ImmPort Data Upload Templates Description

Schema Version 3.20

This document describes elements of the various templates used in the ImmPort data upload system.

Report generated by: BISC, Thu Nov 14 17:27:45 EST 2019

Table Of Contents

47. reagents.HLA_Typing.txt
48. reagents.KIR_Typing.txt
49. reagents.MBAA.txt
50. reagents.Neutralizing_Antibody_Titer.txt
51. reagents.Other.txt
52. reagents.PCR.txt
53. reagents.Sequencing.txt
54. reagents.Virus_Neutralization.txt
55. RNA_SEQ_Results.txt
56. standardCurves.txt
57. study_design_edit.txt
58. subjectAnimals.txt
59. subjectHumans.txt
60. treatments.txt
61. Virus_Neutralization_Results.txt

1. Introduction

1.1 ImmPort Data Upload Templates Use

This guide describes the structure and use of the ImmPort data upload templates. For each template, the purpose, structure (e.g. column headers), and data entry rules are described.

For additional information about the ImmPort Data Upload workflow, please see the ImmPort data upload user's guide and tutorials (http://immport.niaid.nih.gov/immportWeb/experimental/displayDataSubmitHome.do).

It is recommended that you open the Adobe Reader bookmarks option to see a list of the templates.

Each template includes a Schema Version tag. It is used by the ImmPort Data Package Validator and Upload Processing software to ensure the current version of the template is being used. The Schema version refers to the database schema structure and content (in particular the preferred terms and reference data). These version tags should not be modified by the user.

As a reminder, the spreadsheet versions of the templates are provided for benefit of the data providers to enable display of comments and lists in the spreadsheet. The templates uploaded to ImmPort should be saved as tab-delimited text files. Template names should match the names as they appear on the ImmPort web pages. File names are not case sensitive. However, downloading templates from a web browser may cause your computer to append a suffix to the file name and this will prevent ImmPort from recognizing a template name.

1.2 ImmPort Data Upload Packages

The ImmPort data upload workflow is intended to be incremental or modular. You can send one or a few ImmPort upload templates and associated files (e.g. protocols or results) in a data upload package ZIP archive. Or, you can send in many templates and associated files. The order of uploading templates (study before subject or subject before study?) is determined by what descriptive data is referenced within a template and therefore what dependencies exist for an uploaded template to be successfully processed. For example, successfully uploading a subject template requires that a protocol and study arm be referenced, so both the protocol and study design template need to be in the same ZIP archive as the subject template or already uploaded and processed in ImmPort. Individual files contained in the package cannot exceed 2 GBytes (2^31-1 = 2,147,483,647 bytes) in size.

1.3 ImmPort Data Model Overview

ImmPort's model for handling research data is to organize information into metadata or descriptive

categories. Each category has its own template (or suite of templates). The metadata categories and their functions are as follows:

Study: Studies provide the context and organization of a research effort. Studies organize subjects into groups (e.g. arms or cohorts) based on phenotype and/or treatment. The planned visit schedule provides a guide as to the temporal relationship between samples and encounters (i.e is the sample taken before or after a treatment). If the research includes seasonally variable treatments (e.g seasonal influenza vaccine), a separate study should be created for each season.

Subjects: Subjects may be patients or animals from which samples are taken for analysis. Two .xls templates (one for human and one for animal subjects) are available for recording subject information. In these files, treatment protocols used on the subjects can also be listed as well as many other details. Subjects are assigned to a single group (arm or cohort) within a study and maybe linked to multiple studies.

Biological Samples: Describe the types of samples taken from subjects or cell culture and processed for the experiment (i.e. organs, tissue, blood, plasma, cell culture name, etc.), when the samples were taken in the course of a study and protocols used in the sample collection, processing, and/or treatment. Samples are linked to a single study.

Experiments: Describe the measurement technique of the experiment and the links to protocols used in the experiment.

Experiment Samples: The biological samples analyzed in an experiment are linked to the assay reagent, protocol and results via the experiment sample record. Several different template files are available for listing sample details for different assay approaches. An experiment sample should be linked to a single biological sample.

Treatments: Describe the experimental conditions for specific biosamples or experiment samples. Treatments link to experiment samples as well as biosamples if needed.

Protocols: Describe the methods and procedures in studies, subject recruitment/treatment, sample collection/preparation/treatment and experiments. Protocols may be PDF files, Word documents, Excel or other file types.

Reagents: Provide detailed information about the reagents used in an experiment. Since different analysis platforms employ very different reagents, several different template files are available for listing reagent details for different assay approaches.

Table: Explanation of the Fields used to describe the Columns of the Template.

This table describes how each template's column is described.

Field Name	Description
Description:	The Description field provides a detailed description of the column of the Template
Required:	The Required Field can either have the values Yes or No. Yes means the user must enter data for this column. No means it is optional for the user to enter data for this column.
Lookup:	The Lookup Field can either have the values "None" or "Please refer to Appendix A - {Name of the Lookup table}". "None" means this column does not have a pre-defined set of values and no dropdown will be available in the template. "Please refer to Appendix A - {Name of the Lookup table}" means that this column has a pre-defined set of values and a drop-down will be available for the user to select from in the template. The user can click on the "Please refer to Appendix A-{Name of the Lookup}" link in the LookupField and it will take you to the section in Appendix A where the values for the corresponding lookup table are listed.
Comment:	The Comment Field text will be displayed in the template as a comment for the corresponding column. This field provides more information on what kind of data needs to be set for the column
Database Table:	The Database Table Field is the name of the database table which will store the data entered for this column by the user in the template.
Database Column:	The Database Column Field is the name of the column in the ImmPort database which will store the data entered for this column by the user in the template.
Database Type:	The Database Type Field is the data type of the column in the ImmPort database which will store the data entered for this column by the user in the template.

1.4 Template File Loading Order

ImmPort loads the template files in a specified loading order that is specified below in the following table.

Template File Loading Order
protocols.txt
reagents.array.txt
reagents.elisa.txt
reagents.elispot.txt
reagents.mbaa.txt

reagents.flow_cytometry.txt
reagents.hai.txt
reagents.cytof.txt
reagents.neutralizing_antibody_titer.txt
reagents.pcr.txt
reagents.sequencing.txt
reagents.virus_neutralization.txt
reagents.hla_typing.txt
reagents.kir_typing.txt
reagents.other.txt
reagent_sets.txt
treatments.txt
basic_study_design.txt
subjectanimals.txt
subjecthumans.txt
study_design_edit.txt
adverseevents.txt
interventions.txt
assessments.txt
biosamples.txt
labtestpanels.txt
labtests.txt
labtest_results.txt
experiments.txt
controlsamples.txt
standardcurves.txt
experimentsamples.flow_cytometry.txt

experimentsamples.cytof.txt
experimentsamples.gene_expression_array.txt
experimentsamples.genotyping_array.txt
experimentsamples.hla.txt
experimentsamples.image_histology.txt
experimentsamples.kir.txt
experimentsamples.mbaa.txt
experimentsamples.mass_spectrometry.txt
experimentsamples.rna_sequencing.txt
experimentsamples.other.txt
experimentsamples.elisa.txt
experimentsamples.elispot.txt
experimentsamples.hai.txt
experimentsamples.virus_neutralization.txt
experimentsamples.neutralizing_antibody_titer.txt
experimentsamples.qrt-pcr.txt
immuneexposure.txt
publicrepositories.txt
elisa_results.txt
elispot_results.txt
hai_results.txt
pcr_results.txt
virus_neutralization_results.txt
hla_typing.txt
kir_typing.txt
rna_seq_results.txt
mbaa_results.txt

fcm_derived_data.txt
cytof_derived_data.txt

The next section describes each data upload template.

2. **adverseEvents.txt**

The Adverse Event Template reports adverse events that are recorded for subjects in a study.

adverseEvents.txt : User Defined ID	
Description:	The adverse event user defined ID is an identifier chosen by the data provider to refer to a adverse event. The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	adverse_event
Database Column:	user_defined_id
Database Column Type:	varchar(100)

adverseEvents.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject for the reported adverse event.
Required:	Yes
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject for the reported adverse event.
Database Table:	adverse_event
Database Column:	subject_accession
Database Column Type:	varchar(15)

adverseEvents.txt : Study ID	
Description:	An adverse event may be linked to a single study.

Required:	Yes
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession for the study in which the reported adverse event occurred.
Database Table:	adverse_event
Database Column:	study_accession
Database Column Type:	varchar(15)

adverseEvents.txt : Name Reported	
Description:	The adverse event name is a display name that is available when the data is shared, but it is not referenced by other data..
Required:	Yes
Lookup:	None
Comment:	The adverse event name is an alternate identifier that is visible when the adverse event is shared.
Database Table:	adverse_event
Database Column:	name_reported
Database Column Type:	varchar(125)

adverseEvents.txt : Name Preferred	
Description:	The preferred adverse event name is a term from the MedDRA (www.meddra.org) adverse event classification dictionary. This is an optional term and often updated by ImmPort staff by mapping AE reported names to MedDRA terms.
Required:	No
Lookup:	None

Comment:	The preferred adverse event name is a term from the MedDRA (www.meddra.org) adverse event classification dictionary.
Database Table:	adverse_event
Database Column:	name_preferred
Database Column Type:	varchar(40)

adverseEvents.txt : Severity Reported	
Description:	The severity value is chosen from a list of preferred terms.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_adverse_event_severity with preferred column(s) severity_preferred
Comment:	The severity value is chosen from a list of preferred terms.
Database Table:	adverse_event
Database Column:	severity_reported
Database Column Type:	varchar(60)

adverseEvents.txt : Outcome Reported	
Description:	Describe the outcome of the adverse event.
Required:	Yes
Lookup:	None
Comment:	The outcome of the adverse event.
Database Table:	adverse_event
Database Column:	outcome_reported

Database Column Type:	varchar(40)

adverseEvents.txt : Start Study Day	
Description:	The study day in which the adverse event was initially reported.
Required:	No
Lookup:	None
Comment:	The study day in which the adverse event was initially reported.
Database Table:	adverse_event
Database Column:	start_study_day
Database Column Type:	float

adverseEvents.txt : End Study Day	
Description:	The study day in which the adverse event ceased.
Required:	No
Lookup:	None
Comment:	The study day in which the adverse event ceased.
Database Table:	adverse_event
Database Column:	end_study_day
Database Column Type:	float

adverseEvents.txt : Relation To Study Treatment	
Description:	Was the adverse event believed to be related to a study intervention.
Required:	Yes

Lookup:	None
Comment:	Was the adverse event believed to be related to a study intervention.
Database Table:	adverse_event
Database Column:	relation_to_study_treatment
Database Column Type:	varchar(250)

adverseEvents.txt : Organ Or Body System Reported	
Description:	Which portion(s) of the subject was affected by the adverse event.
Required:	No
Lookup:	None
Comment:	Which portion(s) of the subject was affected by the adverse event.
Database Table:	adverse_event
Database Column:	organ_or_body_system_reported
Database Column Type:	varchar(100)

adverseEvents.txt : Description	
Description:	A lengthier description of the adverse event.
Required:	No
Lookup:	None
Comment:	A lengthier description of the adverse event.
Database Table:	adverse_event
Database Column:	description

Database Column Type:	varchar(4000)

adverseEvents.txt : Location Of Reaction Reported	
Description:	Where on/in the subject was the adverse event reported.
Required:	No
Lookup:	None
Comment:	Where on/in the subject was the adverse event reported.
Database Table:	adverse_event
Database Column:	location_of_reaction_reported
Database Column Type:	varchar(126)

adverseEvents.txt : Study Treatment Action Taken	
Description:	What was done to address the adverse event.
Required:	No
Lookup:	None
Comment:	What was done to address the adverse event.
Database Table:	adverse_event
Database Column:	study_treatment_action_taken
Database Column Type:	varchar(250)

adverseEvents.txt : Relation To Nonstudy Treatment	
Description:	Was the adverse event related to some non-study intervention.
Required:	No

Lookup:	None
Comment:	Was the adverse event related to some non-study intervention.
Database Table:	adverse_event
Database Column:	relation_to_nonstudy_treatment
Database Column Type:	varchar(250)

adverseEvents.txt : Causality	
Description:	Was the adverse event believed to be casued by a study intervention.
Required:	No
Lookup:	None
Comment:	Was the adverse event believed to be caused by a study intervention.
Database Table:	adverse_event
Database Column:	causality
Database Column Type:	varchar(250)

adverseEvents.txt : Start Time	
Description:	Allows for describing the time during a study day in which an adverse event was reported.
Required:	No
Lookup:	None
Comment:	Allows for describing the time during a study day in which an adverse event was reported.
Database Table:	adverse_event
Database Column:	start_time

Database Column Type:	varchar(40)

adverseEvents.txt : End Time	
Description:	Allows for describing the time during a study day in which an adverse event was reported.
Required:	No
Lookup:	None
Comment:	Allows for describing the time during a study day in which an adverse event was reported.
Database Table:	adverse_event
Database Column:	end_time
Database Column Type:	varchar(40)

3. **assessments.txt**

The assessment panels template defines and annotates the assessment panels and the assessment components (results) defines and annotates the assessment for the panel. Assessment panels are often encoded in Case Report Forms (CRFs) and these are linked to a study. Assessment components are the answers to questions or assessments recorded in a CRF for a given subject within a study. The assessment template enables you to define the panel and its components in a single form. The assessment panel can be either new or pre-defined in this template. Any combination is acceptable. The only restriction is that the assessment panel id is the key to the template and must be unique within the template.

3.1. Subject Meta DataColumn

The Subject Meta Data Columns include the columns for the combined entity Subject.

Subject Meta Data Column assessments.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject for the subject from which the assessment was completed. A single subject record is permitted.
Required:	Yes
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the assessment was completed.
Database Table:	subject
Database Column:	user_defined_id
Database Column Type:	varchar(100)

3.2. Assessment Panel Meta DataColumns

The Assessment Panel Meta Data Columns include the columns for the combined entity Assessment Panel.

Assessment Panel Meta Data Column assessments.txt : Assessment Panel ID	
Description:	The assessment panel user defined ID is an identifier chosen by the data provider to refer to a set of assessments, often organized into a Case Report Form. This ID may be referenced by other data records (e.g. assessment). The user defined ID is not shared
Required:	Yes
Lookup:	None

Comment:	Please enter either an assessment panel user defined ID or ImmPort accession.
Database Table:	assessment_panel
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Assessment Panel Meta Data Column assessments.txt : Study ID	
Description:	An assessment panel may be linked to a single study.
Conditional Required:	Yes for **New Assessment Panel**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the assessment panel is new.
Database Table:	assessment_panel
Database Column:	study_accession
Database Column Type:	varchar(15)

Assessment Panel Meta Data Column assessments.txt : Name Reported	
Description:	The assessment panel name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Assessment Panel**
Lookup:	None
Comment:	The assessment panel name is an alternate identifier that is visible when the assessment panel is shared.
Database Table:	assessment_panel

Database Column:	name_reported
Database Column Type:	varchar(125)

Assessment Panel Meta Data Column assessments.txt : Assessment Type	
Description:	The assessment type is not a constrained list of terms and suggested values include Physical Exam, Questionnaire, Medical History, Family History.
Required:	No
Lookup:	None
Comment:	Suggested values include Physical Exam, Questionnaire, Medical History, Family History.
Database Table:	assessment_panel
Database Column:	assessment_type
Database Column Type:	varchar(125)

Assessment Panel Meta Data Column assessments.txt : Status	
Description:	The assessment status is not a constrained list of terms and suggested values include Completed, Partial, and Not Completed.
Required:	No
Lookup:	None
Comment:	The assessment status is not a constrained list of terms and suggested values include Completed, Partial, and Not Completed.
Database Table:	assessment_panel
Database Column:	status
Database Column Type:	varchar(50)

Assessment Panel Meta Data Column assessments.txt : CRF File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter CRF file(s) to link to the assessment panel. Separate file names by a semi-colon (;). The file size name limit is 240 characters.

3.3. SeparatorColumn

This column must always appear in the template and must immediately follow after the last meta data column and before the (repeating) result column groups.

Separator Column assessments.txt : Result Separator Column	
Description:	This pseudo column separates meta data from results.
Required:	No
Lookup:	None
Comment:	This pseudo column separates the results (assessment components) from the assessment panel meta data. It must always appear and be the column that appears immediately after the last meta-data column and before any result columns.

3.4. ResultColumns

Each result group (that is, result) consists of a group of the following result columns, where the **first column** of the group must always be '**User Defined ID**'.

Result Column assessments.txt : User Defined ID	
Description:	The assessment component user defined ID is an identifier chosen by the data provider to refer to this assessment result. An assessment component is a portion of an assessment panel. The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The assessment component identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	assessment_component

Database Column:	user_defined_id
Database Column Type:	varchar(100)

Result Column assessments.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a subjects assessment during the course of a study.
Required:	Yes
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	assessment_component
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Result Column assessments.txt : Name Reported	
Description:	The assessment component name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	Yes
Lookup:	None
Comment:	The assessment component name is an alternate identifier that is visible when the sample is shared.
Database Table:	assessment_component
Database Column:	name_reported
Database Column Type:	varchar(125)

Result Column assessments.txt : Study Day	
Description:	Study time collected describes the time value for when the assessment was completed.
Required:	Yes
Lookup:	None
Comment:	Please enter a number.
Database Table:	assessment_component
Database Column:	study_day
Database Column Type:	float

Result Column assessments.txt : Age At Onset Reported	
Description:	Please indicate the age at which a condition reported in the assessment occurred. This column is optional unless units (Age At Onset Unit Reported) is provided.
Required:	No
Lookup:	None
Comment:	Please enter a number.
Database Table:	assessment_component
Database Column:	age_at_onset_reported
Database Column Type:	varchar(100)

Result Column assessments.txt : Age At Onset Unit Reported	
Description:	The time unit for the age of onset value. This column is optional unless value (Age At Onset Reported) is provided.
Required:	No

Preferred Lookup:	Please refer to Appendix A - lk_preferred_time_unit with preferred column(s) time_unit_preferred
Comment:	Suggested values include Days, Months, Years.
Database Table:	assessment_component
Database Column:	age_at_onset_unit_reported
Database Column Type:	varchar(25)

Result Column assessments.txt : Is Clinically Significant	
Description:	Is the condition reported in the assessment significant for the study analysis?
Required:	No
Lookup:	None
Comment:	Please enter a 'Y' or 'N.'
Database Table:	assessment_component
Database Column:	is_clinically_significant
Database Column Type:	varchar(1)

Result Column assessments.txt : Location Of Finding Reported	
Description:	Please use SnoMED CT terms if possible.
Required:	No
Lookup:	None
Comment:	Where on the subject's body does the condition reported in the assessment occur?
Database Table:	assessment_component
Database Column:	location_of_finding_reported

Database Column Type:	varchar(256)

Result Column assessments.txt : Organ Or Body System Reported	
Description:	Please use SnoMED CT terms if possible.
Required:	No
Lookup:	None
Comment:	What is the organ or body system affected by the condition reported in the assessment?
Database Table:	assessment_component
Database Column:	organ_or_body_system_reported
Database Column Type:	varchar(100)

Result Column assessments.txt : Result Value Reported	
Description:	The assessment component value is often the response to a question in a CRF.
Required:	No
Lookup:	None
Comment:	The assessment component value is often the response to a question in a CRF.
Database Table:	assessment_component
Database Column:	result_value_reported
Database Column Type:	varchar(250)

Result Column assessments.txt : Result Unit Reported

Description:	The unit for the assessment value.
Required:	No
Preferred Lookup:	Please refer to Appendix A - lk_unit_of_measure with preferred column(s) unit_of_measure_preferred
Comment:	The unit for the assessment value.
Database Table:	assessment_component
Database Column:	result_unit_reported
Database Column Type:	varchar(100)

Result Column assessments.txt : Result Value Category	
Description:	Suggested terms include Mild, Moderate, and Severe.
Required:	No
Lookup:	None
Comment:	A categorical representation of the assessment value.
Database Table:	assessment_component
Database Column:	result_value_category
Database Column Type:	varchar(40)

Result Column assessments.txt : Subject Position Reported	
Description:	Suggested terms include prone, supine, seated, and standing.
Required:	No
Lookup:	None
Comment:	The position the subject was in when the assessment was completed.
Database Table:	assessment_component

Database Column:	subject_position_reported
Database Column Type:	varchar(40)

Result Column assessments.txt : Time Of Day	
Description:	There are no preferrred response values.
Required:	No
Lookup:	None
Comment:	When during the day was the assessment completed.
Database Table:	assessment_component
Database Column:	time_of_day
Database Column Type:	varchar(40)

Result Column assessments.txt : Verbatim Question	
Description:	What is the wording of the question to elicit the assessment result?
Required:	No
Lookup:	None
Comment:	What is the actual question in the CRF?
Database Table:	assessment_component
Database Column:	verbatim_question
Database Column Type:	varchar(250)

Result Column assessments.txt : Who Is Assessed

Description:	Assessments can include study subject medical history and/or family history.
Required:	No
Lookup:	None
Comment:	Is the study subject assessed or a member of the study subject's family?
Database Table:	assessment_component
Database Column:	who_is_assessed
Database Column Type:	varchar(40)

4. **basic_study_design.txt**

The basic study design template defines and annotates key elements of a study including the purpose, subject grouping, schedule of events, personnel, and references (weblinks, publications). Use the study_design_edit template to add additional information for a study after a study is defined in ImmPort. The basic study design template consists of several sections or compound templates. Some compound templates are required (e.g. study, arm_or_cohort) and other compound templates are optional (e.g. (study_pubmed)).

4.1. Study

The basic study design template defines and annotates key elements of a study including the purpose, subject grouping, schedule of events, personnel, and references (weblinks, publications). Studies involving seasonal variables (e.g. influenza vaccincations) should be defined to ImmPort as single season studies with as many studies defined as seasons included in the research.
The compound template Study is required.

Study : User Defined ID	
Description:	The study user defined ID is an identifier chosen by the data provider to refer to a study design. This ID may be referenced by other data records (e.g. arm). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	study
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Study : Brief Title	
Description:	The brief title will be displayed on ImmPort wherever the study is described.
Required:	Yes
Lookup:	None
Comment:	The brief title serves as a working title for a study.
Database Table:	study

Database Column:	brief_title
Database Column Type:	varchar(250)

Study : Official Title	
Description:	The official study title is displayed on the ImmPort study detail page.
Required:	Yes
Lookup:	None
Comment:	The official study title may be the same as the brief title, but is often more descriptive.
Database Table:	study
Database Column:	official_title
Database Column Type:	varchar(500)

Study : Brief Description	
Description:	A brief study description highlights the essential features of a study.
Required:	Yes
Lookup:	None
Comment:	Summarize the goals, methods and results of the study.
Database Table:	study
Database Column:	brief_description
Database Column Type:	varchar(4000)

Study : Description

Description:	The detailed description can be formatted with html tags to improve legibility. Embedded new line characters should be removed.
Required:	No
Lookup:	None
Comment:	The detailed description supports a lengthy description of the goals and methods of the study.
Database Table:	study
Database Column:	description
Database Column Type:	varchar(4000)

Study : Hypothesis	
Description:	The hypothesis can be formatted with html tags to improve legibility. Embedded new line characters should be removed.
Required:	Yes
Lookup:	None
Comment:	The explanatory proposition(s) being tested by the research study.
Database Table:	study
Database Column:	hypothesis
Database Column Type:	varchar(4000)

Study : Objectives	
Description:	The objectives can be formatted with html tags to improve legibility. Embedded new line characters should be removed.
Required:	Yes
Lookup:	None
Comment:	The goals of the research study.

Database Table:	study
Database Column:	objectives
Database Column Type:	clob

Study : Endpoints	
Description:	The endpoints can be formatted with html tags to improve legibility. Embedded new line characters should be removed.
Required:	Yes
Lookup:	None
Comment:	Endpoints include assessments, lab tests and assays that are part of a study design.
Database Table:	study
Database Column:	endpoints
Database Column Type:	clob

Study : Sponsoring Organization	
Description:	The organization that provides funding and support for the study.
Required:	Yes
Lookup:	None
Comment:	The organization that provides funding and support for the study.
Database Table:	study
Database Column:	sponsoring_organization
Database Column Type:	varchar(250)

Study : Target Enrollment	
Description:	The number of subjects proposed to be enrolled in the study.
Required:	No
Lookup:	None
Comment:	The number of subjects proposed to be enrolled in the study.
Database Table:	study
Database Column:	target_enrollment
Database Column Type:	integer

Study : Minimum Age	
Description:	The minimum age of subjects enrolled in the study.
Required:	No
Lookup:	None
Comment:	The minimum age of subjects enrolled in the study.
Database Table:	study
Database Column:	minimum_age
Database Column Type:	varchar(40)

Study : Maximum Age	
Description:	The maximum age of subjects enrolled in the study.
Required:	No
Lookup:	None

Comment:	The maximum age of subjects enrolled in the study.
Database Table:	study
Database Column:	maximum_age
Database Column Type:	varchar(40)

Study : Age Unit	
Description:	The unit of time used to describe the subject's age in the study. The unit of time for a subject must conform to this unit.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	The unit of time used to describe the subject's age in the study. The unit of time for a subject must conform to this unit.
Database Table:	study
Database Column:	age_unit
Database Column Type:	varchar(50)

Study : Actual Start Date	
Description:	The date format is either dd-MMM-yy or dd-MMM-yyyy where day (dd) is one or two digits 1..31 appropriate to the month, month (MMM) is case-insensitive value (Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec), and year is either (yy) two digits, for example 05 means 2005, and 96 means 1996, or (yyyy) is four digit year, for example 2005.
Required:	Yes
Lookup:	None
Comment:	The commencement time point of the study. The date format is either dd-MMM-yy or dd-MMM-yyyy.
Database Table:	study

Database Column:	actual_start_date
Database Column Type:	date

Study : Intervention Agent	
Description:	If a study is interventional or has an interventional component, a short descriptive name of the intervention agent is requested.
Required:	No
Lookup:	None
Comment:	IA brief description of the study's interventional component (e.g. influenza vaccine).
Database Table:	study
Database Column:	intervention_agent
Database Column Type:	varchar(1000)

4.2. Study_categorization

The compound template Study_categorization is required.

Study_categorization : Research Focus	
Description:	A research focus for the study from the drop down list
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_research_focus
Comment:	Please use the drop down list
Database Table:	study_categorization
Database Column:	research_focus

Database Column Type:	varchar(50)

4.3. Study_2_condition_or_disease

The compound template Study_2_condition_or_disease is required.

Study_2_condition_or_disease : Condition Reported	
Description:	The condition(s)/disease(s) that is (are) being researched or evaluated in the study. Please select condition or disease from the list provided if the condition or disease matches yours or enter a condition or disease if there is not an appropriate one provided. Values provided by the user are further checked against the pref mapping table lk_study_condition_pref_mappng.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_disease_condition with preferred column(s) condition_preferred
Comment:	The condition(s)/disease(s) that is (are) being researched or evaluated in the study. Please select condition or disease from the list provided if the condition or disease matches yours or enter a condition or disease if there is not an appropriate one provided. Values provided by the user are further checked against the pref mapping table lk_study_condition_pref_mappng.
Database Table:	study_2_condition_or_disease
Database Column:	condition_reported
Database Column Type:	varchar(550)

4.4. Arm_or_cohort

The compound template Arm_or_cohort is required.

Arm_or_cohort : User Defined ID	
Description:	The study's arm(s) or cohort(s) group subjects by criteria relevant to the study (e.g. age, condition) and/or treatments or interventions. Insert rows in the template to define additional arms or cohorts linked to the study. Use the study_design_edit template to add additional records after a study is defined in ImmPort.
Required:	Yes
Lookup:	None

Comment:	The arm or cohort user defined ID is an identifier chosen by the data provider to refer to a subject grouping in the study document. This ID may be referenced by other data records (e.g. subjects). The user defined ID is not shared.
Database Table:	arm_or_cohort
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Arm_or_cohort : Name	
Description:	The arm or cohort name is not referenced by other data records.
Required:	Yes
Lookup:	None
Comment:	The arm or cohort name is an alternate identifier that is visible when the study is shared.
Database Table:	arm_or_cohort
Database Column:	name
Database Column Type:	varchar(100)

Arm_or_cohort : Description	
Description:	The description should expand any abbreviations used in the arm or cohort name. For example for an observational study with a cohort whose name was "ADEH+", the description would be "Atopic dermatitis with eczema herpeticum".
Required:	Yes
Lookup:	None
Comment:	The description should expand any abbreviations used in the arm or cohort name.
Database Table:	arm_or_cohort

Database Column:	description
Database Column Type:	varchar(4000)

Arm_or_cohort : Type	
Description:	For an interventional study, the type defines the treatment/control attributes of the arms. The attributes are selected from the values listed below (a study may have more than one arm of a given value). Clinical studies often use the following terms. Experimental - Arm for procedure or drug being evaluated. Active Comparator - arm receiving "standard of care" treatment. Placebo Comparator - arm receiving placebo treatment. Sham Comparator - arm receiving a sham procedure such as a surgery or a sham device. No Intervention - arm receiving neither "standard of care" treatment a placebo, or sham procedure or device. For an observational study, the type should be Observational - All arms are observing differences in cohorts
Required:	No
Lookup:	None
Comment:	Example clinical study values: Observational, Experimental, Active Comparator, Placebo Comparator, Sham Comparator
Database Table:	arm_or_cohort
Database Column:	type
Database Column Type:	varchar(20)

4.5. Study_personnel

The compound template Study_personnel is required.

Study_personnel : User Defined ID	
Description:	The personnel user defined ID is an identifier chosen by the data provider to refer to personnel who may be contacted for more details about the study document. If more than one study personnel record is to be defined, copy the block of rows from Study_Personnel_ID to Site_Name for each additional study personnel record. Use the study_design_edit template to add additional records after a study is defined in ImmPort.
Required:	Yes
Lookup:	None

Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	study_personnel
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Study_personnel : Honorific	
Description:	Usually, the education achievement level of the person.
Required:	No
Lookup:	None
Comment:	Usually, the education achievement level of the person.
Database Table:	study_personnel
Database Column:	honorific
Database Column Type:	varchar(20)

Study_personnel : Last Name	
Description:	The last name of the study personnel being described.
Required:	Yes
Lookup:	None
Comment:	The last name of the study personnel being described.
Database Table:	study_personnel
Database Column:	last_name

Database Column Type:	varchar(40)

Study_personnel : First Name	
Description:	The first name of the study personnel being described.
Required:	Yes
Lookup:	None
Comment:	The first name of the study personnel being described.
Database Table:	study_personnel
Database Column:	first_name
Database Column Type:	varchar(40)

Study_personnel : Suffixes	
Description:	Suffixes that are part of the study personnel's name being described.
Required:	No
Lookup:	None
Comment:	Suffixes that are part of the study personnel's name being described.
Database Table:	study_personnel
Database Column:	suffixes
Database Column Type:	varchar(40)

Study_personnel : Organization	
Description:	The organization with whom the study personnel being described is affiliated.
Required:	Yes

Lookup:	None
Comment:	The organization with whom the study personnel being described is affiliated.
Database Table:	study_personnel
Database Column:	organization
Database Column Type:	varchar(125)

Study_personnel : ORCID ID	
Description:	ORCID (Open Researcher and Contributor Identification), a non-profit organization that promotes the use of its unique digital identifier to connect researchers with their science contributions over time and across changes of name, location and institutional affiliation. The NIH encourages use of this ID. See the link https://nexus.od.nih.gov/all/2019/08/05/linking-orcid-identifiers-to-era-profiles-to-streamline-application-processes-and-to-enhance-tracking-of-career-outcomes/.
Required:	No
Lookup:	None
Comment:	ORCID (Open Researcher and Contributor Identification), a non-profit organization that promotes the use of its unique digital identifier to connect researchers with their science contributions over time and across changes of name, location and institutional affiliation. The NIH encourages use of this ID.
Database Table:	study_personnel
Database Column:	orcid
Database Column Type:	varchar(1000)

Study_personnel : Email	
Description:	Contact information of the study personnel being described.
Required:	Yes
Lookup:	None
Comment:	Contact information of the study personnel being described.

Database Table:	study_personnel
Database Column:	email
Database Column Type:	varchar(40)

Study_personnel : Title In Study	
Description:	The role the personnel play in the study as defined by the research team.
Required:	Yes
Lookup:	None
Comment:	The role the personnel play in the study as defined by the research team.
Database Table:	study_personnel
Database Column:	title_in_study
Database Column Type:	varchar(100)

Study_personnel : Role In Study	
Description:	The ImmPort display will show the personnel listed as 'PI' in the study.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_personnel_role
Comment:	Please use the drop down list.
Database Table:	study_personnel
Database Column:	role_in_study
Database Column Type:	varchar(40)

Study_personnel : Site Name	
Description:	Enter the site name if there is a need to further differentiate the affiliation of the study personnel form the Organization.
Required:	Yes
Lookup:	None
Comment:	Enter the site name if there is a need to further differentiate the affiliation of the study personnel from the Organization.
Database Table:	study_personnel
Database Column:	site_name
Database Column Type:	varchar(100)

4.6. Planned_visit

The compound template Planned_visit is required.

Planned_visit : User Defined ID	
Description:	The planned visit user defined ID is an identifier chosen by the data provider to refer to a planned visit. This ID may be referenced by other data records (e.g. biological samples). The user defined ID is not shared. Insert rows in the template to define additional planned visits linked to the study. Use the study_design_edit template to add additional records after a study is defined in ImmPort.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	planned_visit
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Planned_visit : Name	
Description:	the visit name should indicate the purpose of the visit (e.g. screening, assessment, inoculation, sample drawn). The visit name is not referenced by other data records.
Required:	Yes
Lookup:	None
Comment:	The visit name is an alternate identifier that is visible when the protocol is shared.
Database Table:	planned_visit
Database Column:	name
Database Column Type:	varchar(100)

Planned_visit : Order Number	
Description:	This is a positive whole number value.
Required:	Yes
Lookup:	None
Comment:	The order of the visit within the study design schedule.
Database Table:	planned_visit
Database Column:	order_number
Database Column Type:	integer

Planned_visit : Min Start Day	
Description:	This is a positive or negative numeric value.
Required:	Yes
Lookup:	None

Comment:	The minimum start day for a visit as defined in the study schedule.
Database Table:	planned_visit
Database Column:	min_start_day
Database Column Type:	float

Planned_visit : Max Start Day	
Description:	This is a positive or negative numeric value. If no value is entered, the maximum start day will be set equal to the minimum start day.
Required:	No
Lookup:	None
Comment:	The maximum start day for a visit as defined in the study schedule.
Database Table:	planned_visit
Database Column:	max_start_day
Database Column Type:	float

Planned_visit : Start Rule	
Description:	Enter a start rule only if it is more interesting than "subject has arrived for a scheduled visit".
Required:	No
Lookup:	None
Comment:	Enter a start rule only if it is more interesting than "subject has arrived for a scheduled visit".
Database Table:	planned_visit
Database Column:	start_rule

Database Column Type:	varchar(256)

Planned_visit : End Rule	
Description:	Enter an end rule only if it is more interesting than "subject has arrived for a scheduled visit".
Required:	No
Lookup:	None
Comment:	Enter an end rule only if it is more interesting than "subject has arrived for a scheduled visit".
Database Table:	planned_visit
Database Column:	end_rule
Database Column Type:	varchar(256)

4.7. Inclusion_exclusion

The compound template Inclusion_exclusion is required.

Inclusion_exclusion : User Defined ID	
Description:	The inclusion or exclusion user defined ID is an identifier chosen by the data provider to refer to a criterion used to determine whether a subject may be enrolled in a study. Use the study_design_edit template to add additional records after a study is defined in ImmPort.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	inclusion_exclusion
Database Column:	user_defined_id

Database Column Type:	varchar(100)

Inclusion_exclusion : Criterion	
Description:	One or more criterion must be described to decide whether a subject may be enrolled in a study.
Required:	Yes
Lookup:	None
Comment:	The criterion describes the parameter used to decide if a subject may be enrolled in a study.
Database Table:	inclusion_exclusion
Database Column:	criterion
Database Column Type:	varchar(750)

Inclusion_exclusion : Criterion Category	
Description:	The criterion category is selected form a preferred list of terms.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_criterion_category
Comment:	There are two values to choose from: inclusion or exclusion.
Database Table:	inclusion_exclusion
Database Column:	criterion_category
Database Column Type:	varchar(40)

4.8. Study_2_protocol

The compound template Study_2_protocol is required.

Study_2_protocol : Protocol ID	
Description:	The protocol ID for the study. Use the study_design_edit template to add additional records after a study is defined in ImmPort.
Required:	Yes
Lookup:	None
Comment:	The protocol ID for the study.
Database Table:	study_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

4.9. Study_file

The compound template Study_file is optional.

Study_file : File Name	
Description:	If there are additional files (e.g. as data dictionaries, CRFs, custom formatted lab tests or assessments) that should be linked to the study please indicate them in this block. Insert rows in the template to link additional files to the study. Use the study_design_edit template to add additional records after a study is defined in ImmPort. The file size name limit is 250 characters. For a given study, all file names for study_file must be unique.
Required:	Yes
Lookup:	None
Comment:	The name of the file, including file extension, that is to be linked to the study. The file size name limit is 250 characters. For a given study, all file names for study_file must be unique.
Database Table:	study_file
Database Column:	file_name
Database Column Type:	varchar(250)

Study_file : Description	
Description:	A brief description of the file.
Required:	Yes
Lookup:	None
Comment:	A brief description of the file.
Database Table:	study_file
Database Column:	description
Database Column Type:	varchar(4000)

Study_file : Study File Type	
Description:	Additional study data or study descriptions are current preferred terms.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_study_file_type
Comment:	Please choose from the drop down list.
Database Table:	study_file
Database Column:	type
Database Column Type:	varchar(20)

4.10. Study_link

The compound template Study_link is optional.

Study_link : Name	
Description:	The name of the website to which the link refers. Use the study_design_edit template to add additional records after a study is defined in ImmPort.
Required:	Yes

Lookup:	None
Comment:	The name of the website to which the link refers.
Database Table:	study_link
Database Column:	name
Database Column Type:	varchar(100)

Study_link : Value	
Description:	If this is a clinical trial, please include the clinicalTrial.gov URL.
Required:	Yes
Lookup:	None
Comment:	Define websites that are linked to the study. Insert rows in the template to define additional websites linked to the study.
Database Table:	study_link
Database Column:	value
Database Column Type:	varchar(2000)

4.11. Study_pubmed

The compound template Study_pubmed is optional.

Study_pubmed : Pubmed ID	
Description:	The Pubmed or PubMedCentral identifier of an article that includes data from this study. Use the study_design_edit template to add additional records after a study is defined in ImmPort.
Required:	Yes
Lookup:	None
Comment:	The Pubmed or PubMedCentral identifier of an article that includes data from this study.

Database Table:	study_pubmed
Database Column:	pubmed_id
Database Column Type:	varchar(16)

Study_pubmed : DOI	
Description:	Digital Object Identifier is a persistent identifier or handle used to uniquely identify an object. ImmPort DOIs are generated by DataCite (https://www.datacite.org/)
Required:	No
Lookup:	None
Comment:	Digital Object Identifier is a persistent identifier or handle used to uniquely identify an object.
Database Table:	study_pubmed
Database Column:	doi
Database Column Type:	varchar(100)

Study_pubmed : Title	
Description:	The title of an article that includes data from this study.
Required:	No
Lookup:	None
Comment:	The title of an article that includes data from this study.
Database Table:	study_pubmed
Database Column:	title

Database Column Type:	varchar(4000)

Study_pubmed : Journal	
Description:	The journal name that publishes an article that includes data from this study.
Required:	No
Lookup:	None
Comment:	The journal name that publishes an article that includes data from this study.
Database Table:	study_pubmed
Database Column:	journal
Database Column Type:	varchar(250)

Study_pubmed : Year	
Description:	The article publication year.
Required:	No
Lookup:	None
Comment:	The article publication year.
Database Table:	study_pubmed
Database Column:	year
Database Column Type:	varchar(4)

Study_pubmed : Month	
Description:	The article publication month.
Required:	No

Lookup:	None
Comment:	The article publication month.
Database Table:	study_pubmed
Database Column:	month
Database Column Type:	varchar(12)

Study_pubmed : Issue	
Description:	The journal's issue number.
Required:	No
Lookup:	None
Comment:	The journal's issue number.
Database Table:	study_pubmed
Database Column:	issue
Database Column Type:	varchar(20)

Study_pubmed : Pages	
Description:	The journal's page number.
Required:	No
Lookup:	None
Comment:	The journal's page number.
Database Table:	study_pubmed
Database Column:	pages

Database Column Type:	varchar(20)

Study_pubmed : Authors	
Description:	The article's authors.
Required:	No
Lookup:	None
Comment:	The article's authors.
Database Table:	study_pubmed
Database Column:	authors
Database Column Type:	varchar(4000)

5. **bioSamples.txt**

The biological sample template is a legacy template that defines and annotates the types of samples derived from study subjects and when during the study schedule the sample was derived. The function of this template is also captured in the experiment samples template. This template will continue to be supported for the foreseeable future to support backward compatibility.

bioSamples.txt : User Defined ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

bioSamples.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

bioSamples.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype
Database Column Type:	varchar(50)

bioSamples.txt : Name	
Description:	The biological sample name is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.
Database Table:	biosample
Database Column:	name
Database Column Type:	varchar(100)

bioSamples.txt : Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No

Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	biosample
Database Column:	description
Database Column Type:	varchar(4000)

bioSamples.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Required:	Yes
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.
Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

bioSamples.txt : Study ID	
Description:	A biological sample may be linked to a single study.
Required:	Yes
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession.
Database Table:	biosample

Database Column:	study_accession
Database Column Type:	varchar(15)

bioSamples.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Required:	Yes
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

bioSamples.txt : Treatment ID(s)	
Description:	Please enter either a treatment user defined ID or ImmPort accession if the sample was manipulated in a manner significant to the assay prior to the assay being conducted. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Required:	No
Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.
Database Table:	biosample_2_treatment
Database Column:	treatment_accession
Database Column Type:	varchar(15)

bioSamples.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Required:	Yes
Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample
Database Column:	study_time_collected
Database Column Type:	float

bioSamples.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

bioSamples.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Required:	Yes

Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

bioSamples.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

6. **controlSamples.txt**

The control sample template defines and annotates the control samples included in MBAA assays. Control samples are not assumed to be of biologic origin. This template requires that the control sample be always new, while the experiment can be new or pre-defined. The control sample is the key to the templates and must be unique within the template.

6.1. Control Sample Meta DataColumns

The Control Sample Meta Data Columns include the columns for the combined entity Control Sample.

Control Sample Meta Data Column controlSamples.txt : Control Sample ID	
Description:	The control sample user defined ID is an identifier chosen by the data provider. This ID may be referenced by other data records (e.g. MBAA results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	control_sample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Control Sample Meta Data Column controlSamples.txt : Source	
Description:	The manufacturer or lab where the control sample was obtained.
Conditional Required:	Yes for **New Control Sample**
Lookup:	None
Comment:	The manufacturer or lab where the control sample was obtained.
Database Table:	control_sample
Database Column:	source

Database Column Type:	varchar(100)

Control Sample Meta Data Column controlSamples.txt : Catalog ID	
Description:	The manufacturer or source lab's identifier.
Conditional Required:	Yes for **New Control Sample**
Lookup:	None
Comment:	The manufacturer or source lab's identifier.
Database Table:	control_sample
Database Column:	catalog_id
Database Column Type:	varchar(100)

Control Sample Meta Data Column controlSamples.txt : Dilution Factor	
Description:	The dilution factor indicates how much a sample was diluted before it was assayed.
Conditional Required:	Yes for **New Control Sample**
Lookup:	None
Comment:	Please enter a number.
Database Table:	control_sample
Database Column:	dilution_factor
Database Column Type:	varchar(100)

Control Sample Meta Data Column controlSamples.txt : Assay ID

Description:	The assay ID represents the plate or array ID where standard curves, control samples, and experiment samples were collected and assayed. This ID will be used to link standard curves, control samples, and experiment samples results.
Conditional Required:	Yes for **New Control Sample**
Lookup:	None
Comment:	The assay ID represents the plate or array ID where standard curves, control samples, and experiment samples were collected and assayed. This ID will be used to link standard curves, control samples, and experiment samples results.
Database Table:	control_sample
Database Column:	assay_id
Database Column Type:	varchar(100)

Control Sample Meta Data Column controlSamples.txt : Assay Group ID	
Description:	The assay group ID represents a collection of plates or arrays. This ID may be used to link collections of standard curves, control samples, and experiment samples results.
Required:	No
Lookup:	None
Comment:	The assay group ID represents a collection of plates or arrays. This ID may be used to link collections of standard curves, control samples, and experiment samples results.
Database Table:	control_sample
Database Column:	assay_group_id
Database Column Type:	varchar(100)

Control Sample Meta Data Column controlSamples.txt : ImmPort Template?

Description:	The format of the result file depends on the assay type. ImmPort supports results templates (MBAA_Results.txt) for some of the commonly used immunological assay methods. These template facilitate the sharing and re-use of results data in a standard format. If the result file is the ImmPort results template (strongly recommended by NIAID DAIT), choose 'Yes' from the drop down list and do not include a file name in the "Result File Name" column. If the result file is not an ImmPort results template, choose 'No' from the drop down list and include a file name in the "Result File Name" column.
Conditional Required:	Yes for **New Control Sample**
Controlled Lookup:	Please refer to Appendix A - lk_yes_no
Comment:	The format of the result file depends on the assay type. ImmPort supports results templates (MBAA_Results.txt) for some of the commonly used immunological assay methods. These templates facilitate the sharing and re-use of results data in a standard format. If the result file is the ImmPort results template (strongly recommended by NIAID DAIT), choose 'Yes' from the drop down list and do not include a file name in the "Result File Name" column. If the result file is not an ImmPort results template, choose 'No' from the drop down list and include a file name in the "Result File Name" column.

Control Sample Meta Data Column controlSamples.txt : Result File Name	
Description:	This is expected to be the MBAA_Results.txt ImmPort template. The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Enter the file name (including file extension) that contains assay results for the control sample. The file size name limit is 240 characters.

Control Sample Meta Data Column controlSamples.txt : Lot Number	
Description:	The lot number is helpful to understand possible batch specific differences in assay results.
Required:	No
Lookup:	None
Comment:	The lot number is often provided by a reagent source when the reagent is replenished over time.
Database Table:	control_sample

Database Column:	lot_number
Database Column Type:	varchar(250)

Control Sample Meta Data Column controlSamples.txt : Additional Result File Names	
Description:	HIPC recommends including bead level result files if they are available. Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	HIPC recommends including bead level result files if they are available. The file size name limit is 240 characters.

6.2. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column controlSamples.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template.
Required:	Yes
Lookup:	None
Comment:	Please enter either an experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Experiment Meta Data Column controlSamples.txt : Study ID	
Description:	An experiment may be linked to a single study.

Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column controlSamples.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column controlSamples.txt : Name	
Description:	The experiment name is not referenced by other data records.
Conditional Required:	Yes for **New Experiment**
Lookup:	None

Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	experiment
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column controlSamples.txt : Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No
Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	experiment
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column controlSamples.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment

Database Column:	measurement_technique
Database Column Type:	varchar(50)

7. **CyTOF_Derived_data.txt**
The CYTOF derived data template captures and annotates the assay results for a sample by linking sample, experiment, and interpreted results together.

Table: Marker Intensities (Expression Status) and Their Preferred Labels

This table highlights the preferred marker expression intensity terms to use in the cytometry derived data templates. The Alternative Labels note how indicated reported marker expression intensity terms are mapped to preferred terms. The following table provides information on the preferred labels for marker expression status that can be used in the template column, 'Gating Definition Reported'.

Expression Status	Preferred Label	Alternative Labels
Negative	-	negative, neg
Positive	+	positive, pos
Low	+-	low, lo, LO, (low), -low, dim, di
Intermediate	+~	intermediate, int, medium, med, -medium
High	++	high, hi, (high), -high, Bright, bright, bri, br

The template has validation levels that define the level of validation required for this template. The validation for this template is either Standard or HIPC, where HIPC is a fuller validation with more required columns controlled/preferred vocabularies.

CyTOF_Derived_data.txt : Expsample ID	
Description:	The experiment sample identifier must be stored in ImmPort or in the experimentsamples.txt template.
Required:	Yes
Lookup:	None
Comment:	Please enter either an experiment sample user defined ID or ImmPort accession.
Database Table:	fcs_analyzed_result And expsample_2_file_info
Database Column:	expsample_accession

Database Column Type:	varchar(15)

CyTOF_Derived_data.txt : Population Name Reported	
Description:	The drop down list provides a list of cell population names. Please select a name if it matches your cell population name or enter a population name if there is not an appropriate one provided. The population name has a limit of 150 characters.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_cell_population with preferred column(s) population_name_preferred
Comment:	The population name is the type of cells whose count is reported. Please select a population name from the drop down list if it matches your cell population name or enter a name if there is not an appropriate one provided.
Database Table:	fcs_analyzed_result
Database Column:	population_name_reported
Database Column Type:	varchar(150)

CyTOF_Derived_data.txt : Gating Definition Reported	
Description:	he gating definition is the set of markers and their expression profile that describes a cell population name. Please select a gating definition from the drop down list if it matches your gating definition or enter a gating definition if there is not an appropriate one provided. The marker names should conform to standard names as described in the LK_ANALYTE table. Note that a comma, forward slash or pipe may be used as marker delimiter. The expression values are '-', '+', '+-', '+~', '++', or ''. The gating definition has a limit of 150 characters.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_cell_population_definition with preferred column(s) population_defnition_preferred
Comment:	The gating definition is the set of markers and their expression profile. Please select a gating definition from the drop down list or enter a gating definition. Please see the ImmPort Upload Templates for details on representing marker names, delimiters and expression values.
Database Table:	fcs_analyzed_result

Database Column:	population_defnition_reported
Database Column Type:	varchar(150)

CyTOF_Derived_data.txt : Parent Population Reported	
Description:	The drop down provides the base parent population. Please select a name if it matches your base parent population name or enter a name if there is not an appropriate one provided.
Required:	No
Preferred Lookup:	Please refer to Appendix A - lk_cell_population with preferred column(s) population_name_preferred
Comment:	The base parent population name. Please select a population name from the drop down list if it matches your base parent population name or enter a name if there is not an appropriate one provided.
Database Table:	fcs_analyzed_result
Database Column:	parent_population_reported
Database Column Type:	varchar(150)

CyTOF_Derived_data.txt : Population Statistic (count, percentile, etc)	
Description:	The count of the cell type defined by the marker gating definition.
Required:	Yes
Lookup:	None
Comment:	A number is expected.
Database Table:	fcs_analyzed_result
Database Column:	population_statistic_reported
Database Column Type:	varchar(50)

CyTOF_Derived_data.txt : Population Stat Unit Reported	
Description:	The unit used to describe the cell count. Please select a unit from the drop down list if the definition matches your unit name or enter a unit if there is not an appropriate one provided.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_cell_pop_statistic_unit with preferred column(s) statistic_unit_preferred
Comment:	The unit used to describe the cell count. Please select a unit from the list provided if the definition matches your unit name or enter a unit if there is not an appropriate one provided.
Database Table:	fcs_analyzed_result
Database Column:	population_stat_unit_reported
Database Column Type:	varchar(100)

CyTOF_Derived_data.txt : Workspace File	
Description:	An XML formatted export of the analysis program is expected (e.g. an xml format of a FlowJo .jo or .wsp file). The file size name limit is 240 characters.
Required:	Yes
Lookup:	None
Comment:	The name of the file that stores the interpreted CyTOF results from the analysis program. The file size name limit is 240 characters.

CyTOF_Derived_data.txt : Comments	
Description:	Comments captures additional descriptive information.
Required:	No
Lookup:	None
Comment:	Comments captures additional descriptive information.
Database Table:	fcs_analyzed_result

Database Column:	comments
Database Column Type:	varchar(500)

8. **ELISA_Results.txt**

The ELISA experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. More than one analyte's results per assayed sample may be reported by copying the group of columns 'Analyte', 'Calculated Concentration Value', and 'Calculated Concentration Unit' needed to describe each assay result.

ELISA_Results.txt : Expsample ID	
Description:	The experiment sample identifier must be stored in ImmPort or in the experimentsamples.txt template.
Required:	Yes
Lookup:	None
Comment:	Please enter either an experiment sample user defined ID or ImmPort accession.
Database Table:	elisa_result And expsample_2_file_info
Database Column:	expsample_accession
Database Column Type:	varchar(15)

ELISA_Results.txt : Analyte Reported	
Description:	The analyte describes what is being measured in an assay. The list of values displays common immunology terms on the left and their preferred term on the right, separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_analyte with preferred column(s) immunology_symbol and short_label and analyte_preferred
Comment:	The analyte is the target (e.g protein, DNA, RNA) that is being assayed by the reagent. The list of values displays common immunology terms on the left and their preferred term on the right, separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Database Table:	elisa_result
Database Column:	analyte_reported

Database Column Type:	varchar(100)

ELISA_Results.txt : Value Reported	
Description:	The analyte's concentration value.
Required:	Yes
Lookup:	None
Comment:	The analyte's concentration value.
Database Table:	elisa_result
Database Column:	value_reported
Database Column Type:	varchar(50)

ELISA_Results.txt : Unit Reported	
Description:	The analyte's concentration unit.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_concentration_unit with preferred column(s) concentration_unit_preferred
Comment:	The analyte's concentration unit.
Database Table:	elisa_result
Database Column:	unit_reported
Database Column Type:	varchar(200)

ELISA_Results.txt : Comments	
Description:	Unstructured text to further describe the result.

Required:	No
Lookup:	None
Comment:	Unstructured text to further describe the result.
Database Table:	elisa_result
Database Column:	comments
Database Column Type:	varchar(500)

9. **ELISPOT_Results.txt**

The ELISPOT experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. More than one analyte's results per assayed sample may be reported by copying the group of columns 'Analyte', 'Number Of Spots Per Well', and 'Cell number per well Value', 'Cell number per well Unit' needed to describe each assay result.

ELISPOT_Results.txt : Expsample ID	
Description:	The experiment sample identifier must be stored in ImmPort or in the experimentsamples.txt template.
Required:	Yes
Lookup:	None
Comment:	Please enter either an experiment sample user defined ID or ImmPort accession.
Database Table:	elispot_result And expsample_2_file_info
Database Column:	expsample_accession
Database Column Type:	varchar(15)

ELISPOT_Results.txt : Analyte Reported	
Description:	The analyte describes what is being measured in an assay. The list of values displays common immunology terms on the left and their preferred term on the right, separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_analyte with preferred column(s) immunology_symbol and short_label and analyte_preferred
Comment:	The analyte is the target (e.g protein, DNA, RNA) that is being assayed by the reagent. The list of values displays common immunology terms on the left and their preferred term on the right, separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Database Table:	elispot_result
Database Column:	analyte_reported

Database Column Type:	varchar(100)

ELISPOT_Results.txt : Spot Number Reported	
Description:	The number of spots generated by the reporting assay reagent.
Required:	Yes
Lookup:	None
Comment:	A number is expected.
Database Table:	elispot_result
Database Column:	spot_number_reported
Database Column Type:	varchar(50)

ELISPOT_Results.txt : Cell Number Reported	
Description:	The number of live cells assayed per well.
Required:	Yes
Lookup:	None
Comment:	A number is expected.
Database Table:	elispot_result
Database Column:	cell_number_reported
Database Column Type:	varchar(50)

ELISPOT_Results.txt : Comments	
Description:	Unstructured text to further describe the result
Required:	No

Lookup:	None
Comment:	Unstructured text to further describe the result
Database Table:	elispot_result
Database Column:	comments
Database Column Type:	varchar(500)

10. **experiments.txt**

The experiments template is a legacy template that defines and annotates the mechanistic assays performed on samples. The function of this template is also captured in the experiment samples template. This template will continue to be supported for the foreseeable future to support backward compatibility.

experiments.txt : User Defined ID	
Description:	The experiment user defined ID is an identifier chosen by the data provider to refer to an experiment. This ID may be referenced by other data records (e.g. experiment sample, control sample, standard curve). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

experiments.txt : Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	Yes
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	experiment
Database Column:	name
Database Column Type:	varchar(100)

experiments.txt : Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No
Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	experiment
Database Column:	description
Database Column Type:	varchar(4000)

experiments.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

experiments.txt : Study ID	
Description:	An experiment may be linked to a single study.
Required:	Yes
Lookup:	None

Comment:	Please enter either a study user defined ID or ImmPort accession for the study in which the experiment occurs.
Database Table:	experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

experiments.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession. One or more identifiers can be entered per subject. Separate identifiers by semicolon (;).
Required:	Yes
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

experiments.txt : Hypothesis	
Description:	The explanatory proposition(s) being tested by the experiment.
Required:	No
Lookup:	None
Comment:	The explanatory proposition(s) being tested by the experiment.
Database Table:	experiment
Database Column:	hypothesis

Database Column Type:	varchar(4000)

11. **experimentSamples.CYTOF.txt**

The CYTOF experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment are new, then you must complete the required columns to describe them. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

11.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.CYTOF.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

11.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.CYTOF.txt : Expsample ID

Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.CYTOF.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.CYTOF.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.
Conditional Required:	Yes for **New Expsample**

Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.
Database Table:	expsample_2_treatment
Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.CYTOF.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.CYTOF.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.
Required:	No
Lookup:	None
Comment:	Describe important characteristics of the sample being assayed.
Database Table:	expsample
Database Column:	description

Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.CYTOF.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

Expsample Meta Data Column experimentSamples.CYTOF.txt : Result File Name	
Description:	The primary output for CYTOF assays is a file in .fcs format. The file size name limit is 240 characters.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	The primary output for CYTOF assays is a file in .fcs format. The file size name limit is 240 characters.

11.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.CYTOF.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.

Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.CYTOF.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.
Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.CYTOF.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	biosample
Database Column:	planned_visit_accession

Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.CYTOF.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.CYTOF.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.CYTOF.txt : Biosample Name	
Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.CYTOF.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.CYTOF.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**

Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample
Database Column:	study_time_collected
Database Column Type:	float

Biosample Meta Data Column experimentSamples.CYTOF.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.CYTOF.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample

Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.CYTOF.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

11.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.CYTOF.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id

Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.CYTOF.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.CYTOF.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.CYTOF.txt : Experiment Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No
Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.CYTOF.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

12. **experimentSamples.ELISA.txt**

The ELISA experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. More than one analyte's results per assayed sample may be reported by copying the group of columns 'Analyte', 'Calculated Concentration Value', and 'Calculated Concentration Unit' needed to describe each assay result. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment is new, then you must complete the required columns to describe them. When defining a new experiment or biological sample, it is only necessary to complete the required descriptive columns once per experiment or biological sample. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

12.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.ELISA.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

12.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.ELISA.txt : Expsample ID	
Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.ELISA.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.ELISA.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.
Required:	No

Lookup:	None
Comment:	Describe important characteristics of the sample being assayed.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.ELISA.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.ELISA.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.

Database Table:	expsample_2_treatment
Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.ELISA.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

12.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.ELISA.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.
Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.ELISA.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.ELISA.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.ELISA.txt : Biosample Name	
Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.

Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.ELISA.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.ELISA.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**
Lookup:	None

Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.
Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.ELISA.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.ELISA.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample

Database Column:	study_time_collected
Database Column Type:	float

Biosample Meta Data Column experimentSamples.ELISA.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.ELISA.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.ELISA.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

12.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.ELISA.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.ELISA.txt : Protocol ID(s)

Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.ELISA.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.ELISA.txt : Experiment Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No

Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.ELISA.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

12.5. SeparatorColumn

This column must always appear in the template and must immediately follow after the last meta data column and before the (repeating) result column groups.

Separator Column experimentSamples.ELISA.txt : Result Separator Column	
Description:	This pseudo column separates meta data from results.
Required:	No
Lookup:	None

Comment:	This pseudo column separates the results (lab tests) from the lab test panel meta data. It must always appear and be the column that appears immediately after the last meta-data column and before any result columns.

12.6. ResultColumns

Each result group (that is, result) consists of a group of the following result columns, where the **first column** of the group must always be '**Analyte Reported**'.

Result Column experimentSamples.ELISA.txt : Analyte Reported	
Description:	The analyte describes what is being measured in an assay. The list of values displays common immunology gene symbol and gene symbol terms on the left and their preferred term on the right, each component separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_analyte with preferred column(s) immunology_symbol and short_label and analyte_preferred
Comment:	This COLUMN must appear as the FIRST COLUMN for a repeating result column group. The list of values displays common immunology gene symbol and the gene symbol terms on the left and their preferred term on the right, each component separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Database Table:	elisa_result
Database Column:	analyte_reported
Database Column Type:	varchar(100)

Result Column experimentSamples.ELISA.txt : Value Reported	
Description:	The analyte's concentration value.
Required:	Yes
Lookup:	None
Comment:	The analyte's concentration value.
Database Table:	elisa_result

Database Column:	value_reported
Database Column Type:	varchar(50)

Result Column experimentSamples.ELISA.txt : Unit Reported	
Description:	The analyte's concentration unit.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_concentration_unit with preferred column(s) concentration_unit_preferred
Comment:	The analyte's concentration unit.
Database Table:	elisa_result
Database Column:	unit_reported
Database Column Type:	varchar(200)

Result Column experimentSamples.ELISA.txt : Comments	
Description:	Comments captures additional descriptive information that is added to the result.
Required:	No
Lookup:	None
Comment:	Comments captures additional descriptive information that is added to the result.
Database Table:	elisa_result
Database Column:	comments
Database Column Type:	varchar(500)

13. **experimentSamples.ELISPOT.txt**

The ELISPOT experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. More than one analyte's results per assayed sample may be reported by copying the group of columns 'Analyte', 'Number Of Spots Per Well', and 'Cell number per well Value', 'Cell number per well Unit' needed to describe each assay result. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment is new, then you must complete the required columns to describe them. When defining a new experiment or biological sample, it is only necessary to complete the required descriptive columns once per experiment or biological sample. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

13.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.ELISPOT.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

13.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.ELISPOT.txt : Expsample ID	
Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.ELISPOT.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.ELISPOT.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.
Required:	No

Lookup:	None
Comment:	Describe important characteristics of the sample being assayed.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.ELISPOT.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.ELISPOT.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.

Database Table:	expsample_2_treatment
Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.ELISPOT.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

13.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.ELISPOT.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.
Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.ELISPOT.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.ELISPOT.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.ELISPOT.txt : Biosample Name	
Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.

Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.ELISPOT.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.ELISPOT.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**
Lookup:	None

Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.
Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.ELISPOT.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.ELISPOT.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample

Database Column:	study_time_collected
Database Column Type:	float

Biosample Meta Data Column experimentSamples.ELISPOT.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.ELISPOT.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.ELISPOT.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

13.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.ELISPOT.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.ELISPOT.txt : Protocol ID(s)

Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.ELISPOT.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.ELISPOT.txt : Experiment Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No

Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.ELISPOT.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

13.5. SeparatorColumn

This column must always appear in the template and must immediately follow after the last meta data column and before the (repeating) result column groups.

Separator Column experimentSamples.ELISPOT.txt : Result Separator Column	
Description:	This pseudo column separates meta data from results.
Required:	No
Lookup:	None

Comment:	This pseudo column separates the results (lab tests) from the lab test panel meta data. It must always appear and be the column that appears immediately after the last meta-data column and before any result columns.

13.6. ResultColumns

Each result group (that is, result) consists of a group of the following result columns, where the **first column** of the group must always be '**Analyte Reported**'.

Result Column experimentSamples.ELISPOT.txt : Analyte Reported	
Description:	The molecule or entity being measured. The list of values displays common immunology gene symbol and gene symbol terms on the left and their preferred term on the right, each component separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_analyte with preferred column(s) immunology_symbol and short_label and analyte_preferred
Comment:	The molecule or entity being measured. This COLUMN must appear as the FIRST COLUMN for a repeating result column group. The list of values displays common immunology gene symbol and the gene symbol terms on the left and their preferred term on the right, each component separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Database Table:	elispot_result
Database Column:	analyte_reported
Database Column Type:	varchar(100)

Result Column experimentSamples.ELISPOT.txt : Spot Number Reported	
Description:	The number of spots generated by the reporting assay reagent.
Required:	Yes
Lookup:	None
Comment:	A number is expected.

Database Table:	elispot_result
Database Column:	spot_number_reported
Database Column Type:	varchar(50)

Result Column experimentSamples.ELISPOT.txt : Cell Number Reported	
Description:	The number of live cells assayed per well.
Required:	Yes
Lookup:	None
Comment:	A number is expected.
Database Table:	elispot_result
Database Column:	cell_number_reported
Database Column Type:	varchar(50)

Result Column experimentSamples.ELISPOT.txt : Comments	
Description:	Comments captures additional descriptive information that is added to the result.
Required:	No
Lookup:	None
Comment:	Comments captures additional descriptive information that is added to the result.
Database Table:	elispot_result
Database Column:	comments
Database Column Type:	varchar(500)

14. **experimentSamples.Flow_Cytometry.txt**

The flow cytometry experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment are new, then you must complete the required columns to describe them. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

14.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.Flow_Cytometry.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

14.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.Flow_Cytometry.txt : Expsample ID

Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.Flow_Cytometry.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.Flow_Cytometry.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.
Conditional Required:	Yes for **New Expsample**

Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.
Database Table:	expsample_2_treatment
Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.Flow_Cytometry.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.Flow_Cytometry.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.
Required:	No
Lookup:	None
Comment:	Describe important characteristics of the sample being assayed.
Database Table:	expsample
Database Column:	description

Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.Flow_Cytometry.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

Expsample Meta Data Column experimentSamples.Flow_Cytometry.txt : .Fcs Result File	
Description:	The primary output for flow cytometry assays is a file in .fcs format. The file size name limit is 240 characters.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	The primary output for flow cytometry assays is a file in .fcs format. The file size name limit is 240 characters.

Expsample Meta Data Column experimentSamples.Flow_Cytometry.txt : Compensation Or Control File Name(s)	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Flow cytometry assay runs include compensation and/or control files. The set of compensation/control files from an assay run should be linked to the experiment sample that is linked to the assayed sample's fcs file. The file size name limit is 240 characters.

14.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.Flow_Cytometry.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.
Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.Flow_Cytometry.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.
Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.Flow_Cytometry.txt : Planned Visit ID

Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.Flow_Cytometry.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.Flow_Cytometry.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No

Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.Flow_Cytometry.txt : Biosample Name	
Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.Flow_Cytometry.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.

Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.Flow_Cytometry.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample
Database Column:	study_time_collected
Database Column Type:	float

Biosample Meta Data Column experimentSamples.Flow_Cytometry.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit

Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.Flow_Cytometry.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.Flow_Cytometry.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

14.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.Flow_Cytometry.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.Flow_Cytometry.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.Flow_Cytometry.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.

Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.Flow_Cytometry.txt : Experiment Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No
Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.Flow_Cytometry.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech

Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

15. **experimentSamples.Gene_Expression_Array.txt**

The gene expression experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment are new, then you must complete the required columns to describe them. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

15.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.Gene_Expression_Array.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

15.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Expsample ID

Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.

Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.
Database Table:	expsample_2_treatment
Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.
Required:	No
Lookup:	None
Comment:	Describe important characteristics of the sample being assayed.

Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

Expsample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Repository Name	
Description:	ImmPort expects array gene expression results to be deposited in NCBI GEO since this is a prerequisite for publication. Please choose this repository name from the list.
Required:	No
Controlled Lookup:	Please refer to Appendix A - lk_public_repository
Comment:	Array gene expression results are expected to be deposited in NCBI GEO Please choose this repository name from the list.
Database Table:	expsample_public_repository
Database Column:	repository_name
Database Column Type:	varchar(50)

Expsample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Repository Accession

Description:	The public repository accession should be the most granular or highest resolution provided (e.g. sample level accession, not sample group accession).
Required:	No
Lookup:	None
Comment:	Enter the accession that links to the assay result file(s).
Database Table:	expsample_public_repository
Database Column:	repository_accession
Database Column Type:	varchar(20)

15.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.
Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Subject ID

Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.
Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**

Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Biosample Name	
Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.

Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample
Database Column:	study_time_collected

Database Column Type:	float

Biosample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.Gene_Expression_Array.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

15.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.Gene_Expression_Array.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.Gene_Expression_Array.txt : Protocol ID(s)

Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.Gene_Expression_Array.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.Gene_Expression_Array.txt : Experiment Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.

Required:	No
Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.Gene_Expression_Array.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

16. **experimentSamples.Genotyping_Array.txt**

The genotyping experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment are new, then you must complete the required columns to describe them. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

16.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.Genotyping_Array.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

16.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.Genotyping_Array.txt : Expsample ID

Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.Genotyping_Array.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.Genotyping_Array.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.
Conditional Required:	Yes for **New Expsample**

Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.
Database Table:	expsample_2_treatment
Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.Genotyping_Array.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.Genotyping_Array.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.
Required:	No
Lookup:	None
Comment:	Describe important characteristics of the sample being assayed.
Database Table:	expsample

Database Column:	description
Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.Genotyping_Array.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

Expsample Meta Data Column experimentSamples.Genotyping_Array.txt : Repository Name	
Description:	ImmPort expects genotyping results to be deposited in dbGAP since this is a prerequisite for publication. In order to avoid duplication of data upload by requiring the same data be sent to ImmPort as well as dbGAP, ImmPort requires only the dbGAP accession.
Required:	No
Controlled Lookup:	Please refer to Appendix A - lk_public_repository
Comment:	Genotyping results are expected to be deposited in dbGAP. Please choose this repository name from the list.
Database Table:	expsample_public_repository
Database Column:	repository_name
Database Column Type:	varchar(50)

Expsample Meta Data Column experimentSamples.Genotyping_Array.txt : Repository Accession

Description:	The public repository accession should be the most granular or highest resolution provided (e.g. sample level accession, not sample group accession).
Required:	No
Lookup:	None
Comment:	Enter the accession that links to the assay result file(s).
Database Table:	expsample_public_repository
Database Column:	repository_accession
Database Column Type:	varchar(20)

16.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.Genotyping_Array.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.
Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.Genotyping_Array.txt : Subject ID

Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.
Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.Genotyping_Array.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.Genotyping_Array.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**

Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.Genotyping_Array.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.Genotyping_Array.txt : Biosample Name	
Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.

Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.Genotyping_Array.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.Genotyping_Array.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample
Database Column:	study_time_collected

Database Column Type:	float

Biosample Meta Data Column experimentSamples.Genotyping_Array.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.Genotyping_Array.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.Genotyping_Array.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

16.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.Genotyping_Array.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.Genotyping_Array.txt : Protocol ID(s)

Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.Genotyping_Array.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.Genotyping_Array.txt : Experiment Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.

Required:	No
Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.Genotyping_Array.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

17. experimentSamples.HAI.txt

The HAI experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. More than one analyte's results per assayed sample may be reported by copying the group of columns 'Virus Strain'and 'Titration Dilution Value' needed to describe each assay result. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment is new, then you must complete the required columns to describe them. When defining a new experiment or biological sample, it is only necessary to complete the required descriptive columns once per experiment or biological sample. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

17.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.HAI.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

17.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.HAI.txt : Expsample ID	
Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.HAI.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.HAI.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.
Required:	No
Lookup:	None

Comment:	Describe important characteristics of the sample being assayed.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.HAI.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.HAI.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.
Database Table:	expsample_2_treatment

Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.HAI.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

17.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.HAI.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.
Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.HAI.txt : Type

Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.HAI.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.HAI.txt : Biosample Name	
Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No

Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.HAI.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.HAI.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.

Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.HAI.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.HAI.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample
Database Column:	study_time_collected

Database Column Type:	float

Biosample Meta Data Column experimentSamples.HAI.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.HAI.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.HAI.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

17.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.HAI.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.HAI.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).

Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.HAI.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.HAI.txt : Experiment Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No
Lookup:	None

Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.HAI.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

17.5. SeparatorColumn

This column must always appear in the template and must immediately follow after the last meta data column and before the (repeating) result column groups.

Separator Column experimentSamples.HAI.txt : Result Separator Column	
Description:	This pseudo column separates meta data from results.
Required:	No
Lookup:	None
Comment:	This pseudo column separates the results (lab tests) from the lab test panel meta data. It must always appear and be the column that appears immediately after the last meta-data column and before any result columns.

17.6. ResultColumns

Each result group (that is, result) consists of a group of the following result columns, where the **first column** of the group must always be '**Virus Strain Reported**'.

Result Column experimentSamples.HAI.txt : Virus Strain Reported	
Description:	The name of the virus strain used in the assay. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_virus_strain with preferred column(s) virus_strain_preferred
Comment:	The name of the virus strain used in the assay. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared. This COLUMN must appear as the FIRST COLUMN for a repeating result column group.
Database Table:	hai_result
Database Column:	virus_strain_reported
Database Column Type:	varchar(200)

Result Column experimentSamples.HAI.txt : Value Reported	
Description:	The maximum sample dilution factor that continues to demonstrate inhibition of hemagglutination.
Required:	Yes
Lookup:	None
Comment:	A number is expected.
Database Table:	hai_result
Database Column:	value_reported
Database Column Type:	varchar(50)

Result Column experimentSamples.HAI.txt : Unit Reported	
Description:	The dilution factor unit.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_titer_unit with preferred column(s) titer_unit_preferred
Comment:	The dilution factor unit.
Database Table:	hai_result
Database Column:	unit_reported
Database Column Type:	varchar(200)

Result Column experimentSamples.HAI.txt : Comments	
Description:	Comments captures additional descriptive information that is added to the result.
Required:	No
Lookup:	None
Comment:	Comments captures additional descriptive information that is added to the result.
Database Table:	hai_result
Database Column:	comments
Database Column Type:	varchar(500)

18. **experimentSamples.HLA.txt**

The HLA experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment are new, then you must complete the required columns to describe them. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

18.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.HLA.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

18.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.HLA.txt : Expsample ID

Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.HLA.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.HLA.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.
Conditional Required:	Yes for **New Expsample**

Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.
Database Table:	expsample_2_treatment
Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.HLA.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.HLA.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.
Required:	No
Lookup:	None
Comment:	Describe important characteristics of the sample being assayed.
Database Table:	expsample
Database Column:	description

Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.HLA.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

Expsample Meta Data Column experimentSamples.HLA.txt : ImmPort Template?	
Description:	If the result file is an ImmPort results template (strongly recommended by NIAID DAIT), choose 'Yes' from the drop down list and do not include a file name in the "Result File Name" column. If the result file is not an ImmPort results template, choose 'No' from the drop down list and include a file name in the "Result File Name" column.
Conditional Required:	Yes for **New Expsample**
Controlled Lookup:	Please refer to Appendix A - lk_yes_no
Comment:	If the result file is an ImmPort results template (strongly recommended by NIAID DAIT), choose 'Yes' from the drop down list and do not include a file name in the "Result File Name" column. If the result file is not an ImmPort results template, choose 'No' from the drop down list and include a file name in the "Result File Name" column.

Expsample Meta Data Column experimentSamples.HLA.txt : Result File Name	
Description:	Completing this column is conditional upon whether the "ImmPort Template?" column value is set to "Yes" or "No". If the "ImmPort Template?" column value is set to "Yes", do not enter a file name in the "Result File Name" column. If the "ImmPort Template?" column value is set to "No", enter a file name in the "Result File Name" column. ImmPort supports results templates for many of the commonly used immunological assay methods. These templates facilitate the sharing and re-use of results data in a standard format. The file size name limit is 240 characters.
Required:	No
Lookup:	None

Comment:	Please use the ImmPort template for this assay result (as opposed to custom file formats) to standardize the format of the data when it is shared. If you use the ImmPort template (strongly recommended by NIAID DAIT), do not enter the template name in this column and set the "ImmPort Template?" column value to "Yes". If you do not use the ImmPort template, enter the file name (including file extension) that contains assay results for the experiment sample and set the "ImmPort Template?" column value to "No". The file size name limit is 240 characters.

18.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.HLA.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.
Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.HLA.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.

Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.HLA.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.HLA.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type

Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.HLA.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.HLA.txt : Biosample Name	
Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.HLA.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.HLA.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample
Database Column:	study_time_collected
Database Column Type:	float

Biosample Meta Data Column experimentSamples.HLA.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**

Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.HLA.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.HLA.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample

Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

18.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.HLA.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.HLA.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol

Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.HLA.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.HLA.txt : Experiment Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No
Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.HLA.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

19. **experimentSamples.Image_Histology.txt**

The image histology experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment are new, then you must complete the required columns to describe them. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

19.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.Image_Histology.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

19.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.Image_Histology.txt : Expsample ID

Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.Image_Histology.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.Image_Histology.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.
Conditional Required:	Yes for **New Expsample**

Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.
Database Table:	expsample_2_treatment
Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.Image_Histology.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.Image_Histology.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.
Required:	No
Lookup:	None
Comment:	Describe important characteristics of the sample being assayed.
Database Table:	expsample

Database Column:	description
Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.Image_Histology.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

Expsample Meta Data Column experimentSamples.Image_Histology.txt : Result File Name	
Description:	Enter the file name for this assay result. The file size name limit is 240 characters.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Enter the file name for this assay result. The file size name limit is 240 characters.

19.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.Image_Histology.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None

Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.
Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.Image_Histology.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.
Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.Image_Histology.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.

Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.Image_Histology.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.Image_Histology.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype

Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.Image_Histology.txt : Biosample Name	
Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.Image_Histology.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.Image_Histology.txt : Study Time Collected

Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample
Database Column:	study_time_collected
Database Column Type:	float

Biosample Meta Data Column experimentSamples.Image_Histology.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.Image_Histology.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**

Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.Image_Histology.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

19.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.Image_Histology.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.

Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.Image_Histology.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.Image_Histology.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample

Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.Image_Histology.txt : Experiment Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No
Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.Image_Histology.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

20. **experimentSamples.KIR.txt**

The KIR experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment are new, then you must complete the required columns to describe them. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

20.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.KIR.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

20.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.KIR.txt : Expsample ID

Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.KIR.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.KIR.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.
Conditional Required:	Yes for **New Expsample**

Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.
Database Table:	expsample_2_treatment
Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.KIR.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.KIR.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.
Required:	No
Lookup:	None
Comment:	Describe important characteristics of the sample being assayed.
Database Table:	expsample
Database Column:	description

Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.KIR.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

Expsample Meta Data Column experimentSamples.KIR.txt : ImmPort Template?	
Description:	If the result file is an ImmPort results template (strongly recommended by NIAID DAIT), choose 'Yes' from the drop down list and do not include a file name in the "Result File Name" column. If the result file is not an ImmPort results template, choose 'No' from the drop down list and include a file name in the "Result File Name" column.
Conditional Required:	Yes for **New Expsample**
Controlled Lookup:	Please refer to Appendix A - lk_yes_no
Comment:	If the result file is an ImmPort results template (strongly recommended by NIAID DAIT), choose 'Yes' from the drop down list and do not include a file name in the "Result File Name" column. If the result file is not an ImmPort results template, choose 'No' from the drop down list and include a file name in the "Result File Name" column.

Expsample Meta Data Column experimentSamples.KIR.txt : Result File Name	
Description:	Completing this column is conditional upon whether the "ImmPort Template?" column value is set to "Yes" or "No". If the "ImmPort Template?" column value is set to "Yes", do not enter a file name in the "Result File Name" column. If the "ImmPort Template?" column value is set to "No", enter a file name in the "Result File Name" column. ImmPort supports results templates for many of the commonly used immunological assay methods. These templates facilitate the sharing and re-use of results data in a standard format. The file size name limit is 240 characters.
Required:	No
Lookup:	None

Comment:	Please use the ImmPort template for this assay result (as opposed to custom file formats) to standardize the format of the data when it is shared. If you use the ImmPort template (strongly recommended by NIAID DAIT), do not enter the template name in this column and set the "ImmPort Template?" column value to "Yes". If you do not use the ImmPort template, enter the file name (including file extension) that contains assay results for the experiment sample and set the "ImmPort Template?" column value to "No". The file size name limit is 240 characters.

20.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.KIR.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.
Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.KIR.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.

Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.KIR.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.KIR.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type

Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.KIR.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.KIR.txt : Biosample Name	
Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.KIR.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.KIR.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample
Database Column:	study_time_collected
Database Column Type:	float

Biosample Meta Data Column experimentSamples.KIR.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**

Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.KIR.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.KIR.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample

Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

20.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.KIR.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.KIR.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol

Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.KIR.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.KIR.txt : Experiment Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No
Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.KIR.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

21. **experimentSamples.Mass_Spectrometry.txt**

The mass spectrometry experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment are new, then you must complete the required columns to describe them. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

21.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.Mass_Spectrometry.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

21.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Expsample ID

Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.
Conditional Required:	Yes for **New Expsample**

Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.
Database Table:	expsample_2_treatment
Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.
Required:	No
Lookup:	None
Comment:	Describe important characteristics of the sample being assayed.
Database Table:	expsample

Database Column:	description
Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

Expsample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Result File Name	
Description:	Enter the file name for this assay result. The file size name limit is 240 characters.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Enter the file name for this assay result. The file size name limit is 240 characters.

21.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None

Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.
Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.
Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.

Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype

Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Biosample Name	
Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample
Database Column:	study_time_collected
Database Column Type:	float

Biosample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.

Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.Mass_Spectrometry.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

21.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.Mass_Spectrometry.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes

Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.Mass_Spectrometry.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.Mass_Spectrometry.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.

Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.Mass_Spectrometry.txt : Experiment Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No
Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.Mass_Spectrometry.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique

Database Column Type:	varchar(50)

22. **experimentSamples.MBAA.txt**

The MBAA experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment are new, then you must complete the required columns to describe them. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

22.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.MBAA.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

22.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.MBAA.txt : Expsample ID

Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.MBAA.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.MBAA.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.
Conditional Required:	Yes for **New Expsample**

Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.
Database Table:	expsample_2_treatment
Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.MBAA.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.MBAA.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.
Required:	No
Lookup:	None
Comment:	Describe important characteristics of the sample being assayed.
Database Table:	expsample
Database Column:	description

Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.MBAA.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

Expsample Meta Data Column experimentSamples.MBAA.txt : ImmPort Template?	
Description:	If the result file is an ImmPort results template (strongly recommended by NIAID DAIT), choose 'Yes' from the drop down list and do not include a file name in the "Result File Name" column. If the result file is not an ImmPort results template, choose 'No' from the drop down list and include a file name in the "Result File Name" column.
Conditional Required:	Yes for **New Expsample**
Controlled Lookup:	Please refer to Appendix A - lk_yes_no
Comment:	If the result file is an ImmPort results template (strongly recommended by NIAID DAIT), choose 'Yes' from the drop down list and do not include a file name in the "Result File Name" column. If the result file is not an ImmPort results template, choose 'No' from the drop down list and include a file name in the "Result File Name" column.

Expsample Meta Data Column experimentSamples.MBAA.txt : Result File Name	
Description:	Completing this column is conditional upon whether the "ImmPort Template?" column value is set to "Yes" or "No". If the "ImmPort Template?" column value is set to "Yes", do not enter a file name in the "Result File Name" column. If the "ImmPort Template?" column value is set to "No", enter a file name in the "Result File Name" column. ImmPort supports results templates for many of the commonly used immunological assay methods. These templates facilitate the sharing and re-use of results data in a standard format. The file size name limit is 240 characters.
Required:	No
Lookup:	None

Comment:	Please use the ImmPort template for this assay result (as opposed to custom file formats) to standardize the format of the data when it is shared. If you use the ImmPort template (strongly recommended by NIAID DAIT), do not enter the template name in this column and set the "ImmPort Template?" column value to "Yes". If you do not use the ImmPort template, enter the file name (including file extension) that contains assay results for the experiment sample and set the "ImmPort Template?" column value to "No". The file size name limit is 240 characters.

Expsample Meta Data Column experimentSamples.MBAA.txt : Assay ID	
Description:	The assay ID represents the plate or array ID where standard curves, control samples, and experiment samples were collected and assayed. This ID will be used to link standard curves, control samples, and experiment samples results.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	The assay ID represents the plate or array ID where standard curves, control samples, and experiment samples were collected and assayed. This ID will be used to link standard curves, control samples, and experiment samples results.
Database Table:	expsample_mbaa_detail
Database Column:	assay_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.MBAA.txt : Dilution Factor	
Description:	The dilution factor indicates how much a sample was diluted before it was assayed.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter a number.
Database Table:	expsample_mbaa_detail

Database Column:	dilution_factor
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.MBAA.txt : Assay Group ID	
Description:	The assay group ID represents a collection of plates or arrays. This ID may be used to link collections of standard curves, control samples, and experiment samples results.
Required:	No
Lookup:	None
Comment:	The assay group ID represents a collection of plates or arrays. This ID may be used to link collections of standard curves, control samples, and experiment samples results.
Database Table:	expsample_mbaa_detail
Database Column:	assay_group_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.MBAA.txt : Plate Type	
Description:	Describe the MBAA plate type used in the assay.
Required:	No
Controlled Lookup:	Please refer to Appendix A - lk_plate_type
Comment:	Describe the MBAA plate type used in the assay.
Database Table:	expsample_mbaa_detail
Database Column:	plate_type
Database Column Type:	varchar(100)

22.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.MBAA.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.
Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.MBAA.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.
Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.MBAA.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.MBAA.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.MBAA.txt : Subtype

Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.MBAA.txt : Biosample Name	
Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.MBAA.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No

Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.MBAA.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample
Database Column:	study_time_collected
Database Column Type:	float

Biosample Meta Data Column experimentSamples.MBAA.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.

Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.MBAA.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.MBAA.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

22.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.MBAA.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.MBAA.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.MBAA.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.MBAA.txt : Experiment Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No
Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.MBAA.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.

Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

23. **experimentSamples.Neutralizing_Antibody_Titer.txt**

The neutralizing antibody experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. More than one analyte's results per assayed sample may be reported by copying the group of columns 'Virus Strain'and 'Titration Dilution Value' needed to describe each assay result. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment is new, then you must complete the required columns to describe them. When defining a new experiment or biological sample, it is only necessary to complete the required descriptive columns once per experiment or biological sample. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

23.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

23.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Expsample ID	
Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.

Required:	No
Lookup:	None
Comment:	Describe important characteristics of the sample being assayed.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None

Comment:	Please enter either a treatment user defined ID or ImmPort accession.
Database Table:	expsample_2_treatment
Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

23.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.
Database Table:	biosample
Database Column:	user_defined_id

Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Biosample Name	
Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.

Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.
Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None

Comment:	Please enter a number.
Database Table:	biosample
Database Column:	study_time_collected
Database Column Type:	float

Biosample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample

Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

23.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id

Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name

Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Experiment Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No
Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.Neutralizing_Antibody_Titer.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

23.5. SeparatorColumn

This column must always appear in the template and must immediately follow after the last meta data column and before the (repeating) result column groups.

Separator Column experimentSamples.Neutralizing_Antibody_Titer.txt : Result Separator Column	
Description:	This pseudo column separates meta data from results.
Required:	No
Lookup:	None
Comment:	This pseudo column separates the results (lab tests) from the lab test panel meta data. It must always appear and be the column that appears immediately after the last meta-data column and before any result columns.

23.6. ResultColumns

Each result group (that is, result) consists of a group of the following result columns, where the **first column** of the group must always be '**Virus Strain Reported**'.

Result Column experimentSamples.Neutralizing_Antibody_Titer.txt : Virus Strain Reported	
Description:	The name of the virus strain used in the assay. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_virus_strain with preferred column(s) virus_strain_preferred
Comment:	The name of the virus strain used in the assay. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared. This COLUMN must appear as the FIRST COLUMN for a repeating result column group.
Database Table:	neut_ab_titer_result
Database Column:	virus_strain_reported
Database Column Type:	varchar(200)

Result Column experimentSamples.Neutralizing_Antibody_Titer.txt : Value Reported

Description:	The maximum sample dilution factor that continues to demonstrate virus neutralization.
Required:	Yes
Lookup:	None
Comment:	A number is expected.
Database Table:	neut_ab_titer_result
Database Column:	value_reported
Database Column Type:	varchar(50)

Result Column experimentSamples.Neutralizing_Antibody_Titer.txt : Unit Reported	
Description:	The dilution factor unit.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_titer_unit with preferred column(s) titer_unit_preferred
Comment:	The dilution factor unit.
Database Table:	neut_ab_titer_result
Database Column:	unit_reported
Database Column Type:	varchar(200)

Result Column experimentSamples.Neutralizing_Antibody_Titer.txt : Comments	
Description:	Comments captures additional descriptive information that is added to the result.
Required:	No
Lookup:	None
Comment:	Comments captures additional descriptive information that is added to the result.

Database Table:	neut_ab_titer_result
Database Column:	comments
Database Column Type:	varchar(500)

24. **experimentSamples.Other.txt**

This experiment sample template is used when no other experiment sample template is available to define and annotate the assay results for a sample by linking sample, experiment, and results together. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment are new, then you must complete the required columns to describe them. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

24.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.Other.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

24.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.Other.txt : Expsample ID

Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.Other.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.Other.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.
Conditional Required:	Yes for **New Expsample**

Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.
Database Table:	expsample_2_treatment
Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.Other.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.Other.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.
Required:	No
Lookup:	None
Comment:	Describe important characteristics of the sample being assayed.
Database Table:	expsample
Database Column:	description

Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.Other.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

Expsample Meta Data Column experimentSamples.Other.txt : Result File Name	
Description:	Enter the file name for this assay result. The file size name limit is 240 characters.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Enter the file name for this assay result. The file size name limit is 240 characters.

24.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.Other.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.

Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.Other.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.
Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.Other.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	biosample
Database Column:	planned_visit_accession

Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.Other.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.Other.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.Other.txt : Biosample Name	
Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.Other.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.Other.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**

Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample
Database Column:	study_time_collected
Database Column Type:	float

Biosample Meta Data Column experimentSamples.Other.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.Other.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample

Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.Other.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

24.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.Other.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id

Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.Other.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.Other.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.Other.txt : Experiment Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No
Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.Other.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

25. experimentSamples.QRT-PCR.txt

The qRT-PCR experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. More than one analyte's results per assayed sample may be reported by copying at least the group of columns 'Entrez Gene ID' and 'Threshold Cycles(ct)' needed to describe each assay result. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment is new, then you must complete the required columns to describe them. When defining a new experiment or biological sample, it is only necessary to complete the required descriptive columns once per experiment or biological sample. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

25.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.QRT-PCR.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

25.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.QRT-PCR.txt : Expsample ID	
Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.QRT-PCR.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.QRT-PCR.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.
Required:	No
Lookup:	None

Comment:	Describe important characteristics of the sample being assayed.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.QRT-PCR.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.QRT-PCR.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.
Database Table:	expsample_2_treatment

Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.QRT-PCR.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

25.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.QRT-PCR.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.
Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.QRT-PCR.txt : Type

Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.QRT-PCR.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.QRT-PCR.txt : Biosample Name	
Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No

Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.QRT-PCR.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.QRT-PCR.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.

Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.QRT-PCR.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.QRT-PCR.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample
Database Column:	study_time_collected

Database Column Type:	float

Biosample Meta Data Column experimentSamples.QRT-PCR.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.QRT-PCR.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.QRT-PCR.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

25.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.QRT-PCR.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.QRT-PCR.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).

Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.QRT-PCR.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.QRT-PCR.txt : Experiment Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No
Lookup:	None

Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.QRT-PCR.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

25.5. SeparatorColumn

This column must always appear in the template and must immediately follow after the last meta data column and before the (repeating) result column groups.

Separator Column experimentSamples.QRT-PCR.txt : Result Separator Column	
Description:	This pseudo column separates meta data from results.
Required:	No
Lookup:	None
Comment:	This pseudo column separates the results (lab tests) from the lab test panel meta data. It must always appear and be the column that appears immediately after the last meta-data column and before any result columns.

25.6. ResultColumns

Each result group (that is, result) consists of a group of the following result columns, where the **first column** of the group must always be '**Gene Symbol Name**'.

Result Column experimentSamples.QRT-PCR.txt : Gene Symbol Name	
Description:	The NCBI Gene symbol for the gene being assayed. Please select a gene symbol from the list provided if the gene symbol matches your symbol or enter a symbol if there is not an appropriate one provided. This symbol is visible when the result is shared. If the gene sybmol is a NCBI Gene Symbol that is provided in the list, then the columns 'Gene Name' and 'Gene ID' will also be overwritten by the gene name and Entrez Gene ID provided by NCBI.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_analyte with preferred column(s) immunology_symbol and short_label and analyte_preferred
Comment:	The NCBI Gene symbol for the gene being assayed. Please select a gene symbol from the list provided if the gene symbol matches your symbol or enter a symbol if there is not an appropriate one provided. This symbol is visible when the result is shared.

Result Column experimentSamples.QRT-PCR.txt : Value Reported	
Description:	This value could be absolute or relative. For example, an absolute expression value could be 6 ng RNA/mg intestine. In this case, 6 should be entered in the 'Expression value of target RNA' column, while ng RNA/ mg intestine is in the 'Expression unit of target RNA' column. A relative expression value, like signal versus GAPDH, could be 2.07. In this case, 2.07 should be in the 'Expression value of target RNA' column, while relative to GAPDH is in the 'Expression unit of target RNA' column.
Required:	Yes
Lookup:	None
Comment:	A number is expected.
Database Table:	pcr_result
Database Column:	value_reported
Database Column Type:	varchar(50)

Result Column experimentSamples.QRT-PCR.txt : Unit Reported	
Description:	The unit for the Expression Value Of Target Nucleic ACID. Please select a unit from the list provided if the unit matches your unit or enter a unit if there is not an appropriate one provided.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_pcr_expression_unit with preferred column(s) expression_unit_preferred
Comment:	The unit for the Expression Value Of Target Nucleic ACID. Please select a unit from the list provided if the unit matches your unit or enter a unit if there is not an appropriate one provided.
Database Table:	pcr_result
Database Column:	unit_reported
Database Column Type:	varchar(200)

Result Column experimentSamples.QRT-PCR.txt : Gene ID	
Description:	The NCBI Gene ID for the gene being assayed. A number is expected.
Required:	No
Lookup:	None
Comment:	A number is expected.
Database Table:	pcr_result
Database Column:	gene_id
Database Column Type:	varchar(10)

Result Column experimentSamples.QRT-PCR.txt : Gene Name	
Description:	The NCBI Gene name for the gene being assayed.
Required:	No
Lookup:	None

Comment:	The NCBI Gene name for the gene being assayed.
Database Table:	pcr_result
Database Column:	gene_name
Database Column Type:	varchar(4000)

Result Column experimentSamples.QRT-PCR.txt : Other Gene Accession	
Description:	Additional identifier(s) for the gene being assayed.
Required:	No
Lookup:	None
Comment:	Additional identifier(s) for the gene being assayed.
Database Table:	pcr_result
Database Column:	other_gene_accession
Database Column Type:	varchar(250)

Result Column experimentSamples.QRT-PCR.txt : Comments	
Description:	Comments captures additional descriptive information.
Required:	No
Lookup:	None
Comment:	Comments captures additional descriptive information.
Database Table:	pcr_result
Database Column:	comments
Database Column Type:	varchar(500)

26. **experimentSamples.RNA_Sequencing.txt**

The RNA sequencing Transcripts results experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment are new, then you must complete the required columns to describe them. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

26.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.RNA_Sequencing.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

26.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.RNA_Sequencing.txt : Expsample ID

Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.RNA_Sequencing.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.RNA_Sequencing.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.
Conditional Required:	Yes for **New Expsample**

Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.
Database Table:	expsample_2_treatment
Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.RNA_Sequencing.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.RNA_Sequencing.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.
Required:	No
Lookup:	None
Comment:	Describe important characteristics of the sample being assayed.
Database Table:	expsample

Database Column:	description
Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.RNA_Sequencing.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

Expsample Meta Data Column experimentSamples.RNA_Sequencing.txt : ImmPort Template?	
Description:	If the result file is an ImmPort results template (strongly recommended by NIAID DAIT), choose 'Yes' from the drop down list and do not include a file name in the "Result File Name" column. If the result file is not an ImmPort results template, choose 'No' from the drop down list and include a file name in the "Result File Name" column. If NO RESULT FILE is provided, then leave this column blank.
Required:	No
Controlled Lookup:	Please refer to Appendix A - lk_yes_no
Comment:	If the result file is an ImmPort results template (strongly recommended by NIAID DAIT), choose 'Yes' from the drop down list and do not include a file name in the "Result File Name" column. If the result file is not an ImmPort results template, choose 'No' from the drop down list and include a file name in the "Result File Name" column. If NO RESULT FILE is provided, then leave this column blank.

Expsample Meta Data Column experimentSamples.RNA_Sequencing.txt : Result File Name

Description:	Completing this column is conditional upon whether the "ImmPort Template?" column value is set to "Yes" or "No". If the value is not set, DO NOT PROVIDE a result file (it will be ignored). If the "ImmPort Template?" column value is set to "Yes", do not enter a file name in the "Result File Name" column. If the "ImmPort Template?" column value is set to "No", enter a file name in the "Result File Name" column. ImmPort supports results templates for many of the commonly used immunological assay methods. These templates facilitate the sharing and re-use of results data in a standard format. The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please use the ImmPort template for this assay result (as opposed to custom file formats) to standardize the format of the data when it is shared. If you use the ImmPort template (strongly recommended by NIAID DAIT), do not enter the template name in this column and set the "ImmPort Template?" column value to "Yes". If you do not use the ImmPort template and are providing a result template, enter the file name (including file extension) that contains assay results for the experiment sample and set the "ImmPort Template?" column value to "No". The file size name limit is 240 characters.

Expsample Meta Data Column experimentSamples.RNA_Sequencing.txt : Repository Name	
Description:	ImmPort expects RNA sequencing results to be deposited into a public repository since this is a prerequisite for publication. In order to avoid duplication of data upload by requiring the same data be sent to ImmPort as well as the public repository, ImmPort requires public repository name and accession.
Required:	No
Controlled Lookup:	Please refer to Appendix A - lk_public_repository
Comment:	RNA sequencing results are expected to be deposited into a public repository. If you provide NO RESULTS FILE, please choose the repository name from the list.
Database Table:	expsample_public_repository
Database Column:	repository_name
Database Column Type:	varchar(50)

Expsample Meta Data Column experimentSamples.RNA_Sequencing.txt : Repository Accession

Description:	The public repository accession should be the most granular or highest resolution provided (e.g. sample level accession, not sample group accession).
Required:	No
Lookup:	None
Comment:	Enter the accession that links to the assay result file(s). You need to provide the repository accession if you do NOT PROVIDE A RESULTS FILE.
Database Table:	expsample_public_repository
Database Column:	repository_accession
Database Column Type:	varchar(20)

26.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.RNA_Sequencing.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.
Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.RNA_Sequencing.txt : Subject ID

Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.
Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.RNA_Sequencing.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.RNA_Sequencing.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**

Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.RNA_Sequencing.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.RNA_Sequencing.txt : Biosample Name	
Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.

Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.RNA_Sequencing.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.RNA_Sequencing.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample
Database Column:	study_time_collected

Database Column Type:	float

Biosample Meta Data Column experimentSamples.RNA_Sequencing.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.RNA_Sequencing.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.RNA_Sequencing.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

26.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.RNA_Sequencing.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.RNA_Sequencing.txt : Protocol ID(s)

Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.RNA_Sequencing.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.RNA_Sequencing.txt : Experiment Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.

Required:	No
Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.RNA_Sequencing.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

27. **experimentSamples.Virus_Neutralization.txt**

The virus neutralization experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. More than one analyte's results per assayed sample may be reported by copying the group of columns 'Virus Strain'and 'Titration Dilution Value' needed to describe each assay result. The experiment samples template allows you to describe to ImmPort new experiments and biological samples or link experiments and biological samples stored in ImmPort with assay results. There is considerable flexibility in linking ImmPort content with new content in the templates and there are some general guidelines to remember. All of the experiment sample IDs in the template must always be unique in the template and must not already be stored in ImmPort. The biological sample and the experiment in the template may be new or they both may be new. If the biological sample or the experiment is new, then you must complete the required columns to describe them. When defining a new experiment or biological sample, it is only necessary to complete the required descriptive columns once per experiment or biological sample. The column header names in the templates indicate to what is being described and the '.xls' spreadsheet versions use color codes to indicate what is being described.

27.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the experiment sample template (for example, experiments and biological samples reference both protocols and study IDs). The value entered for protocol ID and study ID is linked to experiment and biological sample.

ID Meta Data Column experimentSamples.Virus_Neutralization.txt : Study ID	
Description:	An experiment and biological sample may be linked to a single study.
Conditional Required:	Yes for **New Experiment And Biosample**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession. This column is only required when both the experiment and biological sample are new.
Database Table:	biosample And experiment
Database Column:	study_accession
Database Column Type:	varchar(15)

27.2. Expsample Meta DataColumns

The Expsample Meta Data Columns include the columns for the combined entity Expsample.

Expsample Meta Data Column experimentSamples.Virus_Neutralization.txt : Expsample ID	
Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.Virus_Neutralization.txt : Expsample Name	
Description:	The experiment sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The experiment sample name is an alternate identifier that is visible when the experiment sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Expsample Meta Data Column experimentSamples.Virus_Neutralization.txt : Expsample Description	
Description:	Describe important characteristics of the sample being assayed.

Required:	No
Lookup:	None
Comment:	Describe important characteristics of the sample being assayed.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Expsample Meta Data Column experimentSamples.Virus_Neutralization.txt : Reagent ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The reagent identifier(s) must be stored in ImmPort or in the reagents.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either an assay reagent user defined ID or ImmPort accession.
Database Table:	expsample_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.Virus_Neutralization.txt : Treatment ID(s)	
Description:	One or more identifiers can be entered. Separate identifiers by semicolon (;). The treatment identifier(s) must be stored in ImmPort or in the treatments.txt template.
Conditional Required:	Yes for **New Expsample**
Lookup:	None
Comment:	Please enter either a treatment user defined ID or ImmPort accession.

Database Table:	expsample_2_treatment
Database Column:	treatment_accession
Database Column Type:	varchar(15)

Expsample Meta Data Column experimentSamples.Virus_Neutralization.txt : Additional Result File Names	
Description:	Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Please enter additional result file(s) to link to the experiment sample. The file size name limit is 240 characters.

27.3. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column experimentSamples.Virus_Neutralization.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.
Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.Virus_Neutralization.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

Biosample Meta Data Column experimentSamples.Virus_Neutralization.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype
Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.Virus_Neutralization.txt : Biosample Name

Description:	The biological sample name is a display name that is available when the data is shared, but it is not referenced by other data.
Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column experimentSamples.Virus_Neutralization.txt : Biosample Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column experimentSamples.Virus_Neutralization.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**

Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.
Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.Virus_Neutralization.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.
Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column experimentSamples.Virus_Neutralization.txt : Study Time Collected	
Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter a number.

Database Table:	biosample
Database Column:	study_time_collected
Database Column Type:	float

Biosample Meta Data Column experimentSamples.Virus_Neutralization.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column experimentSamples.Virus_Neutralization.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_t0_event

Database Column Type:	varchar(50)

Biosample Meta Data Column experimentSamples.Virus_Neutralization.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

27.4. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column experimentSamples.Virus_Neutralization.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template. The experiment serves as the parent entity to bind assay results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.Virus_Neutralization.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. This column is required when either the experiment or biological sample are new.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column experimentSamples.Virus_Neutralization.txt : Experiment Name	
Description:	The experiment name is a display name that is available when the data is shared, but it is not referenced by other data.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	expsample
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column experimentSamples.Virus_Neutralization.txt : Experiment Description

Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No
Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	expsample
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column experimentSamples.Virus_Neutralization.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

27.5. SeparatorColumn

This column must always appear in the template and must immediately follow after the last meta data column and before the (repeating) result column groups.

Separator Column experimentSamples.Virus_Neutralization.txt : Result Separator Column	
Description:	This pseudo column separates meta data from results.

Required:	No
Lookup:	None
Comment:	This pseudo column separates the results (lab tests) from the lab test panel meta data. It must always appear and be the column that appears immediately after the last meta-data column and before any result columns.

27.6. ResultColumns

Each result group (that is, result) consists of a group of the following result columns, where the **first column** of the group must always be '**Virus Strain Reported**'.

Result Column experimentSamples.Virus_Neutralization.txt : Virus Strain Reported	
Description:	The name of the virus strain used in the assay. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_virus_strain with preferred column(s) virus_strain_preferred
Comment:	The name of the virus strain used in the assay. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared. This COLUMN must appear as the FIRST COLUMN for a repeating result column group.
Database Table:	neut_ab_titer_result
Database Column:	virus_strain_reported
Database Column Type:	varchar(200)

Result Column experimentSamples.Virus_Neutralization.txt : Value Reported	
Description:	The maximum sample dilution factor that continues to demonstrate virus neutralization.
Required:	Yes
Lookup:	None
Comment:	A number is expected.

Database Table:	neut_ab_titer_result
Database Column:	value_reported
Database Column Type:	varchar(50)

Result Column experimentSamples.Virus_Neutralization.txt : Unit Reported	
Description:	The dilution factor unit.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_titer_unit with preferred column(s) titer_unit_preferred
Comment:	The dilution factor unit.
Database Table:	neut_ab_titer_result
Database Column:	unit_reported
Database Column Type:	varchar(200)

Result Column experimentSamples.Virus_Neutralization.txt : Comments	
Description:	Comments captures additional descriptive information that is added to the result.
Required:	No
Lookup:	None
Comment:	Comments captures additional descriptive information that is added to the result.
Database Table:	neut_ab_titer_result
Database Column:	comments

Database Column Type:	varchar(500)

28. **FCM_Derived_data.txt**

The flow cytometry derived data template captures and annotates the assay results for a sample by linking sample, experiment, and interpreted results together.

Table: Marker Intensities (Expression Status) and Their Preferred Labels

This table highlights the preferred marker expression intensity terms to use in the cytometry derived data templates. The Alternative Labels note how indicated reported marker expression intensity terms are mapped to preferred terms. The following table provides information on the preferred labels for marker expression status that can be used in the template column, 'Gating Definition Reported'.

Expression Status	Preferred Label	Alternative Labels
Negative	-	negative, neg
Positive	+	positive, pos
Low	+-	low, lo, LO, (low), -low, dim, di
Intermediate	+~	intermediate, int, medium, med, -medium
High	++	high, hi, (high), -high, Bright, bright, bri, br

The template has validation levels that define the level of validation required for this template. The validation for this template is either Standard or HIPC, where HIPC is a fuller validation with more required columns controlled/preferred vocabularies.

FCM_Derived_data.txt : Expsample ID	
Description:	The experiment sample identifier must be stored in ImmPort or in the experimentsamples.txt template.
Required:	Yes
Lookup:	None
Comment:	Please enter either an experiment sample user defined ID or ImmPort accession.
Database Table:	fcs_analyzed_result And expsample_2_file_info
Database Column:	expsample_accession

Database Column Type:	varchar(15)

FCM_Derived_data.txt : Population Name Reported	
Description:	The drop down list provides a list of cell population names. Please select a name if it matches your cell population name or enter a population name if there is not an appropriate one provided. The population name has a limit of 150 characters.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_cell_population with preferred column(s) population_name_preferred
Comment:	The population name is the type of cells whose count is reported. Please select a population name from the drop down list if it matches your cell population name or enter a name if there is not an appropriate one provided.
Database Table:	fcs_analyzed_result
Database Column:	population_name_reported
Database Column Type:	varchar(150)

FCM_Derived_data.txt : Gating Definition Reported	
Description:	he gating definition is the set of markers and their expression profile that describes a cell population name. Please select a gating definition from the drop down list if it matches your gating definition or enter a gating definition if there is not an appropriate one provided. The marker names should conform to standard names as described in the LK_ANALYTE table. Note that a comma, forward slash or pipe may be used as marker delimiter. The expression values are '-', '+', '+-', '+~', '++', or ''. The gating definition has a limit of 150 characters.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_cell_population_definition with preferred column(s) population_defnition_preferred
Comment:	The gating definition is the set of markers and their expression profile. Please select a gating definition from the drop down list or enter a gating definition. Please see the ImmPort Upload Templates for details on representing marker names, delimiters and expression values.
Database Table:	fcs_analyzed_result

Database Column:	population_defnition_reported
Database Column Type:	varchar(150)

FCM_Derived_data.txt : Parent Population Reported	
Description:	The drop down provides the base parent population. Please select a name if it matches your base parent population name or enter a name if there is not an appropriate one provided.
Required:	No
Preferred Lookup:	Please refer to Appendix A - lk_cell_population with preferred column(s) population_name_preferred
Comment:	The base parent population name. Please select a population name from the drop down list if it matches your base parent population name or enter a name if there is not an appropriate one provided.
Database Table:	fcs_analyzed_result
Database Column:	parent_population_reported
Database Column Type:	varchar(150)

FCM_Derived_data.txt : Population Statistic (count, percentile, etc)	
Description:	The count of the cell type defined by the marker gating definition.
Required:	Yes
Lookup:	None
Comment:	A number is expected.
Database Table:	fcs_analyzed_result
Database Column:	population_statistic_reported
Database Column Type:	varchar(50)

FCM_Derived_data.txt : Population Stat Unit Reported	
Description:	The unit used to describe the cell count. Please select a unit from the drop down list if the definition matches your unit name or enter a unit if there is not an appropriate one provided.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_cell_pop_statistic_unit with preferred column(s) statistic_unit_preferred
Comment:	The unit used to describe the cell count. Please select a unit from the list provided if the definition matches your unit name or enter a unit if there is not an appropriate one provided.
Database Table:	fcs_analyzed_result
Database Column:	population_stat_unit_reported
Database Column Type:	varchar(100)

FCM_Derived_data.txt : Workspace File	
Description:	An XML formatted export of the analysis program is expected (e.g. an xml format of a FlowJo .jo or .wsp file). The file size name limit is 240 characters.
Required:	Yes
Lookup:	None
Comment:	The name of the file that stores the interpreted flow cytometry results from the analysis program. The file size name limit is 240 characters.

FCM_Derived_data.txt : Comments	
Description:	Comments captures additional descriptive information.
Required:	No
Lookup:	None
Comment:	Comments captures additional descriptive information.
Database Table:	fcs_analyzed_result

Database Column:	comments
Database Column Type:	varchar(500)

29. **HAI_Results.txt**

The HAI experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. More than one analyte's results per assayed sample may be reported by copying the group of columns 'Virus Strain'and 'Titration Dilution Value' needed to describe each assay result.

HAI_Results.txt : Expsample ID	
Description:	The experiment sample identifier must be stored in ImmPort or in the experimentsamples.txt template.
Required:	Yes
Lookup:	None
Comment:	Please enter either an experiment sample user defined ID or ImmPort accession.
Database Table:	hai_result And expsample_2_file_info
Database Column:	expsample_accession
Database Column Type:	varchar(15)

HAI_Results.txt : Virus Strain Reported	
Description:	The name of the virus strain used in the assay. The list of values displays common immunology terms on the left and their preferred term on the right, separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_virus_strain with preferred column(s) virus_strain_preferred
Comment:	The name of the virus strain used in the assay. The list of values displays common immunology terms on the left and their preferred term on the right, separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Database Table:	hai_result
Database Column:	virus_strain_reported

Database Column Type:	varchar(200)

HAI_Results.txt : Value Reported	
Description:	The maximum sample dilution factor that continues to demonstrate inhibition of hemagglutination.
Required:	Yes
Lookup:	None
Comment:	A number is expected.
Database Table:	hai_result
Database Column:	value_reported
Database Column Type:	varchar(50)

HAI_Results.txt : Unit Reported	
Description:	The dilution factor unit.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_titer_unit with preferred column(s) titer_unit_preferred
Comment:	The dilution factor unit.
Database Table:	hai_result
Database Column:	unit_reported
Database Column Type:	varchar(200)

HAI_Results.txt : Comments	
Description:	Comments captures additional descriptive information.

Required:	No
Lookup:	None
Comment:	Comments captures additional descriptive information.
Database Table:	hai_result
Database Column:	comments
Database Column Type:	varchar(500)

30. **HLA_Typing.txt**

The HLA experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together.

HLA_Typing.txt : Expsample ID	
Description:	The experiment sample identifier must be stored in ImmPort or in the experimentsamples.txt template.
Required:	Yes
Lookup:	None
Comment:	Please enter either an experiment sample user defined ID or ImmPort accession.
Database Table:	hla_typing_result And expsample_2_file_info
Database Column:	expsample_accession
Database Column Type:	varchar(15)

HLA_Typing.txt : Ancestral Population	
Description:	ImmPort recommends using population names as defined by the http://www.allelefrequencies.net site.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_ancestral_population
Comment:	ImmPort recommends using population names as defined by the http://www.allelefrequencies.net site.
Database Table:	hla_typing_result
Database Column:	ancestral_population
Database Column Type:	varchar(250)

HLA_Typing.txt : HLA-A Allele 1

Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-a.allele_1
Database Column Type:	

HLA_Typing.txt : HLA-A Allele 2	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-a.allele_2
Database Column Type:	

HLA_Typing.txt : HLA-B Allele 1	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result

Database Column:	hla-b.allele_1
Database Column Type:	

HLA_Typing.txt : HLA-B Allele 2	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-b.allele_2
Database Column Type:	

HLA_Typing.txt : HLA-C Allele 1	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-c.allele_1
Database Column Type:	

HLA_Typing.txt : HLA-C Allele 2

Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-c.allele_2
Database Column Type:	

HLA_Typing.txt : HLA-DPA1 Allele 1	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-dpa1.allele_1
Database Column Type:	

HLA_Typing.txt : HLA-DPA1 Allele 2	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result

Database Column:	hla-dpa1.allele_2
Database Column Type:	

HLA_Typing.txt : HLA-DPB1 Allele 1	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-dpb1.allele_1
Database Column Type:	

HLA_Typing.txt : HLA-DPB1 Allele 2	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-dpb1.allele_2
Database Column Type:	

HLA_Typing.txt : HLA-DQA1 Allele 1

Description:	This is the description of the field HLA-DQA1 Allele 1. Please refer to the user guide for more description. This description can also be found in the user document
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-dqa1.allele_1
Database Column Type:	

HLA_Typing.txt : HLA-DQA1 Allele 2	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-dqa1.allele_2
Database Column Type:	

HLA_Typing.txt : HLA-DQB1 Allele 1	
Description:	
Required:	No
Lookup:	None
Comment:	

Database Table:	hla_typing_result
Database Column:	hla-dqb1.allele_1
Database Column Type:	

HLA_Typing.txt : HLA-DQB1 Allele 2	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-dqb1.allele_2
Database Column Type:	

HLA_Typing.txt : HLA-DRB1 Allele 1	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-drb1.allele_1
Database Column Type:	

HLA_Typing.txt : HLA-DRB1 Allele 2	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-drb1.allele_2
Database Column Type:	

HLA_Typing.txt : HLA-DRB3 Allele 1	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-drb3.allele_1
Database Column Type:	

HLA_Typing.txt : HLA-DRB3 Allele 2	
Description:	
Required:	No
Lookup:	None
Comment:	

Database Table:	hla_typing_result
Database Column:	hla-drb3.allele_2
Database Column Type:	

HLA_Typing.txt : HLA-DRB4 Allele 1	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-drb4.allele_1
Database Column Type:	

HLA_Typing.txt : HLA-DRB4 Allele 2	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-drb4.allele_2
Database Column Type:	

HLA_Typing.txt : HLA-DRB5 Allele 1	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-drb5.allele_1
Database Column Type:	

HLA_Typing.txt : HLA-DRB5 Allele 2	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	hla_typing_result
Database Column:	hla-drb5.allele_2
Database Column Type:	

HLA_Typing.txt : Comments	
Description:	Comments captures additional descriptive information.
Required:	No
Lookup:	None
Comment:	Comments captures additional descriptive information.

Database Table:	hla_typing_result
Database Column:	comments
Database Column Type:	varchar(500)

31. **immuneExposure.txt**

The subjectHuman and subjectAnimals templates define and annotate the subjects in studies with respect to immune exposure. The Immune Exposure template updates the subjects previously defined in studies with respect to immune exposure.

Table: Exposure Process Reported Conditional Logic

The following Matrix defines what reported template columns are required (XXXXX) for a given 'Exposure Process Reported' template column value. N.B. If multiple immune exposure values are needed for subject (e.g. more than one vaccine is administered), then multiple rows must be added to the template with the same 'Exposure Process Reported' column value. The 'Exposure Material ID' (YYYYY) is also required when the 'Exposure Material Reported' is required. However, if the 'Exposure Process Reported' is preferred value (contained in lk_exposure_material or lk_exposue_material_pref_map), the the column 'Exposure Material ID' can be left blank and it will be filled in by uploader.

Exposure Process Reported	Exposure Material Reported	Exposure Material ID	Disease Reported	Disease Ontology ID	Disease Stage Reported
administering substance in vivo	XXXXX	YYYYY			
documented exposure without evidence for disease	XXXXX	YYYYY			
environmental exposure to endemic/ubiquitous agent without evidence for disease	XXXXX	YYYYY			
exposure to substance without evidence for disease	XXXXX	YYYYY			
exposure with existing immune reactivity without evidence for disease	XXXXX	YYYYY			

infectious challenge	XXXXX	YYYYY			
occurrence of allergy	XXXXX	YYYYY	XXXXX	XXXXX	XXXXX
occurrence of asymptomatic infection	XXXXX	YYYYY			
occurrence of autoimmune disease			XXXXX	XXXXX	XXXXX
occurrence of cancer			XXXXX	XXXXX	XXXXX
occurrence of disease			XXXXX	XXXXX	XXXXX
occurrence of infectious disease	XXXXX	YYYYY	XXXXX	XXXXX	XXXXX
transplantation or transfusion	XXXXX	YYYYY			
vaccination	XXXXX	YYYYY			

immuneExposure.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject for the reported immune exposure.
Required:	Yes
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject for the reported immune exposure.
Database Table:	immune_exposure
Database Column:	subject_accession
Database Column Type:	varchar(15)

immuneExposure.txt : Arm Or Cohort ID	
Description:	A subject may be assigned to a single arm within a study. When subjects are initially uploaded to ImmPort, they may be assigned to a single study's arm.
Required:	Yes
Lookup:	None
Comment:	Please enter either a study arm or cohort user defined ID or ImmPort accession. When subjects are initially uploaded to ImmPort, they may be assigned to a single study's arm.
Database Table:	immune_exposure
Database Column:	arm_accession
Database Column Type:	varchar(15)

immuneExposure.txt : Exposure Process Reported	
Description:	This identifies the type of process through which a host is exposed and the type of evidence for that exposure to have happened, which are tightly intertwined. This is the only element of the four that is always mandatory. Please select an exposure process from the list provided if the process matches yours or enter a exposure process if there is not an appropriate one provided. This exposure process is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_exposure_process with preferred column(s) exposure_process_preferred
Comment:	This identifies the type of process through which a host is exposed and the type of evidence for that exposure to have happened, which are tightly intertwined. This is the only element of the four that is always mandatory. Please select an exposure process from the list provided if the process matches yours or enter a exposure process if there is not an appropriate one provided. This exposure process is visible when the result is shared.
Database Table:	immune_exposure
Database Column:	exposure_process_reported
Database Column Type:	varchar(100)

immuneExposure.txt : Exposure Material Reported	
Description:	This describes what substance(s) the host is exposed to and/or develops immune reactions to as part of the exposure process. Please select an exposure material from the list provided if the exposure material matches yours or enter a exposure material if there is not an appropriate one provided. This exposure material is visible when the result is shared. The value provided by the user is further checked against the pref mapping table lk_exposure_material_pref_map.
Required:	No
Preferred Lookup:	Please refer to Appendix A - lk_exposure_material with preferred column(s) exposure_material_preferred and exposure_material_id
Comment:	This describes what substance(s) the host is exposed to and/or develops immune reactions to as part of the exposure process. Please select an exposure material from the list provided if the exposure material matches yours or enter a exposure material if there is not an appropriate one provided. This exposure material is visible when the result is shared. The value provided by the user is further checked against the pref mapping table lk_exposure_material_pref_map.
Database Table:	immune_exposure
Database Column:	exposure_material_reported
Database Column Type:	varchar(200)

immuneExposure.txt : Exposure Material ID	
Description:	The NCBI or Vaccine Ontology ID associated with the exposure material. If the Exposure Material Reported is not a preferred value, then the Exposure Material ID must be provided. If the Exposure Material Reported is a preferred value, then the Exposure Material ID will be automatically be the ID associated with the preferred value and user will NOT need to supply this ID.
Required:	No
Lookup:	None
Comment:	The NCBI or Vaccine Ontology ID associated with the exposure material. If the Exposure Material Reported is not a preferred value, then the Exposure Material ID must be provided. If the Exposure Material Reported is a preferred value, then the Exposure Material ID will be automatically be the ID associated with the preferred value and user will NOT need to supply this ID.
Database Table:	immune_exposure

Database Column:	exposure_material_id
Database Column Type:	varchar(100)

immuneExposure.txt : Disease Reported	
Description:	This indicates the specific disease of the host associated with the exposure. Please select a disease from the list provided if the disease matches yours or enter a disease if there is not an appropriate one provided. This disease is visible when the result is shared. The value provided by the user is further checked against the pref mapping table lk_exposure_material_pref_map.
Required:	No
Preferred Lookup:	Please refer to Appendix A - lk_disease with preferred column(s) disease_preferred and disease_ontology_id
Comment:	This indicates the specific disease of the host associated with the exposure. Please select a disease from the list provided if the disease matches yours or enter a disease if there is not an appropriate one provided. This disease is visible when the result is shared. The Value provide by the user is further checked against the pref mapping table lk_study_condition_pref_mappng.
Database Table:	immune_exposure
Database Column:	disease_reported
Database Column Type:	varchar(550)

immuneExposure.txt : Disease Ontology ID	
Description:	The NCBI Disease Ontology ID associated with the disease. If the Disease Reported is not a preferred value, then the Disease Ontology ID must be provided. If the disease is a preferred value, then the Disease Ontology ID will be the DOID associated with the preferred value.
Required:	No
Lookup:	None
Comment:	The NCBI Disease Ontology ID associated with the disease. If the Disease Reported is not a preferred value, then the Disease Ontology ID must be provided. If the disease is a preferred value, then the Disease Ontology ID will be the DOID associated with the preferred value.

Database Table:	immune_exposure
Database Column:	disease_ontology_id
Database Column Type:	varchar(100)

immuneExposure.txt : Disease Stage Reported	
Description:	This provides a broad classification of how the disease has progressed. Please select a disease stage from the list provided if the disease stage matches yours or enter a disease stage if there is not an appropriate one provided. This disease stage is visible when the result is shared.
Required:	No
Preferred Lookup:	Please refer to Appendix A - lk_disease_stage with preferred column(s) disease_stage_preferred
Comment:	This provides a broad classification of how the disease has progressed. Please select a disease stage from the list provided if the disease stage matches yours or enter a disease stage if there is not an appropriate one provided. This disease stage is visible when the result is shared.
Database Table:	immune_exposure
Database Column:	disease_stage_reported
Database Column Type:	varchar(100)

32. **interventions.txt**

The Intervention Template records the study interventions, concomitant medications, and anything else that was reported as entering a subject.

interventions.txt : User Defined ID	
Description:	The intervention user defined ID is an identifier chosen by the data provider to refer to a adverse event. The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	intervention
Database Column:	user_defined_id
Database Column Type:	varchar(100)

interventions.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Required:	Yes
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.
Database Table:	intervention
Database Column:	subject_accession
Database Column Type:	varchar(15)

interventions.txt : Study ID

Description:	A biological sample may be linked to a single study.
Required:	Yes
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession.
Database Table:	intervention
Database Column:	study_accession
Database Column Type:	varchar(15)

interventions.txt : Name Reported	
Description:	The intervention name is not referenced by other data records.
Required:	Yes
Lookup:	None
Comment:	The intervention name is an alternate identifier that is visible when the sample is shared.
Database Table:	intervention
Database Column:	name_reported
Database Column Type:	varchar(125)

interventions.txt : Compound Name Reported	
Description:	The compound name describes what substance entered the subject.
Required:	Yes
Lookup:	None
Comment:	The compound name describes what substance entered the subject.
Database Table:	intervention

Database Column:	compound_name_reported
Database Column Type:	varchar(250)

interventions.txt : Compound Role	
Description:	Compound role indicates the purpose or category of the substance.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_compound_role
Comment:	Compound role indicates the purpose or category of the substance.
Database Table:	intervention
Database Column:	compound_role
Database Column Type:	varchar(40)

interventions.txt : Dose Reported	
Description:	The amount of a substance.
Required:	Yes
Lookup:	None
Comment:	The amount of a substance.
Database Table:	intervention
Database Column:	dose_reported
Database Column Type:	varchar(150)

interventions.txt : Start Day

Description:	The study day in which the substance was initially encountered.
Required:	No
Lookup:	None
Comment:	The study day in which the substance was initially encountered.
Database Table:	intervention
Database Column:	start_day
Database Column Type:	float

interventions.txt : End Day	
Description:	The study day in which the substance was encounter ended.
Required:	No
Lookup:	None
Comment:	The study day in which the substance was encounter ended.
Database Table:	intervention
Database Column:	end_day
Database Column Type:	float

interventions.txt : Status	
Description:	Did the substance encounter complete or was ended.
Required:	No
Lookup:	None
Comment:	Did the substance encounter complete or was ended.
Database Table:	intervention

Database Column:	status
Database Column Type:	varchar(50)

interventions.txt : Reported Indication	
Description:	The purpose the substance was encountered.
Required:	No
Lookup:	None
Comment:	The purpose the substance was encountered.
Database Table:	intervention
Database Column:	reported_indication
Database Column Type:	varchar(255)

interventions.txt : Formulation	
Description:	The packaging or delivery of the substance.
Required:	No
Lookup:	None
Comment:	The packaging or delivery of the substance.
Database Table:	intervention
Database Column:	formulation
Database Column Type:	varchar(125)

interventions.txt : Dose

Description:	The dose value.
Required:	No
Lookup:	None
Comment:	The dose value.
Database Table:	intervention
Database Column:	dose
Database Column Type:	float

interventions.txt : Dose Units	
Description:	The dose unit.
Required:	No
Lookup:	None
Comment:	The dose unit.
Database Table:	intervention
Database Column:	dose_units
Database Column Type:	varchar(40)

interventions.txt : Dose Freq Per Interval	
Description:	How often the substance was encountered.
Required:	No
Lookup:	None
Comment:	How often the substance was encountered.
Database Table:	intervention

Database Column:	dose_freq_per_interval
Database Column Type:	varchar(40)

interventions.txt : Route Of Admin Reported	
Description:	How the substance was administered.
Required:	No
Lookup:	None
Comment:	How the substance was administered.
Database Table:	intervention
Database Column:	route_of_admin_reported
Database Column Type:	varchar(40)

interventions.txt : Is Ongoing	
Description:	Is the substance encounter continuing.
Required:	No
Lookup:	None
Comment:	Is the substance encounter continuing.
Database Table:	intervention
Database Column:	is_ongoing
Database Column Type:	varchar(40)

interventions.txt : Start Time

Description:	Time within a study day the substance is initially encountered.
Required:	No
Lookup:	None
Comment:	Time within a study day the substance is initially encountered.
Database Table:	intervention
Database Column:	start_time
Database Column Type:	varchar(40)

interventions.txt : End Time	
Description:	Time within a study day the substance encounter ended.
Required:	No
Lookup:	None
Comment:	Time within a study day the substance encounter ended.
Database Table:	intervention
Database Column:	end_time
Database Column Type:	varchar(40)

interventions.txt : Duration	
Description:	Length of time for the encounter.
Required:	No
Lookup:	None
Comment:	Length of time for the encounter.
Database Table:	intervention

Database Column:	duration
Database Column Type:	float

interventions.txt : Duration Unit	
Description:	Time unit for the duration.
Required:	No
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Time unit for the duration.
Database Table:	intervention
Database Column:	duration_unit
Database Column Type:	varchar(50)

33. **KIR_Typing.txt**

The KIR experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together.

KIR_Typing.txt : Expsample ID	
Description:	The experiment sample identifier must be stored in ImmPort or in the experimentsamples.txt template.
Required:	Yes
Lookup:	None
Comment:	Please enter either an experiment sample user defined ID or ImmPort accession.
Database Table:	kir_typing_result And expsample_2_file_info
Database Column:	expsample_accession
Database Column Type:	varchar(15)

KIR_Typing.txt : KIR Haplotype	
Description:	
Required:	Yes
Lookup:	None
Comment:	
Database Table:	kir_typing_result
Database Column:	kir_haplotype
Database Column Type:	varchar(250)

KIR_Typing.txt : Allele 1	
Description:	

Required:	No
Lookup:	None
Comment:	
Database Table:	kir_typing_result
Database Column:	allele_1
Database Column Type:	varchar(250)

KIR_Typing.txt : Allele 2	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	kir_typing_result
Database Column:	allele_2
Database Column Type:	varchar(250)

KIR_Typing.txt : Comments	
Description:	
Required:	No
Lookup:	None
Comment:	
Database Table:	kir_typing_result
Database Column:	comments

Database Column Type:	varchar(500)

34. **labTest_Results.txt**

The lab test results template is a legacy template that supports reporting the lab test results (but does not support defining the lab test panel which is the parent of a lab test). The function of this template is also captured in the lab tests template. This template will continue to be supported for the foreseeable future to support backward compatibility.

labTest_Results.txt : User Defined ID	
Description:	The lab test user defined ID is an identifier chosen by the data provider to refer the lab test. The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	lab_test
Database Column:	user_defined_id
Database Column Type:	varchar(100)

labTest_Results.txt : Lab Test Panel ID	
Description:	The lab test panel identifier must be stored in ImmPort or in the labTestPanels.txt template. The lab test panel serves as the parent entity to bind lab test results of a similar type together.
Required:	Yes
Lookup:	None
Comment:	Please enter either a lab test panel user defined ID or ImmPort accession.
Database Table:	lab_test
Database Column:	lab_test_panel_accession
Database Column Type:	varchar(15)

labTest_Results.txt : Biosample ID	
Description:	The biosample identifier must be stored in ImmPort or in the biosamples.txt template. A single biosample identifier is expected.
Required:	Yes
Lookup:	None
Comment:	Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to an experiment sample.
Database Table:	lab_test
Database Column:	biosample_accession
Database Column Type:	varchar(15)

labTest_Results.txt : Name Reported	
Description:	The lab test name describes lab test. Please select a unit from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the panel is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_lab_test_name with preferred column(s) name_preferred
Comment:	Please select a unit from the list provided if the name matches your name or enter a name if there is not an appropriate one provided.
Database Table:	lab_test
Database Column:	name_reported
Database Column Type:	varchar(125)

labTest_Results.txt : Result Value Reported	
Description:	The lab test result captures the assayed value for a sample and can include letters, numbers and greater than or less than symbols.
Required:	Yes

Lookup:	None
Comment:	The lab test result captures the assayed value.
Database Table:	lab_test
Database Column:	result_value_reported
Database Column Type:	varchar(250)

labTest_Results.txt : Result Unit Reported	
Description:	The lab test result unit describes the unit for the lab test value.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_unit_of_measure with preferred column(s) unit_of_measure_preferred
Comment:	The lab test result unit describes the unit for the lab test value.
Database Table:	lab_test
Database Column:	result_unit_reported
Database Column Type:	varchar(100)

35. **labTestPanels.txt**

The lab test panels template is a legacy template that defines and annotates the collection of lab tests applied to a sample (but not the lab test results). The function of this template is also captured in the lab tests template. This template will continue to be supported for the foreseeable future to support backward compatibility.

labTestPanels.txt : User Defined ID	
Description:	The lab test panel user defined ID is an identifier chosen by the data provider to refer to lab panel. This ID may be referenced by other data records (e.g. lab test). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	lab_test_panel
Database Column:	user_defined_id
Database Column Type:	varchar(100)

labTestPanels.txt : Name Reported	
Description:	The lab panel name describes a lab test panel. Please select a preferred value from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the panel is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_lab_test_panel_name with preferred column(s) name_preferred
Comment:	The lab panel name describes a lab test panel. Please select a preferred value from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the panel is shared.
Database Table:	lab_test_panel
Database Column:	name_reported

Database Column Type:	varchar(125)

labTestPanels.txt : Study ID	
Description:	A lab test panel may be linked to a single study.
Required:	Yes
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession for the study in which the lab test panel occurs.
Database Table:	lab_test_panel
Database Column:	study_accession
Database Column Type:	varchar(15)

labTestPanels.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession. One or more identifiers can be entered per subject. Separate identifiers by semicolon (;).
Required:	Yes
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession.
Database Table:	lab_test_panel_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

36. **labTests.txt**

The lab tests template defines and annotates the lab test panels, the lab tests and results. This template combines the functions of the legacy lab test panels and lab test results templates into a single template. The biological sample and the lab test panel can be either new or pre-defined in this template. Any combination is acceptable. The only restriction is that the biological sample is the key to template and must be unique within the template.

36.1. ID Meta DataColumn

The ID Meta Data Columns include the ID columns that are referenced by more than one entity in the lab test template (for example, biological samples and lab test panels reference both protocols and study IDs).

ID Meta Data Column labTests.txt : Study ID	
Description:	A lab test panel may be linked to a single study.
Conditional Required:	Yes for **New Biosample And Lab Test Panel**
Lookup:	None
Comment:	Please enter a study user defined ID or ImmPort accession for the study in which the lab test panel occurs. The Study ID is only required when both the lab test panel and biological sample are new.
Database Table:	biosample And lab_test_panel
Database Column:	study_accession
Database Column Type:	varchar(15)

36.2. Biosample Meta DataColumns

The Biosample Meta Data Columns include the columns for the combined entity Biosample.

Biosample Meta Data Column labTests.txt : Biosample ID	
Description:	The biological sample user defined ID is an identifier chosen by the data provider to refer to a sample. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None

Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. Please enter either a biological sample user defined ID or ImmPort accession. A single biological sample may be linked to a lab test.
Database Table:	biosample
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Biosample Meta Data Column labTests.txt : Subject ID	
Description:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived. A single subject record is permitted.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a subject user defined ID or ImmPort accession for the subject from which the sample was derived.
Database Table:	biosample
Database Column:	subject_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column labTests.txt : Planned Visit ID	
Description:	The link to a study's planned visit provides temporal context for a sample's derivation from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter either a study's planned visit user defined ID or ImmPort accession.

Database Table:	biosample
Database Column:	planned_visit_accession
Database Column Type:	varchar(15)

Biosample Meta Data Column labTests.txt : Type	
Description:	The sample types are adopted from Uberon, Cell and CHEBI ontologies.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_sample_type
Comment:	Please choose a biological sample type from the drop down list.
Database Table:	biosample
Database Column:	type
Database Column Type:	varchar(20)

Biosample Meta Data Column labTests.txt : Subtype	
Description:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Required:	No
Lookup:	None
Comment:	Enter a sample type that is of finer resolution than the standard sample types provided. If the 'Biological Sample Type' is 'Other', then the sample subtype must be entered.
Database Table:	biosample
Database Column:	subtype

Database Column Type:	varchar(50)

Biosample Meta Data Column labTests.txt : Name	
Description:	The biological sample name is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The biological sample name is an alternate identifier that is visible when the sample is shared.
Database Table:	biosample
Database Column:	name
Database Column Type:	varchar(100)

Biosample Meta Data Column labTests.txt : Description	
Description:	The biological sample description is used to describe details of the sample not captured in other columns.
Required:	No
Lookup:	None
Comment:	The biological sample description is used to describe details of the sample not captured in other columns.
Database Table:	biosample
Database Column:	description
Database Column Type:	varchar(4000)

Biosample Meta Data Column labTests.txt : Study Time Collected

Description:	Study time collected describes the time value for when a sample was derived from a subject.
Conditional Required:	Yes for **New Biosample**
Lookup:	None
Comment:	Please enter a number.
Database Table:	biosample
Database Column:	study_time_collected
Database Column Type:	float

Biosample Meta Data Column labTests.txt : Study Time Collected Unit	
Description:	The time units are standard terms recommended by the HIPC Standards group.
Conditional Required:	Yes for **New Biosample**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_collected_unit
Database Column Type:	varchar(25)

Biosample Meta Data Column labTests.txt : Study Time T0 Event	
Description:	The time zero event refers to the study milestone upon which time is based.
Conditional Required:	Yes for **New Biosample**

Controlled Lookup:	Please refer to Appendix A - lk_t0_event
Comment:	Please choose from the drop down list.
Database Table:	biosample
Database Column:	study_time_t0_event
Database Column Type:	varchar(50)

Biosample Meta Data Column labTests.txt : Study Time T0 Event Specify	
Description:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Required:	No
Lookup:	None
Comment:	Enter a time zero event if 'Other' is selected in column 'Study Time T0 Event'.
Database Table:	biosample
Database Column:	study_time_t0_event_specify
Database Column Type:	varchar(50)

36.3. Lab Test Panel Meta DataColumns

The Lab Test Panel Meta Data Columns include the columns for the combined entity Lab Test Panel.

Lab Test Panel Meta Data Column labTests.txt : Lab Test Panel ID	
Description:	The lab test panel user defined ID is an identifier chosen by the data provider to refer to lab panel. This ID may be referenced by other data records (e.g. lab test). The user defined ID is not shared.
Required:	Yes
Lookup:	None

Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	lab_test_panel
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Lab Test Panel Meta Data Column labTests.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession. One or more identifiers can be entered per subject. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Lab Test Panel**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession. The Protocol ID(s) is required when either the lab test panel or the biological sample are new.
Database Table:	lab_test_panel_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Lab Test Panel Meta Data Column labTests.txt : Name Reported	
Description:	The lab panel name describe lab test panel. Please select a lab panel name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the panel is shared.
Conditional Required:	Yes for **New Lab Test Panel**
Preferred Lookup:	Please refer to Appendix A - lk_lab_test_panel_name with preferred column(s) name_preferred

Comment:	The lab panel name describes the lab test panel. Please select a lab panel name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the panel is shared.
Database Table:	lab_test_panel
Database Column:	name_reported
Database Column Type:	varchar(125)

36.4. SeparatorColumn

This column must always appear in the template and must immediately follow after the last meta data column and before the (repeating) result column groups.

Separator Column labTests.txt : Result Separator Column	
Description:	This pseudo column separates meta data from results.
Required:	No
Lookup:	None
Comment:	This pseudo column separates the results (lab tests) from the lab test panel meta data. It must always appear and be the column that appears immediately after the last meta-data column and before any result columns.

36.5. ResultColumns

Each result group (that is, result) consists of a group of the following result columns, where the **first column** of the group must always be '**User Defined ID**'.

Result Column labTests.txt : User Defined ID	
Description:	The lab test user defined ID is an identifier chosen by the data provider to refer the lab test. The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The lab test identifier should be unique to the ImmPort workspace to which the data will be uploaded. This COLUMN must appear as the FIRST COLUMN for a repeating result column group.

Database Table:	lab_test
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Result Column labTests.txt : Name Reported	
Description:	The lab test name describes lab test. Please select a lab test name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the panel is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_lab_test_name with preferred column(s) name_preferred
Comment:	Please select a lab test name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided.
Database Table:	lab_test
Database Column:	name_reported
Database Column Type:	varchar(125)

Result Column labTests.txt : Result Value Reported	
Description:	The lab test result captures the assayed value for a sample and can include letters, numbers and greater than or less than symbols.
Required:	Yes
Lookup:	None
Comment:	The lab test result captures the assayed value.
Database Table:	lab_test
Database Column:	result_value_reported

Database Column Type:	varchar(250)

Result Column labTests.txt : Result Unit Reported	
Description:	The lab test result unit describes the unit for the lab test value.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_unit_of_measure with preferred column(s) unit_of_measure_preferred
Comment:	The lab test result unit describes the unit for the lab test value.
Database Table:	lab_test
Database Column:	result_unit_reported
Database Column Type:	varchar(100)

37. **MBAA_Results.txt**

The MBAA experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together.

MBAA_Results.txt : Source ID	
Description:	The source ID is defined in the corresponding ImmPort template.
Required:	No
Lookup:	None
Comment:	The source ID for the assay result is either an experiment sample, a control sample, or a standard curve.

MBAA_Results.txt : Source Type	
Description:	The source type is either an experiment sample, control sample or standard curve.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_source_type
Comment:	Please choose from the drop down list.
Database Table:	mbaa_result
Database Column:	source_type
Database Column Type:	varchar(30)

MBAA_Results.txt : Assay ID	
Description:	The assay ID represents the plate or array ID where standard curves, control samples, and experiment samples were collected and assayed. This ID will be used to link standard curves, control samples, and experiment samples results.
Required:	Yes
Lookup:	None

Comment:	The assay ID represents the plate or array ID where standard curves, control samples, and experiment samples were collected and assayed. This ID will be used to link standard curves, control samples, and experiment samples results.
Database Table:	mbaa_result
Database Column:	assay_id
Database Column Type:	varchar(100)

MBAA_Results.txt : Assay Group ID	
Description:	The assay group ID represents a collection of plates or arrays. This ID may be used to link collections of standard curves, control samples, and experiment samples results.
Required:	No
Lookup:	None
Comment:	The assay group ID represents a collection of plates or arrays. This ID may be used to link collections of standard curves, control samples, and experiment samples results.
Database Table:	mbaa_result
Database Column:	assay_group_id
Database Column Type:	varchar(100)

MBAA_Results.txt : Analyte Reported	
Description:	The analyte describes what is being measured in an assay. The list of values displays common immunology gene symbol and gene symbol terms on the left and their preferred term on the right, each component separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_analyte with preferred column(s) immunology_symbol and short_label and analyte_preferred

Comment:	The analyte is the target (e.g protein, DNA, RNA) that is being assayed by the reagent. The list of values displays common immunology gene symbol and gene symbol terms on the left and their preferred term on the right, each component separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Database Table:	mbaa_result
Database Column:	analyte_reported
Database Column Type:	varchar(100)

MBAA_Results.txt : MFI	
Description:	Mean Fluorescence Intensity
Required:	Yes
Lookup:	None
Comment:	Mean Fluorescence Intensity
Database Table:	mbaa_result
Database Column:	mfi
Database Column Type:	varchar(100)

MBAA_Results.txt : Concentration Value Reported	
Description:	The reported concentration value of the standard curve sample or calculated from the MFI using the standard curve.
Required:	Yes
Lookup:	None
Comment:	A number is expected.
Database Table:	mbaa_result

Database Column:	concentration_value_reported
Database Column Type:	varchar(100)

MBAA_Results.txt : Concentration Unit Reported	
Description:	The concentration unit of the standard curve sample or calculated from the MFI using the standard curve
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_concentration_unit with preferred column(s) concentration_unit_preferred
Comment:	The concentration unit of the standard curve sample or calculated from the MFI using the standard curve.
Database Table:	mbaa_result
Database Column:	concentration_unit_reported
Database Column Type:	varchar(100)

MBAA_Results.txt : MFI Coordinate	
Description:	The position on the assay plate.
Required:	No
Lookup:	None
Comment:	The position on the assay plate.
Database Table:	mbaa_result
Database Column:	mfi_coordinate
Database Column Type:	varchar(100)

MBAA_Results.txt : Comments	
Description:	Additional descriptive information.
Required:	No
Lookup:	None
Comment:	Additional descriptive information.
Database Table:	mbaa_result
Database Column:	comments
Database Column Type:	varchar(500)

38. **PCR_Results.txt**

The qRT-PCR experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. More than one analyte's results per assayed sample may be reported by copying at least the group of columns 'Entrez Gene ID' and 'Threshold Cycles(ct)' needed to describe each assay result.

PCR_Results.txt : Expsample ID	
Description:	The experiment sample identifier must be stored in ImmPort or in the experimentsamples.txt template.
Required:	Yes
Lookup:	None
Comment:	Please enter either an experiment sample user defined ID or ImmPort accession.
Database Table:	pcr_result And expsample_2_file_info
Database Column:	expsample_accession
Database Column Type:	varchar(15)

PCR_Results.txt : Gene Symbol Name	
Description:	The NCBI Gene symbol for the gene being assayed. Please select a gene symbol from the list provided if the gene symbol matches your symbol or enter a symbol if there is not an appropriate one provided. This symbol is visible when the result is shared. If the gene symbol is a NCBI Gene Symbol that is provided in the list, then the columns 'Gene Name' and 'Gene ID' will also be overwritten by the gene name and Entrez Gene ID provided by NCBI.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_analyte with preferred column(s) immunology_symbol and short_label and analyte_preferred
Comment:	The NCBI Gene symbol for the gene being assayed. Please select a gene symbol from the list provided if the gene symbol matches your symbol or enter a symbol if there is not an appropriate one provided. This symbol is visible when the result is shared.

PCR_Results.txt : Value Reported

Description:	This value could be absolute or relative. For example, an absolute expression value could be 6 ng RNA/mg intestine. In this case, 6 should be entered in the 'Expression value of target RNA' column, while ng RNA/ mg intestine is in the 'Expression unit of target RNA' column. A relative expression value, like signal versus GAPDH, could be 2.07. In this case, 2.07 should be in the 'Expression value of target RNA' column, while relative to GAPDH is in the 'Expression unit of target RNA' column.
Required:	Yes
Lookup:	None
Comment:	A number is expected.
Database Table:	pcr_result
Database Column:	value_reported
Database Column Type:	varchar(50)

PCR_Results.txt : Unit Reported	
Description:	The unit for the Expression Value Of Target Nucleic ACID. Please select a unit from the list provided if the unit matches your unit or enter a unit if there is not an appropriate one provided.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_pcr_expression_unit with preferred column(s) expression_unit_preferred
Comment:	The unit for the Expression Value Of Target Nucleic ACID. Please select a unit from the list provided if the unit matches your unit or enter a unit if there is not an appropriate one provided.
Database Table:	pcr_result
Database Column:	unit_reported
Database Column Type:	varchar(200)

PCR_Results.txt : Gene ID	
Description:	The NCBI Gene ID for the gene being assayed. A number is expected.

Required:	No
Lookup:	None
Comment:	A number is expected.
Database Table:	pcr_result
Database Column:	gene_id
Database Column Type:	varchar(10)

PCR_Results.txt : Gene Name	
Description:	The NCBI Gene name for the gene being assayed.
Required:	No
Lookup:	None
Comment:	The NCBI Gene name for the gene being assayed.
Database Table:	pcr_result
Database Column:	gene_name
Database Column Type:	varchar(4000)

PCR_Results.txt : Other Gene Accession	
Description:	Additional identifier(s) for the gene being assayed.
Required:	No
Lookup:	None
Comment:	Additional identifier(s) for the gene being assayed.
Database Table:	pcr_result
Database Column:	other_gene_accession

Database Column Type:	varchar(250)

PCR_Results.txt : Comments	
Description:	Comments captures additional descriptive information.
Required:	No
Lookup:	None
Comment:	Comments captures additional descriptive information.
Database Table:	pcr_result
Database Column:	comments
Database Column Type:	varchar(500)

39. **protocols.txt**

The protocol template defines and annotates protocol documents that are to be linked to study, subjects, biological samples or experiments.

protocols.txt : User Defined ID	
Description:	The protocol user defined ID is an identifier chosen by the data provider to refer to a protocol document. This ID may be referenced by other data records (e.g. study). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	protocol
Database Column:	user_defined_id
Database Column Type:	varchar(100)

protocols.txt : File Name	
Description:	The protocol file name in this column must be an exact spelling match to a file in the ZIP archive that is uploaded. This includes the file extensions which may be hidden depending upon your computer's settings. The file size name limit is 240 characters.
Required:	Yes
Lookup:	None
Comment:	The protocol file name is the document uploaded and linked to the protocol ID. The file name must be an exact spelling match including the file extension. The file size name limit is 240 characters.
Database Table:	protocol
Database Column:	file_name
Database Column Type:	varchar(250)

protocols.txt : Name	
Description:	The protocol name is not referenced by other data records.
Required:	Yes
Lookup:	None
Comment:	The protocol name is an alternate identifier that is visible when the protocol is shared.
Database Table:	protocol
Database Column:	name
Database Column Type:	varchar(100)

protocols.txt : Description	
Description:	The summary is a brief description of the protocol's content.
Required:	No
Lookup:	None
Comment:	The protocol summary describes the purpose of the protocol.
Database Table:	protocol
Database Column:	description
Database Column Type:	varchar(4000)

protocols.txt : Type	
Description:	The protocol type uses a preferred list of terms to characterize the protocol's content.
Required:	No
Controlled Lookup:	Please refer to Appendix A - lk_protocol_type

Comment:	The protocol type is chosen from a list of preferred terms.
Database Table:	protocol
Database Column:	type
Database Column Type:	varchar(20)

40. **publicRepositories.txt**

The public repository template allows one or more public repository accession(s) and name(s) to be assigned to an experiment sample.

publicRepositories.txt : Expsample ID	
Description:	The experiment sample user defined ID is an identifier chosen by the data provider to refer to this sample. This ID may be referenced by other data records (e.g. assay results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	expsample_public_repository
Database Column:	expsample_accession
Database Column Type:	varchar(15)

publicRepositories.txt : Repository Name	
Description:	ImmPort expects array gene expression results to be deposited in NCBI GEO since this is a prerequisite for publication. Please choose this repository name from the list.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_public_repository
Comment:	Array gene expression results are expected to be deposited in NCBI GEO Please choose this repository name from the list.
Database Table:	expsample_public_repository
Database Column:	repository_name
Database Column Type:	varchar(50)

publicRepositories.txt : Repository Accession	
Description:	The public repository accession should be the most granular or highest resolution provided (e.g. sample level accession, not sample group accession).
Required:	Yes
Lookup:	None
Comment:	Enter the accession that links to the assay result file(s).
Database Table:	expsample_public_repository
Database Column:	repository_accession
Database Column Type:	varchar(20)

41. **Reagent_Sets.txt**

The reagent set template defines and annotates the groups of reagents that are used together in assays such as flow cytometry panels, or multiplex ELISA assays. This template is optional.

Reagent_Sets.txt : User Defined ID	
Description:	The reagent user defined ID is an identifier chosen by the data provider to refer to an assay reagent. The nature of the assay reagent is assay specific and may be an array, an antibody or a typing kit. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	reagent
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Reagent_Sets.txt : Reagent ID(s)	
Description:	The individual reagents are defined in assay specific reagent templates (e.g. flow cytometry, ELISA). The data provider may define a set or panel of reagents used in a single assay (e.g a panel of fluorochrome conjugated monoclonal antibodies).
Required:	Yes
Lookup:	None
Comment:	Provide a list of individual reagents that comprise the reagent set. Separate the individual reagent IDs with a semi-colon.
Database Table:	reagent_set_2_reagent
Database Column:	reagent_accession
Database Column Type:	varchar(15)

Reagent_Sets.txt : Description	
Description:	The assay reagent description provides further details on the nature and purpose of the reagent.
Required:	Yes
Lookup:	None
Comment:	A supplemental description of the assay reagent that expands on its Name and User Defined ID.
Database Table:	reagent
Database Column:	description
Database Column Type:	varchar(4000)

Reagent_Sets.txt : Name	
Description:	The reagent name is not referenced by other data records.
Required:	Yes
Lookup:	None
Comment:	The reagent name is an alternate ID that is shared.
Database Table:	reagent
Database Column:	name
Database Column Type:	varchar(100)

Reagent_Sets.txt : Type	
Description:	The reagent set type indicates the assay type with which the reagent set is used.
Required:	Yes

Controlled Lookup:	Please refer to Appendix A - lk_reagent_type
Comment:	Choose from a list of preferred assay types.
Database Table:	reagent
Database Column:	type
Database Column Type:	varchar(20)

42. **reagents.Array.txt**

The array reagent template defines and annotates microarrays assay platforms.

reagents.Array.txt : User Defined ID	
Description:	The reagent user defined ID is an identifier chosen by the data provider to refer to an assay reagent. The nature of the assay reagent is assay specific and may be an array, an antibody or a typing kit. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	reagent
Database Column:	user_defined_id
Database Column Type:	varchar(100)

reagents.Array.txt : Name	
Description:	The reagent name is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The reagent name is an alternate ID that is shared.
Database Table:	reagent
Database Column:	name
Database Column Type:	varchar(100)

reagents.Array.txt : Description

Description:	The assay reagent description provides further details on the nature and purpose of the reagent.
Required:	No
Lookup:	None
Comment:	A supplemental description of the assay reagent that expands on its Name and User Defined ID.
Database Table:	reagent
Database Column:	description
Database Column Type:	varchar(4000)

reagents.Array.txt : Manufacturer	
Description:	The source of a reagent may be important for evaluating assay results.
Required:	Yes
Lookup:	None
Comment:	The manufacturer is the source of a reagent and may include commercial vendors as well as non-commercial sources (e.g. collaborating labs).
Database Table:	reagent
Database Column:	manufacturer
Database Column Type:	varchar(100)

reagents.Array.txt : Catalog Number	
Description:	The reagent's catalog ID provides a reference to the reagent source and description.
Required:	Yes
Lookup:	None

Comment:	If the assay reagent is a commercial product, enter the vendor's catalog identifier. If the reagent is a custom preparation enter 'NA'.
Database Table:	reagent
Database Column:	catalog_number
Database Column Type:	varchar(250)

reagents.Array.txt : Lot Number	
Description:	The lot number is helpful to understand possible batch specific differences in assay results.
Required:	No
Lookup:	None
Comment:	The lot number is often provided by a reagent source when the reagent is replenished over time.
Database Table:	reagent
Database Column:	lot_number
Database Column Type:	varchar(250)

reagents.Array.txt : Weblink	
Description:	The web link is often the vendor's web site.
Required:	No
Lookup:	None
Comment:	An internet address that may provide details of an assay reagent.
Database Table:	reagent
Database Column:	weblink

Database Column Type:	varchar(250)

reagents.Array.txt : Contact	
Description:	If the reagent is from a non-commercial source, the contact information should indicate with whom to communicate to get further details.
Required:	No
Lookup:	None
Comment:	The contact information is particularly helpful when the reagent is not from a commercial vendor.
Database Table:	reagent
Database Column:	contact
Database Column Type:	varchar(1000)

43. **reagents.CyTOF.txt**

The mass cytometry reagent template defines and annotates the mass tagged antibody reagents used for CyTOF.

reagents.CyTOF.txt : User Defined ID	
Description:	The reagent user defined ID is an identifier chosen by the data provider to refer to an assay reagent. The nature of the assay reagent is assay specific and may be an array, an antibody or a typing kit. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	reagent
Database Column:	user_defined_id
Database Column Type:	varchar(100)

reagents.CyTOF.txt : Name	
Description:	The reagent name is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The reagent name is an alternate ID that is shared.
Database Table:	reagent
Database Column:	name
Database Column Type:	varchar(100)

reagents.CyTOF.txt : Description

Description:	The assay reagent description provides further details on the nature and purpose of the reagent.
Required:	No
Lookup:	None
Comment:	A supplemental description of the assay reagent that expands on its Name and User Defined ID.
Database Table:	reagent
Database Column:	description
Database Column Type:	varchar(4000)

reagents.CyTOF.txt : Manufacturer	
Description:	The source of a reagent may be important for evaluating assay results.
Required:	Yes
Lookup:	None
Comment:	The manufacturer is the source of a reagent and may include commercial vendors as well as non-commercial sources (e.g. collaborating labs).
Database Table:	reagent
Database Column:	manufacturer
Database Column Type:	varchar(100)

reagents.CyTOF.txt : Catalog Number	
Description:	The reagent's catalog ID provides a reference to the reagent source and description.
Required:	Yes
Lookup:	None

Comment:	If the assay reagent is a commercial product, enter the vendor's catalog identifier. If the reagent is a custom preparation enter 'NA'.
Database Table:	reagent
Database Column:	catalog_number
Database Column Type:	varchar(250)

reagents.CyTOF.txt : Lot Number	
Description:	The lot number is helpful to understand possible batch specific differences in assay results.
Required:	No
Lookup:	None
Comment:	The lot number is often provided by a reagent source when the reagent is replenished over time.
Database Table:	reagent
Database Column:	lot_number
Database Column Type:	varchar(250)

reagents.CyTOF.txt : Weblink	
Description:	The web link is often the vendor's web site.
Required:	No
Lookup:	None
Comment:	An internet address that may provide details of an assay reagent.
Database Table:	reagent
Database Column:	weblink

Database Column Type:	varchar(250)

reagents.CyTOF.txt : Contact	
Description:	If the reagent is from a non-commercial source, the contact information should indicate with whom to communicate to get further details.
Required:	No
Lookup:	None
Comment:	The contact information is particularly helpful when the reagent is not from a commercial vendor.
Database Table:	reagent
Database Column:	contact
Database Column Type:	varchar(1000)

reagents.CyTOF.txt : Analyte Reported	
Description:	The analyte describes what is being measured in an assay. The list of values displays common immunology gene symbol and gene symbol terms on the left and their preferred term on the right, each component separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_analyte with preferred column(s) immunology_symbol and short_label and analyte_preferred
Comment:	The analyte is the target (e.g protein, DNA, RNA) that is being assayed by the reagent. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Database Table:	reagent
Database Column:	analyte_reported

Database Column Type:	varchar(100)

reagents.CyTOF.txt : Antibody Registry ID	
Description:	This is the description of the field Antibody Registry ID. Please refer to the user guide for more description. This description can also be found in the user document
Required:	No
Lookup:	None
Comment:	The identifier assigned by the Antibody Registry to the antibody reagent. http://antibodyregistry.org/
Database Table:	reagent
Database Column:	antibody_registry_id
Database Column Type:	varchar(250)

reagents.CyTOF.txt : Clone Name	
Description:	Mass cytometry reagents often consist of a monoclonal antibody linked to a isotope and the antibody binds to the target analyte.
Required:	Yes
Lookup:	None
Comment:	The detector in mass cytometry reagents is often a monoclonal antibody conjugated to an isotope. When there is no antibody in the reagent, enter 'NA'.
Database Table:	reagent
Database Column:	clone_name
Database Column Type:	varchar(200)

reagents.CyTOF.txt : Reporter Name	
Description:	Mass cytometry reagents often consist of a monoclonal antibody linked to an isotope and the isotope provides the signal for the mass spectrometer's detectors.
Required:	Yes
Lookup:	None
Comment:	The reporter in a mass cytometry reagent is the isotope linked to an antibody.
Database Table:	reagent
Database Column:	reporter_name
Database Column Type:	varchar(200)

44. **reagents.ELISA.txt**

The ELISA reagent template defines and annotates the antibody reagents assay platforms for ELISA.

reagents.ELISA.txt : User Defined ID	
Description:	The reagent user defined ID is an identifier chosen by the data provider to refer to an assay reagent. The nature of the assay reagent is assay specific and may be an array, an antibody or a typing kit. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	reagent
Database Column:	user_defined_id
Database Column Type:	varchar(100)

reagents.ELISA.txt : Name	
Description:	The reagent name is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The reagent name is an alternate ID that is shared.
Database Table:	reagent
Database Column:	name
Database Column Type:	varchar(100)

reagents.ELISA.txt : Description

Description:	The assay reagent description provides further details on the nature and purpose of the reagent.
Required:	No
Lookup:	None
Comment:	A supplemental description of the assay reagent that expands on its Name and User Defined ID.
Database Table:	reagent
Database Column:	description
Database Column Type:	varchar(4000)

reagents.ELISA.txt : Manufacturer	
Description:	The source of a reagent may be important for evaluating assay results.
Required:	Yes
Lookup:	None
Comment:	The manufacturer is the source of a reagent and may include commercial vendors as well as non-commercial sources (e.g. collaborating labs).
Database Table:	reagent
Database Column:	manufacturer
Database Column Type:	varchar(100)

reagents.ELISA.txt : Catalog Number	
Description:	The reagent's catalog ID provides a reference to the reagent source and description.
Required:	Yes
Lookup:	None

Comment:	If the assay reagent is a commercial product, enter the vendor's catalog identifier. If the reagent is a custom preparation enter 'NA'.
Database Table:	reagent
Database Column:	catalog_number
Database Column Type:	varchar(250)

reagents.ELISA.txt : Lot Number	
Description:	The lot number is helpful to understand possible batch specific differences in assay results.
Required:	No
Lookup:	None
Comment:	The lot number is often provided by a reagent source when the reagent is replenished over time.
Database Table:	reagent
Database Column:	lot_number
Database Column Type:	varchar(250)

reagents.ELISA.txt : Weblink	
Description:	The web link is often the vendor's web site.
Required:	No
Lookup:	None
Comment:	An internet address that may provide details of an assay reagent.
Database Table:	reagent
Database Column:	weblink

Database Column Type:	varchar(250)

reagents.ELISA.txt : Contact	
Description:	If the reagent is from a non-commercial source, the contact information should indicate with whom to communicate to get further details.
Required:	No
Lookup:	None
Comment:	The contact information is particularly helpful when the reagent is not from a commercial vendor.
Database Table:	reagent
Database Column:	contact
Database Column Type:	varchar(1000)

reagents.ELISA.txt : Analyte Reported	
Description:	The analyte describes what is being measured in an assay. The list of values displays common immunology gene symbol and gene symbol terms on the left and their preferred term on the right, each component separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_analyte with preferred column(s) immunology_symbol and short_label and analyte_preferred
Comment:	The analyte is the target (e.g protein, DNA, RNA) that is being assayed by the reagent. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Database Table:	reagent
Database Column:	analyte_reported

Database Column Type:	varchar(100)

reagents.ELISA.txt : Antibody Registry ID	
Description:	
Required:	No
Lookup:	None
Comment:	The identifier assigned by the Antibody Registry to the antibody reagent. http://antibodyregistry.org/
Database Table:	reagent
Database Column:	antibody_registry_id
Database Column Type:	varchar(250)

45. **reagents.ELISPOT.txt**

The ELISPOT reagent template defines and annotates the antibody reagents assay platforms for ELISPOT.

reagents.ELISPOT.txt : User Defined ID	
Description:	The reagent user defined ID is an identifier chosen by the data provider to refer to an assay reagent. The nature of the assay reagent is assay specific and may be an array, an antibody or a typing kit. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	reagent
Database Column:	user_defined_id
Database Column Type:	varchar(100)

reagents.ELISPOT.txt : Name	
Description:	The reagent name is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The reagent name is an alternate ID that is shared.
Database Table:	reagent
Database Column:	name
Database Column Type:	varchar(100)

reagents.ELISPOT.txt : Description

Description:	The assay reagent description provides further details on the nature and purpose of the reagent.
Required:	No
Lookup:	None
Comment:	A supplemental description of the assay reagent that expands on its Name and User Defined ID.
Database Table:	reagent
Database Column:	description
Database Column Type:	varchar(4000)

reagents.ELISPOT.txt : Manufacturer	
Description:	The source of a reagent may be important for evaluating assay results.
Required:	Yes
Lookup:	None
Comment:	The manufacturer is the source of a reagent and may include commercial vendors as well as non-commercial sources (e.g. collaborating labs).
Database Table:	reagent
Database Column:	manufacturer
Database Column Type:	varchar(100)

reagents.ELISPOT.txt : Catalog Number	
Description:	The reagent's catalog ID provides a reference to the reagent source and description.
Required:	Yes
Lookup:	None

Comment:	If the assay reagent is a commercial product, enter the vendor's catalog identifier. If the reagent is a custom preparation enter 'NA'.
Database Table:	reagent
Database Column:	catalog_number
Database Column Type:	varchar(250)

reagents.ELISPOT.txt : Lot Number	
Description:	The lot number is helpful to understand possible batch specific differences in assay results.
Required:	No
Lookup:	None
Comment:	The lot number is often provided by a reagent source when the reagent is replenished over time.
Database Table:	reagent
Database Column:	lot_number
Database Column Type:	varchar(250)

reagents.ELISPOT.txt : Weblink	
Description:	The web link is often the vendor's web site.
Required:	No
Lookup:	None
Comment:	An internet address that may provide details of an assay reagent.
Database Table:	reagent
Database Column:	weblink

Database Column Type:	varchar(250)

reagents.ELISPOT.txt : Contact	
Description:	If the reagent is from a non-commercial source, the contact information should indicate with whom to communicate to get further details.
Required:	No
Lookup:	None
Comment:	The contact information is particularly helpful when the reagent is not from a commercial vendor.
Database Table:	reagent
Database Column:	contact
Database Column Type:	varchar(1000)

reagents.ELISPOT.txt : Analyte Reported	
Description:	The analyte describes what is being measured in an assay. The list of values displays common immunology gene symbol and gene symbol terms on the left and their preferred term on the right, each component separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_analyte with preferred column(s) immunology_symbol and short_label and analyte_preferred
Comment:	The analyte is the target (e.g protein, DNA, RNA) that is being assayed by the reagent. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Database Table:	reagent
Database Column:	analyte_reported

Database Column Type:	varchar(100)

reagents.ELISPOT.txt : Antibody Registry ID	
Description:	
Required:	No
Lookup:	None
Comment:	The identifier assigned by the Antibody Registry to the antibody reagent. http://antibodyregistry.org/
Database Table:	reagent
Database Column:	antibody_registry_id
Database Column Type:	varchar(250)

46. **reagents.Flow_Cytometry.txt**

The flow cytometry reagent template defines and annotates the antibody reagents used for flow cytometry.

reagents.Flow_Cytometry.txt : User Defined ID	
Description:	The reagent user defined ID is an identifier chosen by the data provider to refer to an assay reagent. The nature of the assay reagent is assay specific and may be an array, an antibody or a typing kit. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	reagent
Database Column:	user_defined_id
Database Column Type:	varchar(100)

reagents.Flow_Cytometry.txt : Name	
Description:	The reagent name is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The reagent name is an alternate ID that is shared.
Database Table:	reagent
Database Column:	name
Database Column Type:	varchar(100)

reagents.Flow_Cytometry.txt : Description

Description:	The assay reagent description provides further details on the nature and purpose of the reagent.
Required:	No
Lookup:	None
Comment:	A supplemental description of the assay reagent that expands on its Name and User Defined ID.
Database Table:	reagent
Database Column:	description
Database Column Type:	varchar(4000)

reagents.Flow_Cytometry.txt : Manufacturer	
Description:	The source of a reagent may be important for evaluating assay results.
Required:	Yes
Lookup:	None
Comment:	The manufacturer is the source of a reagent and may include commercial vendors as well as non-commercial sources (e.g. collaborating labs).
Database Table:	reagent
Database Column:	manufacturer
Database Column Type:	varchar(100)

reagents.Flow_Cytometry.txt : Catalog Number	
Description:	The reagent's catalog ID provides a reference to the reagent source and description.
Required:	Yes
Lookup:	None

Comment:	If the assay reagent is a commercial product, enter the vendor's catalog identifier. If the reagent is a custom preparation enter 'NA'.
Database Table:	reagent
Database Column:	catalog_number
Database Column Type:	varchar(250)

reagents.Flow_Cytometry.txt : Lot Number	
Description:	The lot number is helpful to understand possible batch specific differences in assay results.
Required:	No
Lookup:	None
Comment:	The lot number is often provided by a reagent source when the reagent is replenished over time.
Database Table:	reagent
Database Column:	lot_number
Database Column Type:	varchar(250)

reagents.Flow_Cytometry.txt : Weblink	
Description:	The web link is often the vendor's web site.
Required:	No
Lookup:	None
Comment:	An internet address that may provide details of an assay reagent.
Database Table:	reagent
Database Column:	weblink

Database Column Type:	varchar(250)

reagents.Flow_Cytometry.txt : Contact	
Description:	If the reagent is from a non-commercial source, the contact information should indicate with whom to communicate to get further details.
Required:	No
Lookup:	None
Comment:	The contact information is particularly helpful when the reagent is not from a commercial vendor.
Database Table:	reagent
Database Column:	contact
Database Column Type:	varchar(1000)

reagents.Flow_Cytometry.txt : Analyte Reported	
Description:	The analyte describes what is being measured in an assay. The list of values displays common immunology gene symbol and gene symbol terms on the left and their preferred term on the right, each component separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_analyte with preferred column(s) immunology_symbol and short_label and analyte_preferred
Comment:	The analyte is the target (e.g protein, DNA, RNA) that is being assayed by the reagent. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Database Table:	reagent
Database Column:	analyte_reported

Database Column Type:	varchar(100)

reagents.Flow_Cytometry.txt : Antibody Registry ID	
Description:	This is the description of the field Antibody Registry ID. Please refer to the user guide for more description. This description can also be found in the user document
Required:	No
Lookup:	None
Comment:	The identifier assigned by the Antibody Registry to the antibody reagent. http://antibodyregistry.org/
Database Table:	reagent
Database Column:	antibody_registry_id
Database Column Type:	varchar(250)

reagents.Flow_Cytometry.txt : Clone Name	
Description:	Flow cytometry reagents often consist of a monoclonal antibody linked to a fluorescing compound and the antibody binds to the target analyte.
Required:	Yes
Lookup:	None
Comment:	The detector in flow cytometry reagents is often a monoclonal antibody conjugated to a fluorochrome. When there is no antibody in the reagent, enter 'NA'.
Database Table:	reagent
Database Column:	clone_name
Database Column Type:	varchar(200)

reagents.Flow_Cytometry.txt : Reporter Name	
Description:	Flow Cytometry reagents often consist of a monoclonal antibody linked to a fluorescing compound and the fluorochrome provides the signal for the cytometer's detectors.
Required:	Yes
Lookup:	None
Comment:	The reporter in a flow cytometry reagent is the fluorochrome linked to an antibody. When there is no antibody in the reagent, it is the fluorescing agent (e.g. CFSE).
Database Table:	reagent
Database Column:	reporter_name
Database Column Type:	varchar(200)

47. **reagents.HAI.txt**

The HAI reagent template defines and annotates reagents for hemagglutination inhibition assays. These include the cell type used. The viral stain and concentration would be defined in the treatments.txt template.

reagents.HAI.txt : User Defined ID	
Description:	The reagent user defined ID is an identifier chosen by the data provider to refer to an assay reagent. The nature of the assay reagent is assay specific and may be an array, an antibody or a typing kit. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	reagent
Database Column:	user_defined_id
Database Column Type:	varchar(100)

reagents.HAI.txt : Name	
Description:	The reagent name is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The reagent name is an alternate ID that is shared.
Database Table:	reagent
Database Column:	name
Database Column Type:	varchar(100)

reagents.HAI.txt : Description

Description:	The assay reagent description provides further details on the nature and purpose of the reagent.
Required:	No
Lookup:	None
Comment:	A supplemental description of the assay reagent that expands on its Name and User Defined ID.
Database Table:	reagent
Database Column:	description
Database Column Type:	varchar(4000)

reagents.HAI.txt : Manufacturer	
Description:	The source of a reagent may be important for evaluating assay results.
Required:	Yes
Lookup:	None
Comment:	The manufacturer is the source of a reagent and may include commercial vendors as well as non-commercial sources (e.g. collaborating labs).
Database Table:	reagent
Database Column:	manufacturer
Database Column Type:	varchar(100)

reagents.HAI.txt : Catalog Number	
Description:	The reagent's catalog ID provides a reference to the reagent source and description.
Required:	Yes
Lookup:	None

Comment:	If the assay reagent is a commercial product, enter the vendor's catalog identifier. If the reagent is a custom preparation enter 'NA'.
Database Table:	reagent
Database Column:	catalog_number
Database Column Type:	varchar(250)

reagents.HAI.txt : Lot Number	
Description:	The lot number is helpful to understand possible batch specific differences in assay results.
Required:	No
Lookup:	None
Comment:	The lot number is often provided by a reagent source when the reagent is replenished over time.
Database Table:	reagent
Database Column:	lot_number
Database Column Type:	varchar(250)

reagents.HAI.txt : Weblink	
Description:	The web link is often the vendor's web site.
Required:	No
Lookup:	None
Comment:	An internet address that may provide details of an assay reagent.
Database Table:	reagent
Database Column:	weblink

Database Column Type:	varchar(250)

reagents.HAI.txt : Contact	
Description:	If the reagent is from a non-commercial source, the contact information should indicate with whom to communicate to get further details.
Required:	No
Lookup:	None
Comment:	The contact information is particularly helpful when the reagent is not from a commercial vendor.
Database Table:	reagent
Database Column:	contact
Database Column Type:	varchar(1000)

48. **reagents.HLA_Typing.txt**

The HLA typing system reagents template defines and annotates the assay platforms for HLA typing. These reagents will be linked to HLA experiment sample records.

reagents.HLA_Typing.txt : User Defined ID	
Description:	The reagent user defined ID is an identifier chosen by the data provider to refer to an assay reagent. The nature of the assay reagent is assay specific and may be an array, an antibody or a typing kit. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	reagent
Database Column:	user_defined_id
Database Column Type:	varchar(100)

reagents.HLA_Typing.txt : Name	
Description:	The reagent name is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The reagent name is an alternate ID that is shared.
Database Table:	reagent
Database Column:	name
Database Column Type:	varchar(100)

reagents.HLA_Typing.txt : Description

Description:	The assay reagent description provides further details on the nature and purpose of the reagent.
Required:	No
Lookup:	None
Comment:	A supplemental description of the assay reagent that expands on its Name and User Defined ID.
Database Table:	reagent
Database Column:	description
Database Column Type:	varchar(4000)

reagents.HLA_Typing.txt : Manufacturer	
Description:	The source of a reagent may be important for evaluating assay results.
Required:	Yes
Lookup:	None
Comment:	The manufacturer is the source of a reagent and may include commercial vendors as well as non-commercial sources (e.g. collaborating labs).
Database Table:	reagent
Database Column:	manufacturer
Database Column Type:	varchar(100)

reagents.HLA_Typing.txt : Catalog Number	
Description:	The reagent's catalog ID provides a reference to the reagent source and description.
Required:	Yes
Lookup:	None

Comment:	If the assay reagent is a commercial product, enter the vendor's catalog identifier. If the reagent is a custom preparation enter 'NA'.
Database Table:	reagent
Database Column:	catalog_number
Database Column Type:	varchar(250)

reagents.HLA_Typing.txt : Lot Number	
Description:	The lot number is helpful to understand possible batch specific differences in assay results.
Required:	No
Lookup:	None
Comment:	The lot number is often provided by a reagent source when the reagent is replenished over time.
Database Table:	reagent
Database Column:	lot_number
Database Column Type:	varchar(250)

reagents.HLA_Typing.txt : Weblink	
Description:	The web link is often the vendor's web site.
Required:	No
Lookup:	None
Comment:	An internet address that may provide details of an assay reagent.
Database Table:	reagent
Database Column:	weblink

Database Column Type:	varchar(250)

reagents.HLA_Typing.txt : Contact	
Description:	If the reagent is from a non-commercial source, the contact information should indicate with whom to communicate to get further details.
Required:	No
Lookup:	None
Comment:	The contact information is particularly helpful when the reagent is not from a commercial vendor.
Database Table:	reagent
Database Column:	contact
Database Column Type:	varchar(1000)

49. **reagents.KIR_Typing.txt**

The KIR typing system reagents template defines and annotates the assay platforms for KIR typing. These reagents will be linked to KIR experiment sample records.

reagents.KIR_Typing.txt : User Defined ID	
Description:	The reagent user defined ID is an identifier chosen by the data provider to refer to an assay reagent. The nature of the assay reagent is assay specific and may be an array, an antibody or a typing kit. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	reagent
Database Column:	user_defined_id
Database Column Type:	varchar(100)

reagents.KIR_Typing.txt : Name	
Description:	The reagent name is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The reagent name is an alternate ID that is shared.
Database Table:	reagent
Database Column:	name
Database Column Type:	varchar(100)

reagents.KIR_Typing.txt : Description

Description:	The assay reagent description provides further details on the nature and purpose of the reagent.
Required:	No
Lookup:	None
Comment:	A supplemental description of the assay reagent that expands on its Name and User Defined ID.
Database Table:	reagent
Database Column:	description
Database Column Type:	varchar(4000)

reagents.KIR_Typing.txt : Manufacturer	
Description:	The source of a reagent may be important for evaluating assay results.
Required:	Yes
Lookup:	None
Comment:	The manufacturer is the source of a reagent and may include commercial vendors as well as non-commercial sources (e.g. collaborating labs).
Database Table:	reagent
Database Column:	manufacturer
Database Column Type:	varchar(100)

reagents.KIR_Typing.txt : Catalog Number	
Description:	The reagent's catalog ID provides a reference to the reagent source and description.
Required:	Yes
Lookup:	None

Comment:	If the assay reagent is a commercial product, enter the vendor's catalog identifier. If the reagent is a custom preparation enter 'NA'.
Database Table:	reagent
Database Column:	catalog_number
Database Column Type:	varchar(250)

reagents.KIR_Typing.txt : Lot Number	
Description:	The lot number is helpful to understand possible batch specific differences in assay results.
Required:	No
Lookup:	None
Comment:	The lot number is often provided by a reagent source when the reagent is replenished over time.
Database Table:	reagent
Database Column:	lot_number
Database Column Type:	varchar(250)

reagents.KIR_Typing.txt : Weblink	
Description:	The web link is often the vendor's web site.
Required:	No
Lookup:	None
Comment:	An internet address that may provide details of an assay reagent.
Database Table:	reagent
Database Column:	weblink

Database Column Type:	varchar(250)

reagents.KIR_Typing.txt : Contact	
Description:	If the reagent is from a non-commercial source, the contact information should indicate with whom to communicate to get further details.
Required:	No
Lookup:	None
Comment:	The contact information is particularly helpful when the reagent is not from a commercial vendor.
Database Table:	reagent
Database Column:	contact
Database Column Type:	varchar(1000)

50. **reagents.MBAA.txt**

The MBAA reagent template defines and annotates the assay platforms for MBAA. This should include a row for each of the analytes assayed by the MBAA array.

reagents.MBAA.txt : User Defined ID	
Description:	The reagent user defined ID is an identifier chosen by the data provider to refer to an assay reagent. The nature of the assay reagent is assay specific and may be an array, an antibody or a typing kit. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	reagent
Database Column:	user_defined_id
Database Column Type:	varchar(100)

reagents.MBAA.txt : Name	
Description:	The reagent name is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The reagent name is an alternate ID that is shared.
Database Table:	reagent
Database Column:	name
Database Column Type:	varchar(100)

reagents.MBAA.txt : Description

Description:	The assay reagent description provides further details on the nature and purpose of the reagent.
Required:	No
Lookup:	None
Comment:	A supplemental description of the assay reagent that expands on its Name and User Defined ID.
Database Table:	reagent
Database Column:	description
Database Column Type:	varchar(4000)

reagents.MBAA.txt : Manufacturer	
Description:	The source of a reagent may be important for evaluating assay results.
Required:	Yes
Lookup:	None
Comment:	The manufacturer is the source of a reagent and may include commercial vendors as well as non-commercial sources (e.g. collaborating labs).
Database Table:	reagent
Database Column:	manufacturer
Database Column Type:	varchar(100)

reagents.MBAA.txt : Catalog Number	
Description:	The reagent's catalog ID provides a reference to the reagent source and description.
Required:	Yes
Lookup:	None

Comment:	If the assay reagent is a commercial product, enter the vendor's catalog identifier. If the reagent is a custom preparation enter 'NA'.
Database Table:	reagent
Database Column:	catalog_number
Database Column Type:	varchar(250)

reagents.MBAA.txt : Lot Number	
Description:	The lot number is helpful to understand possible batch specific differences in assay results.
Required:	No
Lookup:	None
Comment:	The lot number is often provided by a reagent source when the reagent is replenished over time.
Database Table:	reagent
Database Column:	lot_number
Database Column Type:	varchar(250)

reagents.MBAA.txt : Weblink	
Description:	The web link is often the vendor's web site.
Required:	No
Lookup:	None
Comment:	An internet address that may provide details of an assay reagent.
Database Table:	reagent
Database Column:	weblink

Database Column Type:	varchar(250)

reagents.MBAA.txt : Contact	
Description:	If the reagent is from a non-commercial source, the contact information should indicate with whom to communicate to get further details.
Required:	No
Lookup:	None
Comment:	The contact information is particularly helpful when the reagent is not from a commercial vendor.
Database Table:	reagent
Database Column:	contact
Database Column Type:	varchar(1000)

reagents.MBAA.txt : Analyte Reported	
Description:	The analyte describes what is being measured in an assay. The list of values displays common immunology gene symbol and gene symbol terms on the left and their preferred term on the right, each component separated by a semi-colon. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_analyte with preferred column(s) immunology_symbol and short_label and analyte_preferred
Comment:	The analyte is the target (e.g protein, DNA, RNA) that is being assayed by the reagent. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Database Table:	reagent
Database Column:	analyte_reported

Database Column Type:	varchar(100)

51. **reagents.Neutralizing_Antibody_Titer.txt**

The neutralizing antibody titer reagent template defines and annotates reagents used for neutralizing antibody titer including the cell types, and antibodies if an ELISA approach is employed.

reagents.Neutralizing_Antibody_Titer.txt : User Defined ID	
Description:	The reagent user defined ID is an identifier chosen by the data provider to refer to an assay reagent. The nature of the assay reagent is assay specific and may be an array, an antibody or a typing kit. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	reagent
Database Column:	user_defined_id
Database Column Type:	varchar(100)

reagents.Neutralizing_Antibody_Titer.txt : Name	
Description:	The reagent name is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The reagent name is an alternate ID that is shared.
Database Table:	reagent
Database Column:	name
Database Column Type:	varchar(100)

reagents.Neutralizing_Antibody_Titer.txt : Description

Description:	The assay reagent description provides further details on the nature and purpose of the reagent.
Required:	No
Lookup:	None
Comment:	A supplemental description of the assay reagent that expands on its Name and User Defined ID.
Database Table:	reagent
Database Column:	description
Database Column Type:	varchar(4000)

reagents.Neutralizing_Antibody_Titer.txt : Manufacturer	
Description:	The source of a reagent may be important for evaluating assay results.
Required:	Yes
Lookup:	None
Comment:	The manufacturer is the source of a reagent and may include commercial vendors as well as non-commercial sources (e.g. collaborating labs).
Database Table:	reagent
Database Column:	manufacturer
Database Column Type:	varchar(100)

reagents.Neutralizing_Antibody_Titer.txt : Catalog Number	
Description:	The reagent's catalog ID provides a reference to the reagent source and description.
Required:	Yes
Lookup:	None

Comment:	If the assay reagent is a commercial product, enter the vendor's catalog identifier. If the reagent is a custom preparation enter 'NA'.
Database Table:	reagent
Database Column:	catalog_number
Database Column Type:	varchar(250)

reagents.Neutralizing_Antibody_Titer.txt : Lot Number	
Description:	The lot number is helpful to understand possible batch specific differences in assay results.
Required:	No
Lookup:	None
Comment:	The lot number is often provided by a reagent source when the reagent is replenished over time.
Database Table:	reagent
Database Column:	lot_number
Database Column Type:	varchar(250)

reagents.Neutralizing_Antibody_Titer.txt : Weblink	
Description:	The web link is often the vendor's web site.
Required:	No
Lookup:	None
Comment:	An internet address that may provide details of an assay reagent.
Database Table:	reagent
Database Column:	weblink

Database Column Type:	varchar(250)

reagents.Neutralizing_Antibody_Titer.txt : Contact	
Description:	If the reagent is from a non-commercial source, the contact information should indicate with whom to communicate to get further details.
Required:	No
Lookup:	None
Comment:	The contact information is particularly helpful when the reagent is not from a commercial vendor.
Database Table:	reagent
Database Column:	contact
Database Column Type:	varchar(1000)

52. **reagents.Other.txt**

This reagent template is used to define and annotate reagents that are not described by other reagent templates.

reagents.Other.txt : User Defined ID	
Description:	The reagent user defined ID is an identifier chosen by the data provider to refer to an assay reagent. The nature of the assay reagent is assay specific and may be an array, an antibody or a typing kit. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	reagent
Database Column:	user_defined_id
Database Column Type:	varchar(100)

reagents.Other.txt : Name	
Description:	The reagent name is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The reagent name is an alternate ID that is shared.
Database Table:	reagent
Database Column:	name
Database Column Type:	varchar(100)

reagents.Other.txt : Description

Description:	The assay reagent description provides further details on the nature and purpose of the reagent.
Required:	No
Lookup:	None
Comment:	A supplemental description of the assay reagent that expands on its Name and User Defined ID.
Database Table:	reagent
Database Column:	description
Database Column Type:	varchar(4000)

reagents.Other.txt : Manufacturer	
Description:	The source of a reagent may be important for evaluating assay results.
Required:	Yes
Lookup:	None
Comment:	The manufacturer is the source of a reagent and may include commercial vendors as well as non-commercial sources (e.g. collaborating labs).
Database Table:	reagent
Database Column:	manufacturer
Database Column Type:	varchar(100)

reagents.Other.txt : Catalog Number	
Description:	The reagent's catalog ID provides a reference to the reagent source and description.
Required:	Yes
Lookup:	None

Comment:	If the assay reagent is a commercial product, enter the vendor's catalog identifier. If the reagent is a custom preparation enter 'NA'.
Database Table:	reagent
Database Column:	catalog_number
Database Column Type:	varchar(250)

reagents.Other.txt : Lot Number	
Description:	The lot number is helpful to understand possible batch specific differences in assay results.
Required:	No
Lookup:	None
Comment:	The lot number is often provided by a reagent source when the reagent is replenished over time.
Database Table:	reagent
Database Column:	lot_number
Database Column Type:	varchar(250)

reagents.Other.txt : Weblink	
Description:	The web link is often the vendor's web site.
Required:	No
Lookup:	None
Comment:	An internet address that may provide details of an assay reagent.
Database Table:	reagent
Database Column:	weblink

Database Column Type:	varchar(250)

reagents.Other.txt : Contact	
Description:	If the reagent is from a non-commercial source, the contact information should indicate with whom to communicate to get further details.
Required:	No
Lookup:	None
Comment:	The contact information is particularly helpful when the reagent is not from a commercial vendor.
Database Table:	reagent
Database Column:	contact
Database Column Type:	varchar(1000)

53. **reagents.PCR.txt**

The PCR reagent template defines and annotates the reagents used for PCR assays.

reagents.PCR.txt : User Defined ID	
Description:	The reagent user defined ID is an identifier chosen by the data provider to refer to an assay reagent. The nature of the assay reagent is assay specific and may be an array, an antibody or a typing kit. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	reagent
Database Column:	user_defined_id
Database Column Type:	varchar(100)

reagents.PCR.txt : Name	
Description:	The reagent name is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The reagent name is an alternate ID that is shared.
Database Table:	reagent
Database Column:	name
Database Column Type:	varchar(100)

reagents.PCR.txt : Description

Description:	The assay reagent description provides further details on the nature and purpose of the reagent.
Required:	No
Lookup:	None
Comment:	A supplemental description of the assay reagent that expands on its Name and User Defined ID.
Database Table:	reagent
Database Column:	description
Database Column Type:	varchar(4000)

reagents.PCR.txt : Manufacturer	
Description:	The source of a reagent may be important for evaluating assay results.
Required:	Yes
Lookup:	None
Comment:	The manufacturer is the source of a reagent and may include commercial vendors as well as non-commercial sources (e.g. collaborating labs).
Database Table:	reagent
Database Column:	manufacturer
Database Column Type:	varchar(100)

reagents.PCR.txt : Catalog Number	
Description:	The reagent's catalog ID provides a reference to the reagent source and description.
Required:	Yes
Lookup:	None

Comment:	If the assay reagent is a commercial product, enter the vendor's catalog identifier. If the reagent is a custom preparation enter 'NA'.
Database Table:	reagent
Database Column:	catalog_number
Database Column Type:	varchar(250)

reagents.PCR.txt : Lot Number	
Description:	The lot number is helpful to understand possible batch specific differences in assay results.
Required:	No
Lookup:	None
Comment:	The lot number is often provided by a reagent source when the reagent is replenished over time.
Database Table:	reagent
Database Column:	lot_number
Database Column Type:	varchar(250)

reagents.PCR.txt : Weblink	
Description:	The web link is often the vendor's web site.
Required:	No
Lookup:	None
Comment:	An internet address that may provide details of an assay reagent.
Database Table:	reagent
Database Column:	weblink

Database Column Type:	varchar(250)

reagents.PCR.txt : Contact	
Description:	If the reagent is from a non-commercial source, the contact information should indicate with whom to communicate to get further details.
Required:	No
Lookup:	None
Comment:	The contact information is particularly helpful when the reagent is not from a commercial vendor.
Database Table:	reagent
Database Column:	contact
Database Column Type:	varchar(1000)

54. **reagents.Sequencing.txt**

The sequencing reagent template defines and annotates the assay platforms used for sequencing.

reagents.Sequencing.txt : User Defined ID	
Description:	The reagent user defined ID is an identifier chosen by the data provider to refer to an assay reagent. The nature of the assay reagent is assay specific and may be an array, an antibody or a typing kit. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	reagent
Database Column:	user_defined_id
Database Column Type:	varchar(100)

reagents.Sequencing.txt : Name	
Description:	The reagent name is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The reagent name is an alternate ID that is shared.
Database Table:	reagent
Database Column:	name
Database Column Type:	varchar(100)

reagents.Sequencing.txt : Description

Description:	The assay reagent description provides further details on the nature and purpose of the reagent.
Required:	No
Lookup:	None
Comment:	A supplemental description of the assay reagent that expands on its Name and User Defined ID.
Database Table:	reagent
Database Column:	description
Database Column Type:	varchar(4000)

reagents.Sequencing.txt : Manufacturer	
Description:	The source of a reagent may be important for evaluating assay results.
Required:	Yes
Lookup:	None
Comment:	The manufacturer is the source of a reagent and may include commercial vendors as well as non-commercial sources (e.g. collaborating labs).
Database Table:	reagent
Database Column:	manufacturer
Database Column Type:	varchar(100)

reagents.Sequencing.txt : Catalog Number	
Description:	The reagent's catalog ID provides a reference to the reagent source and description.
Required:	Yes
Lookup:	None

Comment:	If the assay reagent is a commercial product, enter the vendor's catalog identifier. If the reagent is a custom preparation enter 'NA'.
Database Table:	reagent
Database Column:	catalog_number
Database Column Type:	varchar(250)

reagents.Sequencing.txt : Lot Number	
Description:	The lot number is helpful to understand possible batch specific differences in assay results.
Required:	No
Lookup:	None
Comment:	The lot number is often provided by a reagent source when the reagent is replenished over time.
Database Table:	reagent
Database Column:	lot_number
Database Column Type:	varchar(250)

reagents.Sequencing.txt : Weblink	
Description:	The web link is often the vendor's web site.
Required:	No
Lookup:	None
Comment:	An internet address that may provide details of an assay reagent.
Database Table:	reagent
Database Column:	weblink

Database Column Type:	varchar(250)

reagents.Sequencing.txt : Contact	
Description:	If the reagent is from a non-commercial source, the contact information should indicate with whom to communicate to get further details.
Required:	No
Lookup:	None
Comment:	The contact information is particularly helpful when the reagent is not from a commercial vendor.
Database Table:	reagent
Database Column:	contact
Database Column Type:	varchar(1000)

55. **reagents.Virus_Neutralization.txt**

The virus neutralization reagent template defines and annotates reagents used for virus neutralization including the cell types, and antibodies if an ELISA approach is employed.

reagents.Virus_Neutralization.txt : User Defined ID	
Description:	The reagent user defined ID is an identifier chosen by the data provider to refer to an assay reagent. The nature of the assay reagent is assay specific and may be an array, an antibody or a typing kit. This ID may be referenced by other data records (e.g. experiment sample). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	reagent
Database Column:	user_defined_id
Database Column Type:	varchar(100)

reagents.Virus_Neutralization.txt : Name	
Description:	The reagent name is not referenced by other data records.
Required:	No
Lookup:	None
Comment:	The reagent name is an alternate ID that is shared.
Database Table:	reagent
Database Column:	name
Database Column Type:	varchar(100)

reagents.Virus_Neutralization.txt : Description

Description:	The assay reagent description provides further details on the nature and purpose of the reagent.
Required:	No
Lookup:	None
Comment:	A supplemental description of the assay reagent that expands on its Name and User Defined ID.
Database Table:	reagent
Database Column:	description
Database Column Type:	varchar(4000)

reagents.Virus_Neutralization.txt : Manufacturer	
Description:	The source of a reagent may be important for evaluating assay results.
Required:	Yes
Lookup:	None
Comment:	The manufacturer is the source of a reagent and may include commercial vendors as well as non-commercial sources (e.g. collaborating labs).
Database Table:	reagent
Database Column:	manufacturer
Database Column Type:	varchar(100)

reagents.Virus_Neutralization.txt : Catalog Number	
Description:	The reagent's catalog ID provides a reference to the reagent source and description.
Required:	Yes
Lookup:	None

Comment:	If the assay reagent is a commercial product, enter the vendor's catalog identifier. If the reagent is a custom preparation enter 'NA'.
Database Table:	reagent
Database Column:	catalog_number
Database Column Type:	varchar(250)

reagents.Virus_Neutralization.txt : Lot Number	
Description:	The lot number is helpful to understand possible batch specific differences in assay results.
Required:	No
Lookup:	None
Comment:	The lot number is often provided by a reagent source when the reagent is replenished over time.
Database Table:	reagent
Database Column:	lot_number
Database Column Type:	varchar(250)

reagents.Virus_Neutralization.txt : Weblink	
Description:	The web link is often the vendor's web site.
Required:	No
Lookup:	None
Comment:	An internet address that may provide details of an assay reagent.
Database Table:	reagent
Database Column:	weblink

Database Column Type:	varchar(250)

reagents.Virus_Neutralization.txt : Contact	
Description:	If the reagent is from a non-commercial source, the contact information should indicate with whom to communicate to get further details.
Required:	No
Lookup:	None
Comment:	The contact information is particularly helpful when the reagent is not from a commercial vendor.
Database Table:	reagent
Database Column:	contact
Database Column Type:	varchar(1000)

56. **RNA_SEQ_Results.txt**

The RNA sequencing Transcripts results experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together.

RNA_SEQ_Results.txt : Expsample ID	
Description:	The experiment sample identifier must be stored in ImmPort or in the experimentsamples.txt template.
Required:	Yes
Lookup:	None
Comment:	Please enter either an experiment sample user defined ID or ImmPort accession.
Database Table:	rna_seq_result And expsample_2_file_info
Database Column:	expsample_accession
Database Column Type:	varchar(15)

RNA_SEQ_Results.txt : Reference Transcript ID	
Description:	The NCBI ID for the transcript/gene. Either the NCBI ID or the Ensembl ID must be provided.
Required:	Yes
Lookup:	None
Comment:	The ID for the transcript/gene. Either the NCBI ID or the Ensembl ID must be provided.
Database Table:	rna_seq_result
Database Column:	reference_transcript_id
Database Column Type:	varchar(100)

RNA_SEQ_Results.txt : Repository Name

Description:	The public repository name for the transcript (for example, Ensembl or NCBI Gene).
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_public_repository
Comment:	The public repository name for the transcript (for example, Ensembl or NCBI Gene).
Database Table:	rna_seq_result
Database Column:	repository_name
Database Column Type:	varchar(50)

RNA_SEQ_Results.txt : Transcript Type Reported	
Description:	The type of transcript reported.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_transcript_type with preferred column(s) transcript_preferred
Comment:	The type of transcript reported.
Database Table:	rna_seq_result
Database Column:	transcript_type_reported
Database Column Type:	varchar(100)

RNA_SEQ_Results.txt : Result Unit Reported	
Description:	The unit for the result_value.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_rna_sequence_result_unit_type with preferred column(s) result_unit_preferred

Comment:	The unit for the result value.
Database Table:	rna_seq_result
Database Column:	result_unit_reported
Database Column Type:	varchar(100)

RNA_SEQ_Results.txt : Value Reported	
Description:	The transcripts or gene count for the transcript.
Required:	Yes
Lookup:	None
Comment:	The count or gene count for the transcript.
Database Table:	rna_seq_result
Database Column:	value_reported
Database Column Type:	varchar(50)

RNA_SEQ_Results.txt : Comments	
Description:	Comments captures additional descriptive information that is added to the result.
Required:	No
Lookup:	None
Comment:	Comments captures additional descriptive information that is added to the result.
Database Table:	rna_seq_result
Database Column:	comments

Database Column Type:	varchar(500)

57. **standardCurves.txt**

The standard curve template defines and annotates the standard curves derived from the control sample's concentration and MFI to interpret the experiment sample's MFI in terms of its analyte concentration. This template requires that the standard curve be always new, while the experiment can be new or pre-defined. The standard curve is the key the template and must be unique.

57.1. Standard Curve Meta DataColumns

The Standard Curve Meta Data Columns include the columns for the combined entity Standard Curve.

Standard Curve Meta Data Column standardCurves.txt : Standard Curve ID	
Description:	The Standard Curve user defined ID is an identifier chosen by the data provider to refer to a Standard Curve. This ID may be referenced by other data records (e.g. MBAA results). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	standard_curve
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Standard Curve Meta Data Column standardCurves.txt : Formula	
Description:	The formula used to calculate the standard curve from the input data.
Conditional Required:	Yes for **New Standard Curve**
Lookup:	None
Comment:	The formula used to calculate the standard curve from the input data.
Database Table:	standard_curve
Database Column:	formula

Database Column Type:	varchar(500)

Standard Curve Meta Data Column standardCurves.txt : Analyte Reported	
Description:	The molecule or entity being measured. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Conditional Required:	Yes for **New Standard Curve**
Preferred Lookup:	Please refer to Appendix A - lk_analyte with preferred column(s) immunology_symbol and short_label and analyte_preferred
Comment:	The molecule or entity being measured. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Database Table:	standard_curve
Database Column:	analyte_reported
Database Column Type:	varchar(100)

Standard Curve Meta Data Column standardCurves.txt : Assay ID	
Description:	The assay ID represents the plate or array ID where standard curves, control samples, and experiment samples were collected and assayed. This ID will be used to link standard curves, control samples, and experiment samples results.
Conditional Required:	Yes for **New Standard Curve**
Lookup:	None
Comment:	The assay ID represents the plate or array ID where standard curves, control samples, and experiment samples were collected and assayed. This ID will be used to link standard curves, control samples, and experiment samples results.
Database Table:	standard_curve
Database Column:	assay_id

Database Column Type:	varchar(100)

Standard Curve Meta Data Column standardCurves.txt : Assay Group ID	
Description:	The assay group ID represents a collection of plates or arrays. This ID may be used to link collections of standard curves, control samples, and experiment samples results.
Required:	No
Lookup:	None
Comment:	The assay group ID represents a collection of plates or arrays. This ID may be used to link collections of standard curves, control samples, and experiment samples results.
Database Table:	standard_curve
Database Column:	assay_group_id
Database Column Type:	varchar(100)

Standard Curve Meta Data Column standardCurves.txt : Lower Limit	
Description:	A number is expected.
Conditional Required:	Yes for **New Standard Curve**
Lookup:	None
Comment:	Lower limit value established by the standard curve.
Database Table:	standard_curve
Database Column:	lower_limit
Database Column Type:	varchar(100)

Standard Curve Meta Data Column standardCurves.txt : Lower Limit Unit	
Description:	Lower limit unit established by the standard curve.
Conditional Required:	Yes for **New Standard Curve**
Lookup:	None
Comment:	Lower limit unit established by the standard curve.
Database Table:	standard_curve
Database Column:	lower_limit_unit
Database Column Type:	varchar(100)

Standard Curve Meta Data Column standardCurves.txt : Upper Limit	
Description:	A number is expected.
Conditional Required:	Yes for **New Standard Curve**
Lookup:	None
Comment:	Upper limit value established by the standard curve.
Database Table:	standard_curve
Database Column:	upper_limit
Database Column Type:	varchar(100)

Standard Curve Meta Data Column standardCurves.txt : Upper Limit Unit	
Description:	Upper limit value established by the standard curve.
Conditional Required:	Yes for **New Standard Curve**
Lookup:	None

Comment:	Upper limit value established by the standard curve.
Database Table:	standard_curve
Database Column:	upper_limit_unit
Database Column Type:	varchar(100)

Standard Curve Meta Data Column standardCurves.txt : ImmPort Template?	
Description:	The format of the result file depends on the assay type. ImmPort supports results templates (MBAA_Results.txt) for some of the commonly used immunological assay methods. These template facilitate the sharing and re-use of results data in a standard format. If the result file is the ImmPort results template (strongly recommended by NIAID DAIT), choose 'Yes' from the drop down list and do not include a file name in the "Result File Name" column. If the result file is not an ImmPort results template, choose 'No' from the drop down list and include a file name in the "Result File Name" column.
Conditional Required:	Yes for **New Standard Curve**
Controlled Lookup:	Please refer to Appendix A - lk_yes_no
Comment:	The format of the result file depends on the assay type. ImmPort supports results templates (MBAA_Results.txt) for some of the commonly used immunological assay methods. These template facilitate the sharing and re-use of results data in a standard format. If the result file is the ImmPort results template (strongly recommended by NIAID DAIT), choose 'Yes' from the drop down list and do not include a file name in the "Result File Name" column. If the result file is not an ImmPort results template, choose 'No' from the drop down list and include a file name in the "Result File Name" column.

Standard Curve Meta Data Column standardCurves.txt : Result File Name	
Description:	Enter the full result file name including file extension. The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	Enter the full result file name including file extension. The file size name limit is 240 characters.

Standard Curve Meta Data Column standardCurves.txt : Additional Result File Names	
Description:	See the ImmPort Data Upload Guide for details on where MBAA bead level files are stored depending on the assay platform used. Separate file names by a semi-colon (;). The file size name limit is 240 characters.
Required:	No
Lookup:	None
Comment:	HIPC recommends including bead level result files if they are available. The file size name limit is 240 characters.

57.2. Experiment Meta DataColumns

The Experiment Meta Data Columns include the columns for the combined entity Experiment.

Experiment Meta Data Column standardCurves.txt : Experiment ID	
Description:	The experiment identifier must be stored in ImmPort or in the experiments.txt template.
Required:	Yes
Lookup:	None
Comment:	Please enter either a experiment user defined ID or ImmPort accession.
Database Table:	experiment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Experiment Meta Data Column standardCurves.txt : Study ID	
Description:	An experiment may be linked to a single study.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a study user defined ID or ImmPort accession.
Database Table:	experiment

Database Column:	study_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column standardCurves.txt : Protocol ID(s)	
Description:	Please enter either a protocol user defined ID or ImmPort accession for a protocol that describes how the sample was derived and prepared. One or more identifiers can be entered per sample. Separate identifiers by semicolon (;).
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	Please enter either a protocol user defined ID or ImmPort accession.
Database Table:	experiment_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

Experiment Meta Data Column standardCurves.txt : Name	
Description:	The experiment name is not referenced by other data records.
Conditional Required:	Yes for **New Experiment**
Lookup:	None
Comment:	The experiment name is an alternate identifier that is visible when the sample is shared.
Database Table:	experiment
Database Column:	name
Database Column Type:	varchar(100)

Experiment Meta Data Column standardCurves.txt : Description	
Description:	The experiment description is used to describe details of the experiment not captured in other columns.
Required:	No
Lookup:	None
Comment:	The experiment description is used to describe details of the experiment not captured in other columns.
Database Table:	experiment
Database Column:	description
Database Column Type:	varchar(4000)

Experiment Meta Data Column standardCurves.txt : Measurement Technique	
Description:	The measurement technique describes the assay method.
Conditional Required:	Yes for **New Experiment**
Controlled Lookup:	Please refer to Appendix A - lk_exp_measurement_tech
Comment:	Choose from a drop down list.
Database Table:	experiment
Database Column:	measurement_technique
Database Column Type:	varchar(50)

58. **study_design_edit.txt**

The optional basic study design template defines and annotates elements of a study that are optional when it is initially defined (e.g. weblinks, publications) and for which updates are available after the initial design is uploaded. Use the study_design_edit template to add additional information for a study after a study is defined in ImmPort. If any of the following sections are not used they should be deleted from the template: arm_or_cohort, subject_2_arm_or_cohort, period, planned_visit, study_personnel, inclusion_exclusion, study_2_protocol prior to uploading the template.

58.1. Study_categorization

The compound template Study_categorization is optional.

Study_categorization : Study ID	
Description:	The study ID can be either the study user defined ID or a study accession.
Required:	Yes
Lookup:	None
Comment:	The study ID can be either the study user defined ID or a study accession.
Database Table:	study_categorization
Database Column:	study_accession
Database Column Type:	varchar(15)

Study_categorization : Research Focus	
Description:	A research focus for the study from the drop down list
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_research_focus
Comment:	Please use the drop down list
Database Table:	study_categorization
Database Column:	research_focus
Database Column Type:	varchar(50)

58.2. Study_2_condition_or_disease

The compound template Study_2_condition_or_disease is optional.

Study_2_condition_or_disease : Study ID	
Description:	The study ID can be either the study user defined ID or a study accession.
Required:	Yes
Lookup:	None
Comment:	The study ID can be either the study user defined ID or a study accession.
Database Table:	study_2_condition_or_disease
Database Column:	study_accession
Database Column Type:	varchar(15)

Study_2_condition_or_disease : Condition Reported	
Description:	The condition(s)/disease(s) that is (are) being researched or evaluated in the study. Please select condition or disease from the list provided if the condition or disease matches yours or enter a condition or disease if there is not an appropriate one provided. Values provided by the user are further checked against the pref mapping table lk_study_condition_pref_mappng.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_disease_condition with preferred column(s) condition_preferred
Comment:	The condition(s)/disease(s) that is (are) being researched or evaluated in the study. Please select condition or disease from the list provided if the condition or disease matches yours or enter a condition or disease if there is not an appropriate one provided. Values provided by the user are further checked against the pref mapping table lk_study_condition_pref_mappng.
Database Table:	study_2_condition_or_disease
Database Column:	condition_reported
Database Column Type:	varchar(550)

58.3. Study_data_release

The compound template Study_data_release is optional.

Study_data_release : Study ID	
Description:	The study ID can be either the study user defined ID or a study accession.
Required:	Yes
Lookup:	None
Comment:	The study ID can be either the study user defined ID or a study accession.
Database Table:	study_data_release
Database Column:	study_accession
Database Column Type:	varchar(15)

Study_data_release : Data Release Version	
Description:	The version of the study data release. It is a positive integer.
Required:	Yes
Lookup:	None
Comment:	The version of the study data release. It is a positive integer.
Database Table:	study_data_release
Database Column:	data_release_version
Database Column Type:	integer

Study_data_release : Data Release Date

Description:	The date format is either dd-MMM-yy or dd-MMM-yyyy where day (dd) is one or two digits 1..31 appropriate to the month, month (MMM) is case-insensitive value (Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec), and year is either (yy) two digits, for example 05 means 2005, and 96 means 1996, or (yyyy) is four digit year, for example 2005.
Required:	Yes
Lookup:	None
Comment:	The release date for the given version (Data Release Version) study. The date format is either dd-MMM-yy or dd-MMM-yyyy.
Database Table:	study_data_release
Database Column:	data_release_date
Database Column Type:	date

Study_data_release : Data Release Status	
Description:	The status of the data release for the study. Either it is the 'Initial' release or an 'Updated' release.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_release_status
Comment:	The status of the data release for the study. Either it is the 'Initial' release or an 'Updated' release.
Database Table:	study_data_release
Database Column:	status
Database Column Type:	varchar(50)

58.4. Study_file

The compound template Study_file is optional.

Study_file : Study ID

Description:	The study ID can be either the study user defined ID or a study accession.
Required:	Yes
Lookup:	None
Comment:	The study ID can be either the study user defined ID or a study accession.
Database Table:	study_file
Database Column:	study_accession
Database Column Type:	varchar(15)

Study_file : File Name	
Description:	If there are additional files (e.g. as data dictionaries, CRFs, custom formatted lab tests or assements) that should be linked to the study please indicate them in this block. Insert rows in the template to link additional files to the study. The file size name limit is 250 characters. For a given study, all file names for study_file must be unique.
Required:	Yes
Lookup:	None
Comment:	The name of the file, including file extension, that is to be linked to the study. The file size name limit is 250 characters. For a given study, all file names for study_file must be unique.
Database Table:	study_file
Database Column:	file_name
Database Column Type:	varchar(250)

Study_file : Description	
Description:	A brief description of the file.
Required:	Yes
Lookup:	None

Comment:	A brief description of the file.
Database Table:	study_file
Database Column:	description
Database Column Type:	varchar(4000)

Study_file : Study File Type	
Description:	Additional study data or study description are current preferred terms.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_study_file_type
Comment:	Please choose from the drop down list.
Database Table:	study_file
Database Column:	type
Database Column Type:	varchar(20)

58.5. Study_image

The compound template Study_image is optional.

Study_image : Study ID	
Description:	The study ID can be either the study user defined ID or a study accession.
Required:	Yes
Lookup:	None
Comment:	The study ID can be either the study user defined ID or a study accession.
Database Table:	study_image

Database Column:	study_accession
Database Column Type:	varchar(15)

Study_image : Image Filename	
Description:	The name of the file containing the study image for the study. The file size name limit is 250 characters. For a given study, all file names for study_file must be unique.
Required:	Yes
Lookup:	None
Comment:	The name of the file containing the study image for the study.
Database Table:	study_image
Database Column:	image_filename
Database Column Type:	varchar(250)

Study_image : Name	
Description:	The name or title for the study schematic.
Required:	Yes
Lookup:	None
Comment:	The name or title for the study schematic.
Database Table:	study_image
Database Column:	name
Database Column Type:	varchar(100)

Study_image : Description	
Description:	A brief description of the study image file.
Required:	No
Lookup:	None
Comment:	A brief description of the study image file.
Database Table:	study_image
Database Column:	description
Database Column Type:	varchar(4000)

58.6. Study_link

The compound template Study_link is optional.

Study_link : Study ID	
Description:	The study ID can be either the study user defined ID or a study accession.
Required:	Yes
Lookup:	None
Comment:	The study ID can be either the study user defined ID or a study accession.
Database Table:	study_link
Database Column:	study_accession
Database Column Type:	varchar(15)

Study_link : Name	
Description:	The name of the website to which the link refers.
Required:	Yes
Lookup:	None

Comment:	The name of the website to which the link refers.
Database Table:	study_link
Database Column:	name
Database Column Type:	varchar(100)

Study_link : Value	
Description:	If this is a clinical trial, please include the clinicalTrial.gov URL.
Required:	Yes
Lookup:	None
Comment:	Define websites that are linked to the study. Insert rows in the template to define additional websites linked to the study.
Database Table:	study_link
Database Column:	value
Database Column Type:	varchar(2000)

58.7. Study_pubmed

The compound template Study_pubmed is optional.

Study_pubmed : Study ID	
Description:	The study ID can be either the study user defined ID or a study accession.
Required:	Yes
Lookup:	None
Comment:	The study ID can be either the study user defined ID or a study accession.
Database Table:	study_pubmed

Database Column:	study_accession
Database Column Type:	varchar(15)

Study_pubmed : Pubmed ID	
Description:	The Pubmed or PubMedCentral identifier of an article that includes data from this study.
Required:	Yes
Lookup:	None
Comment:	The Pubmed or PubMedCentral identifier of an article that includes data from this study.
Database Table:	study_pubmed
Database Column:	pubmed_id
Database Column Type:	varchar(16)

Study_pubmed : DOI	
Description:	Digital Object Identifier is a persistent identifier or handle used to uniquely identify an object. ImmPort DOIs are generated by DataCite (https://www.datacite.org/)
Required:	No
Lookup:	None
Comment:	Digital Object Identifier is a persistent identifier or handle used to uniquely identify an object.
Database Table:	study_pubmed
Database Column:	doi
Database Column Type:	varchar(100)

Study_pubmed : Title	
Description:	The title of an article that includes data from this study.
Required:	No
Lookup:	None
Comment:	The title of an article that includes data from this study.
Database Table:	study_pubmed
Database Column:	title
Database Column Type:	varchar(4000)

Study_pubmed : Journal	
Description:	The journal name that publishes an article that includes data from this study.
Required:	No
Lookup:	None
Comment:	The journal name that publishes an article that includes data from this study.
Database Table:	study_pubmed
Database Column:	journal
Database Column Type:	varchar(250)

Study_pubmed : Year	
Description:	This is the description of the field Year. Please refer to the user guide for more description. This description can also be found in the user document
Required:	No
Lookup:	None

Comment:	
Database Table:	study_pubmed
Database Column:	year
Database Column Type:	varchar(4)

Study_pubmed : Month	
Description:	This is the description of the field Month. Please refer to the user guide for more description. This description can also be found in the user document
Required:	No
Lookup:	None
Comment:	
Database Table:	study_pubmed
Database Column:	month
Database Column Type:	varchar(12)

Study_pubmed : Issue	
Description:	This is the description of the field Issue. Please refer to the user guide for more description. This description can also be found in the user document
Required:	No
Lookup:	None
Comment:	
Database Table:	study_pubmed
Database Column:	issue

Database Column Type:	varchar(20)

Study_pubmed : Pages	
Description:	This is the description of the field Pages. Please refer to the user guide for more description. This description can also be found in the user document
Required:	No
Lookup:	None
Comment:	
Database Table:	study_pubmed
Database Column:	pages
Database Column Type:	varchar(20)

Study_pubmed : Authors	
Description:	This is the description of the field Authors. Please refer to the user guide for more description. This description can also be found in the user document
Required:	No
Lookup:	None
Comment:	
Database Table:	study_pubmed
Database Column:	authors
Database Column Type:	varchar(4000)

58.8. Arm_or_cohort

The compound template Arm_or_cohort is optional.

Arm_or_cohort : Study ID	
Description:	The study ID can be either the study user defined ID or a study accession.
Required:	Yes
Lookup:	None
Comment:	The study ID can be either the study user defined ID or a study accession.
Database Table:	arm_or_cohort
Database Column:	study_accession
Database Column Type:	varchar(15)

Arm_or_cohort : User Defined ID	
Description:	The study's arm(s) or cohort(s) group subjects by criteria relevant to the study (e.g. age, condition) and/or treatments or interventions. Insert rows in the template to define additional arms or cohorts linked to the study.
Required:	Yes
Lookup:	None
Comment:	The arm or cohort user defined ID is an identifier chosen by the data provider to refer to a subject grouping in the study document. This ID may be referenced by other data records (e.g. subjects). The user defined ID is not shared.
Database Table:	arm_or_cohort
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Arm_or_cohort : Name	
Description:	The arm or cohort name is not referenced by other data records.
Required:	Yes
Lookup:	None

Comment:	The arm or cohort name is an alternate identifier that is visible when the study is shared.
Database Table:	arm_or_cohort
Database Column:	name
Database Column Type:	varchar(100)

Arm_or_cohort : Description	
Description:	The description should expand any abbreviations used in the arm or cohort name. For example for an observational study with a cohort whose name was "ADEH+", the description would be "Atopic dermatitis with eczema herpeticum".
Required:	Yes
Lookup:	None
Comment:	The description should expand any abbreviations used in the arm or cohort name.
Database Table:	arm_or_cohort
Database Column:	description
Database Column Type:	varchar(4000)

Arm_or_cohort : Type	
Description:	For an interventional study, the type defines the treatment/control attributes of the arms. The attributes are selected from the values listed below (a study may have more than one arm of a given value). Clinical studies often use the following terms. Experimental - Arm for procedure or drug being evaluated. Active Comparator - arm receiving "standard of care" treatment. Placebo Comparator - arm receiving placebo treatment. Sham Comparator - arm receiving a sham procedure such as a surgery or a sham device. No Intervention - arm receiving neither "standard of care" treatment a placebo, or sham procedure or device. For an observational study, the type should be Observational - All arms are observing differences in cohorts
Required:	No

Lookup:	None
Comment:	Example clinical study values: Observational, Experimental, Active Comparator, Placebo Comparator, Sham Comparator
Database Table:	arm_or_cohort
Database Column:	type
Database Column Type:	varchar(20)

58.9. Arm_2_subject

The compound template Arm_2_subject is optional.

Arm_2_subject : Subject ID	
Description:	The subject ID can be either subject user defined ID or a subject accession.
Required:	Yes
Lookup:	None
Comment:	The subject ID can be either subject user defined ID or a subject accession.
Database Table:	arm_2_subject
Database Column:	subject_accession
Database Column Type:	varchar(15)

Arm_2_subject : Arm Or Cohort ID	
Description:	A subject may be assigned to a single arm within a study. To link a subject to more than one study's arm, create a new record for each subject to arm link.
Required:	Yes
Lookup:	None
Comment:	The arm or cohort ID can be either arm or cohort user defined ID or an arm or cohort accession.

Database Table:	arm_2_subject
Database Column:	arm_accession
Database Column Type:	varchar(15)

Arm_2_subject : Min Subject Age	
Description:	The subject age at the outset of the study may be determined form one of several study milestones as indicated in the Age Event column.
Required:	Yes
Lookup:	None
Comment:	Please enter a number.
Database Table:	arm_2_subject
Database Column:	min_subject_age
Database Column Type:	float

Arm_2_subject : Max Subject Age	
Description:	The subject age at the end of the study may be determined form one of several study milestones.
Required:	No
Lookup:	None
Comment:	Please enter a number.
Database Table:	arm_2_subject
Database Column:	max_subject_age
Database Column Type:	float

Arm_2_subject : Age Unit	
Description:	A list of preferred terms is available.. The age unit must conform to the age unit assigned to the study.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list. The age unit must conform to the age unit assigned to the study.
Database Table:	arm_2_subject
Database Column:	age_unit
Database Column Type:	varchar(50)

Arm_2_subject : Age Event	
Description:	A list of preferred terms is available.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_age_event
Comment:	Please choose from the drop down list.
Database Table:	arm_2_subject
Database Column:	age_event
Database Column Type:	varchar(50)

Arm_2_subject : Age Event Specify	
Description:	This column supports providing study milestones for subject's age determination that ImmPort does not support.

Required:	No
Lookup:	None
Comment:	If "Age Event" = Other, this field specifies the age event (free text). Otherwise, leave this column blank.
Database Table:	arm_2_subject
Database Column:	age_event_specify
Database Column Type:	varchar(50)

Arm_2_subject : Subject Phenotype	
Description:	The subject phenotype captures key aspects of the subject's disposition for the study.
Required:	No
Lookup:	None
Comment:	Enter a description of the subject.
Database Table:	arm_2_subject
Database Column:	subject_phenotype
Database Column Type:	varchar(200)

Arm_2_subject : Subject Location	
Description:	A list of subject locations is available.
Required:	No
Controlled Lookup:	Please refer to Appendix A - lk_subject_location
Comment:	Please choose from the drop down list.
Database Table:	arm_2_subject

Database Column:	subject_location
Database Column Type:	varchar(50)

58.10. Period

The compound template Period is optional.

Period : Study ID	
Description:	The study ID can be either the study user defined ID or a study accession.
Required:	Yes
Lookup:	None
Comment:	The study ID can be either the study user defined ID or a study accession.
Database Table:	period
Database Column:	study_accession
Database Column Type:	varchar(15)

Period : User Defined ID	
Description:	The period user defined ID is an identifier chosen by the data provider to refer to a period within the study. This ID may be referenced by other data records (e.g. planned visit). The user defined ID is not shared. In many non-human research studies, there is a single period that spans the duration of the study. Insert rows in the template to define additional periods linked to the study.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	period
Database Column:	user_defined_id

Database Column Type:	varchar(100)

Period : Name	
Description:	The period title is not referenced by other data records.
Required:	Yes
Lookup:	None
Comment:	The period title is an alternate identifier that is visible when the protocol is shared.
Database Table:	period
Database Column:	name
Database Column Type:	varchar(100)

Period : Order Number	
Description:	This is a positive whole number value.
Required:	Yes
Lookup:	None
Comment:	The order of the period within a study.
Database Table:	period
Database Column:	order_number
Database Column Type:	integer

58.11. Planned_visit

The compound template Planned_visit is optional.

Planned_visit : Study ID	
Description:	The study ID can be either the study user defined ID or a study accession.
Required:	No
Lookup:	None
Comment:	The study ID can be either the study user defined ID or a study accession.
Database Table:	planned_visit
Database Column:	study_accession
Database Column Type:	varchar(15)

Planned_visit : User Defined ID	
Description:	The planned visit user defined ID is an identifier chosen by the data provider to refer to a protocol document. This ID may be referenced by other data records (e.g. biological samples). The user defined ID is not shared. Insert rows in the template to define additional planned visits linked to the study.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	planned_visit
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Planned_visit : Name	
Description:	the visit name should indicate the purpose of the visit (e.g. screening, assessment, inoculation, sample drawn). The visit name is not referenced by other data records.
Required:	Yes

Lookup:	None
Comment:	The visit name is an alternate identifier that is visible when the protocol is shared.
Database Table:	planned_visit
Database Column:	name
Database Column Type:	varchar(100)

Planned_visit : Order Number	
Description:	This is a positive whole number value.
Required:	Yes
Lookup:	None
Comment:	The order of the visit within the study design schedule.
Database Table:	planned_visit
Database Column:	order_number
Database Column Type:	integer

Planned_visit : Min Start Day	
Description:	This is a positive or negative numeric value.
Required:	Yes
Lookup:	None
Comment:	The minimum start day for a visit as defined in the study schedule.
Database Table:	planned_visit
Database Column:	min_start_day

Database Column Type:	float

Planned_visit : Max Start Day	
Description:	This is a positive or negative numeric value. If no value is entered, the maximum start day will be set equal to the minimum start day.
Required:	No
Lookup:	None
Comment:	The maximum start day for a visit as defined in the study schedule.
Database Table:	planned_visit
Database Column:	max_start_day
Database Column Type:	float

Planned_visit : Start Rule	
Description:	Enter a start rule only if it is more interesting than "subject has arrived for a scheduled visit".
Required:	No
Lookup:	None
Comment:	Enter a start rule only if it is more interesting than "subject has arrived for a scheduled visit".
Database Table:	planned_visit
Database Column:	start_rule
Database Column Type:	varchar(256)

Planned_visit : End Rule

Description:	Enter an end rule only if it is more interesting than "subject has arrived for a scheduled visit".
Required:	No
Lookup:	None
Comment:	Enter an end rule only if it is more interesting than "subject has arrived for a scheduled visit".
Database Table:	planned_visit
Database Column:	end_rule
Database Column Type:	varchar(256)

Planned_visit : Period ID	
Description:	The user defined period ID or period accession.
Required:	Yes
Lookup:	None
Comment:	The period ID can be either a period user defined ID or a period accession.
Database Table:	planned_visit
Database Column:	period_accession
Database Column Type:	varchar(15)

58.12. Study_personnel

The compound template Study_personnel is optional.

Study_personnel : Study ID	
Description:	The study ID can be either the study user defined ID or a study accession.
Required:	Yes
Lookup:	None

Comment:	The study ID can be either the study user defined ID or a study accession.
Database Table:	study_personnel
Database Column:	study_accession
Database Column Type:	varchar(15)

Study_personnel : User Defined ID	
Description:	The personnel user defined ID is an identifier chosen by the data provider to refer to personnel who may be contacted for more details about the study document. If more than one study personnel record is to be defined, copy the block of rows from Study_Personnel_ID to Site_Name for each additional study personnel record.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	study_personnel
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Study_personnel : Honorific	
Description:	Usually, the education achievement level of the person.
Required:	No
Lookup:	None
Comment:	Usually, the education achievement level of the person.
Database Table:	study_personnel

Database Column:	honorific
Database Column Type:	varchar(20)

Study_personnel : Last Name	
Description:	The last name of the study personnel being described.
Required:	Yes
Lookup:	None
Comment:	The last name of the study personnel being described.
Database Table:	study_personnel
Database Column:	last_name
Database Column Type:	varchar(40)

Study_personnel : First Name	
Description:	The first name of the study personnel being described.
Required:	Yes
Lookup:	None
Comment:	The first name of the study personnel being described.
Database Table:	study_personnel
Database Column:	first_name
Database Column Type:	varchar(40)

Study_personnel : Suffixes

Description:	Suffixes that are part of the study personnel's name being described.
Required:	No
Lookup:	None
Comment:	Suffixes that are part of the study personnel's name being described.
Database Table:	study_personnel
Database Column:	suffixes
Database Column Type:	varchar(40)

Study_personnel : Organization	
Description:	The organization with whom the study personnel being described is affiliated.
Required:	Yes
Lookup:	None
Comment:	The organization with whom the study personnel being described is affiliated.
Database Table:	study_personnel
Database Column:	organization
Database Column Type:	varchar(125)

Study_personnel : ORCID ID	
Description:	ORCID (Open Researcher and Contributor Identification), a non-profit organization that promotes the use of its unique digital identifier to connect researchers with their science contributions over time and across changes of name, location and institutional affiliation. The NIH encourages use of this ID. See the link https://nexus.od.nih.gov/all/2019/08/05/linking-orcid-identifiers-to-era-profiles-to-streamline-application-processes-and-to-enhance-tracking-of-career-outcomes/.
Required:	No
Lookup:	None

Comment:	ORCID (Open Researcher and Contributor Identification), a non-profit organization that promotes the use of its unique digital identifier to connect researchers with their science contributions over time and across changes of name, location and institutional affiliation. The NIH encourages use of this ID.
Database Table:	study_personnel
Database Column:	orcid
Database Column Type:	varchar(1000)

Study_personnel : Email	
Description:	Contact information of the study personnel being described.
Required:	Yes
Lookup:	None
Comment:	Contact information of the study personnel being described.
Database Table:	study_personnel
Database Column:	email
Database Column Type:	varchar(40)

Study_personnel : Title In Study	
Description:	The role the personnel play in the study as defined by the research team.
Required:	Yes
Lookup:	None
Comment:	The role the personnel play in the study as defined by the research team.
Database Table:	study_personnel
Database Column:	title_in_study

Database Column Type:	varchar(100)

Study_personnel : Role In Study	
Description:	The ImmPort display will show the personnel listed as 'PI' in the study.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_personnel_role
Comment:	Please use the drop down list.
Database Table:	study_personnel
Database Column:	role_in_study
Database Column Type:	varchar(40)

Study_personnel : Site Name	
Description:	Enter the site name if there is a need to further differentiate the affiliation of the study personnel form the Organization.
Required:	Yes
Lookup:	None
Comment:	Enter the site name if there is a need to further differentiate the affiliation of the study personnel form the Organization.
Database Table:	study_personnel
Database Column:	site_name
Database Column Type:	varchar(100)

58.13. Inclusion_exclusion

The compound template Inclusion_exclusion is optional.

Inclusion_exclusion : Study ID	
Description:	The study ID can be either the study user defined ID or a study accession.
Required:	Yes
Lookup:	None
Comment:	The study ID can be either the study user defined ID or a study accession.
Database Table:	inclusion_exclusion
Database Column:	study_accession
Database Column Type:	varchar(15)

Inclusion_exclusion : User Defined ID	
Description:	The inclusion or exclusion user defined ID is an identifier chosen by the data provider to refer to a criterion used to determine whether a subject may be enrolled in a study.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	inclusion_exclusion
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Inclusion_exclusion : Criterion	
Description:	One or more criterion must be described to decide whether a subject may be enrolled in a study.
Required:	Yes

Lookup:	None
Comment:	The criterion describes the parameter used to decide if a subject may be enrolled in a study.
Database Table:	inclusion_exclusion
Database Column:	criterion
Database Column Type:	varchar(750)

Inclusion_exclusion : Criterion Category	
Description:	The criterion category is selected from a preferred list of terms.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_criterion_category
Comment:	There are two values to choose from: inclusion or exclusion.
Database Table:	inclusion_exclusion
Database Column:	criterion_category
Database Column Type:	varchar(40)

58.14. Study_2_protocol

The compound template Study_2_protocol is optional.

Study_2_protocol : Study ID	
Description:	The study ID can be either the study user defined ID or a study accession.
Required:	Yes
Lookup:	None
Comment:	The study ID can be either the study user defined ID or a study accession.

Database Table:	study_2_protocol
Database Column:	study_accession
Database Column Type:	varchar(15)

Study_2_protocol : Protocol ID	
Description:	The protocol ID for the study.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded. It can be either a protocol user defined ID or an Accession.
Database Table:	study_2_protocol
Database Column:	protocol_accession
Database Column Type:	varchar(15)

59. **subjectAnimals.txt**

The subject animal template defines and annotates key elements of study subjects including demographics and links subjects to an arm within a study. In mouse studies, data providers may choose to define a single subject to represent a set of inbred mice treated the same way rather than describe each mouse (i.e. a cage of mice treated the same way). This approach is driven by how the assay results are recorded: if assay results are available for individual animals, then each animal should be defined to ImmPort.

59.1. Subject Meta DataColumns

The Subject Meta Data Columns include the columns for the combined entity Subject.

Subject Meta Data Column subjectAnimals.txt : Arm Or Cohort ID	
Description:	A subject may be assigned to a single arm within a study. When subjects are initially uploaded to ImmPort, they may be assigned to a single study's arm.
Required:	Yes
Lookup:	None
Comment:	Please enter either a study arm or cohort user defined ID or ImmPort accession. When subjects are initially uploaded to ImmPort, they may be assigned to a single study's arm.
Database Table:	subject
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Subject Meta Data Column subjectAnimals.txt : Gender	
Description:	A list of preferred terms is available.
Conditional Required:	Yes for **New Subject**
Controlled Lookup:	Please refer to Appendix A - lk_gender
Comment:	Please choose from the drop down list.
Database Table:	subject
Database Column:	gender

Database Column Type:	varchar(20)

Subject Meta Data Column subjectAnimals.txt : Min Subject Age	
Description:	The subject age at the outset of the study may be determined form one of several study milestones as indicated in the Age Event column.
Conditional Required:	Yes for **New Subject**
Lookup:	None
Comment:	Please enter a number.
Database Table:	arm_2_subject
Database Column:	min_subject_age
Database Column Type:	float

Subject Meta Data Column subjectAnimals.txt : Max Subject Age	
Description:	The subject age at the end of the study may be determined form one of several study milestones.
Required:	No
Lookup:	None
Comment:	Please enter a number.
Database Table:	arm_2_subject
Database Column:	max_subject_age
Database Column Type:	float

Subject Meta Data Column subjectAnimals.txt : Age Unit

Description:	A list of preferred terms is available. The age unit must conform to the age unit assigned to the study.
Conditional Required:	Yes for **New Subject**
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list. The age unit must conform to the age unit assigned to the study.
Database Table:	arm_2_subject
Database Column:	age_unit
Database Column Type:	varchar(50)

Subject Meta Data Column subjectAnimals.txt : Age Event	
Description:	A list of preferred terms is available.
Conditional Required:	Yes for **New Subject**
Controlled Lookup:	Please refer to Appendix A - lk_age_event
Comment:	Please choose from the drop down list.
Database Table:	arm_2_subject
Database Column:	age_event
Database Column Type:	varchar(50)

Subject Meta Data Column subjectAnimals.txt : Age Event Specify	
Description:	This column supports providing study milestones for subject's age determination that ImmPort does not support.
Required:	No

Lookup:	None
Comment:	If "Age Event" = Other, this field specifies the age event (free text). Otherwise, leave this column blank.
Database Table:	arm_2_subject
Database Column:	age_event_specify
Database Column Type:	varchar(50)

Subject Meta Data Column subjectAnimals.txt : Subject Phenotype	
Description:	The subject phenotype captures key aspects of the subject's disposition for the study.
Required:	No
Lookup:	None
Comment:	Enter a description of the subject.
Database Table:	arm_2_subject
Database Column:	subject_phenotype
Database Column Type:	varchar(200)

Subject Meta Data Column subjectAnimals.txt : Subject Location	
Description:	A list of subject locations is available.
Conditional Required:	Yes for **New Subject**
Controlled Lookup:	Please refer to Appendix A - lk_subject_location
Comment:	Please choose from the drop down list.
Database Table:	subject

Database Column:	location
Database Column Type:	

Subject Meta Data Column subjectAnimals.txt : Species	
Description:	A list of preferred terms is available. Macaca fascicularis is also commonly called cynomologus monkey, crab eating macaque, long-tailed macaque. Macaca mulatta is also commonly called rhesus macaque
Conditional Required:	Yes for **New Subject**
Controlled Lookup:	Please refer to Appendix A - lk_species
Comment:	Please choose from the drop down list.
Database Table:	subject
Database Column:	species
Database Column Type:	varchar(50)

Subject Meta Data Column subjectAnimals.txt : Strain	
Description:	Please provide strain and breed information as available.
Conditional Required:	Yes for **New Subject**
Lookup:	None
Comment:	Please provide strain and breed information as available.
Database Table:	subject
Database Column:	strain
Database Column Type:	varchar(50)

Subject Meta Data Column subjectAnimals.txt : Strain Characteristics	
Description:	Strain or breed characteristics that are relevant for the study (e.g. susceptibility).
Required:	No
Lookup:	None
Comment:	Strain or breed characteristics that are relevant for the study (e.g. susceptibility).
Database Table:	subject
Database Column:	strain_characteristics
Database Column Type:	varchar(500)

59.2. Arm Or Cohort Meta DataColumn

The Arm Or Cohort Meta Data Columns include the columns for the combined entity Arm Or Cohort.

Arm Or Cohort Meta Data Column subjectAnimals.txt : Subject ID	
Description:	The subject defined ID is an identifier chosen by the data provider to refer to a subject. This ID may be referenced by other data records (e.g. biological sample). The user defined ID is not shared. For human subjects, the ID should not be identifying.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	arm_or_cohort
Database Column:	user_defined_id
Database Column Type:	varchar(100)

59.3. SeparatorColumn

This column must always appear in the template and must immediately follow after the last meta data column and before the (repeating) result column groups.

Separator Column subjectAnimals.txt : Result Separator Column	
Description:	This pseudo column separates meta data from results.
Required:	No
Lookup:	None
Comment:	This pseudo column separates the results (lab tests) from the lab test panel meta data. It must always appear and be the column that appears immediately after the last meta-data column and before any result columns.

59.4. ResultColumns

Each result group (that is, result) consists of a group of the following result columns, where the **first column** of the group must always be '**Exposure Process Reported**'.

Table: Exposure Process Reported Conditional Logic

The following Matrix defines what reported template columns are required (XXXXX) for a given 'Exposure Process Reported' template column value. N.B. If multiple immune exposure values are needed for subject (e.g. more than one vaccine is administered), then multiple rows must be added to the template with the same 'Exposure Process Reported' column value. The 'Exposure Material ID' (YYYYY) is also required when the 'Exposure Material Reported' is required. However, if the 'Exposure Process Reported' is preferred value (contained in lk_exposure_material or lk_exposue_material_pref_map), the the column 'Exposure Material ID' can be left blank and it will be filled in by uploader.

Exposure Process Reported	Exposure Material Reported	Exposure Material ID	Disease Reported	Disease Ontology ID	Disease Stage Reported
administering substance in vivo	XXXXX	XXXXX			
documented exposure without evidence for disease	XXXXX	XXXXX			

environmental exposure to endemic/ubiquitous agent without evidence for disease	XXXXX	XXXXX			
exposure to substance without evidence for disease	XXXXX	XXXXX			
exposure with existing immune reactivity without evidence for disease	XXXXX	XXXXX			
infectious challenge	XXXXX	XXXXX			
occurrence of allergy	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX
occurrence of asymptomatic infection	XXXXX	XXXXX			
occurrence of autoimmune disease			XXXXX	XXXXX	XXXXX
occurrence of cancer			XXXXX	XXXXX	XXXXX
occurrence of disease			XXXXX	XXXXX	XXXXX
occurrence of infectious disease	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX
transplantation or transfusion	XXXXX	XXXXX			
vaccination	XXXXX	XXXXX			

Result Column subjectAnimals.txt : Exposure Process Reported

Description:	This identifies the type of process through which a host is exposed and the type of evidence for that exposure to have happened, which are tightly intertwined. This is the only element of the four that is always mandatory. Please select an exposure process from the list provided if the process matches yours or enter a exposure process if there is not an appropriate one provided. This exposure process is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_exposure_process with preferred column(s) exposure_process_preferred
Comment:	This identifies the type of process through which a host is exposed and the type of evidence for that exposure to have happened, which are tightly intertwined. This is the only element of the four that is always mandatory. Please select an exposure process from the list provided if the process matches yours or enter a exposure process if there is not an appropriate one provided. This exposure process is visible when the result is shared.
Database Table:	immune_exposure
Database Column:	exposure_process_reported
Database Column Type:	varchar(100)

Result Column subjectAnimals.txt : Exposure Material Reported	
Description:	This describes what substance(s) the host is exposed to and/or develops immune reactions to as part of the exposure process. Please select an exposure material from the list provided if the exposure material matches yours or enter a exposure material if there is not an appropriate one provided. This exposure material is visible when the result is shared. The value provided by the user is further checked against the pref mapping table lk_exposure_material_pref_map.
Required:	No
Preferred Lookup:	Please refer to Appendix A - lk_exposure_material with preferred column(s) exposure_material_preferred and exposure_material_id
Comment:	This describes what substance(s) the host is exposed to and/or develops immune reactions to as part of the exposure process. Please select an exposure material from the list provided if the exposure material matches yours or enter a exposure material if there is not an appropriate one provided. This exposure material is visible when the result is shared. The value provided by the user is further checked against the pref mapping table lk_exposure_material_pref_map.
Database Table:	immune_exposure

Database Column:	exposure_material_reported
Database Column Type:	varchar(200)

Result Column subjectAnimals.txt : Exposure Material ID	
Description:	The NCBI or Vaccine Ontology ID associated with the exposure material. If the Exposure Material Reported is not a preferred value, then the Exposure Material ID must be provided. If the Exposure Material Reported is a preferred value, then the Exposure Material ID will be automatically be the ID associated with the preferred value and user will NOT need to supply this ID.
Required:	No
Lookup:	None
Comment:	The NCBI or Vaccine Ontology ID associated with the exposure material. If the Exposure Material Reported is not a preferred value, then the Exposure Material ID must be provided. If the Exposure Material Reported is a preferred value, then the Exposure Material ID will be automatically be the ID associated with the preferred value and user will NOT need to supply this ID.
Database Table:	immune_exposure
Database Column:	exposure_material_id
Database Column Type:	varchar(100)

Result Column subjectAnimals.txt : Disease Reported	
Description:	This indicates the specific disease of the host associated with the exposure. Please select a disease from the list provided if the disease matches yours or enter a disease if there is not an appropriate one provided. This disease is visible when the result is shared. The Value provide by the user is further checked against the pref mapping table lk_study_condition_pref_mappng.
Required:	No
Preferred Lookup:	Please refer to Appendix A - lk_disease with preferred column(s) disease_preferred and disease_ontology_id
Comment:	This indicates the specific disease of the host associated with the exposure. Please select a disease from the list provided if the disease matches yours or enter a disease if there is not an appropriate one provided. This disease is visible when the result is shared. The Value provide by the user is further checked against the pref mapping table lk_study_condition_pref_mappng.

Database Table:	immune_exposure
Database Column:	disease_reported
Database Column Type:	varchar(550)

Result Column subjectAnimals.txt : Disease Ontology ID	
Description:	The NCBI Disease Ontology ID associated with the disease. If the Disease Reported is not a preferred value, then the Disease Ontology ID must be provided. If the disease is a preferred value, then the Disease Ontology ID will be the DOID associated with the preferred value.
Required:	No
Lookup:	None
Comment:	The NCBI Disease Ontology ID associated with the disease. If the Disease Reported is not a preferred value, then the Disease Ontology ID must be provided. If the disease is a preferred value, then the Disease Ontology ID will be the DOID associated with the preferred value.
Database Table:	immune_exposure
Database Column:	disease_ontology_id
Database Column Type:	varchar(100)

Result Column subjectAnimals.txt : Disease Stage Reported	
Description:	This provides a broad classification of how the disease has progressed. Please select a disease stage from the list provided if the disease stage matches yours or enter a disease stage if there is not an appropriate one provided. This disease stage is visible when the result is shared.
Required:	No
Preferred Lookup:	Please refer to Appendix A - lk_disease_stage with preferred column(s) disease_stage_preferred
Comment:	This provides a broad classification of how the disease has progressed. Please select a disease stage from the list provided if the disease stage matches yours or enter a disease stage if there is not an appropriate one provided. This disease stage is visible when the result is shared.

Database Table:	immune_exposure
Database Column:	disease_stage_reported
Database Column Type:	varchar(100)

60. subjectHumans.txt

The subject human template defines and annotates key elements of study subjects including demographics and links subjects to an arm within a study.

60.1. Subject Meta DataColumns

The Subject Meta Data Columns include the columns for the combined entity Subject.

Subject Meta Data Column subjectHumans.txt : Arm Or Cohort ID	
Description:	A subject may be assigned to a single arm within a study. When subjects are initially uploaded to ImmPort, they may be assigned to a single study's arm.
Required:	Yes
Lookup:	None
Comment:	Please enter either a study arm or cohort user defined ID or ImmPort accession. When subjects are initially uploaded to ImmPort, they may be assigned to a single study's arm.
Database Table:	subject
Database Column:	user_defined_id
Database Column Type:	varchar(100)

Subject Meta Data Column subjectHumans.txt : Gender	
Description:	A list of preferred terms is available.
Conditional Required:	Yes for **New Subject**
Controlled Lookup:	Please refer to Appendix A - lk_gender
Comment:	Please choose from the drop down list.
Database Table:	subject
Database Column:	gender
Database Column Type:	varchar(20)

Subject Meta Data Column subjectHumans.txt : Min Subject Age	
Description:	The subject age at the outset of the study may be determined form one of several study milestones as indicated in the Age Event column.
Conditional Required:	Yes for **New Subject**
Lookup:	None
Comment:	Please enter a number.
Database Table:	arm_2_subject
Database Column:	min_subject_age
Database Column Type:	float

Subject Meta Data Column subjectHumans.txt : Max Subject Age	
Description:	The subject age at the end of the study may be determined form one of several study milestones.
Required:	No
Lookup:	None
Comment:	Please enter a number.
Database Table:	arm_2_subject
Database Column:	max_subject_age
Database Column Type:	float

Subject Meta Data Column subjectHumans.txt : Age Unit	
Description:	A list of preferred terms is available. The age unit must conform to the age unit assigned to the study.
Conditional Required:	Yes for **New Subject**

Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	Please choose from the drop down list. The age unit must conform to the age unit assigned to the study.
Database Table:	arm_2_subject
Database Column:	age_unit
Database Column Type:	varchar(50)

Subject Meta Data Column subjectHumans.txt : Age Event	
Description:	A list of preferred terms is available.
Conditional Required:	Yes for **New Subject**
Controlled Lookup:	Please refer to Appendix A - lk_age_event
Comment:	Please choose from the drop down list.
Database Table:	arm_2_subject
Database Column:	age_event
Database Column Type:	varchar(50)

Subject Meta Data Column subjectHumans.txt : Age Event Specify	
Description:	This column supports providing study milestones for subject's age determination that ImmPort does not support.
Required:	No
Lookup:	None
Comment:	If "Age Event" = Other, this field specifies the age event (free text). Otherwise, leave this column blank.

Database Table:	arm_2_subject
Database Column:	age_event_specify
Database Column Type:	varchar(50)

Subject Meta Data Column subjectHumans.txt : Subject Phenotype	
Description:	The subject phenotype captures key aspects of the subject's disposition for the study.
Required:	No
Lookup:	None
Comment:	Enter a description of the subject.
Database Table:	arm_2_subject
Database Column:	subject_phenotype
Database Column Type:	varchar(200)

Subject Meta Data Column subjectHumans.txt : Subject Location	
Description:	A list of subject locations is available.
Conditional Required:	Yes for **New Subject**
Controlled Lookup:	Please refer to Appendix A - lk_subject_location
Comment:	Please choose from the drop down list.
Database Table:	subject
Database Column:	location

Database Column Type:	

Subject Meta Data Column subjectHumans.txt : Ethnicity	
Description:	A list of preferred terms is available.
Conditional Required:	Yes for **New Subject**
Controlled Lookup:	Please refer to Appendix A - lk_ethnicity
Comment:	Please choose from the drop down list.
Database Table:	subject
Database Column:	ethnicity
Database Column Type:	varchar(50)

Subject Meta Data Column subjectHumans.txt : Race	
Description:	A list of preferred terms is available.
Conditional Required:	Yes for **New Subject**
Controlled Lookup:	Please refer to Appendix A - lk_race
Comment:	Please choose from the drop down list.
Database Table:	subject
Database Column:	race
Database Column Type:	varchar(50)

Subject Meta Data Column subjectHumans.txt : Race Specify

Description:	This column supports providing subject race descriptions that ImmPort does not support.
Required:	No
Lookup:	None
Comment:	If Race='Other', the race should be specified, otherwise leave blank.
Database Table:	subject
Database Column:	race_specify
Database Column Type:	varchar(1000)

Subject Meta Data Column subjectHumans.txt : Description	
Description:	The subject description may be used to augment the arm or cohort based description of a subject.
Required:	No
Lookup:	None
Comment:	The subject description may be used to augment the arm or cohort based description of a subject.
Database Table:	subject
Database Column:	description
Database Column Type:	varchar(4000)

60.2. Arm Or Cohort Meta DataColumn

The Arm Or Cohort Meta Data Columns include the columns for the combined entity Arm Or Cohort.

Arm Or Cohort Meta Data Column subjectHumans.txt : Subject ID

Description:	The subject defined ID is an identifier chosen by the data provider to refer to a subject. This ID may be referenced by other data records (e.g. biological sample). The user defined ID is not shared. For human subjects, the ID should not be identifying.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	arm_or_cohort
Database Column:	user_defined_id
Database Column Type:	varchar(100)

60.3. SeparatorColumn

This column must always appear in the template and must immediately follow after the last meta data column and before the (repeating) result column groups.

Separator Column subjectHumans.txt : Result Separator Column	
Description:	This pseudo column separates meta data from results.
Required:	No
Lookup:	None
Comment:	This pseudo column separates the results (lab tests) from the lab test panel meta data. It must always appear and be the column that appears immediately after the last meta-data column and before any result columns.

60.4. ResultColumns

Each result group (that is, result) consists of a group of the following result columns, where the **first column** of the group must always be '**Exposure Process Reported**'.

Table: Exposure Process Reported Conditional Logic

The following Matrix defines what reported template columns are required (XXXXX) for a given 'Exposure Process Reported' template column value. N.B. If multiple immune exposure values are needed for subject (e.g. more than one vaccine is administered), then multiple rows must be added to the template with the same 'Exposure Process Reported' column value. The 'Exposure

Material ID' (YYYYY) is also required when the 'Exposure Material Reported' is required. However, if the 'Exposure Process Reported' is preferred value (contained in lk_exposure_material or lk_exposue_material_pref_map), the the column 'Exposure Material ID' can be left blank and it will be filled in by uploader.

Exposure Process Reported	Exposure Material Reported	Exposure Material ID	Disease Reported	Disease Ontology ID	Disease Stage Reported
administering substance in vivo	XXXXX	XXXXX			
documented exposure without evidence for disease	XXXXX	XXXXX			
environmental exposure to endemic/ubiquitous agent without evidence for disease	XXXXX	XXXXX			
exposure to substance without evidence for disease	XXXXX	XXXXX			
exposure with existing immune reactivity without evidence for disease	XXXXX	XXXXX			
infectious challenge	XXXXX	XXXXX			
occurrence of allergy	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX
occurrence of asymptomatic infection	XXXXX	XXXXX			
occurrence of autoimmune disease			XXXXX	XXXXX	XXXXX

occurrence of cancer			XXXXX	XXXXX	XXXXX
occurrence of disease			XXXXX	XXXXX	XXXXX
occurrence of infectious disease	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX
transplantation or transfusion	XXXXX	XXXXX			
vaccination	XXXXX	XXXXX			

Result Column subjectHumans.txt : Exposure Process Reported	
Description:	This identifies the type of process through which a host is exposed and the type of evidence for that exposure to have happened, which are tightly intertwined. This is the only element of the four that is always mandatory. Please select an exposure process from the list provided if the process matches yours or enter a exposure process if there is not an appropriate one provided. This exposure process is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_exposure_process with preferred column(s) exposure_process_preferred
Comment:	This identifies the type of process through which a host is exposed and the type of evidence for that exposure to have happened, which are tightly intertwined. This is the only element of the four that is always mandatory. Please select an exposure process from the list provided if the process matches yours or enter a exposure process if there is not an appropriate one provided. This exposure process is visible when the result is shared.
Database Table:	immune_exposure
Database Column:	exposure_process_reported
Database Column Type:	varchar(100)

Result Column subjectHumans.txt : Exposure Material Reported

Description:	This describes what substance(s) the host is exposed to and/or develops immune reactions to as part of the exposure process. Please select an exposure material from the list provided if the exposure material matches yours or enter a exposure material if there is not an appropriate one provided. This exposure material is visible when the result is shared. The value provided by the user is further checked against the pref mapping table lk_exposure_material_pref_map.
Required:	No
Preferred Lookup:	Please refer to Appendix A - lk_exposure_material with preferred column(s) exposure_material_preferred and exposure_material_id
Comment:	This describes what substance(s) the host is exposed to and/or develops immune reactions to as part of the exposure process. Please select an exposure material from the list provided if the exposure material matches yours or enter a exposure material if there is not an appropriate one provided. This exposure material is visible when the result is shared. The value provided by the user is further checked against the pref mapping table lk_exposure_material_pref_map.
Database Table:	immune_exposure
Database Column:	exposure_material_reported
Database Column Type:	varchar(200)

Result Column subjectHumans.txt : Exposure Material ID	
Description:	The NCBI or Vaccine Ontology ID associated with the exposure material. If the Exposure Material Reported is not a preferred value, then the Exposure Material ID must be provided. If the Exposure Material Reported is a preferred value, then the Exposure Material ID will be automatically be the ID associated with the preferred value and user will NOT need to supply this ID.
Required:	No
Lookup:	None
Comment:	The NCBI or Vaccine Ontology ID associated with the exposure material. If the Exposure Material Reported is not a preferred value, then the Exposure Material ID must be provided. If the Exposure Material Reported is a preferred value, then the Exposure Material ID will be automatically be the ID associated with the preferred value and user will NOT need to supply this ID.
Database Table:	immune_exposure
Database Column:	exposure_material_id

Database Column Type:	varchar(100)

Result Column subjectHumans.txt : Disease Reported	
Description:	This indicates the specific disease of the host associated with the exposure. Please select a disease from the list provided if the disease matches yours or enter a disease if there is not an appropriate one provided. This disease is visible when the result is shared. The Value provide by the user is further checked against the pref mapping table lk_study_condition_pref_mappng.
Required:	No
Preferred Lookup:	Please refer to Appendix A - lk_disease with preferred column(s) disease_preferred and disease_ontology_id
Comment:	This indicates the specific disease of the host associated with the exposure. Please select a disease from the list provided if the disease matches yours or enter a disease if there is not an appropriate one provided. This disease is visible when the result is shared. The Value provide by the user is further checked against the pref mapping table lk_study_condition_pref_mappng.
Database Table:	immune_exposure
Database Column:	disease_reported
Database Column Type:	varchar(550)

Result Column subjectHumans.txt : Disease Ontology ID	
Description:	The NCBI Disease Ontology ID associated with the disease. If the Disease Reported is not a preferred value, then the Disease Ontology ID must be provided. If the disease is a preferred value, then the Disease Ontology ID will be the DOID associated with the preferred value.
Required:	No
Lookup:	None
Comment:	The NCBI Disease Ontology ID associated with the disease. If the Disease Reported is not a preferred value, then the Disease Ontology ID must be provided. If the disease is a preferred value, then the Disease Ontology ID will be the DOID associated with the preferred value.
Database Table:	immune_exposure

Database Column:	disease_ontology_id
Database Column Type:	varchar(100)

Result Column subjectHumans.txt : Disease Stage Reported	
Description:	This provides a broad classification of how the disease has progressed. Please select a disease stage from the list provided if the disease stage matches yours or enter a disease stage if there is not an appropriate one provided. This disease stage is visible when the result is shared.
Required:	No
Preferred Lookup:	Please refer to Appendix A - lk_disease_stage with preferred column(s) disease_stage_preferred
Comment:	This provides a broad classification of how the disease has progressed. Please select a disease stage from the list provided if the disease stage matches yours or enter a disease stage if there is not an appropriate one provided. This disease stage is visible when the result is shared.
Database Table:	immune_exposure
Database Column:	disease_stage_reported
Database Column Type:	varchar(100)

61. **treatments.txt**

The treatment template defines and annotates the in vitro modifications (molecule added, temperature, duration) made to a sample. Treatments are required to be referenced by experiment samples and optionally by biologic samples.

treatments.txt : User Defined ID	
Description:	The treatment user defined ID is an identifier chosen by the data provider to refer to a treatment agent which can be a molecule, time or temperature. This ID may be referenced by other data records (e.g. study). The user defined ID is not shared.
Required:	Yes
Lookup:	None
Comment:	The identifier should be unique to the ImmPort workspace to which the data will be uploaded.
Database Table:	treatment
Database Column:	user_defined_id
Database Column Type:	varchar(100)

treatments.txt : Name	
Description:	The treatment name is not referenced directly by other data records. The name should be an informative to a researcher reviewing the data. Treatments may be referenced by more than one biological or experiment sample. There are three categories to describe the molecular content, time and/or temperature applied in a sample treatment. You may enter data for amount, duration or temperature only any combination of these categories (e.g. amount and duration).
Required:	Yes
Lookup:	None
Comment:	Treatments refer to in vitro modifications of samples. The treatment name is an alternate identifier that is visible when the treatment is shared.
Database Table:	treatment
Database Column:	name

Database Column Type:	varchar(100)

treatments.txt : Use Treatment?	
Description:	If 'No' is selected, you must enter a value in the Treatment User Defined ID and Name columns and that is all. If 'Yes' is selected, you must enter a value in the Treatment User Defined ID and Name columns and the value/unit pair of columns for amount or duration or temperature.
Required:	Yes
Controlled Lookup:	Please refer to Appendix A - lk_yes_no
Comment:	Was a treatment applied to a sample?

treatments.txt : Amount Value	
Description:	The value should be a number.
Required:	No
Lookup:	None
Comment:	The Amount Value indicates how much (concentration, mass, volume) of a treatment agent was applied to a sample.
Database Table:	treatment
Database Column:	amount_value
Database Column Type:	varchar(50)

treatments.txt : Amount Unit	
Description:	The amount unit preferred terms list has commonly used units. If additional units are needed, please contact the BISC HelpDesk.
Required:	No
Controlled Lookup:	Please refer to Appendix A - lk_amount_unit

Comment:	The unit should be selected from the drop down list.
Database Table:	treatment
Database Column:	amount_unit
Database Column Type:	varchar(50)

treatments.txt : Duration Value	
Description:	The Duration Value indicates how long a treatment agent was applied to a sample.
Required:	No
Lookup:	None
Comment:	The value should be a number.
Database Table:	treatment
Database Column:	duration_value
Database Column Type:	varchar(200)

treatments.txt : Duration Unit	
Description:	The duration unit preferred terms list has commonly used units. If additional units are needed, please contact the BISC HelpDesk.
Required:	No
Controlled Lookup:	Please refer to Appendix A - lk_time_unit
Comment:	The unit should be selected from the drop down list.
Database Table:	treatment
Database Column:	duration_unit

Database Column Type:	varchar(50)

treatments.txt : Temperature Value	
Description:	The Temperature Value indicates how long a treatment agent was applied to a sample.
Required:	No
Lookup:	None
Comment:	The value should be a number.
Database Table:	treatment
Database Column:	temperature_value
Database Column Type:	varchar(50)

treatments.txt : Temperature Unit	
Description:	The temperature unit preferred terms list has commonly used units. If additional units are needed, please contact the BISC HelpDesk.
Required:	No
Controlled Lookup:	Please refer to Appendix A - lk_temperature_unit
Comment:	The unit should be selected from the drop down list.
Database Table:	treatment
Database Column:	temperature_unit
Database Column Type:	varchar(50)

treatments.txt : Comments

Description:	The Comments column allows the data provider to provide additional descriptive information.
Required:	No
Lookup:	None
Comment:	Please provide additional comments as needed.
Database Table:	treatment
Database Column:	comments
Database Column Type:	varchar(500)

62. **Virus_Neutralization_Results.txt**

The virus neutralization experiment sample template defines and annotates the assay results for a sample by linking sample, experiment, and results together. More than one analyte's results per assayed sample may be reported by copying the group of columns 'Virus Strain'and 'Titration Dilution Value' needed to describe each assay result.

Virus_Neutralization_Results.txt : Expsample ID	
Description:	The experiment sample identifier must be stored in ImmPort or in the experimentsamples.txt template.
Required:	Yes
Lookup:	None
Comment:	Please enter either an experiment sample user defined ID or ImmPort accession.
Database Table:	neut_ab_titer_result And expsample_2_file_info
Database Column:	expsample_accession
Database Column Type:	varchar(15)

Virus_Neutralization_Results.txt : Virus Strain Reported	
Description:	The name of the virus strain used in the assay. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_virus_strain with preferred column(s) virus_strain_preferred
Comment:	The name of the virus strain used in the assay. Please select a name from the list provided if the name matches your name or enter a name if there is not an appropriate one provided. This name is visible when the result is shared.
Database Table:	neut_ab_titer_result
Database Column:	virus_strain_reported
Database Column Type:	varchar(200)

Virus_Neutralization_Results.txt : Value Reported	
Description:	The maximum sample dilution factor that continues to demonstrate virus neutralization.
Required:	Yes
Lookup:	None
Comment:	A number is expected.
Database Table:	neut_ab_titer_result
Database Column:	value_reported
Database Column Type:	varchar(50)

Virus_Neutralization_Results.txt : Unit Reported	
Description:	The dilution factor unit.
Required:	Yes
Preferred Lookup:	Please refer to Appendix A - lk_titer_unit with preferred column(s) titer_unit_preferred
Comment:	The dilution factor unit.
Database Table:	neut_ab_titer_result
Database Column:	unit_reported
Database Column Type:	varchar(200)

Virus_Neutralization_Results.txt : Comments	
Description:	Comments captures additional descriptive information.
Required:	No
Lookup:	None

Comment:	Comments captures additional descriptive information.
Database Table:	neut_ab_titer_result
Database Column:	comments
Database Column Type:	varchar(500)

Appendix A - Valid Values for the Lookup tables

1. **lk_adverse_event_severity**

Name	Description	Link
severity_preferred		
Grade 1 Mild Adverse Event	A type of adverse event that is usually transient and may require only minimal treatment or therapeutic intervention. The event does not generally interfere with usual activities of daily living.	https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C41338
Grade 2 Moderate Adverse Event	A type of adverse event that is usually alleviated with additional specific therapeutic intervention. The event interferes with usual activities of daily living, causing discomfort but poses no significant or permanent risk of harm to the research participant.	https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C41339
Grade 3 Severe Adverse Event	A type of adverse event that requires intensive therapeutic intervention. The event interrupts usual activities of daily living, or significantly affects clinical status. The event possesses a significant risk of harm to the research participant and hospitalization may be required.	https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C41340
Grade 4 Life Threatening or Disabling Adverse Event	An adverse event, and/or its immediate sequelae, which is associated with an imminent risk of death or which is associated with physical or mental disabilities that affect or limit the ability of a person to perform activities of daily living (eating, ambulation, toileting, etc.)	https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C41337
Grade 5 Death Related to Adverse Event	The termination of life as a result of an adverse event.	https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C48275

Not Specified	Adverse Event is not specified or not received. If no Adverse Event value is received, then this is the system default value.	

2. **lk_age_event**

Name	Description	Link
Age at enrollment	Age Event is the Age at enrollment. In the case of a subject enrolled in multiple studies, this value is the minimum age for all the studies.	http://bioportal.bioontology.org/ontologies/OBI?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FPATO_0000011
Age at infection	Age Event is the Age at infection.	http://bioportal.bioontology.org/ontologies/OBI?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FPATO_0000011
Age at initial treatment	Age Event is the Age at initial treatment.	http://bioportal.bioontology.org/ontologies/OBI?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FPATO_0000011
Age at initial vaccine administration	Age Event is the Age at initial vaccine administration.	http://bioportal.bioontology.org/ontologies/OBI?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FPATO_0000011

Age at Study Day 0	Age Event is the Age at Study Day 0.	http://bioportal.bioontology.org/ontologies/OBI?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FPATO_0000011
Not Specified	Age Event is not specified or not received. If no Age Event value is received, then this is the system default value.	http://bioportal.bioontology.org/ontologies/OBI?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FPATO_0000011
Other	Age Event is some Other value not in CV Terms.	http://bioportal.bioontology.org/ontologies/OBI?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FPATO_0000011
Postmenstrual age	Best estimate of the first day of last menstrual period to birth plus time elapsed from day of birth. [def-source: NCI][attr: NICHD]	http://purl.obolibrary.org/obo/NCIT_C114090

3. **lk_amount_unit**

Name	Description	Link
AI	Antibody Index	https://www.aacc.org/publications/cln/articles/2014/june/ana-testing

DK units/ml	The NIDDK calibrators were tested together with dilutions of the WHO reference serum using harmonized assays on five occasions in the BDC, Bristol, and Munich laboratories and reported as WHO units/ml by calibration as previously described. For each of the NIDDK calibrators, the median value of the WHO units/ml obtained for the 15 measurements was assigned as its calibrator unit. The assigned units were termed digestive and kidney units (DK units)/ml.	https://repository.niddk.nih.gov/studies/aab-calibrators/
gm	gram	http://purl.obolibrary.org/obo/UO_0000021
HAU	hemagglutination units	http://en.wikipedia.org/wiki/Virus_quantification
IU	The unitage assigned by the WHO to International Biological Standards - substances, classed as biological according to the criteria provided by WHO Expert Committee on Biological Standardization (e.g. hormones, enzymes, and vaccines), to enable the results of biological and immunological assay procedures to be expressed in the same way throughout the world. The definition of an international unit is generally arbitrary and technical, and has to be officially approved by the International Conference for Unification of Formulae.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C48579&ns=NCI_Thesaurus
IU/ml	A unit of arbitrary substance concentration (biologic activity concentration) defined as the concentration of one international unit per one milliliter of system volume.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=18.06d&ns=ncit&code=C67377
M	molar	http://purl.obolibrary.org/obo/UO_0000062
mg	milligram	http://purl.obolibrary.org/obo/UO_0000022

mg/ml	microgram per milliliter	http://purl.bioontology.org/ontology/SNOMEDCT/258798001
ml	milliliter	http://purl.obolibrary.org/obo/UO_0000098
mM	millimolar	http://purl.obolibrary.org/obo/UO_0000063
MOI	multiplicity of infection	http://en.wikipedia.org/wiki/Multiplicity_of_infection
ng	nanogram	http://purl.obolibrary.org/obo/UO_0000024
ng/ml	nanogram per milliliter	http://purl.bioontology.org/ontology/SNOMEDCT/258806002
ng/nl	nanogram per nanoliter	
ng/ul	nanogram per microliter	http://purl.bioontology.org/ontology/SNOMEDCT/272082007
nl	nanoliter	http://purl.obolibrary.org/obo/UO_0000102
nM	nanomolar	http://purl.obolibrary.org/obo/UO_0000065
Not Specified	No value provided. Not stated explicitly or in detail.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C38046&ns=NCI_Thesaurus
pg	picogram	http://purl.obolibrary.org/obo/UO_0000025

pg/ml	picogram per milliliter	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C67327&ns=NCI_Thesaurus
pg/nl	picogram per nanoliter	
pg/ul	picogram per microliter	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C67306&ns=NCI_Thesaurus
pl	picoliter	http://purl.obolibrary.org/obo/UO_0000103
pM	picomolar	http://purl.obolibrary.org/obo/UO_0000066
TCID50	mean tissue culture infective dose	http://en.wikipedia.org/wiki/Virus_quantification
ug	microgram	http://purl.obolibrary.org/obo/UO_0000023
ug/ml	microgram per milliliter	http://purl.bioontology.org/ontology/SNOMEDCT/258801007
ug/ul	microgram per microliter	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C42576&ns=NCI_Thesaurus
ul	microliter	http://purl.obolibrary.org/obo/UO_0000101

uM	micromolar	http://purl.bioontology.org/ontology/SNOMEDCT/258814008
units/ml	Enzyme Unit per Milliliter. Unit of catalytic activity concentration defined as activity equal to one enzyme unit per one milliliter of system volume.	http://purl.bioontology.org/ontology/SNOMEDCT/259002007

4. **lk_analyte**

Name	Description	Link	ID
immunology_symbol ; short_label ; analyte_preferred			
- ; hHLA-A*2 ; ANA975	HLA class I histocompatibility antigen, A-2 alpha chain (human)	http://purl.obolibrary.org/obo/PR_P01892	-
AA4 ; hCD93 ; ANA918	complement component C1q receptor (human)	http://purl.obolibrary.org/obo/PR_Q9NPY3	-
ACKR3 ; hACKR3 ; ANA1	atypical chemokine receptor 3 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=57007	57007
Ackr3 ; mACKR3 ; ANA475	atypical chemokine receptor 3 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12778	12778
AFP ; AFP ; ANA704	AFP (human)	http://www.ncbi.nlm.nih.gov/gene/?term=174	174
Annexin ; hANXA5 ; ANA909	annexin A5 (human)	http://purl.obolibrary.org/obo/PR_P08758	-
B7 ; hCD80 ; ANA866	T-lymphocyte activation antigen CD80 (human)	https://www.ncbi.nlm.nih.gov/gene/941	941

B7-2 ; hCD86 ; ANA868	T-lymphocyte activation antigen CD86 (human)	https://www.ncbi.nlm.nih.gov/gene/942	942
BAFF ; hTNFSF13B ; ANA241	tumor necrosis factor ligand superfamily member 13B (human)	http://www.ncbi.nlm.nih.gov/gene/?term=10673	10673
BCL2 ; hBCL2 ; ANA904	apoptosis regulator Bcl-2 (human)	https://www.ncbi.nlm.nih.gov/gene/596	596
Bcl2 ; mBCL2 ; ANA1005	apoptosis regulator Bcl-2 (mouse)	http://purl.obolibrary.org/obo/PR_P10417	12043
BCL6 ; hBCL6 ; ANA910	B-cell lymphoma 6 protein (human)	http://purl.obolibrary.org/obo/PR_P41182	-
Bcl6 ; mBCL6 ; ANA1110	B-cell lymphoma 6 protein homolog (mouse)	http://purl.obolibrary.org/obo/PR_P41183	12053
BDCA1 ; hCD1C ; ANA895	T-cell surface glycoprotein CD1c (human)	https://www.ncbi.nlm.nih.gov/gene/911	911
BDCA2, CD303 ; hCLEC4C ; ANA870	C-type lectin domain family 4 member C (human)	https://www.ncbi.nlm.nih.gov/gene/170482	170482
BDCA3 ; hTHBD ; ANA894	thrombomodulin (human)	https://www.ncbi.nlm.nih.gov/gene/7056	7056
BDNF ; BDNF ; ANA701	BDNF (human)	http://www.ncbi.nlm.nih.gov/gene/?term=627	627
BOB ; hGPR15 ; ANA896	G-protein coupled receptor 15 (human)	https://www.ncbi.nlm.nih.gov/gene/2838	2838

Caspase-3 ; hCASP3 ; ANA911	caspase-3 (human)	http://purl.obolibrary.org/obo/PR_P42574	-
CCL1 ; hCCL1 ; ANA2	C-C motif chemokine 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6346	6346
Ccl1 ; mCCL1 ; ANA476	C-C motif chemokine 1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20290	20290
CCL14 ; hCCL14 ; ANA5	C-C motif chemokine 14 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6358	6358
CCL15 ; hCCL15 ; ANA6	C-C motif chemokine 15 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6359	6359
CCL16 ; hCCL16 ; ANA7	C-C motif chemokine 16 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6360	6360
Ccl17 ; CCL17 ; ANA478	C-C motif chemokine 17	http://www.ncbi.nlm.nih.gov/gene/?term=20295	20295
CCL18 ; hCCL18 ; ANA9	C-C motif chemokine 18 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6362	6362
CCL19 ; hCCL19 ; ANA10	C-C motif chemokine 19 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6363	6363
Ccl19 ; mCcl19 ; ANA479	C-C motif chemokine 19 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=24047	24047
Ccl2 ; mCCL2 ; ANA480	C-C motif chemokine 2 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20296	20296

CCL20 ; hCCL20 ; ANA12	C-C motif chemokine 20 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6364	6364
Ccl20 ; mCCL20 ; ANA481	C-C motif chemokine 20 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20297	20297
CCL21 ; hCCL21 ; ANA13	C-C motif chemokine 21 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6366	6366
Ccl21a ; mCcl21a ; ANA482	C-C motif chemokine 21a (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=18829	18829
CCL22 ; hCCL22 ; ANA14	C-C motif chemokine 22 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6367	6367
Ccl22 ; mCCL22 ; ANA483	C-C motif chemokine 22 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20299	20299
CCL23 ; hCCL23 ; ANA15	C-C motif chemokine 23 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6368	6368
CCL24 ; hCCL24 ; ANA16	C-C motif chemokine 24 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6369	6369
Ccl24 ; mCCL24 ; ANA484	C-C motif chemokine 24 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=56221	56221
CCL25 ; hCCL25 ; ANA17	C-C motif chemokine 25 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6370	6370
Ccl25 ; mCcl25 ; ANA485	C-C motif chemokine 25 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20300	20300

Ccl26 ; CCL26 ; ANA486	C-C motif chemokine 26	http://www.ncbi.nlm.nih.gov/gene/?term=541307	541307
CCL26 ; hCCL26 ; ANA18	C-C motif chemokine 26 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=10344	10344
Ccl27a ; mCCL27 ; ANA487	C-C motif chemokine 27 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20301	20301
Ccl3 ; mCCL3 ; ANA488	C-C motif chemokine 3 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20302	20302
CCL3L1 ; CCL3L1 ; ANA21	CCL3L1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6349	6349
CCL3L3 ; hCCL3L ; ANA22	C-C motif chemokine 3-like 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=414062	414062
CCL3P1 ; CCL3 ; ANA23	C-C motif chemokine 3	http://www.ncbi.nlm.nih.gov/gene/?term=390788	390788
CCL4L1 ; CCL4L1 ; ANA25	CCL4L1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=388372	388372
CCL4L2 ; hCCL4L ; ANA26	C-C motif chemokine 4-like (human)	http://www.ncbi.nlm.nih.gov/gene/?term=9560	9560
Ccl5 ; mCCL5 ; ANA490	C-C motif chemokine 5 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20304	20304
Ccl7 ; mCCL7 ; ANA491	C-C motif chemokine 7 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20306	20306

CCL8 ; hCCL8 ; ANA29	C-C motif chemokine 8 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6355	6355
Ccl8 ; mCcl8 ; ANA492	C-C motif chemokine 8 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20307	20307
CCR1 ; hCCR1 ; ANA30	C-C chemokine receptor type 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1230	1230
Ccr1 ; mCCR1 ; ANA493	C-C chemokine receptor type 1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12768	12768
CCR10 ; hCCR10 ; ANA31	C-C chemokine receptor type 10 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=2826	2826
Ccr10 ; mCCR10 ; ANA494	C-C chemokine receptor type 10 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12777	12777
CCR2 ; hCCR2 ; ANA32	C-C chemokine receptor type 2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=729230	729230
Ccr2 ; mCCR2 ; ANA495	C-C chemokine receptor type 2 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12772	12772
CCR3 ; hCCR3 ; ANA33	C-C chemokine receptor type 3 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1232	1232
Ccr3 ; mCCR3 ; ANA496	C-C chemokine receptor type 3 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12771	12771
CCR4 ; hCCR4 ; ANA34	C-C chemokine receptor type 4 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1233	1233

Ccr4 ; mCCR4 ; ANA497	C-C chemokine receptor type 4 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12773	12773
CCR5 ; hCCR5 ; ANA35	C-C chemokine receptor type 5 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1234	1234
Ccr5 ; mCCR5 ; ANA498	C-C chemokine receptor type 5 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12774	12774
CCR6 ; hCCR6 ; ANA36	C-C chemokine receptor type 6 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1235	1235
Ccr6 ; mCCR6 ; ANA499	C-C chemokine receptor type 6 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12458	12458
CCR7 ; hCCR7 ; ANA37	C-C chemokine receptor type 7 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1236	1236
Ccr7 ; mCCR7 ; ANA500	C-C chemokine receptor type 7 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12775	12775
CCR8 ; hCCR8 ; ANA38	C-C chemokine receptor type 8 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1237	1237
Ccr8 ; mCCR8 ; ANA501	C-C chemokine receptor type 8 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12776	12776
CCR9 ; hCCR9 ; ANA824	C-C chemokine receptor type 9 (human)	https://www.ncbi.nlm.nih.gov/gene/10803	10803
Ccr9 ; mCCR9 ; ANA502	C-C chemokine receptor type 9 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12769	12769

CCRL1 ; hCX3CR1 ; ANA59	CX3C chemokine receptor 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1524	1524
CD10 ; hMME ; ANA930	neprilysin (human)	http://purl.obolibrary.org/obo/PR_P08473	-
CD100 ; hSEMA4D ; ANA1218	semaphorin-4D (human)	http://purl.obolibrary.org/obo/PR_Q92854	10507
CD101 ; hCD101 ; ANA1219	immunoglobulin superfamily member 2 (human)	http://purl.obolibrary.org/obo/PR_Q93033	9398
Cd101 ; mCD101 ; ANA942	immunoglobulin superfamily member 2 (mouse)	http://purl.obolibrary.org/obo/PR_A8E0Y8	630146
CD102 ; hICAM2 ; ANA1025	intercellular adhesion molecule 2 (human)	http://purl.obolibrary.org/obo/PR_P13598	3384
CD103 ; hITGAE ; ANA877	integrin alpha-E (human)	https://www.ncbi.nlm.nih.gov/gene/3682	3682
CD104 ; hITGB4 ; ANA1043	integrin beta-4 (human)	http://purl.obolibrary.org/obo/PR_P16144	3691
CD105 ; hENG ; ANA1050	endoglin (human)	http://purl.obolibrary.org/obo/PR_P17813	2022
CD107a ; hLAMP1 ; ANA887	lysosome-associated membrane glycoprotein 1 (human)	https://www.ncbi.nlm.nih.gov/gene/3916	3916
CD107b ; hLAMP2 ; ANA1024	lysosome-associated membrane glycoprotein 2 (human)	http://purl.obolibrary.org/obo/PR_P13473	3920

CD108 ; hSEMA7A ; ANA965	semaphorin-7A (human)	http://purl.obolibrary.org/obo/PR_O75326	8482
CD109 ; hCD109 ; ANA1188	CD109 antigen (human)	http://purl.obolibrary.org/obo/PR_Q6YHK3	135228
Cd109 ; mCD109 ; ANA1207	CD109 antigen (mouse)	http://purl.obolibrary.org/obo/PR_Q8R422	235505
CD111 ; hNECTIN1 ; ANA1158	nectin-1 (human)	http://purl.obolibrary.org/obo/PR_Q15223	5818
CD112 ; hNECTIN2 ; ANA1217	nectin-2 (human)	http://purl.obolibrary.org/obo/PR_Q92692	5819
CD11a ; hITGAL ; ANA1059	integrin alpha-L (human)	http://purl.obolibrary.org/obo/PR_P20701	3683
CD11b ; hITGAM ; ANA878	integrin alpha-M (human)	https://www.ncbi.nlm.nih.gov/gene/3684	3684
CD11c ; hITGAX ; ANA814	integrin alpha-X (human)	http://purl.obolibrary.org/obo/PR_P20702	3687
CD11d ; hITGAD ; ANA1153	integrin alpha-D (human)	http://purl.obolibrary.org/obo/PR_Q13349	3681
CD123 ; hIL3RA ; ANA173	interleukin-3 receptor subunit alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3563	3563
CD127 ; hIL7R ; ANA182	interleukin-7 receptor subunit alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3575	3575

CD13 ; hANPEP ; ANA1033	aminopeptidase N (human)	http://purl.obolibrary.org/obo/PR_P15144	290
CD133 ; hPROM1 ; ANA954	prominin-1 (human)	http://purl.obolibrary.org/obo/PR_O43490	8842
CD138 ; hSDC1 ; ANA891	syndecan-1 (human)	https://www.ncbi.nlm.nih.gov/gene/6382	6382
CD14 ; hCD14 ; ANA804	monocyte differentiation antigen CD14 (human)	http://purl.obolibrary.org/obo/PR_P08571	929
Cd14 ; mCD14 ; ANA1006	monocyte differentiation antigen CD14 (mouse)	http://purl.obolibrary.org/obo/PR_P10810	12475
CD142 ; hF3 ; ANA1028	tissue factor (human)	http://purl.obolibrary.org/obo/PR_P13726	2152
CD143 ; hACE ; ANA1019	angiotensin-converting enzyme (human)	http://purl.obolibrary.org/obo/PR_P12821	1636
CD144 ; hCDH5 ; ANA1095	cadherin-5 (human)	http://purl.obolibrary.org/obo/PR_P33151	1003
CD146 ; hMCAM ; ANA1115	cell surface glycoprotein MUC18 (human)	http://purl.obolibrary.org/obo/PR_P43121	4162
CD147 ; hBSG ; ANA1098	basigin (human)	http://purl.obolibrary.org/obo/PR_P35613	682
CD148 ; hPTPRJ ; ANA1151	receptor-type tyrosine-protein phosphatase eta (human)	http://purl.obolibrary.org/obo/PR_Q12913	5795

CD15 ; hFUT4 ; ANA875	alpha-(1,3)-fucosyltransferase 4 (human)	https://www.ncbi.nlm.nih.gov/gene/2526	2526
CD150 ; hSLAMF1 ; ANA1152	signaling lymphocytic activation molecule (human)	http://purl.obolibrary.org/obo/PR_Q13291	6504
CD151 ; hCD151 ; ANA1119	CD151 antigen (human)	http://purl.obolibrary.org/obo/PR_P48509	977
Cd151 ; mCD151 ; ANA953	CD151 antigen (mouse)	http://purl.obolibrary.org/obo/PR_O35566	12476
CD152 ; hCTLA4 ; ANA871	cytotoxic T-lymphocyte protein 4 (human)	https://www.ncbi.nlm.nih.gov/gene/1493	1493
CD154 ; hCD40LG ; ANA43	CD40 ligand (human)	http://www.ncbi.nlm.nih.gov/gene/?term=959	959
CD155 ; hPVR ; ANA1034	poliovirus receptor (human)	http://purl.obolibrary.org/obo/PR_P15151	5817
CD156A ; hADAM8 ; ANA1131	disintegrin and metalloproteinase domain-containing protein 8 (human)	http://purl.obolibrary.org/obo/PR_P78325	101
CD156B ; hADAM17 ; ANA1133	disintegrin and metalloproteinase domain-containing protein 17 (human)	http://purl.obolibrary.org/obo/PR_P78536	6868
CD156c ; hADAM10 ; ANA948	disintegrin and metalloproteinase domain-containing protein 10 (human)	http://purl.obolibrary.org/obo/PR_O14672	102
CD157 ; hBST1 ; ANA1149	ADP-ribosyl cyclase/cyclic ADP-ribose hydrolase 2 (human)	http://purl.obolibrary.org/obo/PR_Q10588	683

CD158A ; hKIR2DL1 ; ANA879	killer cell immunoglobulin-like receptor 2DL1 (human)	https://www.ncbi.nlm.nih.gov/gene/3802	3802
CD158B1 ; hKIR2DL2 ; ANA880	killer cell immunoglobulin-like receptor 2DL2 (human)	https://www.ncbi.nlm.nih.gov/gene/3803	3803
CD158B2 ; hKIR2DL3 ; ANA881	killer cell immunoglobulin-like receptor 2DL3 (human)	https://www.ncbi.nlm.nih.gov/gene/3804	3804
CD158D ; hKIR2DL4 ; ANA1224	killer cell immunoglobulin-like receptor 2DL4 (human)	http://purl.obolibrary.org/obo/PR_Q99706	3805
CD158E1 ; hKIR3DL1 ; ANA882	killer cell immunoglobulin-like receptor 3DL1 (human)	https://www.ncbi.nlm.nih.gov/gene/3811	3811
CD158F ; hKIR2DL5A ; ANA1199	killer cell immunoglobulin-like receptor 2DL5A (human)	http://purl.obolibrary.org/obo/PR_Q8N109	57292
CD158G ; hKIR2DS5 ; ANA1156	killer cell immunoglobulin-like receptor 2DS5 (human)	http://purl.obolibrary.org/obo/PR_Q14953	3810
CD158H ; hKIR2DS1 ; ANA1157	killer cell immunoglobulin-like receptor 2DS1 (human)	http://purl.obolibrary.org/obo/PR_Q14954	3806
CD158i ; hKIR2DS4 ; ANA1118	killer cell immunoglobulin-like receptor 2DS4 (human)	http://purl.obolibrary.org/obo/PR_P43632	3809
CD158J ; hKIR2DS2 ; ANA1117	killer cell immunoglobulin-like receptor 2DS2 (human)	http://purl.obolibrary.org/obo/PR_P43631	100132285
CD158k ; hKIR3DL2 ; ANA1116	killer cell immunoglobulin-like receptor 3DL2 (human)	http://purl.obolibrary.org/obo/PR_P43630	3812

CD158z ; hKIR3DL3 ; ANA1204	killer cell immunoglobulin-like receptor 3DL3 (human)	http://purl.obolibrary.org/obo/PR_Q8N743	-
CD159c ; hKLRC2 ; ANA1080	NKG2-C type II integral membrane protein (human)	http://purl.obolibrary.org/obo/PR_P26717	3822
CD16 ; hFCGR3A ; ANA811	low affinity immunoglobulin gamma Fc region receptor III-A (human)	http://purl.obolibrary.org/obo/PR_P08637	2214
CD160 ; hCD160 ; ANA973	CD160 antigen (human)	http://purl.obolibrary.org/obo/PR_O95971	11126
Cd160 ; mCD160 ; ANA970	CD160 antigen (mouse)	http://purl.obolibrary.org/obo/PR_O88875	54215
CD161 ; hKLRB1 ; ANA883	killer cell lectin-like receptor subfamily B member 1 (human)	https://www.ncbi.nlm.nih.gov/gene/3820	3820
CD163 ; hCD163 ; ANA1192	scavenger receptor cysteine-rich type 1 protein M130 (human)	http://purl.obolibrary.org/obo/PR_Q86VB7	9332
Cd163 ; mCD163 ; ANA1164	scavenger receptor cysteine-rich type 1 protein M130 (mouse)	http://purl.obolibrary.org/obo/PR_Q2VLH6	93671
CD164 ; hCD164 ; ANA1141	sialomucin core protein 24 (human)	http://purl.obolibrary.org/obo/PR_Q04900	8763
Cd164 ; mCD164 ; ANA1250	sialomucin core protein 24 (mouse)	http://purl.obolibrary.org/obo/PR_Q9R0L9	53599
Cd164l2 ; mCD164L2 ; ANA1229	CD164 sialomucin-like 2 protein (mouse)	http://purl.obolibrary.org/obo/PR_Q9D6W7	69655

CD166 ; hALCAM ; ANA1154	CD166 antigen (human)	http://purl.obolibrary.org/obo/PR_Q13740	214
CD167 ; hDDR1 ; ANA1145	epithelial discoidin domain-containing receptor 1 (human)	http://purl.obolibrary.org/obo/PR_Q08345	780
CD168 ; hHMMR ; ANA966	hyaluronan mediated motility receptor (human)	http://purl.obolibrary.org/obo/PR_O75330	3161
CD169 ; hSIGLEC1 ; ANA1227	sialoadhesin (human)	http://purl.obolibrary.org/obo/PR_Q9BZZ2	6614
CD16b ; hFCGR3B ; ANA960	low affinity immunoglobulin gamma Fc region receptor III-B (human)	http://purl.obolibrary.org/obo/PR_O75015	2215
CD170 ; hSIGLEC5 ; ANA951	sialic acid-binding Ig-like lectin 5 (human)	http://purl.obolibrary.org/obo/PR_O15389	8778
CD171 ; hL1CAM ; ANA1092	neural cell adhesion molecule L1 (human)	http://purl.obolibrary.org/obo/PR_P32004	3897
CD172a ; hSIRPA ; ANA1130	tyrosine-protein phosphatase non-receptor type substrate 1 (human)	http://purl.obolibrary.org/obo/PR_P78324	140885
CD172b ; hSIRPB1 ; ANA935	signal-regulatory protein beta-1 (human)	http://purl.obolibrary.org/obo/PR_000026875	10326
CD172g ; hSIRPG ; ANA1247	signal-regulatory protein gamma (human)	http://purl.obolibrary.org/obo/PR_Q9P1W8	55423
CD174 ; hFUT3 ; ANA1061	galactoside 3(4)-L-fucosyltransferase (human)	http://purl.obolibrary.org/obo/PR_P21217	2525

CD177 ; hCD177 ; ANA1203	CD177 antigen (human)	http://purl.obolibrary.org/obo/PR_Q8N6Q3	57126
Cd177 ; mCd177 ; ANA1206	CD177 antigen (mouse)	http://purl.obolibrary.org/obo/PR_Q8R2S8	68891
CD179a ; hVPREB1 ; ANA1017	immunoglobulin iota chain (human)	http://purl.obolibrary.org/obo/PR_P12018	7441
CD179B ; hIGLL1 ; ANA1040	immunoglobulin lambda-like polypeptide 1 (human)	http://purl.obolibrary.org/obo/PR_P15814	3543
CD18 ; hITGB2 ; ANA985	integrin beta-2 (human)	http://purl.obolibrary.org/obo/PR_P05107	3689
CD180 ; hCD180 ; ANA1223	CD180 antigen (human)	http://purl.obolibrary.org/obo/PR_Q99467	4064
Cd180 ; mCD180 ; ANA1176	CD180 antigen (mouse)	http://purl.obolibrary.org/obo/PR_Q62192	17079
CD19 ; hCD19 ; ANA805	B-lymphocyte antigen CD19 (human)	http://purl.obolibrary.org/obo/PR_P15391	930
Cd19 ; mCD19 ; ANA1078	B-lymphocyte antigen CD19 (mouse)	http://purl.obolibrary.org/obo/PR_P25918	12478
CD1a ; hCD1A ; ANA988	T-cell surface glycoprotein CD1a (human)	http://purl.obolibrary.org/obo/PR_P06126	909
CD1b ; hCD1B ; ANA1084	T-cell surface glycoprotein CD1b (human)	http://purl.obolibrary.org/obo/PR_P29016	910

CD1d ; hCD1D ; ANA1039	antigen-presenting glycoprotein CD1d (human)	http://purl.obolibrary.org/obo/PR_P15813	912
Cd1d1 ; mCD1D ; ANA1011	antigen-presenting glycoprotein CD1d1 (mouse)	http://purl.obolibrary.org/obo/PR_P11609	12479
Cd1d2 ; mCd1d2 ; ANA1012	antigen-presenting glycoprotein CD1d2 (mouse)	http://purl.obolibrary.org/obo/PR_P11610	12480
CD1e ; hCD1E ; ANA1038	T-cell surface glycoprotein CD1e, membrane-associated (human)	http://purl.obolibrary.org/obo/PR_P15812	913
CD2 ; hCD2 ; ANA860	T-cell surface antigen CD2 (human)	https://www.ncbi.nlm.nih.gov/gene/914	914
Cd2 ; mCD2 ; ANA1000	T-cell surface antigen CD2 (mouse)	http://purl.obolibrary.org/obo/PR_P08920	12481
CD20 ; hMS4A1 ; ANA806	B-lymphocyte antigen CD20 (human)	http://purl.obolibrary.org/obo/PR_P11836	931
CD200 ; hCD200 ; ANA1111	OX-2 membrane glycoprotein (human)	http://purl.obolibrary.org/obo/PR_P41217	4345
Cd200 ; mCD200 ; ANA956	OX-2 membrane glycoprotein (mouse)	http://purl.obolibrary.org/obo/PR_O54901	-
Cd200r1 ; mCd200r1 ; ANA1232	cell surface glycoprotein CD200 receptor 1 (mouse)	http://purl.obolibrary.org/obo/PR_Q9ES57	57781
Cd200r2 ; mCD200R1L ; ANA1187	cell surface glycoprotein CD200 receptor 2 (mouse)	http://purl.obolibrary.org/obo/PR_Q6XJV6	271375

Cd200r3 ; mCd200r3 ; ANA1168	cell surface glycoprotein CD200 receptor 3 (mouse)	http://purl.obolibrary.org/obo/PR_Q5UKY4	74603
Cd200r4 ; mCd200r4 ; ANA1186	cell surface glycoprotein CD200 receptor 4 (mouse)	http://purl.obolibrary.org/obo/PR_Q6XJV4	239849
CD201 ; hPROCR ; ANA1259	endothelial protein C receptor (human)	http://purl.obolibrary.org/obo/PR_Q9UNN8	10544
CD202b ; hTEK ; ANA1139	angiopoietin-1 receptor (human)	http://purl.obolibrary.org/obo/PR_Q02763	7010
CD203c ; hENPP3 ; ANA947	ectonucleotide pyrophosphatase/phosphodiesterase family member 3 (human)	http://purl.obolibrary.org/obo/PR_O14638	5169
CD204 ; hMSR1 ; ANA1064	macrophage scavenger receptor types I and II (human)	http://purl.obolibrary.org/obo/PR_P21757	4481
CD205 ; hLY75 ; ANA937	lymphocyte antigen 75 (human)	http://purl.obolibrary.org/obo/PR_000034294	4065
CD206 ; hMRC1 ; ANA1072	macrophage mannose receptor 1 (human)	http://purl.obolibrary.org/obo/PR_P22897	4360
CD207 ; hCD207 ; ANA1255	C-type lectin domain family 4 member K (human)	http://purl.obolibrary.org/obo/PR_Q9UJ71	50489
Cd207 ; mCD207 ; ANA1208	C-type lectin domain family 4 member K (mouse)	http://purl.obolibrary.org/obo/PR_Q8VBX4	246278
CD208 ; hLAMP3 ; ANA1261	lysosome-associated membrane glycoprotein 3 (human)	http://purl.obolibrary.org/obo/PR_Q9UQV4	27074

Cd209a ; mCd209a ; ANA1216	CD209 antigen-like protein A (mouse)	http://purl.obolibrary.org/obo/PR_Q91ZX1	170786
Cd209b ; mCd209b ; ANA1194	CD209 antigen-like protein B (mouse)	http://purl.obolibrary.org/obo/PR_Q8CJ91	69165
Cd209c ; mCd209c ; ANA1215	CD209 antigen-like protein C (mouse)	http://purl.obolibrary.org/obo/PR_Q91ZW9	170776
Cd209d ; mCd209d ; ANA1214	CD209 antigen-like protein D (mouse)	http://purl.obolibrary.org/obo/PR_Q91ZW8	170779
Cd209e ; mCd209e ; ANA1213	CD209 antigen-like protein E (mouse)	http://purl.obolibrary.org/obo/PR_Q91ZW7	170780
CD21 ; hCR2 ; ANA919	complement receptor type 2 (human)	http://purl.obolibrary.org/obo/PR_P20023	-
CD213A1 ; hIL13RA1 ; ANA128	interleukin-13 receptor subunit alpha-1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3597	3597
CD213A2 ; hIL13RA2 ; ANA129	interleukin-13 receptor subunit alpha-2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3598	3598
Cd22 ; mCD22 ; ANA1097	B-cell receptor CD22 (mouse)	http://purl.obolibrary.org/obo/PR_P35329	12483
CD220 ; hINSR ; ANA989	insulin receptor (human)	http://purl.obolibrary.org/obo/PR_P06213	3643
CD221 ; hIGF1R ; ANA993	insulin-like growth factor 1 receptor (human)	http://purl.obolibrary.org/obo/PR_P08069	3480

CD222 ; hIGF2R ; ANA1013	cation-independent mannose-6-phosphate receptor (human)	http://purl.obolibrary.org/obo/PR_P11717	3482
CD223 ; hLAG3 ; ANA1054	lymphocyte activation gene 3 protein (human)	http://purl.obolibrary.org/obo/PR_P18627	3902
CD224 ; hGGT1 ; ANA1058	glutathione hydrolase 1 proenzyme (human)	http://purl.obolibrary.org/obo/PR_P19440	2678
CD225 ; hIFITM1 ; ANA1021	interferon-induced transmembrane protein 1 (human)	http://purl.obolibrary.org/obo/PR_P13164	8519
CD226 ; hCD226 ; ANA1160	CD226 antigen (human)	http://purl.obolibrary.org/obo/PR_Q15762	10666
Cd226 ; mCD226 ; ANA1198	CD226 antigen (mouse)	http://purl.obolibrary.org/obo/PR_Q8K4F0	225825
CD227 ; hMUC1 ; ANA1041	mucin-1 (human)	http://purl.obolibrary.org/obo/PR_P15941	4582
CD228 ; hMELTF ; ANA998	melanotransferrin (human)	http://purl.obolibrary.org/obo/PR_P08582	4241
CD229 ; hLY9 ; ANA1235	T-lymphocyte surface antigen Ly-9 (human)	http://purl.obolibrary.org/obo/PR_Q9HBG7	4063
CD23 ; hFCER2 ; ANA922	low affinity immunoglobulin epsilon Fc receptor (human)	http://purl.obolibrary.org/obo/PR_P06734	-
CD230 ; hPRNP ; ANA936	major prion protein (human)	http://purl.obolibrary.org/obo/PR_00003002 0	5621

CD231 ; hTSPAN7 ; ANA1113	tetraspanin-7 (human)	http://purl.obolibrary.org/obo/PR_P41732	7102
CD232 ; hPLXNC1 ; ANA958	plexin-C1 (human)	http://purl.obolibrary.org/obo/PR_O60486	10154
CD233 ; hSLC4A1 ; ANA977	band 3 anion transport protein (human)	http://purl.obolibrary.org/obo/PR_P02730	6521
CD234 ; hACKR1 ; ANA1161	atypical chemokine receptor 1 (human)	http://purl.obolibrary.org/obo/PR_Q16570	2532
CD235a ; hGYPA ; ANA976	glycophorin-A (human)	http://purl.obolibrary.org/obo/PR_P02724	2993
CD235b ; hGYPB ; ANA987	glycophorin-B (human)	http://purl.obolibrary.org/obo/PR_P06028	2994
CD236R ; hGYPC ; ANA983	glycophorin-C (human)	http://purl.obolibrary.org/obo/PR_P04921	2995
CD238 ; hKEL ; ANA1073	kell blood group glycoprotein (human)	http://purl.obolibrary.org/obo/PR_P23276	3792
CD239 ; hBCAM ; ANA1122	basal cell adhesion molecule (human)	http://purl.obolibrary.org/obo/PR_P50895	4059
CD24 ; hCD24 ; ANA807	signal transducer CD24 (human)	http://purl.obolibrary.org/obo/PR_P25063	100133941
CD240CE ; hRHCE ; ANA1053	blood group Rh(CE) polypeptide (human)	http://purl.obolibrary.org/obo/PR_P18577	6006

CD240D ; hRHD ; ANA1138	blood group Rh(D) polypeptide (human)	http://purl.obolibrary.org/obo/PR_Q02161	6007
CD241 ; hRHAG ; ANA1137	ammonium transporter Rh type A (human)	http://purl.obolibrary.org/obo/PR_Q02094	6005
CD242 ; hICAM4 ; ANA1155	intercellular adhesion molecule 4 (human)	http://purl.obolibrary.org/obo/PR_Q14773	3386
CD243 ; hABCB1 ; ANA996	multidrug resistance protein 1 (human)	http://purl.obolibrary.org/obo/PR_P08183	5243
CD244 ; hCD244 ; ANA1226	natural killer cell receptor 2B4 (human)	http://purl.obolibrary.org/obo/PR_Q9BZW8	51744
Cd244a ; mCD244 ; ANA1143	natural killer cell receptor 2B4 (mouse)	http://purl.obolibrary.org/obo/PR_Q07763	18106
CD246 ; hALK ; ANA1258	ALK tyrosine kinase receptor (human)	http://purl.obolibrary.org/obo/PR_Q9UM73	238
CD247 ; hCD247 ; ANA1060	T-cell surface glycoprotein CD3 (human)	http://purl.obolibrary.org/obo/PR_P20963	919
Cd247 ; mCD247 ; ANA1076	T-cell surface glycoprotein CD3 isoforms eta/zeta (mouse)	http://purl.obolibrary.org/obo/PR_P24161	12503
CD248 ; hCD248 ; ANA1236	endosialin (human)	http://purl.obolibrary.org/obo/PR_Q9HCU0	57124
Cd248 ; mCD248 ; ANA1212	endosialin (mouse)	http://purl.obolibrary.org/obo/PR_Q91V98	70445

CD249 ; hENPEP ; ANA1142	glutamyl aminopeptidase (human)	http://purl.obolibrary.org/obo/PR_Q07075	2028
Cd24a ; mCD24 ; ANA1077	signal transducer CD24 (mouse)	http://purl.obolibrary.org/obo/PR_P24807	12484
CD26 ; hDPP4 ; ANA1081	dipeptidyl peptidase 4 (human)	http://purl.obolibrary.org/obo/PR_P27487	1803
CD266 ; hTNFRSF12A ; ANA1240	tumor necrosis factor receptor superfamily member 12A (human)	http://purl.obolibrary.org/obo/PR_Q9NP84	51330
CD268 ; hTNFRSF13C ; ANA1222	tumor necrosis factor receptor superfamily member 13C (human)	http://purl.obolibrary.org/obo/PR_Q96RJ3	115650
CD27 ; hCD27 ; ANA40	CD27 antigen (human)	http://www.ncbi.nlm.nih.gov/gene/?term=939	939
Cd27 ; mCD27 ; ANA503	CD27 antigen (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21940	21940
CD271 ; hNGFR ; ANA994	tumor necrosis factor receptor superfamily member 16 (human)	http://purl.obolibrary.org/obo/PR_P08138	4804
CD272 ; hBTLA ; ANA1191	B- and T-lymphocyte attenuator (human)	http://purl.obolibrary.org/obo/PR_Q7Z6A9	151888
CD274 ; hCD274 ; ANA1246	programmed cell death 1 ligand 1 (human)	http://purl.obolibrary.org/obo/PR_Q9NZQ7	29126
Cd274 ; mCD274 ; ANA1231	programmed cell death 1 ligand 1 (mouse)	http://purl.obolibrary.org/obo/PR_Q9EP73	60533

CD275 ; hICOSLG ; ANA964	ICOS ligand (human)	http://purl.obolibrary.org/obo/PR_O75144	23308
CD276 ; hCD276 ; ANA1169	CD276 antigen (human)	http://purl.obolibrary.org/obo/PR_Q5ZPR3	80381
Cd276 ; mCD276 ; ANA1210	CD276 antigen (mouse)	http://purl.obolibrary.org/obo/PR_Q8VE98	102657
CD277 ; hBTN3A1 ; ANA946	butyrophilin subfamily 3 member A1 (human)	http://purl.obolibrary.org/obo/PR_O00481	11119
CD278 ; hICOS ; ANA898	inducible T-cell costimulator (human)	https://www.ncbi.nlm.nih.gov/gene/29851	29851
CD28 ; hCD28 ; ANA863	T-cell-specific surface glycoprotein CD28 (human)	https://www.ncbi.nlm.nih.gov/gene/940	940
Cd28 ; mCD28 ; ANA1086	T-cell-specific surface glycoprotein CD28 (mouse)	http://purl.obolibrary.org/obo/PR_P31041	12487
CD280 ; hMRC2 ; ANA1251	C-type mannose receptor 2 (human)	http://purl.obolibrary.org/obo/PR_Q9UBG0	9902
CD281 ; hTLR1 ; ANA1159	Toll-like receptor 1 (human)	http://purl.obolibrary.org/obo/PR_Q15399	7096
CD282 ; hTLR2 ; ANA959	Toll-like receptor 2 (human)	http://purl.obolibrary.org/obo/PR_O60603	7097
CD283 ; hTLR3 ; ANA952	Toll-like receptor 3 (human)	http://purl.obolibrary.org/obo/PR_O15455	7098

CD284 ; hTLR4 ; ANA944	Toll-like receptor 4 (human)	http://purl.obolibrary.org/obo/PR_O00206	7099
CD288 ; hTLR8 ; ANA1245	Toll-like receptor 8 (human)	http://purl.obolibrary.org/obo/PR_Q9NR97	51311
CD289 ; hTLR9 ; ANA1244	Toll-like receptor 9 (human)	http://purl.obolibrary.org/obo/PR_Q9NR96	54106
CD29 ; hITGB1 ; ANA986	integrin beta-1 (human)	http://purl.obolibrary.org/obo/PR_P05556	3688
CD290 ; hTLR10 ; ANA1225	Toll-like receptor 10 (human)	http://purl.obolibrary.org/obo/PR_Q9BXR5	81793
CD292 ; hBMPR1A ; ANA1101	bone morphogenetic protein receptor type-1A (human)	http://purl.obolibrary.org/obo/PR_P36894	657
CD294 ; hPTGDR2 ; ANA1264	prostaglandin D2 receptor 2 (human)	http://purl.obolibrary.org/obo/PR_Q9Y5Y4	11251
CD295 ; hLEPR ; ANA899	leptin receptor (human)	https://www.ncbi.nlm.nih.gov/gene/3953	3953
CD296 ; hART1 ; ANA1123	GPI-linked NAD(P)(+)--arginine ADP-ribosyltransferase 1 (human)	http://purl.obolibrary.org/obo/PR_P52961	417
CD297 ; hART4 ; ANA1220	ecto-ADP-ribosyltransferase 4 (human)	http://purl.obolibrary.org/obo/PR_Q93070	420
CD298 ; hATP1B3 ; ANA1124	sodium/potassium-transporting ATPase subunit beta-3 (human)	http://purl.obolibrary.org/obo/PR_P54709	483

CD299 ; hCLEC4M ; ANA1233	C-type lectin domain family 4 member M (human)	http://purl.obolibrary.org/obo/PR_Q9H2X3	10332
Cd2ap ; mCD2AP ; ANA1239	CD2-associated protein (mouse)	http://purl.obolibrary.org/obo/PR_Q9JLQ0	12488
Cd2bp2 ; mCD2BP2 ; ANA1228	CD2 antigen cytoplasmic tail-binding protein 2 (mouse)	http://purl.obolibrary.org/obo/PR_Q9CWK3	70233
CD3 ; hCD3E ; ANA809	T-cell surface glycoprotein CD3 epsilon chain (human)	http://purl.obolibrary.org/obo/PR_P07766	916
CD300a ; hCD300A ; ANA1252	CMRF35-like molecule 8 (human)	http://purl.obolibrary.org/obo/PR_Q9UGN4	11314
Cd300a ; mCD300A ; ANA1183	CMRF35-like molecule 8 (mouse)	http://purl.obolibrary.org/obo/PR_Q6SJQ0	217303
CD300c ; hCD300C ; ANA1146	CMRF35-like molecule 6 (human)	http://purl.obolibrary.org/obo/PR_Q08708	10871
Cd300c ; mCD300C ; ANA940	CMRF35-like molecule 6 (mouse)	http://purl.obolibrary.org/obo/PR_A2A7V7	387565
Cd300c2 ; mClm ; ANA1190	CMRF35-like molecule (mouse)	http://purl.obolibrary.org/obo/PR_Q7TSN2	140497
CD300e ; hCD300E ; ANA1167	CMRF35-like molecule 2 (human)	http://purl.obolibrary.org/obo/PR_Q496F6	342510
Cd300e ; mCD300E ; ANA1197	CMRF35-like molecule 2 (mouse)	http://purl.obolibrary.org/obo/PR_Q8K249	217306

Cd300lb ; mCD300LB ; ANA1166	CMRF35-like molecule 7 (mouse)	http://purl.obolibrary.org/obo/PR_Q3U497	217304
Cd300ld ; mClm5 ; ANA1209	CMRF35-like molecule 5 (mouse)	http://purl.obolibrary.org/obo/PR_Q8VCH2	217305
Cd300ld3 ; mClm3 ; ANA1184	CMRF35-like molecule 3 (mouse)	http://purl.obolibrary.org/obo/PR_Q6SJQ5	382551
Cd300lf ; mCD300LF ; ANA1185	CMRF35-like molecule 1 (mouse)	http://purl.obolibrary.org/obo/PR_Q6SJQ7	246746
Cd300lg ; mCd300lg ; ANA1163	CMRF35-like molecule 9 (mouse)	http://purl.obolibrary.org/obo/PR_Q1ERP8	52685
CD301 ; hCLEC10A ; ANA1195	C-type lectin domain family 10 member A (human)	http://purl.obolibrary.org/obo/PR_Q8IUN9	10462
CD302 ; hCD302 ; ANA1196	CD302 antigen (human)	http://purl.obolibrary.org/obo/PR_Q8IX05	9936
Cd302 ; mCD302 ; ANA1230	CD302 antigen (mouse)	http://purl.obolibrary.org/obo/PR_Q9DCG2	66205
CD304 ; hNRP1 ; ANA949	neuropilin-1 (human)	http://purl.obolibrary.org/obo/PR_O14786	8829
CD305 ; hLAIR1 ; ANA1180	leukocyte-associated immunoglobulin-like receptor 1 (human)	http://purl.obolibrary.org/obo/PR_Q6GTX8	3903
CD306 ; hLAIR2 ; ANA1181	leukocyte-associated immunoglobulin-like receptor 2 (human)	http://purl.obolibrary.org/obo/PR_Q6ISS4	3904

CD309 ; hKDR ; ANA1100	vascular endothelial growth factor receptor 2 (human)	http://purl.obolibrary.org/obo/PR_P35968	3791
CD31 ; hPECAM1 ; ANA1044	platelet endothelial cell adhesion molecule (human)	http://purl.obolibrary.org/obo/PR_P16284	5175
CD312 ; hADGRE2 ; ANA1253	adhesion G protein-coupled receptor E2 (human)	http://purl.obolibrary.org/obo/PR_Q9UHX3	30817
CD314 ; hKLRK1 ; ANA886	NKG2-D type II integral membrane protein (human)	https://www.ncbi.nlm.nih.gov/gene/22914	22914
CD315 ; hPTGFRN ; ANA1248	prostaglandin F2 receptor negative regulator (human)	http://purl.obolibrary.org/obo/PR_Q9P2B2	5738
CD316 ; hIGSF8 ; ANA1221	immunoglobulin superfamily member 8 (human)	http://purl.obolibrary.org/obo/PR_Q969P0	93185
CD317 ; hBST2 ; ANA1150	bone marrow stromal antigen 2 (human)	http://purl.obolibrary.org/obo/PR_Q10589	684
CD318 ; hCDCP1 ; ANA1234	CUB domain-containing protein 1 (human)	http://purl.obolibrary.org/obo/PR_Q9H5V8	64866
CD319 ; hSLAMF7 ; ANA1242	SLAM family member 7 (human)	http://purl.obolibrary.org/obo/PR_Q9NQ25	57823
CD320 ; hCD320 ; ANA1241	CD320 antigen (human)	http://purl.obolibrary.org/obo/PR_Q9NPF0	51293
Cd320 ; mCD320 ; ANA1266	CD320 antigen (mouse)	http://purl.obolibrary.org/obo/PR_Q9Z1P5	54219

CD321 ; hF11R ; ANA1265	junctional adhesion molecule A (human)	http://purl.obolibrary.org/obo/PR_Q9Y624	50848
CD322 ; hJAM2 ; ANA1126	junctional adhesion molecule B (human)	http://purl.obolibrary.org/obo/PR_P57087	58494
CD324 ; hCDH1 ; ANA1020	cadherin-1 (human)	http://purl.obolibrary.org/obo/PR_P12830	999
CD326 ; hEPCAM ; ANA1045	epithelial cell adhesion molecule (human)	http://purl.obolibrary.org/obo/PR_P16422	4072
CD32A ; hFCGR2A ; ANA1018	low affinity immunoglobulin gamma Fc region receptor II-a (human)	http://purl.obolibrary.org/obo/PR_P12318	2212
CD32B ; hFCGR2B ; ANA1088	low affinity immunoglobulin gamma Fc region receptor II-b (human)	http://purl.obolibrary.org/obo/PR_P31994	2213
CD32C ; hFCGR2C ; ANA1089	low affinity immunoglobulin gamma Fc region receptor II-c (human)	http://purl.obolibrary.org/obo/PR_P31995	9103
Cd33 ; mCD33 ; ANA1177	myeloid cell surface antigen CD33 (mouse)	http://purl.obolibrary.org/obo/PR_Q63994	12489
CD331 ; hFGFR1 ; ANA1009	fibroblast growth factor receptor 1 (human)	http://purl.obolibrary.org/obo/PR_P11362	2260
CD332 ; hFGFR2 ; ANA1065	fibroblast growth factor receptor 2 (human)	http://purl.obolibrary.org/obo/PR_P21802	2263
CD333 ; hFGFR3 ; ANA1070	fibroblast growth factor receptor 3 (human)	http://purl.obolibrary.org/obo/PR_P22607	2261

CD334 ; hFGFR4 ; ANA1069	fibroblast growth factor receptor 4 (human)	http://purl.obolibrary.org/obo/PR_P22455	2264
CD335 ; hNCR1 ; ANA967	natural cytotoxicity triggering receptor 1 (human)	http://purl.obolibrary.org/obo/PR_O76036	9437
CD337 ; hNCR3 ; ANA950	natural cytotoxicity triggering receptor 3 (human)	http://purl.obolibrary.org/obo/PR_O14931	259197
CD339 ; hJAG1 ; ANA1132	protein jagged-1 (human)	http://purl.obolibrary.org/obo/PR_P78504	182
CD34 ; hCD34 ; ANA1083	hematopoietic progenitor cell antigen CD34 (human)	http://purl.obolibrary.org/obo/PR_P28906	947
Cd34 ; mCD34 ; ANA1178	hematopoietic progenitor cell antigen CD34 (mouse)	http://purl.obolibrary.org/obo/PR_Q64314	12490
CD340 ; hERBB2 ; ANA982	receptor tyrosine-protein kinase erbB-2 (human)	http://purl.obolibrary.org/obo/PR_P04626	2064
CD344 ; hFZD4 ; ANA1256	frizzled-4 (human)	http://purl.obolibrary.org/obo/PR_Q9ULV1	8322
CD349 ; hFZD9 ; ANA943	frizzled-9 (human)	http://purl.obolibrary.org/obo/PR_O00144	8326
CD35 ; hCR1 ; ANA1051	complement receptor type 1 (human)	http://purl.obolibrary.org/obo/PR_P17927	1378
CD350 ; hFZD10 ; ANA1257	frizzled-10 (human)	http://purl.obolibrary.org/obo/PR_Q9ULW2	11211

CD36 ; hCD36 ; ANA1047	platelet glycoprotein 4 (human)	http://purl.obolibrary.org/obo/PR_P16671	948
Cd36 ; mCD36 ; ANA1148	platelet glycoprotein 4 (mouse)	http://purl.obolibrary.org/obo/PR_Q08857	12491
CD37 ; hCD37 ; ANA1008	leukocyte antigen CD37 (human)	http://purl.obolibrary.org/obo/PR_P11049	951
Cd37 ; mCD37 ; ANA1172	leukocyte antigen CD37 (mouse)	http://purl.obolibrary.org/obo/PR_Q61470	12493
CD38 ; hCD38 ; ANA808	ADP-ribosyl cyclase/cyclic ADP-ribose hydrolase 1 (human)	http://purl.obolibrary.org/obo/PR_P28907	952
Cd38 ; mCD38 ; ANA1125	ADP-ribosyl cyclase/cyclic ADP-ribose hydrolase 1 (mouse)	http://purl.obolibrary.org/obo/PR_P56528	12494
CD39 ; hENTPD1 ; ANA921	ectonucleoside triphosphate diphosphohydrolase 1 (human)	http://purl.obolibrary.org/obo/PR_P49961	-
CD3d ; hCD3D ; ANA979	T-cell surface glycoprotein CD3 delta chain (human)	http://purl.obolibrary.org/obo/PR_P04234	915
Cd3d ; mCD3D ; ANA980	T-cell surface glycoprotein CD3 delta chain (mouse)	http://purl.obolibrary.org/obo/PR_P04235	12500
Cd3e ; mCD3E ; ANA1071	T-cell surface glycoprotein CD3 epsilon chain (mouse)	http://purl.obolibrary.org/obo/PR_P22646	12501
Cd3eap ; mCD3EAP ; ANA1189	DNA-directed RNA polymerase I subunit RPA34 (mouse)	http://purl.obolibrary.org/obo/PR_Q76KJ5	70333

CD3g ; hCD3G ; ANA1003	T-cell surface glycoprotein CD3 gamma chain (human)	http://purl.obolibrary.org/obo/PR_P09693	917
Cd3g ; mCD3G ; ANA1016	T-cell surface glycoprotein CD3 gamma chain (mouse)	http://purl.obolibrary.org/obo/PR_P11942	12502
CD4 ; hCD4 ; ANA41	T-cell surface glycoprotein CD4 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=920	920
Cd4 ; mCD4 ; ANA504	T-cell surface glycoprotein CD4 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12504	12504
CD40 ; hCD40 ; ANA42	tumor necrosis factor receptor superfamily member 5 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=958	958
Cd40 ; mCD40 ; ANA505	tumor necrosis factor receptor superfamily member 5 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21939	21939
Cd40lg ; mCD40LG ; ANA506	CD40 ligand (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21947	21947
CD41 ; hITGA2B ; ANA997	integrin alpha-IIb (human)	http://purl.obolibrary.org/obo/PR_P08514	3674
CD42a ; hGP9 ; ANA1032	platelet glycoprotein IX (human)	http://purl.obolibrary.org/obo/PR_P14770	2815
CD42b ; hGP1BA ; ANA992	platelet glycoprotein Ib alpha chain (human)	http://purl.obolibrary.org/obo/PR_P07359	2811
CD42c ; hGP1BB ; ANA1022	platelet glycoprotein Ib beta chain (human)	http://purl.obolibrary.org/obo/PR_P13224	2812

CD42d ; hGP5 ; ANA1103	platelet glycoprotein V (human)	http://purl.obolibrary.org/obo/PR_P40197	2814
CD43 ; hSPN ; ANA893	leukosialin (human)	https://www.ncbi.nlm.nih.gov/gene/6693	6693
CD44 ; hCD44 ; ANA914	CD44 antigen (human)	http://purl.obolibrary.org/obo/PR_P16070	-
Cd44 ; mCD44 ; ANA1035	CD44 antigen (mouse)	http://purl.obolibrary.org/obo/PR_P15379	12505
CD45RA ; hPTPRC/iso:h6 ; ANA816	receptor-type tyrosine-protein phosphatase C isoform h6 (human)	http://purl.obolibrary.org/obo/PR_P08575-8	5788
CD45RO ; PTPRC/iso:CD45RO ; ANA822	receptor-type tyrosine-protein phosphatase C isoform CD45RO	http://purl.obolibrary.org/obo/PR_000001017	5788
CD46 ; hCD46 ; ANA1036	membrane cofactor protein (human)	http://purl.obolibrary.org/obo/PR_P15529	4179
Cd46 ; mCD46 ; ANA968	membrane cofactor protein (mouse)	http://purl.obolibrary.org/obo/PR_O88174	17221
CD47 ; hCD47 ; ANA1147	leukocyte surface antigen CD47 (human)	http://purl.obolibrary.org/obo/PR_Q08722	961
Cd47 ; mCD47 ; ANA1175	leukocyte surface antigen CD47 (mouse)	http://purl.obolibrary.org/obo/PR_Q61735	16423
CD48 ; hCD48 ; ANA1001	CD48 antigen (human)	http://purl.obolibrary.org/obo/PR_P09326	962

Cd48 ; mCD48 ; ANA1052	CD48 antigen (mouse)	http://purl.obolibrary.org/obo/PR_P18181	12506
CD49 ; hITGA6 ; ANA876	integrin alpha-6 (human)	https://www.ncbi.nlm.nih.gov/gene/3655	3655
CD49a ; hITGA1 ; ANA927	integrin alpha-1 (human)	http://purl.obolibrary.org/obo/PR_P56199	-
CD49b ; hITGA2 ; ANA1048	integrin alpha-2 (human)	http://purl.obolibrary.org/obo/PR_P17301	3673
CD49c ; hITGA3 ; ANA1079	integrin alpha-3 (human)	http://purl.obolibrary.org/obo/PR_P26006	3675
CD49d ; hITGA4 ; ANA1026	integrin alpha-4 (human)	http://purl.obolibrary.org/obo/PR_P13612	3676
CD49e ; hITGA5 ; ANA999	integrin alpha-5 (human)	http://purl.obolibrary.org/obo/PR_P08648	3678
CD5 ; hCD5 ; ANA915	T-cell surface glycoprotein CD5 (human)	http://purl.obolibrary.org/obo/PR_P06127	-
Cd5 ; mCD5 ; ANA1023	T-cell surface glycoprotein CD5 (mouse)	http://purl.obolibrary.org/obo/PR_P13379	12507
CD50 ; hICAM3 ; ANA1094	intercellular adhesion molecule 3 (human)	http://purl.obolibrary.org/obo/PR_P32942	3385
CD51 ; hITGAV ; ANA991	integrin alpha-V (human)	http://purl.obolibrary.org/obo/PR_P06756	3685

CD52 ; hCD52 ; ANA1087	CAMPATH-1 antigen (human)	http://purl.obolibrary.org/obo/PR_P31358	1043
Cd52 ; mCD52 ; ANA1179	CAMPATH-1 antigen (mouse)	http://purl.obolibrary.org/obo/PR_Q64389	23833
CD53 ; hCD53 ; ANA1057	leukocyte surface antigen CD53 (human)	http://purl.obolibrary.org/obo/PR_P19397	963
Cd53 ; mCD53 ; ANA1171	leukocyte surface antigen CD53 (mouse)	http://purl.obolibrary.org/obo/PR_Q61451	12508
CD55 ; hCD55 ; ANA995	complement decay-accelerating factor (human)	http://purl.obolibrary.org/obo/PR_P08174	1604
Cd55 ; mCd55 ; ANA1173	complement decay-accelerating factor, GPI-anchored (mouse)	http://purl.obolibrary.org/obo/PR_Q61475	13136
Cd55b ; mCd55b ; ANA1174	complement decay-accelerating factor transmembrane isoform (mouse)	http://purl.obolibrary.org/obo/PR_Q61476	13137
CD56 ; hNCAM1 ; ANA815	neural cell adhesion molecule 1 (human)	http://purl.obolibrary.org/obo/PR_P13591	4684
CD57 ; hB3GAT1 ; ANA823	galactosylgalactosylxylosylprotein 3-beta-glucuronosyltransferase 1 (human)	https://www.ncbi.nlm.nih.gov/gene/27087	27087
CD58 ; hCD58 ; ANA1056	lymphocyte function-associated antigen 3 (human)	http://purl.obolibrary.org/obo/PR_P19256	965
CD59 ; hCD59 ; ANA1030	CD59 glycoprotein (human)	http://purl.obolibrary.org/obo/PR_P13987	966

Cd59a ; mCd59a ; ANA957	CD59A glycoprotein (mouse)	http://purl.obolibrary.org/obo/PR_O55186	12509
Cd59b ; mCd59b ; ANA1127	CD59B glycoprotein (mouse)	http://purl.obolibrary.org/obo/PR_P58019	333883
Cd5l ; mCD5L ; ANA1249	CD5 antigen-like (mouse)	http://purl.obolibrary.org/obo/PR_Q9QWK4	11801
CD6 ; hCD6 ; ANA1085	T-cell differentiation antigen CD6 (human)	http://purl.obolibrary.org/obo/PR_P30203	923
Cd6 ; mCD6 ; ANA1170	T-cell differentiation antigen CD6 (mouse)	http://purl.obolibrary.org/obo/PR_Q61003	12511
CD61 ; hITGB3 ; ANA984	integrin beta-3 (human)	http://purl.obolibrary.org/obo/PR_P05106	3690
CD62E ; hSELE ; ANA1046	E-selectin (human)	http://purl.obolibrary.org/obo/PR_P16581	6401
CD62L ; hSELL ; ANA712	L-selectin (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6401	6401
CD62P ; hSELP ; ANA1042	P-selectin (human)	http://purl.obolibrary.org/obo/PR_P16109	6403
CD63 ; hCD63 ; ANA902	CD63 antigen (human)	https://www.ncbi.nlm.nih.gov/gene/967	967
Cd63 ; mCD63 ; ANA1112	CD63 antigen (mouse)	http://purl.obolibrary.org/obo/PR_P41731	12512

CD64 ; hFCGR1A ; ANA873	high affinity immunoglobulin gamma Fc receptor I (human)	https://www.ncbi.nlm.nih.gov/gene/2209	2209
CD66a ; hCEACAM1 ; ANA1027	carcinoembryonic antigen-related cell adhesion molecule 1 (human)	http://purl.obolibrary.org/obo/PR_P13688	634
CD66b ; hCEACAM8 ; ANA1091	carcinoembryonic antigen-related cell adhesion molecule 8 (human)	http://purl.obolibrary.org/obo/PR_P31997	1088
CD66c ; hCEACAM6 ; ANA1105	carcinoembryonic antigen-related cell adhesion molecule 6 (human)	http://purl.obolibrary.org/obo/PR_P40199	4680
CD66d ; hCEACAM3 ; ANA1104	carcinoembryonic antigen-related cell adhesion molecule 3 (human)	http://purl.obolibrary.org/obo/PR_P40198	1084
CD66e ; hCEACAM5 ; ANA990	carcinoembryonic antigen-related cell adhesion molecule 5 (human)	http://purl.obolibrary.org/obo/PR_P06731	1048
CD66f ; hPSG1 ; ANA1010	pregnancy-specific beta-1-glycoprotein 1 (human)	http://purl.obolibrary.org/obo/PR_P11464	5669
CD68 ; hCD68 ; ANA1096	macrosialin (human)	http://purl.obolibrary.org/obo/PR_P34810	968
Cd68 ; mCD68 ; ANA1090	macrosialin (mouse)	http://purl.obolibrary.org/obo/PR_P31996	12514
CD69 ; hCD69 ; ANA865	early activation antigen CD69 (human)	https://www.ncbi.nlm.nih.gov/gene/969	969
Cd69 ; mCD69 ; ANA1102	early activation antigen CD69 (mouse)	http://purl.obolibrary.org/obo/PR_P37217	12515

CD7 ; hCD7 ; ANA1002	T-cell antigen CD7 (human)	http://purl.obolibrary.org/obo/PR_P09564	924
Cd7 ; mCD7 ; ANA1121	T-cell antigen CD7 (mouse)	http://purl.obolibrary.org/obo/PR_P50283	12516
CD70 ; hCD70 ; ANA44	CD70 antigen (human)	http://www.ncbi.nlm.nih.gov/gene/?term=970	970
Cd70 ; mCD70 ; ANA507	CD70 antigen (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21948	21948
CD71a ; hTFRC ; ANA932	transferrin receptor protein 1 (human)	http://purl.obolibrary.org/obo/PR_P02786	-
CD72 ; hCD72 ; ANA1066	B-cell differentiation antigen CD72 (human)	http://purl.obolibrary.org/obo/PR_P21854	971
Cd72 ; mCD72 ; ANA1067	B-cell differentiation antigen CD72 (mouse)	http://purl.obolibrary.org/obo/PR_P21855	12517
CD73 ; hNT5E ; ANA1062	5'-nucleotidase (human)	http://purl.obolibrary.org/obo/PR_P21589	4907
CD74 ; hCD74 ; ANA978	HLA class II histocompatibility antigen gamma chain (human)	http://purl.obolibrary.org/obo/PR_P04233	972
Cd74 ; mCD74 ; ANA981	H-2 class II histocompatibility antigen gamma chain (mouse)	http://purl.obolibrary.org/obo/PR_P04441	16149
CD79a ; hCD79A ; ANA1015	B-cell antigen receptor complex-associated protein alpha chain (human)	http://purl.obolibrary.org/obo/PR_P11912	973

Cd79a ; mCD79A ; ANA1014	B-cell antigen receptor complex-associated protein alpha chain (mouse)	http://purl.obolibrary.org/obo/PR_P11911	12518
CD79b ; hCD79B ; ANA1109	B-cell antigen receptor complex-associated protein beta chain (human)	http://purl.obolibrary.org/obo/PR_P40259	974
Cd79b ; mCD79B ; ANA1037	B-cell antigen receptor complex-associated protein beta chain (mouse)	http://purl.obolibrary.org/obo/PR_P15530	15985
CD8 ; hCD8A ; ANA810	T-cell surface glycoprotein CD8 alpha chain (human)	http://purl.obolibrary.org/obo/PR_P01732	925
Cd80 ; mCD80 ; ANA1135	T-lymphocyte activation antigen CD80 (mouse)	http://purl.obolibrary.org/obo/PR_Q00609	12519
CD81 ; hCD81 ; ANA1129	CD81 antigen (human)	http://purl.obolibrary.org/obo/PR_P60033	975
Cd81 ; mCD81 ; ANA1099	CD81 antigen (mouse)	http://purl.obolibrary.org/obo/PR_P35762	12520
CD82 ; hCD82 ; ANA1082	CD82 antigen (human)	http://purl.obolibrary.org/obo/PR_P27701	3732
Cd82 ; mCD82 ; ANA1107	CD82 antigen (mouse)	http://purl.obolibrary.org/obo/PR_P40237	12521
CD83 ; hCD83 ; ANA916	CD83 antigen (human)	http://purl.obolibrary.org/obo/PR_Q01151	-
Cd83 ; mCD83 ; ANA969	CD83 antigen (mouse)	http://purl.obolibrary.org/obo/PR_O88324	12522

CD84 ; hCD84 ; ANA1254	SLAM family member 5 (human)	http://purl.obolibrary.org/obo/PR_Q9UIB8	8832
Cd84 ; mCD84 ; ANA1162	SLAM family member 5 (mouse)	http://purl.obolibrary.org/obo/PR_Q18PI6	12523
CD85a ; hLILRB3 ; ANA962	leukocyte immunoglobulin-like receptor subfamily B member 3 (human)	http://purl.obolibrary.org/obo/PR_O75022	107987462
CD85b ; hLILRA6 ; ANA1182	leukocyte immunoglobulin-like receptor subfamily A member 6 (human)	http://purl.obolibrary.org/obo/PR_Q6PI73	-
CD85c ; hLILRB5 ; ANA963	leukocyte immunoglobulin-like receptor subfamily B member 5 (human)	http://purl.obolibrary.org/obo/PR_O75023	10990
CD85d ; hLILRB2 ; ANA1201	leukocyte immunoglobulin-like receptor subfamily B member 2 (human)	http://purl.obolibrary.org/obo/PR_Q8N423	-
CD85e ; hLILRA3 ; ANA1202	leukocyte immunoglobulin-like receptor subfamily A member 3 (human)	http://purl.obolibrary.org/obo/PR_Q8N6C8	11026
CD85f ; hLILRA5 ; ANA941	leukocyte immunoglobulin-like receptor subfamily A member 5 (human)	http://purl.obolibrary.org/obo/PR_A6NI73	353514
CD85g ; hLILRA4 ; ANA1128	leukocyte immunoglobulin-like receptor subfamily A member 4 (human)	http://purl.obolibrary.org/obo/PR_P59901	23547
CD85h ; hLILRA2 ; ANA1200	leukocyte immunoglobulin-like receptor subfamily A member 2 (human)	http://purl.obolibrary.org/obo/PR_Q8N149	11027
CD85i ; hLILRA1 ; ANA961	leukocyte immunoglobulin-like receptor subfamily A member 1 (human)	http://purl.obolibrary.org/obo/PR_O75019	11024

CD85J ; hLILRB1 ; ANA888	leukocyte immunoglobulin-like receptor subfamily B member 1 (human)	https://www.ncbi.nlm.nih.gov/gene/10859	10859
CD85k ; hLILRB4 ; ANA1205	leukocyte immunoglobulin-like receptor subfamily B member 4 (human)	http://purl.obolibrary.org/obo/PR_Q8NHJ6	11006
Cd86 ; mCD86 ; ANA1114	T-lymphocyte activation antigen CD86 (mouse)	http://purl.obolibrary.org/obo/PR_P42082	12524
CD87 ; hPLAUR ; ANA1140	urokinase plasminogen activator surface receptor (human)	http://purl.obolibrary.org/obo/PR_Q03405	5329
CD88 ; hC5AR1 ; ANA1063	C5a anaphylatoxin chemotactic receptor 1 (human)	http://purl.obolibrary.org/obo/PR_P21730	728
CD89 ; hFCAR ; ANA1075	immunoglobulin alpha Fc receptor (human)	http://purl.obolibrary.org/obo/PR_P24071	2204
Cd8a ; mCD8A ; ANA974	T-cell surface glycoprotein CD8 alpha chain (mouse)	http://purl.obolibrary.org/obo/PR_P01731	12525
CD8b ; hCD8B ; ANA1007	T-cell surface glycoprotein CD8 beta chain (human)	http://purl.obolibrary.org/obo/PR_P10966	926
Cd8b1 ; mCD8B ; ANA1004	T-cell surface glycoprotein CD8 beta chain (mouse)	http://purl.obolibrary.org/obo/PR_P10300	12526
CD9 ; hCD9 ; ANA1068	CD9 antigen (human)	http://purl.obolibrary.org/obo/PR_P21926	928
Cd9 ; mCD9 ; ANA1108	CD9 antigen (mouse)	http://purl.obolibrary.org/obo/PR_P40240	12527

CD90 ; hTHY1 ; ANA934	Thy-1 membrane glycoprotein (human)	http://purl.obolibrary.org/obo/PR_P04216	-
CD91 ; hLRP1 ; ANA1144	prolow-density lipoprotein receptor-related protein 1 (human)	http://purl.obolibrary.org/obo/PR_Q07954	4035
Cd93 ; mCD93 ; ANA971	complement component C1q receptor (mouse)	http://purl.obolibrary.org/obo/PR_O89103	17064
CD94 ; hKLRD1 ; ANA884	natural killer cells antigen CD94 (human)	https://www.ncbi.nlm.nih.gov/gene/3824	3824
CD95 ; hFAS ; ANA85	tumor necrosis factor receptor superfamily member 6 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=355	355
CD96 ; hCD96 ; ANA1106	T-cell surface protein tactile (human)	http://purl.obolibrary.org/obo/PR_P40200	10225
Cd96 ; mCD96 ; ANA1165	T-cell surface protein tactile (mouse)	http://purl.obolibrary.org/obo/PR_Q3U0X8	84544
CD97 ; hADGRE5 ; ANA1120	CD97 antigen (human)	http://purl.obolibrary.org/obo/PR_P48960	976
CD98 ; hSLC7A5 ; ANA1136	large neutral amino acids transporter small subunit 1 (human)	http://purl.obolibrary.org/obo/PR_Q01650	8140
CD99 ; hCD99 ; ANA1031	CD99 antigen (human)	http://purl.obolibrary.org/obo/PR_P14209	4267
Cd99l2 ; mCD99L2 ; ANA1193	CD99 antigen-like protein 2 (mouse)	http://purl.obolibrary.org/obo/PR_Q8BIF0	171486

CDw113 ; hNECTIN3 ; ANA1243	nectin-3 (human)	http://purl.obolibrary.org/obo/PR_Q9NQS3	25945
CDw218b ; hIL18RAP ; ANA972	interleukin-18 receptor accessory protein (human)	http://purl.obolibrary.org/obo/PR_O95256	8807
CDw293 ; hBMPR1B ; ANA945	bone morphogenetic protein receptor type-1B (human)	http://purl.obolibrary.org/obo/PR_O00238	658
CDw325 ; hCDH2 ; ANA1055	cadherin-2 (human)	http://purl.obolibrary.org/obo/PR_P19022	1000
CDw327 ; hSIGLEC6 ; ANA955	sialic acid-binding Ig-like lectin 6 (human)	http://purl.obolibrary.org/obo/PR_O43699	946
CDw328 ; hSIGLEC7 ; ANA1262	sialic acid-binding Ig-like lectin 7 (human)	http://purl.obolibrary.org/obo/PR_Q9Y286	27036
CDw329 ; hSIGLEC9 ; ANA1263	sialic acid-binding Ig-like lectin 9 (human)	http://purl.obolibrary.org/obo/PR_Q9Y336	27180
CDw338 ; hABCG2 ; ANA1260	ATP-binding cassette sub-family G member 2 (human)	http://purl.obolibrary.org/obo/PR_Q9UNQ0	9429
CDW92 ; hSLC44A1 ; ANA1211	choline transporter-like protein 1 (human)	http://purl.obolibrary.org/obo/PR_Q8WWI5	23446
CENPB ; hCENPB ; ANA821	major centromere autoantigen B (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1059	1059
CKLF ; hCKLF ; ANA45	chemokine-like factor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=51192	51192

Cklf ; mCKLF ; ANA508	chemokine-like factor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=75458	75458
CLA, CD162 ; hSELPLG ; ANA903	P-selectin glycoprotein ligand 1 (human)	https://www.ncbi.nlm.nih.gov/gene/6404	6404
CLCF1 ; hCLCF1 ; ANA46	cardiotrophin-like cytokine factor 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=23529	23529
Clcf1 ; mCLCF1 ; ANA509	cardiotrophin-like cytokine factor 1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=56708	56708
Cmtm1 ; CMTM1 ; ANA510	CKLF-like MARVEL transmembrane domain-containing protein 1	http://www.ncbi.nlm.nih.gov/gene/?term=100504164	100504164
CMTM1 ; hCMTM1 ; ANA47	CKLF-like MARVEL transmembrane domain-containing protein 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=113540	113540
CMTM6 ; hCMTM6 ; ANA48	CKLF-like MARVEL transmembrane domain-containing protein 6 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=54918	54918
Cmtm6 ; mCMTM6 ; ANA511	CKLF-like MARVEL transmembrane domain-containing protein 6 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=67213	67213
CMTM7 ; hCMTM7 ; ANA49	CKLF-like MARVEL transmembrane domain-containing protein 7 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=112616	112616
Cmtm7 ; mCMTM7 ; ANA512	CKLF-like MARVEL transmembrane domain-containing protein 7 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=102545	102545
CNTFR ; hCNTFR ; ANA50	ciliary neurotrophic factor receptor subunit alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1271	1271

Cntfr ; mCNTFR ; ANA513	ciliary neurotrophic factor receptor subunit alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12804	12804
Csf1 ; mCSF1 ; ANA514	macrophage colony-stimulating factor 1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12977	12977
CSF1R ; hCSF1R ; ANA52	macrophage colony-stimulating factor 1 receptor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1436	1436
Csf1r ; mCSF1R ; ANA515	macrophage colony-stimulating factor 1 receptor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12978	12978
Csf2 ; mCSF2 ; ANA516	granulocyte-macrophage colony-stimulating factor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12981	12981
CSF2RA ; hCSF2RA ; ANA54	granulocyte-macrophage colony-stimulating factor receptor subunit alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1438	1438
Csf2ra ; mCSF2RA ; ANA517	granulocyte-macrophage colony-stimulating factor receptor subunit alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12982	12982
CSF2RB ; hCSF2RB ; ANA55	cytokine receptor common subunit beta (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1439	1439
Csf2rb ; mCsf2rb ; ANA518	cytokine receptor common subunit beta (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12983	12983
CSF3 ; hCSF3 ; ANA56	granulocyte colony-stimulating factor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1440	1440
Csf3 ; mCSF3 ; ANA519	granulocyte colony-stimulating factor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12985	12985

CSF3R ; hCSF3R ; ANA57	granulocyte colony-stimulating factor receptor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1441	1441
Csf3r ; mCSF3R ; ANA520	granulocyte colony-stimulating factor receptor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12986	12986
CTACK ; hCCL27 ; ANA19	C-C motif chemokine 27 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=10850	10850
Cx3cr1 ; mCX3CR1 ; ANA522	CX3C chemokine receptor 1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=13051	13051
Cxcl1 ; mCXCL1 ; ANA523	growth-regulated alpha protein (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=14825	14825
CXCL11 ; hCXCL11 ; ANA62	C-X-C motif chemokine 11 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6373	6373
Cxcl11 ; mCxcl11 ; ANA525	C-X-C motif chemokine 11 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=56066	56066
CXCL12 ; hCXCL12 ; ANA63	stromal cell-derived factor 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6387	6387
Cxcl12 ; mCXCL12 ; ANA526	stromal cell-derived factor 1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20315	20315
CXCL13 ; hCXCL13 ; ANA64	C-X-C motif chemokine 13 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=10563	10563
Cxcl13 ; mCXCL13 ; ANA527	C-X-C motif chemokine 13 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=55985	55985

CXCL14 ; hCXCL14 ; ANA65	C-X-C motif chemokine 14 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=9547	9547
Cxcl14 ; mCXCL14 ; ANA528	C-X-C motif chemokine 14 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=57266	57266
CXCL16 ; hCXCL16 ; ANA66	C-X-C motif chemokine 16 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=58191	58191
Cxcl16 ; mCXCL16 ; ANA529	C-X-C motif chemokine 16 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=66102	66102
CXCL17 ; hCXCL17 ; ANA67	C-X-C motif chemokine 17 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=284340	284340
Cxcl17 ; mCXCL17 ; ANA530	C-X-C motif chemokine 17 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=232983	232983
Cxcl2 ; mCxcl2 ; ANA531	C-X-C motif chemokine 2 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20310	20310
CXCL3 ; hCXCL3 ; ANA69	C-X-C motif chemokine 3 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=2921	2921
Cxcl3 ; mCxcl3 ; ANA532	C-X-C motif chemokine 3 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=330122	330122
CXCL5 ; hCXCL5 ; ANA70	C-X-C motif chemokine 5 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6374	6374
Cxcl5 ; mCXCL5 ; ANA533	C-X-C motif chemokine 5 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20311	20311

CXCL6 ; hCXCL6 ; ANA71	C-X-C motif chemokine 6 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6372	6372
CXCL9 ; hCXCL9 ; ANA73	C-X-C motif chemokine 9 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=4283	4283
Cxcl9 ; mCXCL9 ; ANA534	C-X-C motif chemokine 9 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=17329	17329
CXCR1 ; hCXCR1 ; ANA74	C-X-C chemokine receptor type 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3577	3577
Cxcr1 ; mCxcr1 ; ANA535	C-X-C chemokine receptor type 1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=227288	227288
CXCR2 ; hCXCR2 ; ANA75	C-X-C chemokine receptor type 2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3579	3579
Cxcr2 ; mCXCR2 ; ANA536	C-X-C chemokine receptor type 2 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12765	12765
CXCR3 ; hCXCR3 ; ANA76	C-X-C chemokine receptor type 3 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=2833	2833
Cxcr3 ; mCXCR3 ; ANA537	C-X-C chemokine receptor type 3 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12766	12766
CXCR4 ; hCXCR4 ; ANA77	C-X-C chemokine receptor type 4 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7852	7852
Cxcr4 ; mCXCR4 ; ANA538	C-X-C chemokine receptor type 4 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12767	12767

CXCR5 ; hCXCR5 ; ANA78	C-X-C chemokine receptor type 5 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=643	643
Cxcr5 ; mCXCR5 ; ANA539	C-X-C chemokine receptor type 5 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=12145	12145
CXCR6 ; hCXCR6 ; ANA79	C-X-C chemokine receptor type 6 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=10663	10663
Cxcr6 ; mCXCR6 ; ANA540	C-X-C chemokine receptor type 6 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=80901	80901
DC-SIGN1 ; hCD209 ; ANA869	CD209 antigen (human)	https://www.ncbi.nlm.nih.gov/gene/30835	30835
EBI3 ; hEBI3 ; ANA80	interleukin-27 subunit beta (human)	http://www.ncbi.nlm.nih.gov/gene/?term=10148	10148
Ebi3 ; mEBI3 ; ANA541	interleukin-27 subunit beta (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=50498	50498
EGF ; hEGF ; ANA81	pro-epidermal growth factor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1950	1950
Egf ; mEGF ; ANA542	pro-epidermal growth factor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=13645	13645
EGFR ; hEGFR ; ANA82	epidermal growth factor receptor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1956	1956
Egfr ; mEGFR ; ANA543	epidermal growth factor receptor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=13649	13649

Eotaxin ; hCCL11 ; ANA3	eotaxin (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6356	6356
Eotaxin ; mCCL11 ; ANA477	eotaxin (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20292	20292
EPO ; hEPO ; ANA83	erythropoietin (human)	http://www.ncbi.nlm.nih.gov/gene/?term=2056	2056
Epo ; mEPO ; ANA544	erythropoietin (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=13856	13856
EPOR ; hEPOR ; ANA84	erythropoietin receptor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=2057	2057
Epor ; mEPOR ; ANA545	erythropoietin receptor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=13857	13857
Fas ; mFAS ; ANA546	tumor necrosis factor receptor superfamily member 6 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=14102	14102
Fasl ; mFASLG ; ANA547	tumor necrosis factor ligand superfamily member 6 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=14103	14103
FASLG ; hFASLG ; ANA86	tumor necrosis factor ligand superfamily member 6 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=356	356
FGF1 ; hFGF1 ; ANA87	fibroblast growth factor 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=2246	2246
Fgf1 ; mFGF1 ; ANA548	fibroblast growth factor 1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=14164	14164

FGFB ; hFGF2 ; ANA88	fibroblast growth factor 2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=2247	2247
Fgfb ; mFGF2 ; ANA549	fibroblast growth factor 2 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=14173	14173
FIGF ; hVEGFD ; ANA710	vascular endothelial growth factor D (human)	http://www.ncbi.nlm.nih.gov/gene/?term=2277	2277
FLT3 ; hFLT3 ; ANA89	receptor-type tyrosine-protein kinase FLT3 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=2322	2322
Flt3 ; mFLT3 ; ANA550	receptor-type tyrosine-protein kinase FLT3 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=14255	14255
Flt3l ; mFLT3LG ; ANA551	fms-related tyrosine kinase 3 ligand (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=14256	14256
FLT3LG ; hFLT3LG ; ANA90	fms-related tyrosine kinase 3 ligand (human)	http://www.ncbi.nlm.nih.gov/gene/?term=2323	2323
FOXP3 ; hFOXP3 ; ANA874	forkhead box protein P3 (human)	https://www.ncbi.nlm.nih.gov/gene/50943	50943
FRACTALKINE ; hCX3CL1 ; ANA58	fractalkine (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6376	6376
Fractalkine ; mCX3CL1 ; ANA521	fractalkine (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20312	20312
GDF15 ; hGDF15 ; ANA91	growth/differentiation factor 15 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=9518	9518

Gdf15 ; mGDF15 ; ANA552	growth/differentiation factor 15 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=23886	23886
GMCSF ; hCSF2 ; ANA53	granulocyte-macrophage colony-stimulating factor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1437	1437
GranB ; hGZMB ; ANA897	granzyme B (human)	https://www.ncbi.nlm.nih.gov/gene/3002	3002
GRO ; hCXCL1 ; ANA60	growth-regulated alpha protein (human)	http://www.ncbi.nlm.nih.gov/gene/?term=2919	2919
HGF ; hHGF ; ANA92	hepatocyte growth factor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3082	3082
Hgf ; mHGF ; ANA553	hepatocyte growth factor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=15234	15234
HLA-A ; hHLA-A ; ANA938	HLA class I histocompatibility antigen A alpha chain (human)	http://purl.obolibrary.org/obo/PR_000036948	-
HLA-C ; hHLA-C ; ANA939	HLA class I histocompatibility antigen C alpha chain (human)	http://purl.obolibrary.org/obo/PR_000036950	-
HLA-E ; hHLA-E ; ANA1029	HLA class I histocompatibility antigen, alpha chain E (human)	http://purl.obolibrary.org/obo/PR_P13747	3133
HLA-G ; hHLA-G ; ANA1049	HLA class I histocompatibility antigen, alpha chain G (human)	http://purl.obolibrary.org/obo/PR_P17693	3135
HLADR ; hHLA-DRA ; ANA812	HLA class II histocompatibility antigen, DR alpha chain (human)	http://purl.obolibrary.org/obo/PR_P01903	3122

ICAM1 ; ICAM1 ; ANA705	ICAM1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3383	3383
IFNA ; fam:hIFNA ; ANA717	interferon alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3438	3438
IFNA1 ; Ifna1 ; ANA93	interferon alpha-1	http://www.ncbi.nlm.nih.gov/gene/?term=3439	3439
Ifna1 ; mIfna1 ; ANA554	interferon alpha-1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=15962	15962
IFNA10 ; hIFNA10 ; ANA94	interferon alpha-10 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3446	3446
Ifna10 ; IFNA10 ; ANA555	interferon alpha-10	http://www.ncbi.nlm.nih.gov/gene/?term=110296	110296
IFNA13 ; Ifna13 ; ANA95	interferon alpha-13	http://www.ncbi.nlm.nih.gov/gene/?term=3447	3447
Ifna13 ; mIfna13 ; ANA556	interferon alpha-13 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=230396	230396
IFNA14 ; hIFNA14 ; ANA96	interferon alpha-14 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3448	3448
Ifna14 ; IFNA14 ; ANA557	interferon alpha-14	http://www.ncbi.nlm.nih.gov/gene/?term=404549	404549
IFNA16 ; hIFNA16 ; ANA97	interferon alpha-16 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3449	3449

Ifna16 ; IFNA16 ; ANA558	interferon alpha-16	http://www.ncbi.nlm.nih.gov/gene/?term=230398	230398
IFNA17 ; hIFNA17 ; ANA98	interferon alpha-17 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3451	3451
IFNA2 ; hIFNA2 ; ANA99	interferon alpha-2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3440	3440
Ifna2 ; mIfna2 ; ANA559	interferon alpha-2 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=15965	15965
IFNA21 ; hIFNA21 ; ANA100	interferon alpha-21 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3452	3452
IFNA4 ; hIFNA4 ; ANA101	interferon alpha-4 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3441	3441
Ifna4 ; mIfna4 ; ANA560	interferon alpha-4 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=15967	15967
IFNA5 ; hIFNA5 ; ANA102	interferon alpha-5 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3442	3442
Ifna5 ; mIfna5 ; ANA561	interferon alpha-5 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=15968	15968
IFNA6 ; hIFNA6 ; ANA103	interferon alpha-6 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3443	3443
Ifna6 ; mIfna6 ; ANA562	interferon alpha-6 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=15969	15969

IFNA7 ; hIFNA7 ; ANA104	interferon alpha-7 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3444	3444
Ifna7 ; mIfna7 ; ANA563	interferon alpha-7 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=15970	15970
IFNA8 ; hIFNA8 ; ANA105	interferon alpha-8 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3445	3445
IFNAR1 ; hIFNAR1 ; ANA106	interferon alpha/beta receptor 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3454	3454
Ifnar1 ; mIFNAR1 ; ANA565	interferon alpha/beta receptor 1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=15975	15975
IFNAR2 ; hIFNAR2 ; ANA107	interferon alpha/beta receptor 2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3455	3455
Ifnar2 ; mIFNAR2 ; ANA566	interferon alpha/beta receptor 2 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=15976	15976
IFNB1 ; hIFNB1 ; ANA108	interferon beta (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3456	3456
Ifnb1 ; mIFNB1 ; ANA567	interferon beta (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=15977	15977
IFNE ; hIFNE ; ANA109	interferon epsilon (human)	http://www.ncbi.nlm.nih.gov/gene/?term=338376	338376
Ifne ; mIFNE ; ANA568	interferon epsilon (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=230405	230405

IFNG ; hIFNG ; ANA110	interferon gamma (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3458	3458
Ifng ; mIFNG ; ANA569	interferon gamma (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=15978	15978
IFNGR1 ; hIFNGR1 ; ANA111	interferon gamma receptor 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3459	3459
Ifngr1 ; mIFNGR1 ; ANA570	interferon gamma receptor 1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=15979	15979
IFNGR2 ; hIFNGR2 ; ANA112	interferon gamma receptor 2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3460	3460
Ifngr2 ; IFNGR2 ; ANA571	interferon-gamma receptor beta chain	http://www.ncbi.nlm.nih.gov/gene/?term=15980	15980
IFNK ; hIFNK ; ANA113	interferon kappa (human)	http://www.ncbi.nlm.nih.gov/gene/?term=56832	56832
Ifnk ; mIFNK ; ANA572	interferon kappa (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=387510	387510
IFNL1 ; hIFNL1 ; ANA114	interferon lambda-1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=282618	282618
Ifnl2 ; mIfnl2 ; ANA573	interferon lambda-2 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=330496	330496
IFNL3 ; hIFNL3 ; ANA116	interferon lambda-3 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=282617	282617

Ifnl3 ; mIfnl3 ; ANA574	interferon lambda-3 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=338374	338374
IFNLR1 ; hIFNLR1 ; ANA117	interferon lambda receptor 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=163702	163702
Ifnlr1 ; mIFNLR1 ; ANA575	interferon lambda receptor 1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=242700	242700
IgA1 ; hIGHA1 ; ANA820	immunoglobulin heavy constant alpha 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3493	3493
IgA2 ; hIGHA2 ; ANA819	immunoglobulin heavy constant alpha 2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3494	3494
IgD ; hIGHD ; ANA813	immunoglobulin heavy constant delta (human)	http://purl.obolibrary.org/obo/PR_P01880	3495
IGF1 ; IGF1 ; ANA713	IGF1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3479	3479
IGFBP3 ; IGFBP3 ; ANA706	IGFBP3 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3486	3486
IgM ; hIGHM ; ANA817	immunoglobulin heavy constant mu (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3507	3507
IL10 ; hIL10 ; ANA118	interleukin-10 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3586	3586
Il10 ; mIL10 ; ANA576	interleukin-10 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16153	16153

IL10RA ; hIL10RA ; ANA119	interleukin-10 receptor subunit alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3587	3587
Il10ra ; mIL10RA ; ANA577	interleukin-10 receptor subunit alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16154	16154
IL10RB ; hIL10RB ; ANA120	interleukin-10 receptor subunit beta (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3588	3588
Il10rb ; mIL10RB ; ANA578	interleukin-10 receptor subunit beta (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16155	16155
IL11 ; hIL11 ; ANA121	interleukin-11 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3589	3589
Il11 ; mIL11 ; ANA579	interleukin-11 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16156	16156
IL11RA ; hIL11RA ; ANA122	interleukin-11 receptor subunit alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3590	3590
Il11ra1 ; mIl11ra1 ; ANA580	interleukin-11 receptor subunit alpha-1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16157	16157
IL12p35 ; hIL12A ; ANA123	interleukin-12 subunit alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3592	3592
Il12p35 ; mIL12A ; ANA581	interleukin-12 subunit alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16159	16159
IL12p40 ; hIL12B ; ANA124	interleukin-12 subunit beta (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3593	3593

IL12p40 ; mIL12B ; ANA582	interleukin-12 subunit beta (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16160	16160
IL12p70 ; hIL12 ; ANA800	interleukin-12 complex (human)	http://purl.obolibrary.org/obo/PR_000044524	
IL12RB1 ; hIL12RB1 ; ANA125	interleukin-12 receptor subunit beta-1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3594	3594
Il12rb1 ; mIL12RB1 ; ANA583	interleukin-12 receptor subunit beta-1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16161	16161
IL12RB2 ; hIL12RB2 ; ANA126	interleukin-12 receptor subunit beta-2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3595	3595
Il12rb2 ; mIL12RB2 ; ANA584	interleukin-12 receptor subunit beta-2 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16162	16162
IL13 ; hIL13 ; ANA127	interleukin-13 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3596	3596
Il13 ; mIL13 ; ANA585	interleukin-13 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16163	16163
Il13ra1 ; mIL13RA1 ; ANA586	interleukin-13 receptor subunit alpha-1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16164	16164
Il13ra2 ; mIL13RA2 ; ANA587	interleukin-13 receptor subunit alpha-2 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16165	16165
IL15 ; hIL15 ; ANA130	interleukin-15 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3600	3600

Il15 ; mIL15 ; ANA588	interleukin-15 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16168	16168
IL15RA ; hIL15RA ; ANA131	interleukin-15 receptor subunit alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3601	3601
Il15ra ; mIL15RA ; ANA589	interleukin-15 receptor subunit alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16169	16169
IL16 ; hIL16 ; ANA132	pro-interleukin-16 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3603	3603
Il16 ; mIL16 ; ANA590	pro-interleukin-16 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16170	16170
IL17 ; hIL17F-17A ; ANA801	interleukin 17F/17A heterodimer (human)	http://purl.obolibrary.org/obo/PR_000044528	
IL17A ; hIL17A ; ANA133	interleukin-17A (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3605	3605
Il17a ; mIL17A ; ANA591	interleukin-17A (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16171	16171
IL17B ; hIL17B ; ANA134	interleukin-17B (human)	http://www.ncbi.nlm.nih.gov/gene/?term=27190	27190
Il17b ; mIL17B ; ANA592	interleukin-17B (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=56069	56069
IL17C ; hIL17C ; ANA135	interleukin-17C (human)	http://www.ncbi.nlm.nih.gov/gene/?term=27189	27189

Il17c ; mIL17C ; ANA593	interleukin-17C (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=234836	234836
IL17D ; hIL17D ; ANA136	interleukin-17D (human)	http://www.ncbi.nlm.nih.gov/gene/?term=53342	53342
Il17d ; IL17D ; ANA594	interleukin-17D	http://www.ncbi.nlm.nih.gov/gene/?term=239114	239114
IL17F ; hIL17F ; ANA137	interleukin-17F (human)	http://www.ncbi.nlm.nih.gov/gene/?term=112744	112744
Il17f ; mIL17F ; ANA595	interleukin-17F (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=257630	257630
IL17RA ; hIL17RA ; ANA138	interleukin-17 receptor A (human)	http://www.ncbi.nlm.nih.gov/gene/?term=23765	23765
Il17ra ; mIL17RA ; ANA596	interleukin-17 receptor A (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16172	16172
IL18 ; hIL18 ; ANA139	interleukin-18 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3606	3606
Il18 ; mIL18 ; ANA597	interleukin-18 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16173	16173
IL18R1 ; hIL18R1 ; ANA140	interleukin-18 receptor 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=8809	8809
il18r1 ; mIL18R1 ; ANA698	interleukin-18 receptor 1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16182	16182

IL19 ; hIL19 ; ANA141	interleukin-19 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=29949	29949
Il19 ; mIL19 ; ANA598	interleukin-19 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=329244	329244
IL1A ; hIL1A ; ANA142	interleukin-1 alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3552	3552
Il1a ; mIL1A ; ANA599	interleukin-1 alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16175	16175
IL1B ; hIL1B ; ANA143	interleukin-1 beta (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3553	3553
Il1b ; mIL1B ; ANA600	interleukin-1 beta (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16176	16176
IL1F10 ; hIL1F10 ; ANA144	interleukin-1 family member 10 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=84639	84639
Il1f10 ; mIL1F10 ; ANA601	interleukin-1 family member 10 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=215274	215274
Il1f5 ; mIL36RN ; ANA602	interleukin-36 receptor antagonist protein (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=54450	54450
IL1R1 ; hIL1R1 ; ANA145	interleukin-1 receptor type 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3554	3554
Il1r1 ; mIL1R1 ; ANA603	interleukin-1 receptor type 1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16177	16177

IL1R2 ; hIL1R2 ; ANA146	interleukin-1 receptor type 2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7850	7850
Il1r2 ; mIL1R2 ; ANA604	interleukin-1 receptor type 2 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16178	16178
IL1RN ; hIL1RN ; ANA147	interleukin-1 receptor antagonist protein (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3557	3557
Il1rn ; mIL1RN ; ANA605	interleukin-1 receptor antagonist protein (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16181	16181
IL2 ; hIL2 ; ANA148	interleukin-2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3558	3558
Il2 ; mIL2 ; ANA606	interleukin-2 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16183	16183
IL20 ; hIL20 ; ANA149	interleukin-20 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=50604	50604
Il20 ; mIL20 ; ANA607	interleukin-20 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=58181	58181
IL20RA ; hIL20RA ; ANA150	interleukin-20 receptor subunit alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=53832	53832
Il20ra ; mIL20RA ; ANA608	interleukin-20 receptor subunit alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=237313	237313
IL20RB ; hIL20RB ; ANA151	interleukin-20 receptor subunit beta (human)	http://www.ncbi.nlm.nih.gov/gene/?term=53833	53833

Il20rb ; IL20RB ; ANA609	interleukin-20 receptor subunit beta	http://www.ncbi.nlm.nih.gov/gene/?term=213208	213208
IL21 ; hIL21 ; ANA152	interleukin-21 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=59067	59067
Il21 ; mIL21 ; ANA610	interleukin-21 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=60505	60505
IL21R ; hIL21R ; ANA153	interleukin-21 receptor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=50615	50615
Il21r ; mIL21R ; ANA611	interleukin-21 receptor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=60504	60504
IL22 ; hIL22 ; ANA154	interleukin-22 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=50616	50616
Il22 ; mIl22 ; ANA612	interleukin-22 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=50929	50929
IL22RA1 ; hIL22RA1 ; ANA155	interleukin-22 receptor subunit alpha-1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=58985	58985
Il22ra1 ; mIL22RA1 ; ANA613	interleukin-22 receptor subunit alpha-1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=230828	230828
IL22RA2 ; hIL22RA2 ; ANA156	interleukin-22 receptor subunit alpha-2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=116379	116379
Il22ra2 ; mIL22RA2 ; ANA614	interleukin-22 receptor subunit alpha-2 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=237310	237310

IL23 ; hIL23 ; ANA802	interleukin-23 complex (human)	http://purl.obolibrary.org/obo/PR_000044525	
IL23A ; hIL23A ; ANA157	interleukin-23 subunit alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=51561	51561
Il23a ; mIL23A ; ANA615	interleukin-23 subunit alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=83430	83430
IL23R ; hIL23R ; ANA158	interleukin-23 receptor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=149233	149233
Il23r ; mIL23R ; ANA616	interleukin-23 receptor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=209590	209590
IL24 ; hIL24 ; ANA159	interleukin-24 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=11009	11009
Il24 ; mIL24 ; ANA617	interleukin-24 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=93672	93672
IL25 ; hIL25 ; ANA160	interleukin-25 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=64806	64806
Il25 ; mMYDGF ; ANA618	myeloid-derived growth factor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=140806	140806
IL26 ; hIL26 ; ANA161	interleukin-26 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=55801	55801
IL27 ; hIL27 ; ANA162	interleukin-27 subunit alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=246778	246778

Il27 ; mIL27 ; ANA619	interleukin-27 subunit alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=246779	246779
IL28A ; hIFNL2 ; ANA115	interferon lambda-2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=282616	282616
IL2RA ; hIL2RA ; ANA163	interleukin-2 receptor subunit alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3559	3559
Il2ra ; mIL2RA ; ANA620	interleukin-2 receptor subunit alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16184	16184
IL2RB ; hIL2RB ; ANA164	interleukin-2 receptor subunit beta (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3560	3560
Il2rb ; mIL2RB ; ANA621	interleukin-2 receptor subunit beta (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16185	16185
IL2RG ; hIL2RG ; ANA165	cytokine receptor common subunit gamma (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3561	3561
Il2rg ; mIL2RG ; ANA622	cytokine receptor common subunit gamma (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16186	16186
IL3 ; hIL3 ; ANA166	interleukin-3 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3562	3562
Il3 ; mIL3 ; ANA623	interleukin-3 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16187	16187
IL31 ; hIL31 ; ANA167	interleukin-31 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=386653	386653

Il31 ; mIL31 ; ANA624	interleukin-31 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=76399	76399
IL32 ; hIL32 ; ANA168	interleukin-32 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=9235	9235
IL33 ; hIL33 ; ANA169	interleukin-33 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=90865	90865
Il33 ; mIL33 ; ANA625	interleukin-33 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=77125	77125
IL34 ; hIL34 ; ANA170	interleukin-34 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=146433	146433
Il34 ; mIL34 ; ANA626	interleukin-34 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=76527	76527
IL36G ; hIL36G ; ANA171	interleukin-36 gamma (human)	http://www.ncbi.nlm.nih.gov/gene/?term=56300	56300
IL36RN ; hIL36RN ; ANA172	interleukin-36 receptor antagonist protein (human)	http://www.ncbi.nlm.nih.gov/gene/?term=26525	26525
Il3ra ; mIL3RA ; ANA627	interleukin-3 receptor subunit alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16188	16188
IL4 ; hIL4 ; ANA174	interleukin-4 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3565	3565
Il4 ; mIL4 ; ANA628	interleukin-4 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16189	16189

IL4R ; hIL4R ; ANA175	interleukin-4 receptor subunit alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3566	3566
Il4ra ; mIL4R ; ANA629	interleukin-4 receptor subunit alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16190	16190
IL5 ; hIL5 ; ANA176	interleukin-5 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3567	3567
Il5 ; mIL5 ; ANA630	interleukin-5 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16191	16191
IL5RA ; hIL5RA ; ANA177	interleukin-5 receptor subunit alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3568	3568
Il5ra ; mIL5RA ; ANA631	interleukin-5 receptor subunit alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16192	16192
IL6 ; hIL6 ; ANA178	interleukin-6 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3569	3569
Il6 ; mIL6 ; ANA632	interleukin-6 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16193	16193
IL6R ; hIL6R ; ANA179	interleukin-6 receptor subunit alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3570	3570
Il6ra ; mIL6R ; ANA633	interleukin-6 receptor subunit alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16194	16194
IL6ST ; hIL6ST ; ANA180	interleukin-6 receptor subunit beta (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3572	3572

Il6st ; mIL6ST ; ANA634	interleukin-6 receptor subunit beta (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16195	16195
IL7 ; hIL7 ; ANA181	interleukin-7 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3574	3574
Il7 ; mIL7 ; ANA635	interleukin-7 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16196	16196
Il7r ; mIL7R ; ANA636	interleukin-7 receptor subunit alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16197	16197
IL8 ; hCXCL8 ; ANA72	interleukin-8 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3576	3576
IL9 ; hIL9 ; ANA183	interleukin-9 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3578	3578
Il9 ; mIL9 ; ANA637	interleukin-9 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16198	16198
IL9R ; hIL9R ; ANA184	interleukin-9 receptor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3581	3581
Il9r ; mIL9R ; ANA638	interleukin-9 receptor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16199	16199
IP-10 ; hCXCL10 ; ANA61	C-X-C motif chemokine 10 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3627	3627
IP-10 ; mCXCL10 ; ANA524	C-X-C motif chemokine 10 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=15945	15945

Itgal ; mITGAL ; ANA1074	integrin alpha-L (mouse)	http://purl.obolibrary.org/obo/PR_P24063	-
Ki67 ; hMKI67 ; ANA889	proliferation marker protein Ki-67 (human)	https://www.ncbi.nlm.nih.gov/gene/4288	4288
Kir3dl1 ; mKir3dl1 ; ANA1134	killer cell immunoglobulin-like receptor 3DL1 (mouse)	http://purl.obolibrary.org/obo/PR_P83555	-
KIT ; hKIT ; ANA185	mast/stem cell growth factor receptor Kit (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3815	3815
Kit ; mKIT ; ANA639	mast/stem cell growth factor receptor Kit (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16590	16590
Kitl ; mKITLG ; ANA640	kit ligand (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=17311	17311
KITLG ; hKITLG ; ANA186	kit ligand (human)	http://www.ncbi.nlm.nih.gov/gene/?term=4254	4254
LBT ; hLTB ; ANA187	lymphotoxin-beta (human)	http://www.ncbi.nlm.nih.gov/gene/?term=4050	4050
LECT1 ; hCNMD ; ANA188	leukocyte cell-derived chemotaxin 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=11061	11061
Lect1 ; mCNMD ; ANA641	leukocyte cell-derived chemotaxin 1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16840	16840
LECT2 ; hLECT2 ; ANA189	leukocyte cell-derived chemotaxin-2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3950	3950

Lect2 ; mLECT2 ; ANA642	leukocyte cell-derived chemotaxin-2 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16841	16841
LEP ; LEP ; ANA714	LEP (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3952	3952
LIF ; hLIF ; ANA190	leukemia inhibitory factor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3976	3976
Lif ; mLIF ; ANA643	leukemia inhibitory factor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16878	16878
LIFR ; hLIFR ; ANA191	leukemia inhibitory factor receptor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3977	3977
Lifr ; mLIFR ; ANA644	leukemia inhibitory factor receptor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16880	16880
Ltb ; mLTB ; ANA646	lymphotoxin-beta (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16994	16994
LTBR ; hLTBR ; ANA193	tumor necrosis factor receptor superfamily member 3 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=4055	4055
Ltbr ; mLTBR ; ANA647	tumor necrosis factor receptor superfamily member 3 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=17000	17000
MCP1 ; hCCL2 ; ANA11	C-C motif chemokine 2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6347	6347
MCP3 ; hCCL7 ; ANA28	C-C motif chemokine 7 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6354	6354

MCP4 ; hCCL13 ; ANA4	C-C motif chemokine 13 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6357	6357
MCSF ; hCSF1 ; ANA51	macrophage colony-stimulating factor 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=1435	1435
MET ; hMET ; ANA194	hepatocyte growth factor receptor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=4233	4233
Met ; mMET ; ANA648	hepatocyte growth factor receptor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=17295	17295
MIF ; hMIF ; ANA195	macrophage migration inhibitory factor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=4282	4282
Mif ; mMIF ; ANA649	macrophage migration inhibitory factor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=17319	17319
MIP1A ; hCCL3 ; ANA20	C-C motif chemokine 3 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6348	6348
MIP1B ; hCCL4 ; ANA24	C-C motif chemokine 4 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6351	6351
Mip1b ; mCCL4 ; ANA489	C-C motif chemokine 4 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20303	20303
MIP2 ; hCXCL2 ; ANA68	C-X-C motif chemokine 2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=2920	2920
MPL ; hMPL ; ANA196	thrombopoietin receptor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=4352	4352

Mpl ; mMPL ; ANA650	thrombopoietin receptor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=17480	17480
MPO ; MPO ; ANA707	MPO (human)	http://www.ncbi.nlm.nih.gov/gene/?term=4353	4353
MST1 ; hMST1 ; ANA197	hepatocyte growth factor-like protein (human)	http://www.ncbi.nlm.nih.gov/gene/?term=4485	4485
Mst1 ; mMST1 ; ANA651	hepatocyte growth factor-like protein (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=15235	15235
MST1R ; hMST1R ; ANA198	macrophage-stimulating protein receptor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=4486	4486
Mst1r ; mMST1R ; ANA652	macrophage-stimulating protein receptor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=19882	19882
Nectin1 ; mNECTIN1 ; ANA1237	nectin-1 (mouse)	http://purl.obolibrary.org/obo/PR_Q9JKF6	58235
Nectin2 ; mNECTIN2 ; ANA1093	nectin-2 (mouse)	http://purl.obolibrary.org/obo/PR_P32507	19294
Nectin3 ; mNECTIN3 ; ANA1238	nectin-3 (mouse)	http://purl.obolibrary.org/obo/PR_Q9JLB9	58998
NGF ; NGF ; ANA699	NGF (human)	http://www.ncbi.nlm.nih.gov/gene/?term=4803	4803
NKG2A ; hKLRC1 ; ANA861	NKG2-A/NKG2-B type II integral membrane protein (human)	https://www.ncbi.nlm.nih.gov/gene/3821	3821

NKP44 ; hNCR2 ; ANA885	natural cytotoxicity triggering receptor 2 (human)	https://www.ncbi.nlm.nih.gov/gene/9436	9436
OPG ; hTNFRSF11B ; ANA226	tumor necrosis factor receptor superfamily member 11B (human)	http://www.ncbi.nlm.nih.gov/gene/?term=4982	4982
OSM ; hOSM ; ANA199	oncostatin-M (human)	http://www.ncbi.nlm.nih.gov/gene/?term=5008	5008
Osm ; mOSM ; ANA653	oncostatin-M (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=18413	18413
OSMR ; hOSMR ; ANA200	oncostatin-M-specific receptor subunit beta (human)	http://www.ncbi.nlm.nih.gov/gene/?term=9180	9180
Osmr ; mOSMR ; ANA654	oncostatin-M-specific receptor subunit beta (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=18414	18414
PAI1 ; SERPINE1 ; ANA708	SERPINE1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=5054	5054
PAPPA ; PAPPA ; ANA700	PAPPA (human)	http://www.ncbi.nlm.nih.gov/gene/?term=5069	5069
PD1 ; hPDCD1 ; ANA818	programmed cell death protein 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=5133	5133
PDGF ; hPDGF-AB ; ANA803	platelet-derived growth factor complex AB dimer (human)	http://purl.obolibrary.org/obo/PR_000044755	
PDGFA ; hPDGFA ; ANA201	platelet-derived growth factor subunit A (human)	http://www.ncbi.nlm.nih.gov/gene/?term=5154	5154

Pdgfa ; mPDGFA ; ANA655	platelet-derived growth factor subunit A (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=18590	18590
PDGFB ; hPDGFB ; ANA202	platelet-derived growth factor subunit B (human)	http://www.ncbi.nlm.nih.gov/gene/?term=5155	5155
Pdgfb ; mPDGFB ; ANA656	platelet-derived growth factor subunit B (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=18591	18591
PDGFRA ; hPDGFRA ; ANA203	platelet-derived growth factor receptor alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=5156	5156
Pdgfra ; mPDGFRA ; ANA657	platelet-derived growth factor receptor alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=18595	18595
PDGFRB ; hPDGFRB ; ANA204	platelet-derived growth factor receptor beta (human)	http://www.ncbi.nlm.nih.gov/gene/?term=5159	5159
Pdgfrb ; mPDGFRB ; ANA658	platelet-derived growth factor receptor beta (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=18596	18596
PDL2 ; hPDCD1LG2 ; ANA931	programmed cell death 1 ligand 2 (human)	http://purl.obolibrary.org/obo/PR_Q9BQ51	-
Perforin ; hPRF1 ; ANA890	perforin-1 (human)	https://www.ncbi.nlm.nih.gov/gene/5551	5551
PF4 ; hPF4 ; ANA205	platelet factor 4 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=5196	5196
Pf4 ; mPF4 ; ANA659	platelet factor 4 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=56744	56744

PF4V1 ; hPF4V1 ; ANA206	platelet factor 4 variant (human)	http://www.ncbi.nlm.nih.gov/gene/?term=5197	5197
PIGF ; PIGF ; ANA715	PIGF (human)	http://www.ncbi.nlm.nih.gov/gene/?term=5281	5281
PPBP ; hPPBP ; ANA207	platelet basic protein (human)	http://www.ncbi.nlm.nih.gov/gene/?term=5473	5473
Ppbp ; PPBP ; ANA660	platelet basic protein	http://www.ncbi.nlm.nih.gov/gene/?term=57349	57349
PRTN3 ; PRTN3 ; ANA703	PRTN3 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=5657	5657
pSTAT1 ; hSTAT1/iso:1/Phos:1 ; ANA907	signal transducer and activator of transcription 1 isoform 1 phosphorylated 1 (human)	http://purl.obolibrary.org/obo/PR_000026858	-
pSTAT3 ; hSTAT3/Phos:1 ; ANA908	signal transducer and activator of transcription 3 phosphorylated 1 (human)	http://purl.obolibrary.org/obo/PR_000045774	-
RANKL ; hTNFSF11 ; ANA238	tumor necrosis factor ligand superfamily member 11 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=8600	8600
RANTES ; hCCL5 ; ANA27	C-C motif chemokine 5 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6352	6352
RETN ; hRETN ; ANA208	resistin (human)	http://www.ncbi.nlm.nih.gov/gene/?term=56729	56729
Retn ; mRETN ; ANA661	resistin (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=57264	57264

SIGLEC-2 ; hCD22 ; ANA862	B-cell receptor CD22 (human)	https://www.ncbi.nlm.nih.gov/gene/933	933
SIGLEC-3 ; hCD33 ; ANA864	myeloid cell surface antigen CD33 (human)	https://www.ncbi.nlm.nih.gov/gene/945	945
SLAN ; hSECISBP2L ; ANA906	selenocysteine insertion sequence-binding protein 2-like (human)	https://www.ncbi.nlm.nih.gov/gene/9728	9728
SPP1 ; hSPP1 ; ANA209	osteopontin (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6696	6696
Spp1 ; mSPP1 ; ANA662	osteopontin (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=20750	20750
STAT1 ; hSTAT1 ; ANA892	signal transducer and activator of transcription 1-alpha/beta (human)	https://www.ncbi.nlm.nih.gov/gene/6772	6772
STAT3 ; hSTAT3 ; ANA900	signal transducer and activator of transcription 3 (human)	https://www.ncbi.nlm.nih.gov/gene/6774	6774
STAT5 ; hSTAT5A ; ANA901	signal transducer and activator of transcription 5A (human)	https://www.ncbi.nlm.nih.gov/gene/6776	6776
TARC ; hCCL17 ; ANA8	C-C motif chemokine 17 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6361	6361
TDGF1P2 ; hTDGF1P3 ; ANA210	teratocarcinoma-derived growth factor 3 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=22816	22816
TDGF1P3 ; TDGF1P3 ; ANA211	TDGF1P3 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6998	6998

TGFA ; TGFA ; ANA212	TGFA (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7039	7039
Tgfa ; Tgfa ; ANA663	Tgfa (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21802	21802
TGFB1 ; hTGFB1 ; ANA213	transforming growth factor beta-1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7040	7040
Tgfb1 ; mTGFB1 ; ANA664	transforming growth factor beta-1 proprotein (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21803	21803
TGFB2 ; hTGFB2 ; ANA214	transforming growth factor beta-2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7042	7042
Tgfb2 ; mTGFB2 ; ANA665	transforming growth factor beta-2 proprotein (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21808	21808
TGFB3 ; hTGFB3 ; ANA215	transforming growth factor beta-3 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7043	7043
Tgfb3 ; mTGFB3 ; ANA666	transforming growth factor beta-3 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21809	21809
TGFBR1 ; hTGFBR1 ; ANA216	TGF-beta receptor type-1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7046	7046
Tgfbr1 ; mTGFBR1 ; ANA667	TGF-beta receptor type-1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21812	21812
TGFBR2 ; hTGFBR2 ; ANA217	TGF-beta receptor type-2 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7048	7048

Tgfbr2 ; mTGFBR2 ; ANA668	TGF-beta receptor type-2 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21813	21813
TGFBR3 ; hTGFBR3 ; ANA218	transforming growth factor beta receptor type 3 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7049	7049
Tgfbr3 ; mTGFBR3 ; ANA669	transforming growth factor beta receptor type 3 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21814	21814
THPO ; hTHPO ; ANA219	thrombopoietin (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7066	7066
Thpo ; mTHPO ; ANA670	thrombopoietin (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21832	21832
TLR5 ; hTLR5 ; ANA872	Toll-like receptor 5 (human)	https://www.ncbi.nlm.nih.gov/gene/7100	7100
TLR6 ; hTLR6 ; ANA867	Toll-like receptor 6 (human)	https://www.ncbi.nlm.nih.gov/gene/10333	10333
TLR7 ; hTLR7 ; ANA39	Toll-like receptor 7 (human)	https://www.ncbi.nlm.nih.gov/gene/51284	51284
TNFA ; hTNF ; ANA220	tumor necrosis factor (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7124	7124
Tnfa ; mTNF ; ANA671	tumor necrosis factor (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21926	21926
TNFB ; hLTA ; ANA192	lymphotoxin-alpha (human)	http://www.ncbi.nlm.nih.gov/gene/?term=4049	4049

Tnfb ; mLTA ; ANA645	lymphotoxin-alpha (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16992	16992
TNFRSF10A ; hTNFRSF10A ; ANA221	tumor necrosis factor receptor superfamily member 10A (human)	http://www.ncbi.nlm.nih.gov/gene/?term=8797	8797
TNFRSF10B ; hTNFRSF10B ; ANA222	tumor necrosis factor receptor superfamily member 10B (human)	http://www.ncbi.nlm.nih.gov/gene/?term=8795	8795
Tnfrsf10b ; mTnfrsf10b ; ANA672	tumor necrosis factor receptor superfamily member 10B (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21933	21933
TNFRSF10C ; hTNFRSF10C ; ANA223	tumor necrosis factor receptor superfamily member 10C (human)	http://www.ncbi.nlm.nih.gov/gene/?term=8794	8794
TNFRSF10D ; hTNFRSF10D ; ANA224	tumor necrosis factor receptor superfamily member 10D (human)	http://www.ncbi.nlm.nih.gov/gene/?term=8793	8793
TNFRSF11A ; hTNFRSF11A ; ANA225	tumor necrosis factor receptor superfamily member 11A (human)	http://www.ncbi.nlm.nih.gov/gene/?term=8792	8792
Tnfrsf11a ; mTNFRSF11A ; ANA673	tumor necrosis factor receptor superfamily member 11A (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21934	21934
Tnfrsf11b ; mTNFRSF11B ; ANA674	tumor necrosis factor receptor superfamily member 11B (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=18383	18383
TNFRSF13B ; hTNFRSF13B ; ANA227	tumor necrosis factor receptor superfamily member 13B (human)	http://www.ncbi.nlm.nih.gov/gene/?term=23495	23495
Tnfrsf13b ; mTNFRSF13B ; ANA675	tumor necrosis factor receptor superfamily member 13B (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=57916	57916

TNFRSF14 ; hTNFRSF14 ; ANA228	tumor necrosis factor receptor superfamily member 14 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=8764	8764
Tnfrsf14 ; mTNFRSF14 ; ANA676	tumor necrosis factor receptor superfamily member 14 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=230979	230979
TNFRSF17 ; hTNFRSF17 ; ANA229	tumor necrosis factor receptor superfamily member 17 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=608	608
Tnfrsf17 ; mTNFRSF17 ; ANA677	tumor necrosis factor receptor superfamily member 17 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21935	21935
TNFRSF18 ; hTNFRSF18 ; ANA230	tumor necrosis factor receptor superfamily member 18 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=8784	8784
Tnfrsf18 ; mTnfrsf18 ; ANA678	tumor necrosis factor receptor superfamily member 18 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21936	21936
TNFRSF1A ; hTNFRSF1A ; ANA231	tumor necrosis factor receptor superfamily member 1A (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7132	7132
Tnfrsf1a ; mTNFRSF1A ; ANA679	tumor necrosis factor receptor superfamily member 1A (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21937	21937
TNFRSF1B ; hTNFRSF1B ; ANA232	tumor necrosis factor receptor superfamily member 1B (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7133	7133
Tnfrsf1b ; mTNFRSF1B ; ANA680	tumor necrosis factor receptor superfamily member 1B (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21938	21938
TNFRSF25 ; hTNFRSF25 ; ANA233	tumor necrosis factor receptor superfamily member 25 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=8718	8718

Tnfrsf25 ; TNFRSF25 ; ANA681	tumor necrosis factor receptor superfamily member 25	http://www.ncbi.nlm.nih.gov/gene/?term=85030	85030
TNFRSF4 ; hTNFRSF4 ; ANA234	tumor necrosis factor receptor superfamily member 4 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7293	7293
Tnfrsf4 ; mTNFRSF4 ; ANA682	tumor necrosis factor receptor superfamily member 4 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=22163	22163
TNFRSF8 ; hTNFRSF8 ; ANA235	tumor necrosis factor receptor superfamily member 8 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=943	943
Tnfrsf8 ; mTNFRSF8 ; ANA683	tumor necrosis factor receptor superfamily member 8 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21941	21941
TNFRSF9 ; hTNFRSF9 ; ANA236	tumor necrosis factor receptor superfamily member 9 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=3604	3604
Tnfrsf9 ; mTNFRSF9 ; ANA684	tumor necrosis factor receptor superfamily member 9 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21942	21942
Tnfsf10 ; mTNFSF10 ; ANA685	tumor necrosis factor ligand superfamily member 10 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=22035	22035
Tnfsf11 ; mTNFSF11 ; ANA686	tumor necrosis factor ligand superfamily member 11 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21943	21943
TNFSF12 ; hTNFSF12 ; ANA239	tumor necrosis factor ligand superfamily member 12 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=8742	8742
Tnfsf12 ; mTNFSF12 ; ANA687	tumor necrosis factor ligand superfamily member 12 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21944	21944

TNFSF13 ; hTNFSF13 ; ANA240	tumor necrosis factor ligand superfamily member 13 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=8741	8741
Tnfsf13 ; mTNFSF13 ; ANA688	tumor necrosis factor ligand superfamily member 13 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=69583	69583
Tnfsf13b ; mTNFSF13B ; ANA689	tumor necrosis factor ligand superfamily member 13B (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=24099	24099
TNFSF14 ; hTNFSF14 ; ANA242	tumor necrosis factor ligand superfamily member 14 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=8740	8740
Tnfsf14 ; mTNFSF14 ; ANA690	tumor necrosis factor ligand superfamily member 14 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=50930	50930
TNFSF15 ; hTNFSF15 ; ANA243	tumor necrosis factor ligand superfamily member 15 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=9966	9966
Tnfsf15 ; mTNFSF15 ; ANA691	tumor necrosis factor ligand superfamily member 15 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=326623	326623
TNFSF18 ; hTNFSF18 ; ANA244	tumor necrosis factor ligand superfamily member 18 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=8995	8995
Tnfsf18 ; mTNFSF18 ; ANA692	tumor necrosis factor ligand superfamily member 18 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=240873	240873
TNFSF4 ; hTNFSF4 ; ANA245	tumor necrosis factor ligand superfamily member 4 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7292	7292
Tnfsf4 ; mTNFSF4 ; ANA693	tumor necrosis factor ligand superfamily member 4 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=22164	22164

TNFSF8 ; hTNFSF8 ; ANA246	tumor necrosis factor ligand superfamily member 8 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=944	944
Tnfsf8 ; mTNFSF8 ; ANA694	tumor necrosis factor ligand superfamily member 8 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21949	21949
TNFSF9 ; hTNFSF9 ; ANA247	tumor necrosis factor ligand superfamily member 9 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=8744	8744
Tnfsf9 ; mTNFSF9 ; ANA695	tumor necrosis factor ligand superfamily member 9 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=21950	21950
TRAIL ; hTNFSF10 ; ANA237	tumor necrosis factor ligand superfamily member 10 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=8743	8743
TSLP ; TSLP ; ANA716	TSLP (human)	http://www.ncbi.nlm.nih.gov/gene/?term=85480	85480
VCAM1 ; VCAM1 ; ANA702	VCAM1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7412	7412
VEGFA ; VEGFA ; ANA709	VEGFA (human)	http://www.ncbi.nlm.nih.gov/gene/?term=7422	7422
XCL1 ; hXCL1 ; ANA248	lymphotactin (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6375	6375
Xcl1 ; mXCL1 ; ANA696	lymphotactin (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=16963	16963
XCL2 ; hXCL2 ; ANA249	cytokine SCM-1 beta (human)	http://www.ncbi.nlm.nih.gov/gene/?term=6846	6846

XCR1 ; hXCR1 ; ANA250	chemokine XC receptor 1 (human)	http://www.ncbi.nlm.nih.gov/gene/?term=2829	2829
Xcr1 ; mXCR1 ; ANA697	chemokine XC receptor 1 (mouse)	http://www.ncbi.nlm.nih.gov/gene/?term=23832	23832

5. **lk_ancestral_population**

Name	Description	Link
Australia	Australia and all of its islands (for example, Groote Eylandt, Tasmania, etc).	http://www.allelefrequencies.net/datasets.asp#tag_4
Europe	An area bounded by Franz Joseph Land, Svalbard, Iceland, the northern coast of the Mediterranean and Black Seas, and those areas of Russia west of the Caspian Sea and Kazakhstan. Includes Mediterranean islands that are part of European nations, with the exception of Cyprus and islands that are part of Turkey.	http://www.allelefrequencies.net/datasets.asp#tag_4
None of the Above	The population area is unknown.	http://www.allelefrequencies.net/datasets.asp#tag_4
North Africa	Nations on the African continent north of a line drawn between Nouadhibou in Mauritania and Djiubouti. Includes all of Western Sahara, Morocco, Algeria, Lyibia, Egypt, Eritrea, and Djibouti and northern areas of Mauritania, Mali, Niger, Chad, Sudan, and Ethiopia.	http://www.allelefrequencies.net/datasets.asp#tag_4
North America	Canada, the United States, Mexico, the Carribean, the Aleutian islands, and Greenland.	http://www.allelefrequencies.net/datasets.asp#tag_4
North-East Asia	Russia north and east of Kazakhstan (and associated islands), Kazakhstan, Uzbekistan, Kyrgyztan, Tajikistan, Mongolia, China east and north of Mongolia and east of the Bohai Sea, the Korean pennisula, and the islands of Japan.	http://www.allelefrequencies.net/datasets.asp#tag_4

Oceania	An area of the Pacific bounded by the Hawaiian Islands, Easter Island, the islands of New Zealand, the Sunda Islands, Madagascar, those areas of Borneo not part of Malaysia, and the Phillipines.	http://www.allelefrequencies.net/datasets.asp#tag_4
Other	This category is for populations derived from more than one of the other regions defined here.	http://www.allelefrequencies.net/datasets.asp#tag_4
South America	All of the South American and the Central American nations, and associated islands.	http://www.allelefrequencies.net/datasets.asp#tag_4
South-East Asia	China west and south of Mongolia, Taiwan, Vietnam, Laos, Cambodia, Thailand, Malaysia (including the Malaysian area of Borneo), Singapore, and Burma.	http://www.allelefrequencies.net/datasets.asp#tag_4
South-West Asia	Cyprus, Turkey (and associated islands), Georgia, Armenia, Azerbaijan, Syria, Lebanon, Israel, the Palestinian Territories, Jordan, the Saudi peninsula, Iraq, Kuwait, Iran, Turkmenistan, Afghanistan, Pakistan, India, Sri Lanka, and Bangladesh.	http://www.allelefrequencies.net/datasets.asp#tag_4
Sub-Saharan Africa	The area on the African continent south of the Sahara, defined by a line drawn between Nouadhibou in Mauritania and Djiubouti, and the islands associated with the nations of that area. Includes the southern areas of Mauritania, Mali, Niger, Chad, Sudan, and Ethiopia. Madagascar is not included in this region.	http://www.allelefrequencies.net/datasets.asp#tag_4

6. **lk_cell_pop_statistic_unit**

Name	Description	Link
statistic_unit_preferred		
cells	cell count	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C48938&ns=NCI_Thesaurus

cells/ul	A unit of cell concentration expressed as a number of cells per unit volume equal to one microliter.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C67242&ns=NCI_Thesaurus
MFI at 90th percentile	Mean Fluorescence Intensity at 90th Percentile. MFI : A unit of measure equal to the geometric mean fluorescence intensity of a log-normal distribution of fluorescence signals.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C96687&ns=NCI_Thesaurus
Not Specified	No value provided. Not stated explicitly or in detail.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C38046&ns=NCI_Thesaurus
percentage	A fraction or ratio with 100 understood as the denominator. e.g. percentage of a cell population of interest within a parent population	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C25613&ns=NCI_Thesaurus
stim/unstim fold change	Fold change comparing stimulated vs unstimulated sample	

7. **lk_cell_population**

Name	Description	Link
population_name_preferred		
B: B cell	B cell	http://purl.obolibrary.org/obo/CL_0000236

B: IgD+ memory B cell	unswitched memory B cell	http://purl.obolibrary.org/obo/CL_0000970
B: IgD- memory B cell	IgD-negative memory B cell	http://purl.obolibrary.org/obo/CL_0001053
B: memory B cell	memory B cell	http://purl.obolibrary.org/obo/CL_0000787
B: naive B cell	naive B cell	http://purl.obolibrary.org/obo/CL_0000788
B: plasmablast	plasmablast	http://purl.obolibrary.org/obo/CL_0000980
B: transitional B cell	transitional stage B cell	http://purl.obolibrary.org/obo/CL_0000818
DC: dendritic cell	dendritic cell	http://purl.obolibrary.org/obo/CL_0000451
DC: myeloid dendritic cell	myeloid dendritic cell	http://purl.obolibrary.org/obo/CL_0000782
DC: plasmacytoid dendritic cell	plasmacytoid dendritic cell	http://purl.obolibrary.org/obo/CL_0000784
Live/Dead	Viable cells	http://purl.obolibrary.org/obo/PATO_0000169
M: CD16+ monocyte	CD14-positive, CD16-positive monocyte	http://purl.obolibrary.org/obo/CL_0002397
M: CD16- monocyte	CD14-positive, CD16-negative classical monocyte	http://purl.obolibrary.org/obo/CL_0002057
M: monocyte	monocyte	http://purl.obolibrary.org/obo/CL_0000576

NK: CD16+ CD56+ NK cell	CD16-positive, CD56-dim natural killer cell	http://purl.obolibrary.org/obo/CL_0000939
NK: CD16- CD56bright NK cell	CD16-negative, CD56-bright natural killer cell	http://purl.obolibrary.org/obo/CL_0000938
NK: NK cell	natural killer cell	http://purl.obolibrary.org/obo/CL_0000623
PBMC	peripheral blood mononuclear cell	http://purl.obolibrary.org/obo/CL_2000001
T: activated CCR4+ Treg	activated CD4-positive, CD25-positive, CCR4-positive, alpha-beta regulatory T cell, human	http://purl.obolibrary.org/obo/CL_0001048
T: activated CD4+ T cell	activated CD4-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0001043
T: activated CD8+ T cell	activated CD8-positive, alpha-beta T cell, human	http://purl.obolibrary.org/obo/CL_0001049
T: CCR4+ Treg	naive CCR4-positive regulatory T cell	http://purl.obolibrary.org/obo/CL_0001045
T: CD4+ T cell	CD4-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0000624
T: CD8+ T cell	CD8-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0000625
T: central memory CD4+ T cell	central memory CD4-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0000904
T: central memory CD8+ T cell	central memory CD8-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0000907
T: effector CD4+ T cell	effector CD4-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0001044
T: effector CD8+ T cell	effector CD8-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0001050

T: effector memory CD4+ T cell	effector memory CD4-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0000905
T: effector memory CD8+ T cell	effector memory CD8-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0000913
T: memory CCR4+ Treg	memory CCR4-positive regulatory T cell	http://purl.obolibrary.org/obo/CL_0001046
T: naive CCR4+ Treg	naive CCR4-positive regulatory T cell	http://purl.obolibrary.org/obo/CL_0001045
T: naive CD4+ T cell	naive thymus-derived CD4-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0000895
T: naive CD8+ T cell	naive thymus-derived CD8-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0000900
T: NK T cell	mature NK T cell	http://purl.obolibrary.org/obo/CL_0000814
T: non-Tc1/Tc17 CD8+ T cell	Tc2 cell	http://purl.obolibrary.org/obo/CL_0001052; http://purl.obolibrary.org/obo/CL_0000918
T: non-Th1/Th17 CD4+ T cell	T-helper 2 cell	http://purl.obolibrary.org/obo/CL_0000546
T: T cell	T cell	http://purl.obolibrary.org/obo/CL_0000084
T: Tc1 CD8+ T cell	Tc1 cell	http://purl.obolibrary.org/obo/CL_0000917
T: Tc17 CD8+ T cell	Tc17 cell	http://purl.obolibrary.org/obo/CL_0002128
T: Th1 CD4+ T cell	T-helper 1 cell	http://purl.obolibrary.org/obo/CL_0000545

T: Th17 CD4+ T cell	T-helper 17 cell	http://purl.obolibrary.org/obo/CL_0000899
T: Treg	CD4-positive, CD25+, alpha-beta regulatory T cell	http://purl.obolibrary.org/obo/CL_0000792
Total Cells	NA	NA

8. **lk_cell_population_definition**

Name	Description	Link
population_defnition_preferred		
A leukocyte with a single non-segmented nucleus in the mature form found in the circulatory pool of blood.	peripheral blood mononuclear cell	http://purl.obolibrary.org/obo/CL_2000001
All cells in a sample	NA	NA
CD3+	T cell	http://purl.obolibrary.org/obo/CL_0000084
CD3+, CD4+	CD4-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0000624
CD3+, CD4+, CD127lo, CD25+	CD4-positive, CD25+, alpha-beta regulatory T cell	http://purl.obolibrary.org/obo/CL_0000792
CD3+, CD4+, CD127lo, CD25+, CCR4+	naive CCR4-positive regulatory T cell	http://purl.obolibrary.org/obo/CL_0001045
CD3+, CD4+, CD127lo, CD25+, CCR4+, CD45RO+	memory CCR4-positive regulatory T cell	http://purl.obolibrary.org/obo/CL_0001046
CD3+, CD4+, CD127lo, CD25+, CCR4+, CD45RO-	naive CCR4-positive regulatory T cell	http://purl.obolibrary.org/obo/CL_0001045
CD3+, CD4+, CD127lo, CD25+, CCR4+, HLA-DR+	activated CD4-positive, CD25-positive, CCR4-positive, alpha-beta regulatory T cell, human	http://purl.obolibrary.org/obo/CL_0001048
CD3+, CD4+, CD8-, CCR7+, CD45RA+	naive thymus-derived CD4-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0000895

CD3+, CD4+, CD8-, CCR7+, CD45RA-	central memory CD4-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0000904
CD3+, CD4+, CD8-, CCR7-, CD45RA+	effector CD4-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0001044
CD3+, CD4+, CD8-, CCR7-, CD45RA-	effector memory CD4-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0000905
CD3+, CD4+, CD8-, CD38+, HLA-DR+	activated CD4-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0001043
CD3+, CD4+, CD8-, CXCR3+, CCR6-	T-helper 1 cell	http://purl.obolibrary.org/obo/CL_0000545
CD3+, CD4+, CD8-, CXCR3-, CCR6+	T-helper 17 cell	http://purl.obolibrary.org/obo/CL_0000899
CD3+, CD4+, CD8-, CXCR3-, CCR6-	T-helper 2 cell	http://purl.obolibrary.org/obo/CL_0000546
CD3+, CD4-, CD8+, CCR7+, CD45RA+	naive thymus-derived CD8-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0000900
CD3+, CD4-, CD8+, CCR7+, CD45RA-	central memory CD8-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0000907
CD3+, CD4-, CD8+, CCR7-, CD45RA+	effector CD8-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0001050
CD3+, CD4-, CD8+, CCR7-, CD45RA-	effector memory CD8-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0000913
CD3+, CD4-, CD8+, CD38+, HLA-DR+	activated CD8-positive, alpha-beta T cell, human	http://purl.obolibrary.org/obo/CL_0001049
CD3+, CD4-, CD8+, CXCR3+, CCR6-	Tc1 cell	http://purl.obolibrary.org/obo/CL_0000917
CD3+, CD4-, CD8+, CXCR3-, CCR6+	Tc17 cell	http://purl.obolibrary.org/obo/CL_0002128

CD3+, CD4-, CD8+, CXCR3-, CCR6-	Tc2 cell	http://purl.obolibrary.org/obo/CL_0001052; http://purl.obolibrary.org/obo/CL_0000918
CD3+, CD56+, CD14-, CD33-	mature NK T cell	http://purl.obolibrary.org/obo/CL_0000814
CD3+, CD8+	CD8-positive, alpha-beta T cell	http://purl.obolibrary.org/obo/CL_0000625
CD3-, CD19+ , CD20+	B cell	http://purl.obolibrary.org/obo/CL_0000236
CD3-, CD19+, CD20+, CD24hi, CD38hi	transitional stage B cell	http://purl.obolibrary.org/obo/CL_0000818
CD3-, CD19+, CD20+, CD27+	memory B cell	http://purl.obolibrary.org/obo/CL_0000787
CD3-, CD19+, CD20+, CD27+, IgD+	unswitched memory B cell	http://purl.obolibrary.org/obo/CL_0000970
CD3-, CD19+, CD20+, CD27+, IgD-	IgD-negative memory B cell	http://purl.obolibrary.org/obo/CL_0001053
CD3-, CD19+, CD20+, CD27-, IgD+	naive B cell	http://purl.obolibrary.org/obo/CL_0000788
CD3-, CD19+, CD20-, CD27hi, CD38hi	plasmablast	http://purl.obolibrary.org/obo/CL_0000980
CD3-, CD19-, CD20-, CD14+	monocyte	http://purl.obolibrary.org/obo/CL_0000576
CD3-, CD19-, CD20-, CD14+, CD16+	CD14-positive, CD16-positive monocyte	http://purl.obolibrary.org/obo/CL_0002397
CD3-, CD19-, CD20-, CD14+, CD16-	CD14-positive, CD16-negative classical monocyte	http://purl.obolibrary.org/obo/CL_0002057

CD3-, CD19-, CD20-, CD14-, CD16-, CD56-, HLA-DR+	dendritic cell	http://purl.obolibrary.org/obo/CL_0000451
CD3-, CD19-, CD20-, CD14-, CD16-, CD56-, HLA-DR+, CD11c+, CD123-	myeloid dendritic cell	http://purl.obolibrary.org/obo/CL_0000782
CD3-, CD19-, CD20-, CD14-, CD16-, CD56-, HLA-DR+, CD11c-, CD123+	plasmacytoid dendritic cell	http://purl.obolibrary.org/obo/CL_0000784
CD3-, CD19-, CD20-, CD14-, HLA-DR-, CD16+, CD56+	CD16-positive, CD56-dim natural killer cell	http://purl.obolibrary.org/obo/CL_0000939
CD3-, CD19-, CD20-, CD14-, HLA-DR-, CD16-, CD56++	CD16-negative, CD56-bright natural killer cell	http://purl.obolibrary.org/obo/CL_0000938
CD3-, CD56+	natural killer cell	http://purl.obolibrary.org/obo/CL_0000623
Living cells gated from dead cells	Viable cells	http://purl.obolibrary.org/obo/PATO_0000169

9. **lk_compound_role**

Name	Description	Link
Concomitant Medication	Compound Role is Concomitant Medication.	https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&ns=ncit&code=C49568&key=n828559380&m=1&b=1&n=null
Intervention	Compound Role is Intervention.	http://www.ebi.ac.uk/efo/EFO_0002571
Other	Compound Role is Other.	

Substance Use	Compound Role is Substance Use.	http://purl.bioontology.org/ontology/MEDDRA/10070964

10. **lk_concentration_unit**

Name	Description	Link
concentration_unit_preferred		
AI	Antibody Index	https://www.aacc.org/publications/cln/articles/2014/june/ana-testing
DK units/ml	The NIDDK calibrators were tested together with dilutions of the WHO reference serum using harmonized assays on five occasions in the BDC, Bristol, and Munich laboratories and reported as WHO units/ml by calibration as previously described. For each of the NIDDK calibrators, the median value of the WHO units/ml obtained for the 15 measurements was assigned as its calibrator unit. The assigned units were termed digestive and kidney units (DK units)/ml.	https://repository.niddk.nih.gov/studies/aab-calibrators/
HAU	hemagglutination units	http://en.wikipedia.org/wiki/Virus_quantification
IU/ml	A unit of arbitrary substance concentration (biologic activity concentration) defined as the concentration of one international unit per one milliliter of system volume.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=18.06d&ns=ncit&code=C67377
M	molar	http://purl.obolibrary.org/obo/UO_0000062
mg/ml	microgram per milliliter	http://purl.bioontology.org/ontology/SNOMEDCT/258798001

mM	millimolar	http://purl.obolibrary.org/obo/UO_0000063
MOI	multiplicity of infection	http://en.wikipedia.org/wiki/Multiplicity_of_infection
ng/ml	nanogram per milliliter	http://purl.bioontology.org/ontology/SNOMEDCT/258806002
ng/nl	nanogram per nanoliter	
ng/ul	nanogram per microliter	http://purl.bioontology.org/ontology/SNOMEDCT/272082007
nM	nanomolar	http://purl.obolibrary.org/obo/UO_0000065
Not Specified	No value provided. Not stated explicitly or in detail.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C38046&ns=NCI_Thesaurus
pg/ml	picogram per milliliter	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C67327&ns=NCI_Thesaurus
pg/nl	picogram per nanoliter	
pg/ul	picogram per microliter	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C67306&ns=NCI_Thesaurus

pM	picomolar	http://purl.obolibrary.org/obo/UO_0000066
TCID50	mean tissue culture infective dose	http://en.wikipedia.org/wiki/Virus_quantification
ug/ml	microgram per milliliter	http://purl.bioontology.org/ontology/SNOMEDCT/258801007
ug/ul	microgram per microliter	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C42576&ns=NCI_Thesaurus
uM	micromolar	http://purl.bioontology.org/ontology/SNOMEDCT/258814008
units/ml	Enzyme Unit per Milliliter. Unit of catalytic activity concentration defined as activity equal to one enzyme unit per one milliliter of system volume.	http://purl.bioontology.org/ontology/SNOMEDCT/259002007

11. **lk_criterion_category**

Name	Description	Link
Exclusion	Exclusion Criterion used to evaluate whether a subject is a candidate for exclusion in a study.	https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C25370&ns=NCI_Thesaurus

Inclusion	Inclusion Criterion used to evaluate whether a subject is a candidate for inclusion in a study.	https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C25532&ns=NCI_Thesaurus&key=810018085&b=1&n=null

12. **lk_disease**

Name	Description	Link
disease_preferred ; disease_ontology_id		
acute myeloid leukemia ; DOID:9119	A myeloid leukemia that is characterized by the rapid growth of abnormal white blood cells that accumulate in the bone marrow and interfere with the production of normal blood cells.	http://www.disease-ontology.org/?id=DOID:9119
allergic hypersensitivity disease ; DOID:1205	An immune system disease that is an exaggerated immune response to allergens, such as insect venom, dust mites, pollen, pet dander, drugs or some foods.	http://www.disease-ontology.org/?id=DOID:1205
allergic rhinitis ; DOID:4481	A rhinitis that is an allergic inflammation and irritation of the nasal airways involving sneezing, runny nose, nasal congestion, itching and tearing of the eyes caused by exposure to an allergen such as pollen, dust, mold, animal dander and droppings of cockroaches or house dust mites.	http://www.disease-ontology.org/?id=DOID:4481
Alzheimer's disease ; DOID:10652	A tauopathy that is characterized by memory lapses, confusion, emotional instability and progressive loss of mental ability and results in progressive memory loss, impaired thinking, disorientation, and changes in personality and mood starting and leads in advanced cases to a profound decline in cognitive and physical functioning and is marked histologically by the degeneration of brain neurons especially in the cerebral cortex and by the presence of neurofibrillary tangles and plaques containing beta-amyloid.	http://www.disease-ontology.org/?id=DOID:10652

anthrax disease ; DOID:7427	A primary bacterial infectious disease that results_in infection located_in skin, located_in lung lymph nodes or located_in gastrointestinal tract, has_material_basis_in Bacillus anthracis, transmitted_by contact with infected animals or animal products, transmitted_by airborne spores or transmitted_by ingestion of undercooked meat from infected animals and has_symptom skin ulcer, has_symptom nausea, has_symptom poor appetite, has_symptom bloody diarrhea, has_symptom fever or has_symptom shortness of breath.	http://www.disease-ontology.org/?id=DOID:7427
asthma ; DOID:2841	A bronchial disease that is characterized by chronic inflammation and narrowing of the airways, which is caused by a combination of environmental and genetic factors. The disease has_symptom recurring periods of wheezing (a whistling sound while breathing), has_symptom chest tightness, has_symptom shortness of breath, has_symptom mucus production and has_symptom coughing. The symptoms appear due to a variety of triggers such as allergens, irritants, respiratory infections, weather changes, exercise, stress, reflux disease, medications, foods and emotional anxiety.	http://www.disease-ontology.org/?id=DOID:2841
atopic dermatitis ; DOID:3310	A dermatitis that is a chronically relapsing inflammatory allergic response located_in the skin that causes itching and flaking.	http://www.disease-ontology.org/?id=DOID:3310
bronchiolitis ; DOID:2942	A lung disease that is an inflammation of the bronchioles, the smallest air passages of the lungs. It is caused by viruses and bacteria. The disease has_symptom cough, has_symptom wheezing, has_symptom shortness of breath, has_symptom fever, has_symptom nasal flaring in infants and has_symptom bluish skin due to lack of oxygen.	http://www.disease-ontology.org/?id=DOID:2942

chickenpox ; DOID:8659	A viral infectious disease that results_in infection located_in skin, has_material_basis_in Human herpesvirus 3, which is transmitted_by direct contact with secretions from the rash, or transmitted_by droplet spread of respiratory secretions. The infection has_symptom anorexia, has_symptom myalgia, has_symptom nausea, has_symptom fever, has_symptom headache, has_symptom sore throat, and has_symptom blisters.	http://www.disease-ontology.org/?id=DOID:8659
chikungunya ; DOID:0050012	A viral infectious disease that results_in infection located_in joint, has_material_basis_in Chikungunya virus, which is transmitted_by Aedes mosquito bite. The infection has_symptom fever, has_symptom arthralgia, and has_symptom maculopapular rash.	http://www.disease-ontology.org/?id=DOID:0050012
childhood type dermatomyositis ; DOID:14203	childhood type dermatomyositis	http://www.disease-ontology.org/?id=DOID:14203
cholera ; DOID:1498	A primary bacterial infectious disease that is described as an acute, diarrheal illness caused by infection of the intestine with the bacterium Vibrio cholerae, which is characterized by profuse watery diarrhea, vomiting, leg cramps, circulatory collapse and shock.	http://www.disease-ontology.org/?id=DOID:1498
Clostridium difficile colitis ; DOID:0060185	A colitis characterized by an overgrowth of Clostridium difficile bacteria.	http://www.disease-ontology.org/?id=DOID:0060185
colorectal cancer ; DOID:9256	A large intestine cancer that is located_in the colon and/or located_in the rectum.	http://www.disease-ontology.org/?id=DOID:9256
Crohn's disease ; DOID:8778	An intestinal disease that involves inflammation located_in intestine.	http://www.disease-ontology.org/?id=DOID:8778
cystic kidney disease ; DOID:2975	cystic kidney disease	http://www.disease-ontology.org/?id=DOID:2975

cystinosis ; DOID:1064	A lysosomal storage disease characterized by the abnormal accumulation of cystine in the lysosomes. It follo0ws an autosomal recessive inheritance pattern and that has_material_basis_in mutations in the CTNS gene, located on chromosome 17.	http://www.disease-ontology.org/?id=DOID:1064
dengue disease ; DOID:12205	A viral infectious disease that results in infection, has material basis in Dengue virus [NCBITaxon:12637] with four serotypes (Dengue virus 1, 2, 3 and 4), which are transmitted by Aedes mosquito bite. The infection has symptom fever, has symptom severe headache, has symptom severe pain behind the eyes, has symptom joint pain, has symptom muscle and bone pain, has symptom rash, and has symptom mild bleeding.	http://www.disease-ontology.org/?id=DOID:12205
dengue hemorrhagic fever ; DOID:12206	A dengue disease that occurs when a person experiences a second infection with a heterologous Dengue virus serotype, which is transmitted_by Aedes mosquito bite. The infection has_symptom hemorrhagic lesions of the skin, has_symptom thrombocytopenia, has_symptom reduction in the fluid part of the blood, and has_symptom high fever.	http://www.disease-ontology.org/?id=DOID:12206
diabetes mellitus ; DOID:9351	A glucose metabolism disease characterized by chronic hyperglycaemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both.	http://www.disease-ontology.org/?id=DOID:9351
diphtheria ; DOID:11405	A primary bacterial infectious disease that is characterized by sore throat, low fever, and an adherent membrane (a pseudomembrane) on the tonsils, pharynx, and/or nasal cavity. A milder form of diphtheria can be restricted to the skin. It is caused by Corynebacterium diphtheriae, an aerobic Gram-positive bacterium. Diphtheria toxin spreads through the bloodstream and can lead to potentially life-threatening complications that affect other organs of the body, such as the heart and kidneys.	http://www.disease-ontology.org/?id=DOID:11405

Ebola hemorrhagic fever ; DOID:4325	A viral infectious disease that is a hemorrhagic fever, has material basis in Zaire ebolavirus, has material basis in Sudan ebolavirus, has material basis in Cote d'Ivoire ebolavirus, or has material basis in Bundibugyo ebolavirus, which are transmitted by contact with the body fluids of an infected animal or person, transmitted by contaminated fomites, or transmitted by infected medical equipment. The infection has symptom fever, has symptom headache, has symptom joint pain, has symptom muscle aches, has symptom sore throat, has symptom weakness, has symptom diarrhea, has symptom vomiting, has symptom stomach pain, has symptom rash, has symptom red eyes, has symptom hiccups, and has symptom internal and external bleeding.	http://www.disease-ontology.org/?id=DOID:4325
eczema herpeticum ; DOID:9123	A herpes simplex that results_in infection located_in skin, effected by preexisting dermatosis, has_material_basis_in Human herpesvirus 1 or Human herpesvirus 2. The infection has_symptom watery blisters, has_symptom fever, and has_symptom swelling of the lymph nodes.	http://www.disease-ontology.org/?id=DOID:9123
egg allergy ; DOID:4377	A food allergy that is an allergy or hypersensitivity to dietary substances from the yolk or whites of eggs, causing an overreaction of the immune system which may lead to severe physical symptoms.	http://www.disease-ontology.org/?id=DOID:4377
encephalitis ; DOID:9588	A brain disease that is characterized as an acute inflammation of the brain with flu-like symptoms.	http://www.disease-ontology.org/?id=DOID:9588
end stage renal failure ; DOID:783	end stage renal failure	http://www.disease-ontology.org/?id=DOID:783
focal segmental glomerulosclerosis ; DOID:1312	focal segmental glomerulosclerosis	http://www.disease-ontology.org/?id=DOID:1312

granulomatosis with polyangiitis ; DOID:12132	An autoimmune hypersensitivity disease that is characterized by necrotizing granulomatous inflammation of the upper and lower respiratory tract, glomerulonephritis, vasculitis, and the presence of antineutrophil cytoplasmatic autoantibodies (ANCAs) in patient sera, and is \nlocated_in lung, located_in kidney, located_in skin resulting from an autoimmune attack by antineutrophil cytoplasmic antibodies against small and medium-size blood vessels.	http://www.disease-ontology.org/?id=DOID:12132
haemophilus meningitis ; DOID:0080179	A bacterial meningitis that has_material_basis_in Haemophilus influenzae infection.	http://www.disease-ontology.org/?id=DOID:0080179
hemolytic-uremic syndrome ; DOID:12554	A kidney disease that is characterized by hemolytic anemia, thrombocytopenia, and renal failure caused by platelet thrombi in the microcirculation of the kidney and other organs.	http://www.disease-ontology.org/?id=DOID:12554
hepatitis A ; DOID:12549	A viral infectious disease that results_in inflammation located_in liver, has_material_basis_in Hepatitis A virus, which is transmitted_by ingestion of contaminated food or water, or transmitted_by direct contact with an infected person. The infection has_symptom fever, has_symptom fatigue, has_symptom loss of appetite, has_symptom nausea, has_symptom vomiting, has_symptom abdominal pain, has_symptom clay-colored bowel movements, has_symptom joint pain, and has_symptom jaundice.	http://www.disease-ontology.org/?id=DOID:12549
hepatitis B ; DOID:2043	A viral infectious disease that results_in inflammation located_in liver, has_material_basis_in Hepatitis B virus, which is transmitted_by sexual contact, transmitted_by blood transfusions, and transmitted_by fomites like needles or syringes. The infection has_symptom fever, has_symptom fatigue, has_symptom loss of appetite, has_symptom nausea, has_symptom vomiting, has_symptom abdominal pain, has_symptom clay-colored bowel movements, has_symptom joint pain, and has_symptom jaundice.	http://www.disease-ontology.org/?id=DOID:2043

hepatitis C ; DOID:1883	A viral infectious disease that results_in inflammation located_in liver, has_material_basis_in Hepatitis C virus, which is transmitted_by blood from an infected person enters the body of an uninfected person. The infection has_symptom fever, has_symptom fatigue, has_symptom loss of appetite, has_symptom nausea, has_symptom vomiting, has_symptom abdominal pain, has_symptom clay-colored bowel movements, has_symptom joint pain, and has_symptom jaundice.	http://www.disease-ontology.org/?id=DOID:1883
herpes zoster ; DOID:8536	A viral infectious disease that results_in infection located_in nerve fiber, has_material_basis_in Human herpesvirus 3, which reactivates after appearing as chickenpox in childhood. The virus is transmitted_by direct contact with the rash, which can develop into chickenpox in newly-infected individuals. The infection has_symptom rash which is followed by blisters, has_symptom headache, has_symptom fever, has_symptom malaise, has_symptom itching, has_symptom burning pain, and has_symptom paresthesia.	http://www.disease-ontology.org/?id=DOID:8536
human immunodeficiency virus infectious disease ; DOID:526	A viral infectious disease that results in destruction of immune system, leading to life-threatening opportunistic infections and cancers, has material basis in Human immunodeficiency virus 1 or has material basis in Human immunodeficiency virus 2, which are transmitted by sexual contact, transmitted by transfer of blood, semen, vaginal fluid, pre-ejaculate, or breast milk, transmitted by congenital method, and transmitted by contaminated needles. The virus infects helper T cells (CD4+ T cells) which are directly or indirectly destroyed, macrophages, and dendritic cells. The infection has symptom diarrhea, has symptom fatigue, has symptom fever, has symptom vaginal yeast infection, has symptom headache, has symptom mouth sores, has symptom muscle aches, has symptom sore throat, and has symptom swollen lymph glands.	http://www.disease-ontology.org/?id=DOID:526

hypoglycemia ; DOID:9993	A glucose metabolism disease that is characterized by abnormally low levels of blood glucose.	http://www.disease-ontology.org/?id=DOID:9993
influenza ; DOID:8469	A viral infectious disease that results in infection, located in respiratory tract, has material basis in Influenzavirus A, has material basis in Influenzavirus B, or has material basis in Influenzavirus C, which are transmitted by droplet spread of oronasal secretions during coughing, sneezing, or talking from an infected person. It is a highly contagious disease that affects birds and mammals and has symptom chills, has symptom fever, has symptom sore throat, has symptom runny nose, has symptom muscle pains, has symptom severe headache, has symptom cough, and has symptom weakness.	http://www.disease-ontology.org/?id=DOID:8469
interstitial nephritis ; DOID:1063	interstitial nephritis	http://www.disease-ontology.org/?id=DOID:1063
juvenile rheumatoid arthritis ; DOID:676	A rheumatoid arthritis that involves an autoimmune disease onset in children under 16 which attacks the healthy cells and tissue of located_in joint.	http://www.disease-ontology.org/?id=DOID:676
kidney cortex necrosis ; DOID:2973	kidney cortex necrosis	http://www.disease-ontology.org/?id=DOID:2973
lung adenocarcinoma ; DOID:3910	A lung cancer that derives_from epithelial cells of glandular origin.	http://www.disease-ontology.org/?id=DOID:3910
lung cancer ; DOID:1324	A respiratory system cancer that is located_in the lung.	http://www.disease-ontology.org/?id=DOID:1324
lupus nephritis ; DOID:0080162	A glomerulonephritis that is characterized by inflammation of the kidneys resulting from systemic lupus erythematosus.	http://www.disease-ontology.org/?id=DOID:0080162

Lyme disease ; DOID:11729	A primary bacterial infectious disease that results_in infection, has_material_basis_in Borrelia burgdorferi, which is transmitted_by blacklegged tick (Ixodes scapularis) or transmitted_by western blacklegged tick (Ixodes pacificus). The infection has_symptom fever, has_symptom headache, has_symptom fatigue, and has_symptom skin rash called erythema migrans. If left untreated, infection can spread to joints, the heart, and the nervous system.	http://www.disease-ontology.org/?id=DOID:11729
malaria ; DOID:12365	A parasitic protozoa infectious disease characterized as a vector-borne infectious disease caused by the presence of protozoan parasites of the genus Plasmodium in the red blood cells, transmitted from an infected to an uninfected individual by the bite of anopheline mosquitoes, and characterized by periodic attacks of chills and fever that coincide with mass destruction of blood cells and the release of toxic substances by the parasite at the end of each reproductive cycle.	http://www.disease-ontology.org/?id=DOID:12365
measles ; DOID:8622	A viral infectious disease that results_in infection located_in skin, has_material_basis_in Measles virus, which is transmitted_by contact with oronasal secretions, or semen of an infected person. The infection has_symptom fever, has_symptom cough, has_symptom coryza, has_symptom conjunctivitis, and has_symptom maculopapular, erythematous rash.	http://www.disease-ontology.org/?id=DOID:8622
meningitis ; DOID:9471	A central nervous system disease that is characterized by an inflammation of the pia-arachnoid meninges. It can be caused by growth of bacteria, fungi, or parasites within the subarachnoid space or by the growth of bacteria or viruses within the meningeal or ependymal cells.	http://www.disease-ontology.org/?id=DOID:9471
meningococcal meningitis ; DOID:0080176	A bacterial meningitis that has_material_basis_in Neisseria meningitidis infection.	http://www.disease-ontology.org/?id=DOID:0080176

meningoencephalitis ; DOID:10554	A central nervous system disease that involves encephalitis which occurs along with meningitis.	http://www.disease-ontology.org/?id=DOID:10554
molluscum contagiosum ; DOID:8867	A viral infectious disease that results_in infection located_in skin, has_material_basis_in Molluscum contagiosum virus, which is transmitted_by contact with the skin, and transmitted_by fomites. The infection has_symptom lesions which are flesh-colored with a pit in the center.	http://www.disease-ontology.org/?id=DOID:8867
multiple sclerosis ; DOID:2377	A demyelinating disease that involves damage to the fatty myelin sheaths around the axons of the brain and spinal cord resulting in demyelination and scarring.	http://www.disease-ontology.org/?id=DOID:2377
mumps ; DOID:10264	A viral infectious disease that results in inflammation located in salivary gland, has material basis in Mumps virus, which is transmitted by droplet spread of saliva or mucus from the mouth, nose, or throat of an infected person, or transmitted by contaminated fomites. The infection has symptom fever, has symptom headache, has symptom muscle aches, has symptom tiredness, has symptom loss of appetite, has symptom swollen and tender salivary glands under the ears or jaw on one or both sides of the face.	http://www.disease-ontology.org/?id=DOID:10264
myasthenia gravis ; DOID:437	An autoimmune disease of the nervous system that has_material_basis_in antibodies to acetylcholine receptors at the neuromuscular junction, has_symptom ptosis, has_symptom diplopia, has_symptom dysphagia, has_symptom dysarthria, has_symptom muscle weakness and has_symptom dyspnea.	http://www.disease-ontology.org/?id=DOID:437
myocarditis ; DOID:820	An extrinsic cardiomyopathy that is characterized as an inflammation of the heart muscle.	http://www.disease-ontology.org/?id=DOID:820
neuromyelitis optica ; DOID:8869	A central nervous system disease characterized by inflammation of the optic nerve (optic neuritis) and inflammation of the spinal cord (myelitis).	http://www.disease-ontology.org/?id=DOID:8869

optic nerve glioma ; DOID:4992	optic nerve glioma	http://www.disease-ontology.org/?id=DOID:4992
osteoarthritis ; DOID:8398	An arthritis that has_material_basis_in worn out cartilage located_in joint.	http://www.disease-ontology.org/?id=DOID:8398
Parkinson's disease ; DOID:14330	A synucleinopathy that has_material_basis_in degeneration of the central nervous system that often impairs motor skills, speech, and other functions.	http://www.disease-ontology.org/?id=DOID:14330
peanut allergy ; DOID:4378	A food allergy that is an allergy or hypersensitivity to dietary substances from peanuts causing an overreaction of the immune system which in a small percentage of people may lead to severe physical symptoms.	http://www.disease-ontology.org/?id=DOID:4378
pemphigus vulgaris ; DOID:0060851	A pemphigus characterized by autosomal dominant blisters and erosions on the skin and mucous membranes erosions cause by autoantibodies to intercellular cement substance.	http://www.disease-ontology.org/?id=DOID:0060851
Plasmodium falciparum malaria ; DOID:14067	A malaria described as a severe form of the disease caused by a parasite Plasmodium falciparum, which is marked by irrregular recurrence of paroxysms and prolonged or continuous fever.	http://www.disease-ontology.org/?id=DOID:14067
Plasmodium vivax malaria ; DOID:12978	A malaria that is caused by the protozoan parasite Plasmodium vivax, which induces paroxysms at 48-hour intervals.	http://www.disease-ontology.org/?id=DOID:12978
pre-eclampsia ; DOID:10591	A hypertension occurring during pregnancy characterized by large amounts of protein in the urine (proteinuria) and edema, usually by the last trimester of pregnancy.	http://www.disease-ontology.org/?id=DOID:10591
psoriasis ; DOID:8893	A skin disease that is characterized by patches of thick red skin and silvery scales.	http://www.disease-ontology.org/?id=DOID:8893
psoriatic arthritis ; DOID:9008	A syndrome that occurs in humans with psoriasis who also experience symptoms similar to arthritis.	http://www.disease-ontology.org/?id=DOID:9008

pustulosis of palm and sole ; DOID:4398	pustulosis of palm and sole	http://www.disease-ontology.org/?id=DOID:4398
rheumatoid arthritis ; DOID:7148	An arthritis that is an autoimmune disease which attacks healthy cells and tissue located_in joint.	http://www.disease-ontology.org/?id=DOID:7148
rubella ; DOID:8781	A viral infectious disease that results_in infection located_in skin, has_material_basis_in Rubella virus, which is transmitted_by droplet spread of oronasal secretions from the infected person through coughing and sneezing, and transmitted_by congenital method. The infection has_symptom rash on the face which spreads to the trunk and limbs, has_symptom fever, has_symptom lymphadenopathy, has_symptom joint pains, has_symptom headache, and has_symptom conjunctivitis.	http://www.disease-ontology.org/?id=DOID:8781
sarcoma ; DOID:1115	A cell type cancer that has material basis in abnormally proliferating cells derives from embryonic mesoderm.	http://www.disease-ontology.org/?id=DOID:1115
Sjogren's syndrome ; DOID:12894	An autoimmune hypersensitivity disease that involves attack of immune cells which destroy the exocrine glands that produce tears and saliva.	http://www.disease-ontology.org/?id=DOID:12894
smallpox ; DOID:8736	A viral infectious disease that results in infection located in skin, has material basis in Variola virus, which is transmitted by droplets from oral, nasal or pharyngeal mucosa, transmitted by contact with the body fluids, or transmitted by fomites. The infection results in formation of lesions, first on the face, hands and forearms and later on the trunk.	http://www.disease-ontology.org/?id=DOID:8736
Streptococcus pneumonia ; DOID:0040084	A bacterial pneumonia has_material_basis_in Streptococcus pneumoniae.	http://www.disease-ontology.org/?id=DOID:0040084
systemic lupus erythematosus ; DOID:9074	A lupus erythematosus that is an inflammation of connective tissue marked by skin rashes, joint pain and swelling, inflammation of the kidneys and inflammation of the tissue surrounding the heart.	http://www.disease-ontology.org/?id=DOID:9074

systemic scleroderma ; DOID:418	A scleroderma that is characterized by fibrosis (or hardening) of the skin and major organs, as well as vascular alterations, and autoantibodies.	http://www.disease-ontology.org/?id=DOID:418
tetanus ; DOID:11338	A primary bacterial infectious disease that results in prolonged contraction of skeletal muscle fibers, has material basis in Clostridium tetani, which produces tetanospasmin, a neurotoxin, which is carried to the brain and spinal cord, where it binds irreversibly to receptors inhibiting neurotransmission. Damaged upper motor neurons cannot control reflex responses to afferent sensory stimuli.	http://www.disease-ontology.org/?id=DOID:11338
tuberculosis ; DOID:399	A primary bacterial infectious disease that is located_in lungs, located_in lymph nodes, located_in pericardium, located_in brain, located_in pleura or located_in gastrointestinal tract, has_material_basis_in Mycobacterium tuberculosis, which is transmitted_by droplets released into the air when an infected person coughs or sneezes.	http://www.disease-ontology.org/?id=DOID:399
type 1 diabetes mellitus ; DOID:9744	A diabetes mellitus that results from the body's failure to produce insulin and has_material_basis_in autoimmune destruction of insulin-producing beta cells of the pancreas.	http://www.disease-ontology.org/?id=DOID:9744
type 2 diabetes mellitus ; DOID:9352	A diabetes mellitus that involves high blood glucose resulting from cells fail to use insulin properly.	http://www.disease-ontology.org/?id=DOID:9352
typhoid fever ; DOID:13258	A primary bacterial infectious disease that is a communicable systemic illness, has_material_basis_in Salmonella enterica subsp enterica serovar Typhi, which is transmitted_by ingestion of food or water contaminated with the feces of an infected person. The infection has_symptom fever, has_symptom diarrhea, has_symptom prostration, has_symptom headache, has_symptom splenomegaly, has_symptom liver enlargement, has_symptom eruption of rose-colored spots, and has_symptom leukopenia.	http://www.disease-ontology.org/?id=DOID:13258

ulcerative colitis ; DOID:8577	A colitis that is predominantly confined to the mucosa located_in colon and includes characteristic ulcers, or open sores.	http://www.disease-ontology.org/?id=DOID:8577
urinary tract obstruction ; DOID:5200	urinary tract obstruction	http://www.disease-ontology.org/?id=DOID:5200
vasculitis ; DOID:865	A vascular disease that is characterized by inflammation of the blood vessels.	http://www.disease-ontology.org/?id=DOID:865
West Nile encephalitis ; DOID:2365	A viral infectious disease that results in inflammation located in brain, has material basis in West Nile virus, which is transmitted by Culex, transmitted by Aedes, and transmitted by Anopheles species of mosquitoes. The infection has symptom high fever, has symptom headache, has symptom neck stiffness, has symptom stupor, has symptom disorientation, has symptom coma, has symptom tremors, has symptom convulsions, has symptom muscle weakness, has symptom vision loss, has symptom numbness, and has symptom paralysis.	http://www.disease-ontology.org/?id=DOID:2365
West Nile fever ; DOID:2366	A viral infectious disease that results_in infection, has_material_basis_in West Nile virus, which is transmitted_by Culex and transmitted_by Aedes mosquitoes. The infection has_symptom fever, has_symptom sore throat, has_symptom headache, has_symptom body ache, has_symptom nausea, has_symptom maculopapular rash and has_symptom vomiting.	http://www.disease-ontology.org/?id=DOID:2366

yellow fever ; DOID:9682	A viral infectious disease that results in infection, has material basis in Yellow fever virus, which is transmitted by Aedes, transmitted by Haemagogus, or transmitted by Sabethes species of mosquitoes. The infection has symptom fever, has symptom muscle pain, has symptom backache, has symptom headache, has symptom shivers, has symptom loss of appetite, has symptom jaundice, and has symptom bleeding from the mouth, nose, eyes or stomach leading to vomitus containing blood.	http://www.disease-ontology.org/?id=DOID:9682
Zika fever ; DOID:0060478	A viral infectious disease that has_material_basis in Zika virus, which is transmitted_by Aedes aegypti mosquitoes and targets neural progenitor cells and neuronal cells in all stages of maturity and has_symptom fever, has_symptom rash, has_symptom headaches and has_symptom joint pain.	http://www.disease-ontology.org/?id=DOID:0060478

13. **lk_disease_condition**

Name	Description	Link
condition_preferred		
acute myeloid leukemia	A myeloid leukemia that is characterized by the rapid growth of abnormal white blood cells that accumulate in the bone marrow and interfere with the production of normal blood cells.	http://www.disease-ontology.org/?id=DOID:9119
allergic hypersensitivity disease	An immune system disease that is an exaggerated immune response to allergens, such as insect venom, dust mites, pollen, pet dander, drugs or some foods.	http://www.disease-ontology.org/?id=DOID:1205
allergic rhinitis	A rhinitis that is an allergic inflammation and irritation of the nasal airways involving sneezing, runny nose, nasal congestion, itching and tearing of the eyes caused by exposure to an allergen such as pollen, dust, mold, animal dander and droppings of cockroaches or house dust mites.	http://www.disease-ontology.org/?id=DOID:4481

Alzheimer's disease	A tauopathy that is characterized by memory lapses, confusion, emotional instability and progressive loss of mental ability and results in progressive memory loss, impaired thinking, disorientation, and changes in personality and mood starting and leads in advanced cases to a profound decline in cognitive and physical functioning and is marked histologically by the degeneration of brain neurons especially in the cerebral cortex and by the presence of neurofibrillary tangles and plaques containing beta-amyloid.	http://www.disease-ontology.org/?id=DOID:10652
anthrax disease	A primary bacterial infectious disease that results_in infection located_in skin, located_in lung lymph nodes or located_in gastrointestinal tract, has_material_basis_in Bacillus anthracis, transmitted_by contact with infected animals or animal products, transmitted_by airborne spores or transmitted_by ingestion of undercooked meat from infected animals and has_symptom skin ulcer, has_symptom nausea, has_symptom poor appetite, has_symptom bloody diarrhea, has_symptom fever or has_symptom shortness of breath.	http://www.disease-ontology.org/?id=DOID:7427
asthma	A bronchial disease that is characterized by chronic inflammation and narrowing of the airways, which is caused by a combination of environmental and genetic factors. The disease has_symptom recurring periods of wheezing (a whistling sound while breathing), has_symptom chest tightness, has_symptom shortness of breath, has_symptom mucus production and has_symptom coughing. The symptoms appear due to a variety of triggers such as allergens, irritants, respiratory infections, weather changes, exercise, stress, reflux disease, medications, foods and emotional anxiety.	http://www.disease-ontology.org/?id=DOID:2841
atopic dermatitis	A dermatitis that is a chronically relapsing inflammatory allergic response located_in the skin that causes itching and flaking.	http://www.disease-ontology.org/?id=DOID:3310

bronchiolitis	A lung disease that is an inflammation of the bronchioles, the smallest air passages of the lungs. It is caused by viruses and bacteria. The disease has_symptom cough, has_symptom wheezing, has_symptom shortness of breath, has_symptom fever, has_symptom nasal flaring in infants and has_symptom bluish skin due to lack of oxygen.	http://www.disease-ontology.org/?id=DOID:2942
chickenpox	A viral infectious disease that results_in infection located_in skin, has_material_basis_in Human herpesvirus 3, which is transmitted_by direct contact with secretions from the rash, or transmitted_by droplet spread of respiratory secretions. The infection has_symptom anorexia, has_symptom myalgia, has_symptom nausea, has_symptom fever, has_symptom headache, has_symptom sore throat, and has_symptom blisters.	http://www.disease-ontology.org/?id=DOID:8659
chikungunya	A viral infectious disease that results_in infection located_in joint, has_material_basis_in Chikungunya virus, which is transmitted_by Aedes mosquito bite. The infection has_symptom fever, has_symptom arthralgia, and has_symptom maculopapular rash.	http://www.disease-ontology.org/?id=DOID:0050012
childhood type dermatomyositis	childhood type dermatomyositis	http://www.disease-ontology.org/?id=DOID:14203
cholera	A primary bacterial infectious disease that is described as an acute, diarrheal illness caused by infection of the intestine with the bacterium Vibrio cholerae, which is characterized by profuse watery diarrhea, vomiting, leg cramps, circulatory collapse and shock.	http://www.disease-ontology.org/?id=DOID:1498
Clostridium difficile colitis	A colitis characterized by an overgrowth of Clostridium difficile bacteria.	http://www.disease-ontology.org/?id=DOID:0060185
colorectal cancer	A large intestine cancer that is located_in the colon and/or located_in the rectum.	http://www.disease-ontology.org/?id=DOID:9256

Crohn's disease	An intestinal disease that involves inflammation located_in intestine.	http://www.disease-ontology.org/?id=DOID:8778
cystic kidney disease	cystic kidney disease	http://www.disease-ontology.org/?id=DOID:2975
cystinosis	A lysosomal storage disease characterized by the abnormal accumulation of cystine in the lysosomes. It follo0ws an autosomal recessive inheritance pattern and that has_material_basis_in mutations in the CTNS gene, located on chromosome 17.	http://www.disease-ontology.org/?id=DOID:1064
dengue disease	A viral infectious disease that results in infection, has material basis in Dengue virus [NCBITaxon:12637] with four serotypes (Dengue virus 1, 2, 3 and 4), which are transmitted by Aedes mosquito bite. The infection has symptom fever, has symptom severe headache, has symptom severe pain behind the eyes, has symptom joint pain, has symptom muscle and bone pain, has symptom rash, and has symptom mild bleeding.	http://www.disease-ontology.org/?id=DOID:12205
dengue hemorrhagic fever	A dengue disease that occurs when a person experiences a second infection with a heterologous Dengue virus serotype, which is transmitted_by Aedes mosquito bite. The infection has_symptom hemorrhagic lesions of the skin, has_symptom thrombocytopenia, has_symptom reduction in the fluid part of the blood, and has_symptom high fever.	http://www.disease-ontology.org/?id=DOID:12206
diabetes mellitus	A glucose metabolism disease characterized by chronic hyperglycaemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both.	http://www.disease-ontology.org/?id=DOID:9351

diphtheria	A primary bacterial infectious disease that is characterized by sore throat, low fever, and an adherent membrane (a pseudomembrane) on the tonsils, pharynx, and/or nasal cavity. A milder form of diphtheria can be restricted to the skin. It is caused by Corynebacterium diphtheriae, an aerobic Gram-positive bacterium. Diphtheria toxin spreads through the bloodstream and can lead to potentially life-threatening complications that affect other organs of the body, such as the heart and kidneys.	http://www.disease-ontology.org/?id=DOID:11405
Ebola hemorrhagic fever	A viral infectious disease that is a hemorrhagic fever, has material basis in Zaire ebolavirus, has material basis in Sudan ebolavirus, has material basis in Cote d'Ivoire ebolavirus, or has material basis in Bundibugyo ebolavirus, which are transmitted by contact with the body fluids of an infected animal or person, transmitted by contaminated fomites, or transmitted by infected medical equipment. The infection has symptom fever, has symptom headache, has symptom joint pain, has symptom muscle aches, has symptom sore throat, has symptom weakness, has symptom diarrhea, has symptom vomiting, has symptom stomach pain, has symptom rash, has symptom red eyes, has symptom hiccups, and has symptom internal and external bleeding.	http://www.disease-ontology.org/?id=DOID:4325
eczema herpeticum	A herpes simplex that results_in infection located_in skin, effected by preexisting dermatosis, has_material_basis_in Human herpesvirus 1 or Human herpesvirus 2. The infection has_symptom watery blisters, has_symptom fever, and has_symptom swelling of the lymph nodes.	http://www.disease-ontology.org/?id=DOID:9123
egg allergy	A food allergy that is an allergy or hypersensitivity to dietary substances from the yolk or whites of eggs, causing an overreaction of the immune system which may lead to severe physical symptoms.	http://www.disease-ontology.org/?id=DOID:4377

encephalitis	A brain disease that is characterized as an acute inflammation of the brain with flu-like symptoms.	http://www.disease-ontology.org/?id=DOID:9588
end stage renal failure	end stage renal failure	http://www.disease-ontology.org/?id=DOID:783
focal segmental glomerulosclerosis	focal segmental glomerulosclerosis	http://www.disease-ontology.org/?id=DOID:1312
granulomatosis with polyangiitis	An autoimmune hypersensitivity disease that is characterized by necrotizing granulomatous inflammation of the upper and lower respiratory tract, glomerulonephritis, vasculitis, and the presence of antineutrophil cytoplasmatic autoantibodies (ANCAs) in patient sera, and is \nlocated_in lung, located_in kidney, located_in skin resulting from an autoimmune attack by antineutrophil cytoplasmic antibodies against small and medium-size blood vessels.	http://www.disease-ontology.org/?id=DOID:12132
haemophilus meningitis	A bacterial meningitis that has_material_basis_in Haemophilus influenzae infection.	http://www.disease-ontology.org/?id=DOID:0080179
hemolytic-uremic syndrome	A kidney disease that is characterized by hemolytic anemia, thrombocytopenia, and renal failure caused by platelet thrombi in the microcirculation of the kidney and other organs.	http://www.disease-ontology.org/?id=DOID:12554
hepatitis A	A viral infectious disease that results_in inflammation located_in liver, has_material_basis_in Hepatitis A virus, which is transmitted_by ingestion of contaminated food or water, or transmitted_by direct contact with an infected person. The infection has_symptom fever, has_symptom fatigue, has_symptom loss of appetite, has_symptom nausea, has_symptom vomiting, has_symptom abdominal pain, has_symptom clay-colored bowel movements, has_symptom joint pain, and has_symptom jaundice.	http://www.disease-ontology.org/?id=DOID:12549

hepatitis B	A viral infectious disease that results_in inflammation located_in liver, has_material_basis_in Hepatitis B virus, which is transmitted_by sexual contact, transmitted_by blood transfusions, and transmitted_by fomites like needles or syringes. The infection has_symptom fever, has_symptom fatigue, has_symptom loss of appetite, has_symptom nausea, has_symptom vomiting, has_symptom abdominal pain, has_symptom clay-colored bowel movements, has_symptom joint pain, and has_symptom jaundice.	http://www.disease-ontology.org/?id=DOID:2043
hepatitis C	A viral infectious disease that results_in inflammation located_in liver, has_material_basis_in Hepatitis C virus, which is transmitted_by blood from an infected person enters the body of an uninfected person. The infection has_symptom fever, has_symptom fatigue, has_symptom loss of appetite, has_symptom nausea, has_symptom vomiting, has_symptom abdominal pain, has_symptom clay-colored bowel movements, has_symptom joint pain, and has_symptom jaundice.	http://www.disease-ontology.org/?id=DOID:1883
herpes zoster	A viral infectious disease that results_in infection located_in nerve fiber, has_material_basis_in Human herpesvirus 3, which reactivates after appearing as chickenpox in childhood. The virus is transmitted_by direct contact with the rash, which can develop into chickenpox in newly-infected individuals. The infection has_symptom rash which is followed by blisters, has_symptom headache, has_symptom fever, has_symptom malaise, has_symptom itching, has_symptom burning pain, and has_symptom paresthesia.	http://www.disease-ontology.org/?id=DOID:8536

human immunodeficiency virus infectious disease	A viral infectious disease that results in destruction of immune system, leading to life-threatening opportunistic infections and cancers, has material basis in Human immunodeficiency virus 1 or has material basis in Human immunodeficiency virus 2, which are transmitted by sexual contact, transmitted by transfer of blood, semen, vaginal fluid, pre-ejaculate, or breast milk, transmitted by congenital method, and transmitted by contaminated needles. The virus infects helper T cells (CD4+ T cells) which are directly or indirectly destroyed, macrophages, and dendritic cells. The infection has symptom diarrhea, has symptom fatigue, has symptom fever, has symptom vaginal yeast infection, has symptom headache, has symptom mouth sores, has symptom muscle aches, has symptom sore throat, and has symptom swollen lymph glands.	http://www.disease-ontology.org/?id=DOID:526
hypoglycemia	A glucose metabolism disease that is characterized by abnormally low levels of blood glucose.	http://www.disease-ontology.org/?id=DOID:9993
influenza	A viral infectious disease that results in infection, located in respiratory tract, has material basis in Influenzavirus A, has material basis in Influenzavirus B, or has material basis in Influenzavirus C, which are transmitted by droplet spread of oronasal secretions during coughing, sneezing, or talking from an infected person. It is a highly contagious disease that affects birds and mammals and has symptom chills, has symptom fever, has symptom sore throat, has symptom runny nose, has symptom muscle pains, has symptom severe headache, has symptom cough, and has symptom weakness.	http://www.disease-ontology.org/?id=DOID:8469
interstitial nephritis	interstitial nephritis	http://www.disease-ontology.org/?id=DOID:1063

juvenile rheumatoid arthritis	A rheumatoid arthritis that involves an autoimmune disease onset in children under 16 which attacks the healthy cells and tissue of located_in joint.	http://www.disease-ontology.org/?id=DOID:676
kidney cortex necrosis	kidney cortex necrosis	http://www.disease-ontology.org/?id=DOID:2973
lung adenocarcinoma	A lung cancer that derives_from epithelial cells of glandular origin.	http://www.disease-ontology.org/?id=DOID:3910
lung cancer	A respiratory system cancer that is located_in the lung.	http://www.disease-ontology.org/?id=DOID:1324
lupus nephritis	A glomerulonephritis that is characterized by inflammation of the kidneys resulting from systemic lupus erythematosus.	http://www.disease-ontology.org/?id=DOID:0080162
Lyme disease	A primary bacterial infectious disease that results_in infection, has_material_basis_in Borrelia burgdorferi, which is transmitted_by blacklegged tick (Ixodes scapularis) or transmitted_by western blacklegged tick (Ixodes pacificus). The infection has_symptom fever, has_symptom headache, has_symptom fatigue, and has_symptom skin rash called erythema migrans. If left untreated, infection can spread to joints, the heart, and the nervous system.	http://www.disease-ontology.org/?id=DOID:11729
malaria	A parasitic protozoa infectious disease characterized as a vector-borne infectious disease caused by the presence of protozoan parasites of the genus Plasmodium in the red blood cells, transmitted from an infected to an uninfected individual by the bite of anopheline mosquitoes, and characterized by periodic attacks of chills and fever that coincide with mass destruction of blood cells and the release of toxic substances by the parasite at the end of each reproductive cycle.	http://www.disease-ontology.org/?id=DOID:12365

measles	A viral infectious disease that results_in infection located_in skin, has_material_basis_in Measles virus, which is transmitted_by contact with oronasal secretions, or semen of an infected person. The infection has_symptom fever, has_symptom cough, has_symptom coryza, has_symptom conjunctivitis, and has_symptom maculopapular, erythematous rash.	http://www.disease-ontology.org/?id=DOID:8622
meningitis	A central nervous system disease that is characterized by an inflammation of the pia-arachnoid meninges. It can be caused by growth of bacteria, fungi, or parasites within the subarachnoid space or by the growth of bacteria or viruses within the meningeal or ependymal cells.	http://www.disease-ontology.org/?id=DOID:9471
meningococcal meningitis	A bacterial meningitis that has_material_basis_in Neisseria meningitidis infection.	http://www.disease-ontology.org/?id=DOID:0080176
meningoencephalitis	A central nervous system disease that involves encephalitis which occurs along with meningitis.	http://www.disease-ontology.org/?id=DOID:10554
molluscum contagiosum	A viral infectious disease that results_in infection located_in skin, has_material_basis_in Molluscum contagiosum virus, which is transmitted_by contact with the skin, and transmitted_by fomites. The infection has_symptom lesions which are flesh-colored with a pit in the center.	http://www.disease-ontology.org/?id=DOID:8867
multiple sclerosis	A demyelinating disease that involves damage to the fatty myelin sheaths around the axons of the brain and spinal cord resulting in demyelination and scarring.	http://www.disease-ontology.org/?id=DOID:2377

mumps	A viral infectious disease that results in inflammation located in salivary gland, has material basis in Mumps virus, which is transmitted by droplet spread of saliva or mucus from the mouth, nose, or throat of an infected person, or transmitted by contaminated fomites. The infection has symptom fever, has symptom headache, has symptom muscle aches, has symptom tiredness, has symptom loss of appetite, has symptom swollen and tender salivary glands under the ears or jaw on one or both sides of the face.	http://www.disease-ontology.org/?id=DOID:10264
myasthenia gravis	An autoimmune disease of the nervous system that has_material_basis_in antibodies to acetylcholine receptors at the neuromuscular junction, has_symptom ptosis, has_symptom diplopia, has_symptom dysphagia, has_symptom dysarthria, has_symptom muscle weakness and has_symptom dyspnea.	http://www.disease-ontology.org/?id=DOID:437
myocarditis	An extrinsic cardiomyopathy that is characterized as an inflammation of the heart muscle.	http://www.disease-ontology.org/?id=DOID:820
neuromyelitis optica	A central nervous system disease characterized by inflammation of the optic nerve (optic neuritis) and inflammation of the spinal cord (myelitis).	http://www.disease-ontology.org/?id=DOID:8869
optic nerve glioma	optic nerve glioma	http://www.disease-ontology.org/?id=DOID:4992
osteoarthritis	An arthritis that has_material_basis_in worn out cartilage located_in joint.	http://www.disease-ontology.org/?id=DOID:8398
Parkinson's disease	A synucleinopathy that has_material_basis_in degeneration of the central nervous system that often impairs motor skills, speech, and other functions.	http://www.disease-ontology.org/?id=DOID:14330

peanut allergy	A food allergy that is an allergy or hypersensitivity to dietary substances from peanuts causing an overreaction of the immune system which in a small percentage of people may lead to severe physical symptoms.	http://www.disease-ontology.org/?id=DOID:4378
pemphigus vulgaris	A pemphigus characterized by autosomal dominant blisters and erosions on the skin and mucous membranes erosions cause by autoantibodies to intercellular cement substance.	http://www.disease-ontology.org/?id=DOID:0060851
Plasmodium falciparum malaria	A malaria described as a severe form of the disease caused by a parasite Plasmodium falciparum, which is marked by irrregular recurrence of paroxysms and prolonged or continuous fever.	http://www.disease-ontology.org/?id=DOID:14067
Plasmodium vivax malaria	A malaria that is caused by the protozoan parasite Plasmodium vivax, which induces paroxysms at 48-hour intervals.	http://www.disease-ontology.org/?id=DOID:12978
pre-eclampsia	A hypertension occurring during pregnancy characterized by large amounts of protein in the urine (proteinuria) and edema, usually by the last trimester of pregnancy.	http://www.disease-ontology.org/?id=DOID:10591
psoriasis	A skin disease that is characterized by patches of thick red skin and silvery scales.	http://www.disease-ontology.org/?id=DOID:8893
psoriatic arthritis	A syndrome that occurs in humans with psoriasis who also experience symptoms similar to arthritis.	http://www.disease-ontology.org/?id=DOID:9008
pustulosis of palm and sole	pustulosis of palm and sole	http://www.disease-ontology.org/?id=DOID:4398
rheumatoid arthritis	An arthritis that is an autoimmune disease which attacks healthy cells and tissue located_in joint.	http://www.disease-ontology.org/?id=DOID:7148

rubella	A viral infectious disease that results_in infection located_in skin, has_material_basis_in Rubella virus, which is transmitted_by droplet spread of oronasal secretions from the infected person through coughing and sneezing, and transmitted_by congenital method. The infection has_symptom rash on the face which spreads to the trunk and limbs, has_symptom fever, has_symptom lymphadenopathy, has_symptom joint pains, has_symptom headache, and has_symptom conjunctivitis.	http://www.disease-ontology.org/?id=DOID:8781
sarcoma	A cell type cancer that has material basis in abnormally proliferating cells derives from embryonic mesoderm.	http://www.disease-ontology.org/?id=DOID:1115
Sjogren's syndrome	An autoimmune hypersensitivity disease that involves attack of immune cells which destroy the exocrine glands that produce tears and saliva.	http://www.disease-ontology.org/?id=DOID:12894
smallpox	A viral infectious disease that results in infection located in skin, has material basis in Variola virus, which is transmitted by droplets from oral, nasal or pharyngeal mucosa, transmitted by contact with the body fluids, or transmitted by fomites. The infection results in formation of lesions, first on the face, hands and forearms and later on the trunk.	http://www.disease-ontology.org/?id=DOID:8736
Streptococcus pneumonia	A bacterial pneumonia has_material_basis_in Streptococcus pneumoniae.	http://www.disease-ontology.org/?id=DOID:0040084
systemic lupus erythematosus	A lupus erythematosus that is an inflammation of connective tissue marked by skin rashes, joint pain and swelling, inflammation of the kidneys and inflammation of the tissue surrounding the heart.	http://www.disease-ontology.org/?id=DOID:9074
systemic scleroderma	A scleroderma that is characterized by fibrosis (or hardening) of the skin and major organs, as well as vascular alterations, and autoantibodies.	http://www.disease-ontology.org/?id=DOID:418

tetanus	A primary bacterial infectious disease that results in prolonged contraction of skeletal muscle fibers, has material basis in Clostridium tetani, which produces tetanospasmin, a neurotoxin, which is carried to the brain and spinal cord, where it binds irreversibly to receptors inhibiting neurotransmission. Damaged upper motor neurons cannot control reflex responses to afferent sensory stimuli.	http://www.disease-ontology.org/?id=DOID:11338
tuberculosis	A primary bacterial infectious disease that is located_in lungs, located_in lymph nodes, located_in pericardium, located_in brain, located_in pleura or located_in gastrointestinal tract, has_material_basis_in Mycobacterium tuberculosis, which is transmitted_by droplets released into the air when an infected person coughs or sneezes.	http://www.disease-ontology.org/?id=DOID:399
type 1 diabetes mellitus	A diabetes mellitus that results from the body's failure to produce insulin and has_material_basis_in autoimmune destruction of insulin-producing beta cells of the pancreas.	http://www.disease-ontology.org/?id=DOID:9744
type 2 diabetes mellitus	A diabetes mellitus that involves high blood glucose resulting from cells fail to use insulin properly.	http://www.disease-ontology.org/?id=DOID:9352
typhoid fever	A primary bacterial infectious disease that is a communicable systemic illness, has_material_basis_in Salmonella enterica subsp enterica serovar Typhi, which is transmitted_by ingestion of food or water contaminated with the feces of an infected person. The infection has_symptom fever, has_symptom diarrhea, has_symptom prostration, has_symptom headache, has_symptom splenomegaly, has_symptom liver enlargement, has_symptom eruption of rose-colored spots, and has_symptom leukopenia.	http://www.disease-ontology.org/?id=DOID:13258
ulcerative colitis	A colitis that is predominantly confined to the mucosa located_in colon and includes characteristic ulcers, or open sores.	http://www.disease-ontology.org/?id=DOID:8577

urinary tract obstruction	urinary tract obstruction	http://www.disease-ontology.org/?id=DOID:5200
vasculitis	A vascular disease that is characterized by inflammation of the blood vessels.	http://www.disease-ontology.org/?id=DOID:865
West Nile encephalitis	A viral infectious disease that results in inflammation located in brain, has material basis in West Nile virus, which is transmitted by Culex, transmitted by Aedes, and transmitted by Anopheles species of mosquitoes. The infection has symptom high fever, has symptom headache, has symptom neck stiffness, has symptom stupor, has symptom disorientation, has symptom coma, has symptom tremors, has symptom convulsions, has symptom muscle weakness, has symptom vision loss, has symptom numbness, and has symptom paralysis.	http://www.disease-ontology.org/?id=DOID:2365
West Nile fever	A viral infectious disease that results_in infection, has_material_basis_in West Nile virus, which is transmitted_by Culex and transmitted_by Aedes mosquitoes. The infection has_symptom fever, has_symptom sore throat, has_symptom headache, has_symptom body ache, has_symptom nausea, has_symptom maculopapular rash and has_symptom vomiting.	http://www.disease-ontology.org/?id=DOID:2366
yellow fever	A viral infectious disease that results in infection, has material basis in Yellow fever virus, which is transmitted by Aedes, transmitted by Haemagogus, or transmitted by Sabethes species of mosquitoes. The infection has symptom fever, has symptom muscle pain, has symptom backache, has symptom headache, has symptom shivers, has symptom loss of appetite, has symptom jaundice, and has symptom bleeding from the mouth, nose, eyes or stomach leading to vomitus containing blood.	http://www.disease-ontology.org/?id=DOID:9682

Zika fever	A viral infectious disease that has_material_basis in Zika virus, which is transmitted_by Aedes aegypti mosquitoes and targets neural progenitor cells and neuronal cells in all stages of maturity and has_symptom fever, has_symptom rash, has_symptom headaches and has_symptom joint pain.	http://www.disease-ontology.org/?id=DOID:0060478

14. **lk_disease_stage**

Name	Description	Link
disease_stage_preferred		
Acute/Recent onset	A short-term infection or disease characterized by a dramatic onset and rapid recovery. Primary infections fall under this category.	https://dst.liai.org/BcellDisc.html
Chronic	A long-term infection or illness and partial remission.	https://dst.liai.org/BcellDisc.html
Other	Any disease stage that cannot be classified under the selections above will be classified under "other." Household contacts will be recorded as "other".	https://dst.liai.org/BcellDisc.html
Post	Recovery from an illness, including latent (potentially existing but not presently evident or realized) and remission (a period during which symptoms of disease disappear [complete remission]). Note that partial remission will be recorded as "chronic".	https://dst.liai.org/BcellDisc.html
Unknown	Used when the disease stage is not clearly specified or known.	https://dst.liai.org/BcellDisc.html

15. **lk_ethnicity**

Name	Description	Link
Hispanic or Latino	A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race. The term, "Spanish origin," can be used in addition to "Hispanic or Latino."	https://www.fda.gov/regulatory-information/search-fda-guidance-documents/collection-race-and-ethnicity-data-clinical-trials

Not Hispanic or Latino	A person not of Hispanic or Latino origin.	https://www.fda.gov/regulatory-information/search-fda-guidance-documents/collection-race-and-ethnicity-data-clinical-trials
Not Specified	Ethnicity is not specified or not received. If no Ethnicity value is received, then this is the system default value.	https://www.fda.gov/regulatory-information/search-fda-guidance-documents/collection-race-and-ethnicity-data-clinical-trials
Other	A person having an Ethnicity that is some Other value not in CV Terms.	https://www.fda.gov/regulatory-information/search-fda-guidance-documents/collection-race-and-ethnicity-data-clinical-trials

16. **lk_exp_measurement_tech**

Name	Description	Link
16S rRNA gene sequencing	An assay that determines taxonomic and community diversity information by sequencing specific genomic regions used as marker of identity or diversity.	http://purl.obolibrary.org/obo/OBI_0001960
1D Gel	One dimensional gels are used to separate an analyte using one physical feature of the analyte.	http://purl.obolibrary.org/obo/OBI_0001121
2D Gel	Two dimensional gels are used to separate an analyte using two physical features of the analyte.	http://purl.obolibrary.org/obo/OBI_0001121

Array	Arrays (including microarrays) are a set of probes immobilized on a surface. The probes can be oligonucleotides, cDNAs, antibodies and other molecules that recognize a target. Microarrays can be constructed by several methods including (but not limited to in situ oligo synthesis (e.g. Affymetrix), cDNA spotting, bead arrays (e.g. Illumina) and antibody spotting. The position and identity of probes are provided by the manufacturer. The probe identifiers and their target are referred to as annotation or translation of probe identifiers to bioinformatic identifiers. Microarrays can be used for gene expression (mRNA transcript quantification), genotyping, cytokine quantification, etc. Microarrays for gene expression fall into two general classes- single channel and dual channel. The channel refers to the wavelength scanned for fluorescent signals. Affymetrix microarrays are obligatory single channel. There are a host of commercial and non-commercial microarray meanufacturers that use two c	http://purl.obolibrary.org/obo/OBI_0400147; http://purl.obolibrary.org/obo/OBI_0001204; http://purl.obolibrary.org/obo/OBI_0001307; http://purl.obolibrary.org/obo/OBI_0400149
Cell Culture	A cell culture includes the cells in culture, as well as the media and all additives in which the cells are being grown or in which they are stored.	http://purl.obolibrary.org/obo/OBI_0001876
Circular Dichroism	Circular Dichroism is a form of spectroscopy used to determine the optical isomerism and secondary structure of molecules.	http://en.wikipedia.org/wiki/Circular_Dichroism
CyTOF	Cytometry Time Of Flight CyTOF (DVS Sciences) or Mass cytometry, or , is a variation of flow cytometry in which antibodies are labeled with heavy metal ion tags rather than fluorochromes. Readout is by time-of-flight mass spectrometry.	http://purl.obolibrary.org/obo/OBI_0002115
Cytometric Bead Array Assay	An analyte assay in which a series of beads coated with antibodies specific for different analytes and marked with discrete fluorescent labels are used to simultaneously capture and quantitate soluble analytes.	http://purl.obolibrary.org/obo/OBI_0000920

DNA methylation profiling assay	An assay which aims to provide information about state of methylation of DNA molecules using genomic DNA collected from a material entity using a range of techniques and instrument such as DNA sequencers and often relying on treatment with bisulfites to ensure cytosine conversion.	http://purl.obolibrary.org/obo/OBI_0000634
DNA microarray	Microarray that is used as a physical 2D immobilisation matrix.	http://purl.obolibrary.org/obo/OBI_0400148
ELISA	Enzyme-Linked ImmunoSorbant Assay. Quantification of a molecule (e.g cytokine) by an antibody immobilization strategy.	http://purl.obolibrary.org/obo/OBI_0000661
ELISPOT	Enzyme-linked ImmunoSPOT. A variant of ELISA with increased resolution that allows quantifying the number of cells in a population that release a molecule (e.g. cytokine).	http://purl.obolibrary.org/obo/OBI_0600031
EMSA	Electrophoretic mobility shift assay is an assay which aims to provide information about Protein-DNA or Protein-RNA interaction and which used gel electrophoresis and relies on the fact the molecular interactions will cause the heterodimer to be retarded on the gel when compared to controls corresponding to protein extract alone and protein extract + neutral nucleic acid.	http://purl.obolibrary.org/obo/OBI_0001671
Exome Sequencing	Technique for sequencing all the protein-coding genes in a genome (known as the exome). Sequencing process which uses deoxyribonucleic acid as input and results in a the creation of DNA sequence information artifact.	http://purl.obolibrary.org/obo/OBI_0002118
Flow Cytometry	Fluorescence Activated Cell Sorting	http://purl.obolibrary.org/obo/OBI_0000916
Hemagglutination Inhibition	Quantitate serum antibody to a specific antigen by blocking agglutination of cells.	http://purl.obolibrary.org/obo/OBI_0000875
HLA Typing	Human Leukocyte Antigen typing.	http://purl.obolibrary.org/obo/OBI_0002122

HPLC	High Performace Liquid Chromotography is used to separate components of a mixture by using a variety of chemical interactions between the substance being analyzed (analyte) and the chromatography column.	http://purl.obolibrary.org/obo/OBI_0002116
Immunoblot	a western blot analysis is an assay which allows detection of protein present in a extract resolved on polyacrylamide gel by electrophoresis, transfered to a membrane made of nitrocellulose or polyvinylidene difluoride and immobilized using formaldehyde based cross linking.	http://purl.obolibrary.org/obo/OBI_0000854
Immunoprecipitation	An assay with the objective to determine presence of an analyte by mixing a solution of antigen and antibody and separating out bound antigen:antibody complexes using immunoprecipitation.	http://purl.obolibrary.org/obo/OBI_0001700
in situ Hybridization	Uses a labelled complementary DNA or RNA strand (i.e., probe) to localize a specific DNA or RNA sequence in a portion or section of tissue (in situ), or the entire tissue (whole mount ISH), in cells and in circulating tumor cells (CTCs).	http://en.wikipedia.org/wiki/In_situ_hybridization
KIR Typing	Killer cell immunoglobulin-like receptors.	http://purl.obolibrary.org/obo/OBI_0002122
Line Probe Assay	PCR amplification of a genomic region is performed using biotinylated primers. Following amplification, labelled PCR products are hybridized with specific oligonucleotide probes immobilized on a strip.	http://purl.obolibrary.org/obo/OBI_0000892
Liquid Chromatography	Chromatography is the collective term for a family of laboratory techniques for the separation of mixtures. It involves passing a mixture which contains the analyte through a stationary phase, which separates it from other molecules in the mixture and allows it to be isolated.	http://purl.obolibrary.org/obo/OBI_0001057
Luminex xMAP	Microsphere based multiplexing system. Microspheres are color coded and linked to a detector or capture reagent (e.g. antibody, oligonucleotides, peptides, or receptors).	http://purl.obolibrary.org/obo/OBI_0000920

Mass Spectrometry	Mass spectrometry is an analytical technique used to measure the mass-to-charge ratio of ions.	http://purl.obolibrary.org/obo/OBI_0000470
Meso Scale Discovery ECL	MSD Electrochemiluminescence (ECL) detection uses labels that emit light when electrochemically stimulated.	http://en.wikipedia.org/wiki/Electrochemiluminescence
microRNA profiling assay	A transcription profiling assay in which aims to quantify the microRNA species within a biological sample.	http://purl.obolibrary.org/obo/OBI_0001926
Microscopy	Visualization of very small entities from cellular to sub-cellular and molecular resolution depending on technique.	http://purl.obolibrary.org/obo/OBI_0002119
Mixed Lymphocyte Reaction	Mixed lymphocyte reaction test is a measure of histocompatibility at the HLA locus. Peripheral blood lymphocytes from two individuals are mixed together in tissue culture for several days; lymphocytes from incompatible individuals will stimulate each other to proliferate significantly (e.g. measured by tritiated thymidine uptake) whereas those from compatible individuals will not; in the one\-way MLC test, the lymphocytes from one of the individuals are inactivated thereby allowing only the untreated remaining population of cells to proliferate in response to foreign histocompatibility antigens.	http://purl.obolibrary.org/obo/OBI_0002120
Molecular Cloning	Molecular cloning refers to the procedure isolating a DNA sequence of interest and obtaining multiple copies of it in an organism.	http://purl.obolibrary.org/obo/OBI_0600064
Nanostring	Nanostring technology uses molecular "barcodes" and single molecule imaging to detect and count hundreds of unique transcripts in a single reaction.	http://www.nanostring.com/applications/technology

Neutralizing Antibody Titer Assay	A quantitative assay where different dilutions of serum are mixed with virus and used to infect cells. At the lower dilutions, antibodies will block infection, but at higher dilutions, there will be too few antibodies to have an effect. The simple process of dilution provides a way to compare the virus- neutralizing abilities of different sera. The neutralization titer is expressed as the reciprocal of the highest dilution at which virus infection is blocked.	http://purl.obolibrary.org/obo/OBI_0000872
NMR	Nuclear Magnetic Resonance spectroscopy is a technique for determining the structure of organic compounds.	http://purl.obolibrary.org/obo/OBI_0000623
Northern Blot	Northern blots are a derivative of Southern blots where RNA that has been size fractionated (often by 1-D gel electrophoresis) is immobilized on a substrate (e.g. a charged nylon membrane). The blot is(are) hybridized with a labeled probe(s). The position on the blot and the intensity of the label's signal can be used to estimate RNA size and concentration, respectively.	http://purl.obolibrary.org/obo/OBI_0000860
Other	Other Experiment Measurement Technique not listed.	
PCR	Polymerase Chain Reaction is a technique to amplify a DNA template.	http://purl.obolibrary.org/obo/OBI_0000415
Protein microarray	Microarray, usually a piece of glass, on which different molecules of protein have been affixed at separate locations in an ordered manner. These are used to identify protein-protein or protein-small molecule interactions.	http://purl.obolibrary.org/obo/OBI_0400149
Q-PCR	Quantitative Polymerase Chain Reaction is used to measure the gene expression of transcripts by comparing the number of cycles in a sample needed to reach a certain threshold value with the known quantities of a transcript needed to reach the same threshold.	http://purl.obolibrary.org/obo/OBI_0000415

Real time polymerase chain reaction assay	A laboratory technique based on the PCR, which is used to amplify and simultaneously quantify a specific DNA molecule based on the use of complementary probes/primers. It enables both detection and quantification (as absolute number of copies or relative amount when normalized to DNA input or additional normalizing genes) of one or more specific sequences in a DNA sample.	http://purl.obolibrary.org/obo/OBI_0000893
RNA sequencing	Sequencing process which uses ribonucleic acid as input and results in a the creation of RNA sequence information artifact.	http://purl.obolibrary.org/obo/OBI_0001177; http://purl.obolibrary.org/obo/OBI_0001271
Rnase Protection Assay	A laboratory technique to identify individual RNA molecules in a heterogeneous RNA sample extracted from cells.	http://en.wikipedia.org/wiki/RNase_protection_assay
Sequencing	Sequencing is used to discover new sequence variants and to genotype a sample for known variants.	http://purl.obolibrary.org/obo/OBI_0600047
SNP microarray	DNA microarray used to detect polymorphisms in DNA samples.	http://purl.obolibrary.org/obo/OBI_0001204
Southern Blot	A Southern blot is a method of capturing DNA molecules that have been seperated by agarose gel electrophoresis for subsequent analysis.	http://purl.obolibrary.org/obo/OBI_0000892
Surface Plasmon Resonance	An assay that uses the detection of electromagnetic waves in a surface to detect material entities adsorbed to the surface, which changes the local index of refraction.	http://purl.obolibrary.org/obo/OBI_0000923
TCID50	50 percent Tissue Culture Infective Dose, (TCID50) is the measure of infectious virus titer. This endpoint dilution assay quantifies the amount of virus required to kill 50% of infected hosts or to produce a cytopathic effect in 50% of inoculated tissue culture cells.	http://en.wikipedia.org/wiki/Virus_Quantification

Transcription profiling assay	An assay which aims to provide information about gene expression and transcription activity using ribonucleic acids collected from a material entity using a range of techniques and instrument such as DNA sequencers, DNA microarrays, Northern Blot	http://purl.obolibrary.org/obo/OBI_0000424
Transcription profiling by array	An assay in which the transcriptome of a biological sample is analyzed using array technology.	http://purl.obolibrary.org/obo/OBI_0001463
Virus Neutralization	Block a viral function.	http://purl.obolibrary.org/obo/OBI_0000872
Western Blot	Western blot is a method in molecular biology/biochemistry/immunogenetics to detect protein in a given sample of tissue homogenate or extract. It uses gel electrophoresis to separate denatured proteins by mass. The proteins are then transferred out of the gel and onto a membrane (typically nitrocellulose), where they are probed using antibodies specific to the protein. As a result, researchers can examine the amount of protein in a given sample and compare levels between several groups. Other techniques also using antibodies allow detection of proteins in tissues (immunohistochemistry) and cells (immunocytochemistry). The confirmatory HIV test employs a western blot to detect anti-HIV antibody in a human serum sample. A Western blot is also used as the definitive test for Bovine spongiform encephalopathy (BSE, commonly referred to as 'mad cow disease'). Some forms of Lyme disease testing employ Western blotting.	http://purl.obolibrary.org/obo/OBI_0000854
Whole Genome Sequencing	Laboratory process that determines the complete DNA sequence of an organism's genome at a single time. Sequencing process which uses deoxyribonucleic acid as input and results in a the creation of DNA sequence information artifact	http://purl.obolibrary.org/obo/OBI_0002117

Yeast Two Hybrid	Two-hybrid screening is a molecular biology technique used to discover protein-protein interactions by testing for physical interactions (such as binding) between two proteins.	http://purl.obolibrary.org/obo/OBI_0001679

17. **lk_exposure_material**

Name	Description	Link
exposure_material_preferred ; exposure_material_id		
BCG Vaccine ; VO_0000771	BCG Vaccine	http://www.ontobee.org/ontology/VO?iri=http://purl.obolibrary.org/obo/VO_0000771
Borreliella burgdorferi ; NCBI:139	Borreliella burgdorferi	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=139
Chikungunya virus ; NCBI:37124	Found from reported data using NCBI Taxomony Dump: 37124	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=37124
Dengue virus 1 ; NCBI:11053	Dengue virus 1	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=11053
Dengue virus 2 ; NCBI:11060	Dengue virus 2	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=11060

Dengue virus 3 ; NCBI:11069	Found from reported data using NCBI Taxomony Dump: 11069	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=11069
Dengue virus ; NCBI:12637	Dengue virus	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=12637
Hepacivirus C ; NCBI:11103	Found from reported data using NCBI Taxomony Dump: 11103	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=11103
Human alphaherpesvirus 3 ; NCBI:10335	Human alphaherpesvirus 3	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=10335
Human rhinovirus A16 ; NCBI:31708	Found from reported data using NCBI Taxomony Dump: 31708	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=31708
Influenza A H1N1 2009 Monovalent Vaccine Novartis ; VO_0000081	Influenza A H1N1 2009 Monovalent Vaccine Novartis	http://www.ontobee.org/ontology/VO?iri=http://purl.obolibrary.org/obo/VO_0000081
Influenza A virus (A/California/7/2009(H1N1)) ; NCBI:1316510	Found from reported data using NCBI Taxomony Dump: 1316510	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=1316510

Influenza A virus (A/reassortant/FluMist(California/07/2009 x Ann Arbor/6/1960)(H1N1)) ; NCBI:1701435	Found from reported data using NCBI Taxomony Dump: 1701435	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=1701435
Influenza A virus ; NCBI:11320	Influenza A virus	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=11320
Mycobacterium tuberculosis ; NCBI:1773	Mycobacterium tuberculosis	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=1773
Plasmodium coatneyi ; NCBI:208452	Found from reported data using NCBI Taxomony Dump: 208452	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=208452
Plasmodium cynomolgi strain B ; NCBI:1120755	Found from reported data using NCBI Taxomony Dump: 1120755	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=1120755
Plasmodium cynomolgi strain Ceylon ; NCBI:5829	Found from reported data using NCBI Taxomony Dump: 5829	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=5829
Plasmodium vivax ; NCBI:5855	Found from reported data using NCBI Taxomony Dump: 5855	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=5855
Purified Protein Derivative ; Unknown ID	Purified Protein Derivative	

Schistosoma mansoni ; NCBI:6183	Found from reported data using NCBI Taxomony Dump: 6183	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=6183
unidentified ; NCBI:32644	Found from reported data using NCBI Taxomony Dump: 32644	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=32644
Vaccinia virus LC16M8 ; NCBI:10248	Found from reported data using NCBI Taxomony Dump: 10248	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=10248
Varicella-zoster virus vaccine ; VO_0000669	Varicella-zoster virus vaccine	http://www.ontobee.org/ontology/VO?iri=http://purl.obolibrary.org/obo/VO_0000669
West Nile virus ; NCBI:11082	West Nile virus	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=11082
Zika virus ; NCBI:64320	Found from reported data using NCBI Taxomony Dump: 64320	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?mode=Info&id=64320

18. **lk_exposure_process**

Name	Description	Link
exposure_process_preferred		
administering substance in vivo	A planned process by which a material is intentionally given to an organism resulting in exposure of the organism to that substance.	http://purl.obolibrary.org/obo/OBI_0600007

documented exposure without evidence for disease	A process in which an organism is exposed to a substance which is evident from that process having been observed or documented.	
environmental exposure to endemic/ubiquitous agent without evidence for disease	A process in which an organism's exposure to a material entity is assumed from that material being commonly present in the environment of the organism.	
exposure to substance without evidence for disease	An unplanned process in which an organism comes into contact with a substance without evidence for a disease caused by that exposure.	
exposure with existing immune reactivity without evidence for disease	A process in which an organism is exposed to a material entity which is evident by a detectable immune reactivity against it.	http://purl.obolibrary.org/obo/OBI_1110061
infectious challenge	Administering an infectious agent to an organism in order to test if and how an infection will occur.	http://purl.obolibrary.org/obo/OBI_0000712
no exposure	An organism's lifspan which does not include exposure to a substance of interest.	
occurrence of allergy	The process in which an allergic disease unfolds.	http://purl.obolibrary.org/obo/OBI_1110012
occurrence of asymptomatic infection	A process in which an infectious agent is in or on the body of an organism without causing detectable disease .	
occurrence of autoimmune disease	The process in which an autoimmune disease unfolds.	http://purl.obolibrary.org/obo/OBI_1110054
occurrence of cancer	The process in which cancer unfolds	http://purl.obolibrary.org/obo/OBI_1110053
occurrence of cancer associated with virus	An occurence of cancer where there is evidence for the presence of a cancer causing oncovirus in the tumor.	https://ontology.iedb.org/ontology/ONTIE_0003313.tsv
occurrence of disease	The process in which a disease unfolds.	http://purl.obolibrary.org/obo/OGMS_0000063
occurrence of infectious disease	The process in which an infectious disease unfolds.	http://purl.obolibrary.org/obo/OBI_1110008

solid tissue transplantation	A planned process in which solid tissue is transferred to an organism	https://ontology.iedb.org/ontology/ONTIE_0003311.tsv
transfusion	A planned process in which a bodily fluid is transferred into an organism	https://ontology.iedb.org/ontology/ONTIE_0003312.tsv
transplantation or transfusion	Transfering a solid tissue (transplant) or bodily fluid (transfusion) to an organism.	http://purl.obolibrary.org/obo/OBI_0000105
unknown	An organism's lifespan for which there is no available information on an exposure to a material entity of interest.	
vaccination	Adminstering a vaccine to an organism with the intention of inducing immunity against antigen components of the vaccine.	

19. **lk_gender**

Name	Description	Link
Female	Gender is Female.	http://purl.bioontology.org/ontology/SNOMEDCT/248152002
Male	Gender is Male.	http://purl.bioontology.org/ontology/SNOMEDCT/248153007
Not Specified	Gender is not specified or not received. If no gender value is received, then this is the system default value.	
Other	Gender is Other. Value may be used to differeniate as neither Male or Female.	
Unknown	Gender is Unknown. Value may be used to signify that gender is unknown at the time.	

20. **lk_lab_test_name**

Name	Description	Link	ID
name_preferred			

25-Hydroxyvitamin D Measurement	A measurement of the total inactive Vitamin D in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C92268	VITDIT
A/G RATIO	Blood Albumin Level to Blood Globulin Level Ratio	http://purl.obolibrary.org/obo/CMO_0002402	
Acanthocytes	A measurement of the acanthocytes per unit of a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74699	ACANT
Acanthocytes/Erythrocytes	A relative measurement (ratio or percentage) of acanthocytes to all erythrocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74633	ACANTRBC
Activated Partial Thromboplastin Time	A measurement of the length of time that it takes for clotting to occur when reagents are added to a plasma specimen. The test is partial due to the absence of tissue factor (Factor III) from the reaction mixture.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C38462	APTT

Alanine Aminotransferase	A measurement of the alanine aminotransferase in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C64433	ALT
Albumin	A measurement of the albumin protein in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C64431	ALB
Albumin/Creatinine	A relative measurement (ratio or percentage) of the albumin to the creatinine in a urine sample.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C74761	ALBCREAT
Alkaline Phosphatase	A measurement of the alkaline phosphatase in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C64432	ALP
Amylase	Urine Amylase Level	http://purl.obolibrary.org/obo/CMO_0000280	
Anion Gap	Anion Gap	http://purl.obolibrary.org/obo/CMO_0000067	

Anisocytes	A measurement of the inequality in the size of the red blood cells in a whole blood specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74797	ANISO
Anti-DNA Antibodies	A measurement of the anti-DNA antibodies in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81973	DNAAB
Anti-Double Stranded DNA	A measurement of the anti-double stranded DNA antibody in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74913	ADSDNA
Anti-Ribonucleoprotein Antibody	An antinuclear antibody directed against U1 snRNP, that is strongly associated with mixed connective tissue disease and commonly detected in lupus.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C121325	

Anti-Saccharomyces cerevisiae Antibody	A measurement of the anti-Saccharomyces cerevisiae antibody in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81976	ASCAB
Anti-Smith Antibody	An antinuclear antibody directed against small nuclear ribonucleoproteins (snRNPs), that is highly specific, but has poor sensitivity for systemic lupus erythematosus (SLE). Presence of anti-Sm antibodies are associated with central nervous system, kidney, lung and cardiac involvement in SLE, but are not indicative of disease activity.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C121324	
Anti-SS-A antibody	Anti-SS-A antibody	http://purl.bioontology.org/ontology/MEDDRA/10060213	
Anti-SS-B antibody	Anti-SS-B antibody	http://purl.bioontology.org/ontology/MEDDRA/10060214	
Anticardiolipin IgG Antibody	An IgG autoantibody directed against cardiolipin. It is associated with thrombosis, spontaneous abortion, and complications during labor.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C70990	

Anticardiolipin IgM Antibody	An IgM autoantibody directed against cardiolipin. It is associated with hemolytic anemia.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C70619	
Antiglobulin Test, Direct	A measurement of the antibody or complement-coated erythrocytes in a blood specimen in vivo.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81974	ANGLOBDR
Antimitochondrial Antibodies	A measurement of the antimitochondrial antibodies in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81975	AMA
Antinuclear Antibodies	A measurement of the antinuclear antibodies (antibodies that attack the body's own tissue) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74916	ANA
Apolipoprotein A1	Blood Apolipoprotein A1 Level	http://purl.obolibrary.org/obo/CMO_0000520	

Apolipoprotein B	Blood Apoliprotein B Level	http://purl.obolibrary.org/obo/CMO_0000522	
Aspartate Aminotransferase	A measurement of the aspartate aminotransferase in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C64467	AST
Aspartate Aminotransferase Antigen	A measurement of the aspartate aminotransferase antigen in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81978	ASTAG
Auer Rods	A measurement of the Auer rods (elongated needle structures that are found in the cytoplasm of leukemic blasts and are formed by clumps of azurophilic granular material) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74657	AUERRODS
Bacteria	The quantitative determination of bacterial populations. The two most widely used methods for determining bacterial numbers are: 1) the standard, or viable, plate count method and 2) spectrophotometric (turbidimetric) analysis.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C64469	BACT

Band	Blood Band Neutrophil Count	http://purl.obolibrary.org/obo/CMO_0002336	
Basophil % of WBC	Blood Basophil Count to Total Leukocyte Count Ratio	http://purl.obolibrary.org/obo/CMO_0000368	
Basophils	A measurement of the basophils per unit of a biological specimen.	http://purl.bioontology.org/ontology/SNOMEDCT/42351005; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64470	BASO
Basophils/Leukocytes	A relative measurement (ratio or percentage) of the basophils to leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64471	BASOLE
BC_GLUC (GLUC)	Blood Glucose Level	http://purl.obolibrary.org/obo/CMO_0000046	
Beta-2 Glycoprotein Antibody	A measurement of the beta-2 glycoprotein antibody in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81979	B2GLYAB

Bicarbonate	A measurement of the bicarbonate in a biological specimen	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C74667	BICARB
Bilirubin	A measurement of the total bilirubin in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C38037	BILI
Bite Cells	A measurement of the bite cells (erthrocytes with the appearance of a bite having been removed, due to oxidative hemolysis) in a biological specimen .	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74700	BITECE
Bite Cells/Erythrocytes	A relative measurement of the bite cells (erthrocytes with the appearance of a bite having been removed, due to oxidative hemolysis) to all erythrocytes in a biological specimen .	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74634	BTECERBC
Blasts	A measurement of the blast cells per unit of a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74605	BLAST

Blasts/Leukocytes	A relative measurement (ratio or percentage) of the blasts to leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64487	BLASTLE
Blood Urea Nitrogen	A measurement of the urea nitrogen in a blood specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C61019	BUN
BUN	Blood Urea Nitrogen Level	http://purl.obolibrary.org/obo/CMO_0000049	
Burr Cells	A measurement of the Burr cells (erythrocytes characterized by the presence of small, blunt projections evenly distributed across the cell surface) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74701	BURRCE
C Reactive Protein	A measurement of the C reactive protein in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C64548	CRP

C-peptide	The determination of the amount of C-peptide present in a sample.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C74736	CPEPTIDE
Cabot Rings	A measurement of the Cabot rings (red-purple staining, threadlike, ring or figure 8 shaped filaments in in an erythrocyte) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74702	CABOT
Calcium	A measurement of the calcium in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C64488	CA
Cancer Antigen 125	A measurement of the cancer antigen 125 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C79089	CA125AG

Cancer Antigen 19-9	A measurement of the cancer antigen 18-9 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81982	CA19_9AG
Carbon Dioxide	A quantitative measurement of the gas carbon dioxide present in a sample.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C64545	CO2
Carcinoembryonic Antigen	A measurement of the carcinoembryonic antigen in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81983	CEA
CD19	A count of the CD19 B cells per unit of a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C103808	CD19

CD19/Lymphocytes	A relative measurement (ratio or percentage) of CD19 B cells to all lymphocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C103812	CD19LY
CD3	A count of the CD3 T cells per unit of a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C103809	CD3
CD3/Lymphocytes	A relative measurement (ratio or percentage) of CD3 T cells to all lymphocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C103813	CD3LY
CD4	A count of the CD4 T cells per unit of a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C103810	CD4

CD4/CD8	A relative measure (ratio or percentage) of CD4 T cells to the CD8 T cells in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C103814	CD4CD8
CD4/Lymphocytes	A relative measurement (ratio or percentage) of CD4 T cells to all lymphocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C103815	CD4LY
CD40	A measurement of the CD40 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C82006	CD40
CD40 Ligand	A measurement of the CD40 ligand in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C82007	CD40L

CD8	A count of the CD8 T cells per unit of a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C103811	CD8
CD8/Lymphocytes	A relative measurement (ratio or percentage) of CD8 T cells to all lymphocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C103816	CD8LY
Chloride	A measurement of the chloride in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C64495	CL
Cholesterol	A measurement of the cholesterol in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C105586	CHOL

Cholesterol/HDL-Cholesterol	A relative measurement (ratio or percentage) of total cholesterol to high-density lipoprotein cholesterol (HDL-C) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C80171	
Complement Bb	A measurement of the complement Bb in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C80172	CBB
Complement C1q Antibody	A measurement of the complement C1q antibody in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C80173	C1QAB
Complement C3	A measurement of the complement C3 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C80174	C3
Complement C3a	A measurement of the complement C3a in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C80175	C3A

Complement C3b	A measurement of the complement C3b in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C80176	C3B
Complement C4	A measurement of the complement C4 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C80177	C4
Complement C4a	A measurement of the complement C4a in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C80178	C4A
Complement C5a	A measurement of the complement C5a in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C80179	C5A
Complement Total	A measurement of the total complement in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C80160	CTOT

Creatine Kinase	A measurement of the total creatine kinase in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C64489	CK
Creatinine	A measurement of the creatinine in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C64547	CREAT
Creatinine clearance	The determination of the clearance of endogenous creatinine, used for evaluating the glomerular filtration rate.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C25747	Creatinine Clearance
Crenated Cells	A measurement of the Burr cells (erythrocytes characterized by the presence of multiple small, sharp projections evenly distributed across the cell surface) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74703	CRENCE

Cytomegalovirus Viral Load Measurement	The determination of the amount of cytomegalovirus viral load present in a sample.	http://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C98716&ns=NCI_Thesaurus	CMVVLD
Dacryocytes	A measurement of dacryocytes in unit of a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64801	TEARDCY
Differential Segment (percent)	Blood Segmented Neutrophil Count to Total Leukocyte Count Ratio	http://purl.obolibrary.org/obo/CMO_0002337	
Dohle Bodies	A measurement of the Dohle bodie (blue-gray, basophilic, leukocyte inclusions located in the peripheral cytoplasm of neutrophils) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74610	DOHLE
Elliptocytes	A measurement of the elliptically shaped erythrocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64549	ELLIPCY
Eosinophil	Blood Eosinophil Count	http://purl.obolibrary.org/obo/CMO_0000033	

Eosinophil % of WBC	Blood Eosinophil Count to Total Leukocyte Count Ratio	http://purl.obolibrary.org/obo/CMO_0000369	
Eosinophil Metamyelocytes	A measurement of the eosinphil metamyelocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C84819	EOSMM
Eosinophil Myelocytes	A measurement of the eosinophil myelocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C84821	EOSMYL
Eosinophils	A measurement of the eosinophils per unit in a biological specimen.	http://purl.bioontology.org/ontology/SNOMEDCT/71960002; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64550	EOS
Eosinophils/Leukocytes	A relative measurement (ratio or percentage) of the eosinophils to leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64604	EOSLE

Epithelial cells	The determination of the number of epithelial cells in a sample.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C64605	Epithelial Cells
Ery. Mean Corpuscular Hemoglobin	A quantitative measurement of the mean amount of hemoglobin per erythrocyte in a biological specimen.	http://purl.bioontology.org/ontology/SNOMEDCT/37254006; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64797	MCH
Ery. Mean Corpuscular HGB Concentration	A quantitative measurement of the mean amount of hemoglobin per erythrocytes in a specified volume of a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64798	MCHC

Ery. Mean Corpuscular Volume	A quantitative measurement of the mean volume of erythrocytes in a biological specimen.	http://purl.bioontology.org/ontology/SNOMEDCT/104133003; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64799	MCV
Erythrocyte Sedimentation Rate	The distance (e.g. millimeters) that red blood cells settle in unclotted blood over a specified unit of time (e.g. one hour)	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74611	ESR
Erythrocytes	A measurement of the total erythrocytes per unit of a biological specimen.	http://purl.bioontology.org/ontology/SNOMEDCT/14089001; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C51946	RBC

Erythrocytes Distribution Width	A value derived from mean corpuscular volume and the standard deviation of the red blood cell volume in a whole blood specimen.	http://purl.bioontology.org/ontology/SNOMEDCT/66842004; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64800	RDW
Estimated GFR by Cockcroft-Gault	Blood Glomerular Filtration Rate	http://purl.obolibrary.org/obo/CMO_0000490	
Estimated GFR by MDRD	Blood Glomerular Filtration Rate, Diet in Renal Disease Formula (MDRD)	http://purl.obolibrary.org/obo/CMO_0000491	
Gamma Glutamyl Transpeptidase	A quantitative measurement of the amount of gamma glutamyl transpeptidase present in a sample.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C64847	GGT
Giant Platelets	A measurement of the giant (larger than 7um in diameter) platelets in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74728	PLATGNT

Globulin	Blood Globulin Level	http://purl.obolibrary.org/obo/CMO_0002398	
Glomerular Filtration Rate	A kidney function test that measures the fluid volume that is filtered from the kidney glomeruli to the Bowman's capsule per unit of time.	https://medlineplus.gov/lab-tests/glomerular-filtration-rate-gfr-test/	GFR
GLUC (GLUC)	Blood Glucose Level	http://purl.obolibrary.org/obo/CMO_0000046	
Glucose	A measurement of the glucose in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C105585	GLUC
Glutamic Acid Decarboxylase 2 Antibody	A measurement of the glutamic acid decarboxylase 2 antibody in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C82017	GAD2AB
Glutamic Acid Decarboxylase Antibody	The determination of the amount of glutamic acid decarboxylase antibody present in a sample.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C96653	GADAB

Glycosylated Hemoglobin	A quantitative measurement of the amount of glycosylated hemoglobin present in a sample of blood.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C64849	HBA1C
Hairy Cells	A measurement of the hairy cells (b-cell lymphocytes with hairy projections from the cytoplasm) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74604	HAIRYCE
Hairy Cells/Lymphocytes	A measurement (ratio or percentage) of the hairy cells (b-cell lymphocytes with hairy projections from the cytoplasm) to all lymphocytes in a biological specimen .	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74640	HRYCELY
HDL Cholesterol	A measurement of the high density lipoprotein cholesterol in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C105587	HDL

Heinz Bodies	A measurement of the Heinz bodies (small round inclusions within the body of a red blood cell) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74709	HEINZ
Helmet Cells	A measurement of the Helmet cells (specialized Keratocytes with two projections on either end that are tapered and hornlike) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74658	HELMETCE
Hematocrit	The percentage of a whole blood specimen that is composed of red blood cells (erythrocytes).	http://purl.bioontology.org/ontology/SNOMEDCT/250231008; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64796	HCT
Hemoglobin	A measurement of the hemoglobin in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64848	HGB

Hepatitis A Virus Surface Antibody	A measurement of the surface antibody reaction of a biological specimen to the Hepatitis A virus.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74710	HASAB
Hepatitis B Virus Surface Antibody	A measurement of the surface antibody reaction of a biological specimen to the Hepatitis B virus.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74711	HBSAB
Hepatitis B Virus Surface Antigen	A measurement of the surface antigen reaction of a biological specimen to the Hepatitis B virus.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64850	HBSAG
Hepatitis C Virus Surface Antibody	A measurement of the surface antibody reaction of a biological specimen to the Hepatitis C virus.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74712	HCSAB
Heterophile Antibodies	A measurement of the heterophile antibodies in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81984	HTPHAB

HIV-1 Antibody	A measurement of the antibody reaction of a biological specimen to the HIV-1 virus.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74713	HIV1AB
HIV-1/2 Antibody	A measurement of the antibody reaction of a biological specimen to the either the HIV-1 or HIV-2 virus.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74714	HIV12AB
HIV-2 Antibody	A measurement of the antibody reaction of a biological specimen to the HIV-2 virus.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74715	HIV2AB
Howell-Jolly Bodies	A measurement of the Howell-Jolly bodies (spherical, blue-black condensed DNA inclusions within the body of a red blood cell that appear under Wright-stain) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74704	HOWJOL
Hypersegmented Cells	A measurement of the hypersegmented (more than five lobes) neutrophils in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74612	HYPSEGCE

Hypochromia	An observation which indicates that the hemoglobin concentration in a red blood cell specimen has fallen below a specified level.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64802	HPOCROM
IgG1	Serum Immunoglobulin G1 Level	http://purl.obolibrary.org/obo/CMO_0002115	
IgG2	Serum Immunoglobulin G2a Level	http://purl.obolibrary.org/obo/CMO_0002116	
Immunoglobulin A	A measurement of the Immunoglobulin A in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81969	IGA
Immunoglobulin D	Blood Immunoglobulin D Level	http://purl.obolibrary.org/obo/CMO_0002093	
Immunoglobulin E	A measurement of the Immunoglobulin E in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81970	IGE

Immunoglobulin G	A measurement of the Immunoglobulin G in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81971	IGG
Immunoglobulin M	A measurement of the Immunoglobulin M in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81972	IGM
Indirect Antiglobulin Test	A test that uses Coombs' reagent to detect the presence of anti-erythrocyte antibodies in serum.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C91372	ANGLBIND
Insulin Autoantibody	The determination of the amount of insulin autoantibody in a biological specimen.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C119286	INSAAB

Interferon Alpha	A measurement of the interferon alpha in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81994	IFNA
Interferon Beta	A measurement of the interferon beta in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81995	IFNB
Interferon Gamma	A measurement of the interferon gamma in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81996	IFNG
Interleukin 1	A measurement of the interleukin 1 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74805	INTLK1
Interleukin 10	A measurement of the interleukin 10 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74806	INTLK10

Interleukin 11	A measurement of the interleukin 11 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74807	INTLK11
Interleukin 12	A measurement of the interleukin 12 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74808	INTLK12
Interleukin 13	A measurement of the interleukin 13 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74809	INTLK13
Interleukin 14	A measurement of the interleukin 14 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74810	INTLK14
Interleukin 15	A measurement of the interleukin 15 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74811	INTLK15

Interleukin 16	A measurement of the interleukin 16 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74812	INTLK16
Interleukin 17	A measurement of the interleukin 17 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74813	INTLK17
Interleukin 18	A measurement of the interleukin 18 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74814	INTLK18
Interleukin 19	A measurement of the interleukin 19 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74815	INTLK19
Interleukin 2	A measurement of the interleukin 2 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74816	INTLK2

Interleukin 20	A measurement of the interleukin 20 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74817	INTLK20
Interleukin 21	A measurement of the interleukin 21 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74818	INTLK21
Interleukin 22	A measurement of the interleukin 22 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74819	INTLK22
Interleukin 23	A measurement of the interleukin 23 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74820	INTLK23
Interleukin 24	A measurement of the interleukin 24 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74821	INTLK24

Interleukin 25	A measurement of the interleukin 25 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74822	INTLK25
Interleukin 26	A measurement of the interleukin 26 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74823	INTLK26
Interleukin 27	A measurement of the interleukin 27 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74824	INTLK27
Interleukin 28	A measurement of the interleukin 28 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74825	INTLK28
Interleukin 29	A measurement of the interleukin 29 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74826	INTLK29

Interleukin 3	A measurement of the interleukin 3 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74827	INTLK3
Interleukin 30	A measurement of the interleukin 30 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74828	INTLK30
Interleukin 31	A measurement of the interleukin 31 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74829	INTLK31
Interleukin 32	A measurement of the interleukin 32 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74830	INTLK32
Interleukin 33	A measurement of the interleukin 33 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74831	INTLK33

Interleukin 4	A measurement of the interleukin 4 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74832	INTLK4
Interleukin 5	A measurement of the interleukin 5 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74833	INTLK5
Interleukin 6	A measurement of the interleukin 6 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74834	INTLK6
Interleukin 7	A measurement of the interleukin 7 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74835	INTLK7
Interleukin 8	A measurement of the interleukin 8 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74836	INTLK8

Interleukin 9	A measurement of the interleukin 9 in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74837	INTLK9
Islet Cell 512 Antibody	A measurement of the islet cell 512 antibody in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81985	IC512AB
Islet Cell 512 Antigen	A measurement of the islet cell 512 antigen in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81986	IC512AG
Islet Neogenesis Associated Protein Antibody	A measurement of the islet neogenesis associated protein antibody in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81987	INGAPAB
Ketones	Organic compounds with a carbonyl group (C=O) bonded to two other carbon atoms as the skeleton structure. Acetone is the simplest ketone compound.	https://medlineplus.gov/lab-tests/ketones-in-blood/; https://medlineplus.gov/lab-tests/ketones-in-urine/	KETONES

Lactate Dehydrogenase	A quantitative measurement of the amount of lactate dehydrogenase present in a sample.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C64855	LDH
Large Platelets	A measurement of the large (between 4 um and 7um in diameter) platelets in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74729	PLATLRG
Large Unstained Cells	A measurement of the large, peroxidase-negative cells which cannot be further characterized (i.e. as large lymphocytes, virocytes, or stem cells) present in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74659	LGUNSCE
Large Unstained Cells/Leukocytes	A relative measure (ratio or percentage) of the large unstained cells to leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C79467	LGLUCLE

LDL Cholesterol	A measurement of the low density lipoprotein cholesterol in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C105588	LDL
Leukemic Blasts	A measurement of the leukemic blasts (lymphoblasts that remain in an immature state even when outside the bone marrow) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74630	BLASTLM
Leukemic Blasts/Lymphocytes	A relative measurement (ratio or percentage) of the leukemic blasts (immature lymphoblasts) to mature lymphocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74641	BLSTLMLY
Leukocyte esterase	A quantitative measurement of the amount of leukocyte esterase present in a sample.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C64856	LEUKASE

Leukocytes	A measurement of the leukocytes per unit of a biological specimen.	http://purl.bioontology.org/ontology/SNOMEDCT/767002; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C51948	WBC
Lmphocytes	Blood Lymphocyte Count	http://purl.obolibrary.org/obo/CMO_0000031	
Lymphocyte % of WBC	Blood Lymphocyte Count to Total Leukocyte Count Ratio	http://purl.obolibrary.org/obo/CMO_0000371	
Lymphocyte count	Blood Lymphocyte Count	http://purl.obolibrary.org/obo/CMO_0000031	
Lymphocytes	A measurement of the lymphocytes per unit of a biological specimen.	http://purl.bioontology.org/ontology/SNOMEDCT/74765001; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C51949	LYM

Lymphocytes Atypical	A measurement of the atypical lymphocytes per unit of a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64818	LYMAT
Lymphocytes Atypical/Leukocytes	A relative measurement (ratio or percentage) of the atypical lymphocytes to leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64819	LYMATLE
Lymphocytes/Leukocytes	A relative measurement (ratio or percentage) of the lymphocytes to leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64820	LYMLE
Lymphoma Cells	A measurement of the malignant lymphocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74613	LYMMCE
Lymphoma Cells/Lymphocytes	A relative measurement (ratio or percentage) of the malignant lymphocytes to all lymphocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74910	LYMMCELY

Macrocytes	A measurement of the macrocytes per unit of a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64821	MACROCY
Magnesium	A quantitative measurement of the amount of magnesium present in a sample.	https://www.urmc.rochester.edu/encyclopedia/content.aspx?contenttypeid=167&contentid=magnesium_blood	MG
Malignant Cells, NOS	A measurement of the malignant cells of all types in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74660	MLIGCE
Malignant Cells, NOS/Blood Cells	A relative measurement (ratio or percentage) of the malignant cells of all types to all blood cells in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74643	MLIGCEBC

Mature Plasma Cells	A measurement of the mature plasma cells (plasmacytes) in a biological specimen.	http://purl.biontology.org/ontology/SNOMEDCT/270924002; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74661	PLSMCE
Mature Plasma Cells/Lymphocytes	A relative measurement (ratio or percentage) of the mature plasma cells (plasmacytes) to all lymphocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74911	PLSMCELY
May-Hegglin Anomaly	A measurement of the May-Hegglin Anomaly (which is characterized by large, misshapen platelets and the presence of Dohle bodies in the leukocytes) in a blood specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74614	MAYHEG
Mean Platelet Volume	A measurement of the average size of the platelets found in a blood specimen.	http://purl.biontology.org/ontology/SNOMEDCT/75672003; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74730	MPV

Metamyelocytes	A measurement of the metamyelocytes (small, myelocytic neutrophils with an indented nucleus) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74615	METAMY
Metamyelocytes/Leukocytes	A relative measurement (ratio or percentage)of the metamyelocytes (small, myelocytic neutrophils with an indented nucleus) to all leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74645	METAMYLE
Microcytes	A measurement of the microcytes per unit of a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64822	MICROCY
Milk protein	Milk Protein Measurement	http://purl.obolibrary.org/obo/CMO_0000789	
Milk protein CAP-Klasse	Milk Protein Measurement	http://purl.obolibrary.org/obo/CMO_0000789	
Monoblasts	A measurement of the monoblast cells per unit of a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74631	MONOBL

Monoblasts/Leukocytes	A relative measurement (ratio or percentage) of monoblast cells to all leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74646	MONOBLLE
Monocyte % of WBC	Blood Monocyte Count to Total Leukocyte Count Ratio	http://purl.obolibrary.org/obo/CMO_0000374	
Monocytes	A measurement of the monocytes per unit of a biological specimen.	http://purl.bioontology.org/ontology/SNOMEDCT/67776007; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64823	MONO
Monocytes/Leukocytes	A relative measure (ratio or percentage) of the monocytes to leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64824	MONOLE

Myeloblasts	A measurement of the myeloblast cells per unit of a biological specimen.	http://purl.biontology.org/ontology/SNOMEDCT/104103005; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74632	MYBLA
Myeloblasts/Leukocytes	A relative measurement (ratio or percentage) of the myeloblasts to leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64825	MYBLALE
Myelocytes	A measurement of the myelocytes per unit of a biological specimen.	http://purl.biontology.org/ontology/SNOMEDCT/104099000; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74662	MYCY
Myelocytes/Leukocytes	A relative measurement (ratio or percentage) of the myelocytes to leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64826	MYCYLE

Myoglobin	A measurement of myoglobin in a biological specimen.	http://purl.bioontology.org/ontology/SNOMEDCT/33606006; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C79436	MGB
Neutrophil % of WBC	Blood Neutrophil Count to Total Leukocyte Count Ratio	http://purl.obolibrary.org/obo/CMO_0000370	
Neutrophilic Metamyelocytes	A measurement of the neutrophilic metamyelocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C84822	NEUTMM
Neutrophilic Myelocytes	A measurement of the neutrophilic myelocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C84823	NEUTMY

Neutrophils	A measurement of the neutrophils per unit of a biological specimen.	http://purl.bioontology.org/ontology/SNOMEDCT/30630007; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C63321	NEUT
Neutrophils Band Form	A measurement of the banded neutrophils per unit of a biological specimen.	http://purl.bioontology.org/ontology/SNOMEDCT/25340006; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64830	NEUTB
Neutrophils Band Form/Leukocytes	A relative measurement (ratio or percentage) of the banded neutrophils to leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64831	NEUTBLE

Neutrophils, Segmented	A measurement of the segmented neutrophils in a biological specimen.	http://purl.biontology.org/ontology/SNOMEDCT/104096007; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81997	NEUTSG
Neutrophils, Segmented/Leukocytes	A relative measurement (ratio or percentage) of segmented neutrophils to leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C82045	NEUTSGLE
Neutrophils/Leukocytes	A relative measurement (ratio or percentage) of the neutrophils to leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64827	NEUTLE
Nitrite	A quantitative measurement of the amount of nitrite present in a sample.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C64810	NITRITE

Non-HDL Cholesterol, calc	Plasma Non-HDL, Non-LDL Cholesterol Level	http://purl.obolibrary.org/obo/CMO_0002283	
Nucleated Erythrocytes	A measurement of the nucleated red blood cells (large, immature nucleated erythrocytes) in a biological specimen.	http://purl.bioontology.org/ontology/SNOMEDCT/104098008; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74705	RBCNUC
Nucleated Erythrocytes/Erythrocytes	A relative measurement (ratio or percentage) of the nucleated red blood cells (large, immature nucleated erythrocytes) to all erythrocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74647	RBCNURBC
Nucleated Erythrocytes/Leukocytes	A relative measurement (ratio or percentage) of nucleated erythrocytes to leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C82046	RBCNUCLE

Panel Reactive Antibody	An assessment of the reactivity between host immune cells and donor human leukocyte antigen. This test is most commonly carried out in subjects awaiting transplant. The recipient's blood or serum is mixed with either a panel of lymphocytes from random blood donations or a potential donor's purified human leukocyte antigens (HLA). Host reactivity is scored as a percent.	https://en.wikipedia.org/wiki/Panel-reactive_antibody	PRA
Pappenheimer Bodies	A measurement of the Pappenheimer Bodies (violet or blue staining, ferritin granules usually found along the periphery of the red blood cells) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74616	PAPPEN
Parathyroid Hormone, Intact	A measurement of the intact parathyroid hormone (consisting of amino acids 1-84 or 7-84) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74789	PTHI
Partial thromboplastin time	A measurement of the length of time that it takes for clotting to occur when reagents are added to a plasma specimen. The test is partial due to the absence of tissue factor (Factor III) from the reaction mixture.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C38462	APTT

Pelger Huet Anomaly	A measurement of the Pelger Huet Anomaly (neutrophils and eosinophils nuclei appear rodlike, spherical or dumbbell shapped) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74617	PELGERH
Pemphigoid Antibodies	A measurement of the pemphigoid antibodies in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81988	PEMAB
pH	Quantity of dimension one used to express on a scale from 0 to 14 the amount-of-substance concentration of hydrogen ion of dilute aqueous solution, calculated as the logarithm of the reciprocal of hydrogen-ion concentration in gram atoms per liter.	https://en.wikipedia.org/wiki/PH	PH
Phosphate	A measurement of the phosphate in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C64857	PHOS
Plasmacytoid Lymphocytes	A measurement of the plasmacytoid lymphocytes (lymphocytes with peripherally clumped chromatin and often deep blue cytoplasm, and that appear similar to plasma cells) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74618	LYMPL

Plasmacytoid Lymphocytes/Lymphocytes	A relative measurement (ratio or percentage) of the plasmacytoid lymphocytes (lymphocytes with peripherally clumped chromatin and often deep blue cytoplasm, and that appear similar to plasma cells) to all lymphocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74648	LYMPLLY
Plasminogen Activator Inhibitor-1 Antigen	A measurement of the plasminogen activator inhibitor-1 antigen in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81989	PAI1AG
Platelet count	Platelet Count	http://purl.obolibrary.org/obo/CMO_0000029	
Platelet Distribution Width	A mesurement of the range of platelet sizes in a blood specimen.	http://purl.biontology.org/ontology/SNOMEDCT/250313005; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81962	PDW

Platelets	A measurement of the platelets per unit of a biological specimen.	http://purl.biontology.org/ontology/SNOMEDCT/61928009; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C51951	PLAT
Poikilocytes	A measurement of the odd-shaped erythrocytes in a whole blood specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C79602	POIKILO
Poikilocytes/Erythrocytes	A relative measurement (ratio or percentage) of the poikilocytes irregularly shaped erythrocytes to all erythrocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74649	POIKRBC
Polychromasia	A measurement of the blue-staining characteristic of newly generated erythrocytes.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64803	POLYCHR
Polymorphonuclear leukocyte count	Polymorphonuclear leukocyte count	http://purl.biontology.org/ontology/SNOMEDCT/116708001	

Potassium	A measurement of the potassium in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C64853	K
Precursor Plasma Cells	A measurement of the precursor (blast stage) plasma cells (antibody secreting cells derived from B cells via antigen stimulation) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74619	PLSPCE
Precursor Plasma Cells/Lymphocytes	A relative measurement (ratio or percentage) of the precursor (blast stage) plasma cells (antibody secreting cells derived from B cells via antigen stimulation) to all lymphocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74650	PLSPCELY
Prolymphocytes	A measurement of the prolymphocytes in a biological specimen.	http://purl.bioontology.org/ontology/SNOMEDCT/104101007; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74620	PROLYM

Prolymphocytes/Leukocytes	A relative measurement (ratio or percentage) of prolymphocytes to leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64829	PRLYMLE
Prolymphocytes/Lymphocytes	A relative measurement (ratio or percentage) of prolymphocytes to all lymphocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74651	PROLYMLY
Promonocytes	A measurement of the promonocytes per unit of a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74621	PROMONO
Promonocytes/Leukocytes	A relative measurement (ratio or percentage) of promonocytes to all leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74652	PROMONLE

Promyelocytes	A measurement of the promyelocytes (immature myelocytes) in a biological specimen.	http://purl.biontology.org/ontology/SNOMEDCT/104100008; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74622	PROMY
Promyelocytes/Leukocytes	A relative measurement (ratio or percentage) of the promyelocytes (immature myelocytes) to all leukocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74653	PROMYLE
Prostate Specific Antigen	A measurement of the prostate specific antigen in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C17634	PSA
Protein	A measurement of a group of complex organic macromolecules composed of one or more alpha-L-amino acid chains in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C64858	PROT

Protein/Creatinine	A relative measurement (ratio or percentage) of the protein to creatinine in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C79463	PROTCRT
Prothrombin time	A blood clotting measurement that evaluates the extrinsic pathway of coagulation and is expressed in units of time or percent activity.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C62656	
Rapid Plasma Reagin	A measurement of the antibodies produced by cellular damage caused by Treponema pallidum (syphilis) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74716	RPR
Reactive Lymphocytes	A measurement of the reactive lymphocytes (lymphocytes which have become large due to an antigen reaction) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74629	LYMRCT
Reactive Lymphocytes/Lymphocytes	A relative measurement (ratio or percentage) of the reactive lymphocytes (lymphocytes which have become large due to an antigen reaction) to all lymphocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74654	LYMRCTLY

Reticulocytes	A measurement of the reticulocytes per unit of a biological specimen.	http://purl.biontology.org/ontology/SNOMEDCT/45995003; http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C51947	RETI
Reticulocytes/Erythrocytes	A relative measurement (ratio or percentage) of reticulocytes to erythrocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64828	RETIRBC
RF	Serum Immunoglobulin M-type Rheumatoid Factor Level	http://purl.obolibrary.org/obo/CMO_0002609	
Rheumatoid Factor	A measurement of the rheumatoid factor antibody in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74717	RF
Rouleaux Formation	A measurement of the stacking of red blood cells within a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74624	ROULEAUX

Schistocytes	A measurement of the schistocytes (fragmented red blood cells) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74706	SCHISTO
Sezary Cells	A measurement of the Sezary cells (atypical lymphocytes with cerebriform nuclei) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74625	SEZCE
Sezary Cells/Lymphocytes	A relative measurement (ratio or percentage) of the Sezary cells (atypical lymphocytes with cerebriform nuclei) to all lymphocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74655	SEZCELY
SGOT	Blood Aspartate Aminotransferase Activity Level	http://purl.obolibrary.org/obo/CMO_0000580	
SGPT	Blood Alanine Aminotransferase Activity Level	http://purl.obolibrary.org/obo/CMO_0000574	
Sickle Cells	A measurement of the sickle cells (sickle shaped red blood cells) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74626	SCKLCE

Sickle Cells/Erythrocytes	A relative measurement (ratio or percentage) of the sickle cells (sickle shaped red blood cells) to all erythrocytes in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74656	SCKCERBC
Smudge Cells	A measurement of the smudge cells (the nuclear remnant of a ruptured white blood cell) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74627	SMDGCE
Sodium	A measurement of the sodium in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C64809	SODIUM
Specific Gravity	The density (mass per unit volume) of any material divided by that of water at a standard temperature.	https://en.wikipedia.org/wiki/Specific_gravity	SPGRAV
Spherocytes	A measurement of the spherocytes (small, sphere-shaped red blood cells) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74707	SPHERO

Stomatocytes	A measurement of the stomatocytes (red blood cells with an oval or rectangular area of central pallor, producing the appearance of a cell mouth) in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74708	STOMCY
Thyroid Antibodies	A measurement of the thyroid antibodies in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81990	THYAB
Thyroid Antimicrosomal Antibodies	A measurement of the thyroid antimicrosomal antibodies in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81991	THYAMAB
Thyroid Antithyroglobulin Antibodies	A measurement of the thyroid antithyroglobulin antibodies in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81992	THYATAB
Thyrotropin	A measurement of the thyrotropin in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C64813	

Thyroxine	A hormone synthesized and secreted by the thyroid gland containing four iodine atoms and is converted to triiodothyronine (T3) in the body, influencing metabolism and organ function.	https://en.wikipedia.org/wiki/Thyroid_hormones	T4
Tissue Plasminogen Activator Antigen	A measurement of the tissue plasminogen activator antigen in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C81993	TPAAG
TNFA	Inflammatory Exudate Tumor Necrosis Factor Level	http://purl.obolibrary.org/obo/CMO_0001435	
Triglycerides	A measurement of the triglycerides in a biological specimen..	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=15.12d&code=C64812	TRIG
Triiodothryonine	Blood Triiodothyronine Level	http://purl.obolibrary.org/obo/CMO_0001291	
Triiodothyronine	A thyroid hormone containing 3 iodine atoms generally synthesized from levothyroxine, and has greater biological activity.	https://en.wikipedia.org/wiki/Triiodothyronine	T3

Urate	A quantitative measurement of the amount of urate present in a sample.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C64814	URATE
Urea Nitrogen, Serum/Plasma	Blood Urea Nitrogen Level	http://purl.obolibrary.org/obo/CMO_0000049	
Uric Acid	Blood Uric Acid Level	http://purl.obolibrary.org/obo/CMO_0000501	
Urobilinogen	A quantitative measurement of the amount of urobilinogen present in a sample.	https://en.wikipedia.org/wiki/Urobilinogen	UROBIL
Vacuolated Neutrophils	A measurement of the neutrophils containing small vacuoles in a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C74628	NEUTVAC
White Blood Cell Count	White Blood Cell Count	http://purl.obolibrary.org/obo/CMO_0000027	

21. **lk_lab_test_panel_name**

Name	Description	Link
name_preferred		

Autoimmune liver disease panel	An autoimmune liver disease panel is a group of tests that is done to check for autoimmune liver disease.	https://www.nlm.nih.gov/medlineplus/ency/article/003328.htm
Blood Cell Count	The determination of the number of red blood cells, white blood cells, and platelets in a blood sample.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C28133; http://purl.bioontology.org/ontology/SNOMEDCT/252275004
Blood Cell Count with Differential	A hematologic procedure to determine the number of red blood cells, white blood cells, and platelets, including the white cell differential count and red cell morphology, in a blood sample.	http://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=14.11d&code=C98494
Blood Flow Cytometry	Flow cytometry used to examine and quantitate the constituents of the blood.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C38062; http://purl.bioontology.org/ontology/SNOMEDCT/64444005
Chemistry Test	A laboratory test designed for the quantification of an organic or inorganic chemical within a biological specimen.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C49237&ns=NCI_Thesaurus
Comprehensive Metabolic Panel	Comprehensive Metabolic Panel	http://purl.bioontology.org/ontology/CPT/80053

Drug Test	A laboratory test of biological material such as blood, urine, hair, saliva or sweat, used to detect the presence of a drug or its metabolites with in the body.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C78139&ns=NCI_Thesaurus&key=n1647193989&b=1&n=null; http://purl.bioontology.org/ontology/SNOMEDCT/394642008
Fasting Lipid Profile	Fasting Lipid Profile	http://purl.bioontology.org/ontology/SNOMEDCT/252150008
Hormone measurement	The determination of the amount of hormone present in a sample.	https://www.cdc.gov/labstandards/pdf/hs/HoSt_Brochure.pdf
Immunology Test	Laboratory test involving interaction of antigens with specific antibodies	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C16723&ns=NCI_Thesaurus; http://purl.bioontology.org/ontology/SNOMEDCT/252318005
Laboratory test related to hemostasis	Laboratory test related to hemostasis	http://purl.bioontology.org/ontology/SNOMEDCT/127791007
Mixed-Meal Tolerance Test	Mixed-Meal Tolerance Test	http://www.ncbi.nlm.nih.gov/pubmed/15189492

Protein or Enzyme Type Measurement	A term that refers to a chemistry test measuring a specific protein or enzyme in the peripheral blood or body fluid.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C64430; http://purl.bioontology.org/ontology/SNOMEDCT/122444009
Renal Function Test	A laboratory procedure that evaluates the kidney function.	https://medlineplus.gov/kidneytests.html
Serum protein electrophoresis	Serum protein electrophoresis	http://purl.bioontology.org/ontology/SNOMEDCT/4903000
Thyroid Panel	Thyroid Panel	http://purl.bioontology.org/ontology/SNOMEDCT/35650009
Total Protein Measurement	A quantitative measurement of the amount of total protein present in a sample.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C64858&ns=NCI_Thesaurus; http://purl.bioontology.org/ontology/SNOMEDCT/74040009
Urinalysis	Laboratory analysis of urine, commonly used to aid in the diagnosis of disease or to detect the presence of a specific substance. It involves examination of the urine by physical or chemical means as well as microscopic examination that helps to screen for urinary tract infections, renal disease, and diseases of other organs, that result in abnormal metabolites (break-down products) appearing in the urine.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=15.10d&ns=NCI_Thesaurus&code=C17241

Vitamin measurement	Vitamin level	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C74803&ns=NCI_Thesaurus; http://purl.bioontology.org/ontology/SNOMEDCT/122446006

22. **lk_pcr_expression_unit**

Name	Description	Link
expression_unit_preferred		
Cq	Threshold cycle (or Ct or Cq) is a count which is defined as the fractional PCR cycle number at which the reporter fluorescence is greater than the threshold in the context of the RT-qPCR assay.	http://purl.obolibrary.org/obo/STATO_0000190
Ct	Threshold cycle (or Ct or Cq) is a count which is defined as the fractional PCR cycle number at which the reporter fluorescence is greater than the threshold in the context of the RT-qPCR assay.	http://purl.obolibrary.org/obo/STATO_0000190
Delta Ct	Difference between the target gene and the reference gene.	http://www.ncbi.nlm.nih.gov/pubmed/?term=PMID%3A11846609
Delta Delta Ct	Difference between the Delta Ct target gene of the treated sample and the Delta Ct of the target gene of the untreated sample.	http://www.ncbi.nlm.nih.gov/pubmed/?term=PMID%3A11846609
Not Specified	No value provided. Not stated explicitly or in detail.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C38046&ns=NCI_Thesaurus

23. **lk_personnel_role**

Name	Description	Link
Co-Principal Investigator	A responsible party role played by a person responsible for the overall conduct of a study.	http://purl.obolibrary.org/obo/OBI_0000103
Medical Monitor	Person employed by the sponsor or clinical research organization, who is responsible for determining that a clinical study is being conducted in accordance with the protocol. A monitor's duties may include, but are not limited to, helping to plan and initiate a trial, assessing the conduct of trial, assisting in data analysis, interpretation, and extrapolation. Monitor has medical authority for the checking data and documentation from the trial and for the evaluation of its safety aspects.	https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&ns=ncit&code=C51836&key=1517300889&b=1&n=null
Other	A person having a Role that is some Other value not in CV Terms.	
Principal Investigator	A responsible party role played by a person responsible for the overall conduct of a study.	http://purl.obolibrary.org/obo/OBI_0000103
Site Manager	Someone (or something) that controls, directs, and organizes people, resources, or processes.	http://ncicb.nci.nih.gov/xml/owl/EVS/Thesaurus.owl#C70652
Sub-Investigator	A worker role authorized to make study-related decisions and carry out tasks related to the study; this role occurs during the study timeline.	http://purl.obolibrary.org/obo/OBI_0000224

24. **lk_plate_type**

Name	Description
Not Specified	No plate type specified

25. **lk_preferred_time_unit**

Name	Description	Link
time_unit_preferred		

d.p.c.	Unit of Days Post Coitum (d.p.c.).	https://en.wikipedia.org/wiki/Days_post_coitum
Days	Unit of Days.	http://bioportal.bioontology.org/ontologies/NCIT/?p=classes&conceptid=http%3A%2F%2Fncicb.nci.nih.gov%2Fxml%2Fowl%2FEVS%2FThesaurus.owl%23C25301
Hours	Unit of Hours.	http://bioportal.bioontology.org/ontologies/NCIT?p=classes&conceptid=http%3A%2F%2Fncicb.nci.nih.gov%2Fxml%2Fowl%2FEVS%2FThesaurus.owl%23C25529
Minutes	Unit of Minutes.	http://bioportal.bioontology.org/ontologies/NCIT?p=classes&conceptid=http%3A%2F%2Fncicb.nci.nih.gov%2Fxml%2Fowl%2FEVS%2FThesaurus.owl%23C48154

Months	Unit of Months.	http://bioportal.bioontology.org/ontologies/NCIT?p=classes&conceptid=http%3A%2F%2Fncicb.nci.nih.gov%2Fxml%2Fowl%2FEVS%2FThesaurus.owl%23C29846
Not Specified	Unit is not specified or not received. If no Unit value is received, then this is the system default value.	
Seconds	Unit of Seconds.	http://bioportal.bioontology.org/ontologies/NCIT?p=classes&conceptid=http%3A%2F%2Fncicb.nci.nih.gov%2Fxml%2Fowl%2FEVS%2FThesaurus.owl%23C25666
Weeks	Unit of Weeks.	http://bioportal.bioontology.org/ontologies/NCIT/?p=classes&conceptid=http%3A%2F%2Fncicb.nci.nih.gov%2Fxml%2Fowl%2FEVS%2FThesaurus.owl%23C29844

Years	Unit of Years.	http://bioportal.bioontology.org/ontologies/NCIT/?p=classes&conceptid=http%3A%2F%2Fncicb.nci.nih.gov%2Fxml%2Fowl%2FEVS%2FThesaurus.owl%23C29848

26. **lk_protocol_type**

Name	Description	Link
Assay	Protocol used to assay or measure an experiment sample	
Bio Sample Preparation	Biological Sample Preparation.	
Bio Sample Treatment	Protocol used to prepare Biological Sample.	
Biomaterial Transformation	Protocol used to prepare or modify a biological sample	
Case Report Form	Case Report Form	https://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=17.10e&code=C40988
Clinical	Clinical	
Clinical Study Protocol	Clinical Study Protocol	https://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&code=C25320
Data Processing	Data Processing	
Data Transformation	Protocol used to analyze or reformat data	
Experiment	Protocol used in the Experiment.	
Experimental Sample	Protocol used for Experimental Sample.	

Not Specified	Protcol Type is not specified or not received. If no Protocol Type value is received, then this is the system default value.	
Other	Other	
Statistical Analysis Documentation	Statistical Analysis Documentation	https://ncit.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&version=17.10e&code=C115732
Study Protocol	'Study_Protocol' Study design description.	
Study Summary	'Study_Summary' Study review after a study is closed.	
Subject Organism Treatment	Subject Organism Treatment	

27. **lk_public_repository**

Name	Description	Link
dbGAP	The database of Genotypes and Phenotypes (dbGaP) was developed to archive and distribute the results of studies that have investigated the interaction of genotype and phenotype.	http://www.ncbi.nlm.nih.gov/gap
ENA	The European Nucleotide Archive (ENA) provides a comprehensive record of the world's nucleotide sequencing information, covering raw sequencing data, sequence assembly information and functional annotation.	http://www.ebi.ac.uk/ena
Ensembl	Ensembl gene repository	
FlowRepository	A database of flow cytometry experiments where you can query and download data collected and annotated according to the MIFlowCyt standard.	http://flowrepository.org
GenBank	GenBank is the NIH genetic sequence database, an annotated collection of all publicly available DNA sequences.	https://www.ncbi.nlm.nih.gov/genbank/

GEO	GEO is a public functional genomics data repository supporting MIAME-compliant data submissions. Array- and sequence-based data are accepted. Tools are provided to help users query and download experiments and curated gene expression profiles.	http://www.ncbi.nlm.nih.gov/geo/
ImmPort	Immunology Database and Analysis Portal (ImmPort).	http://www.immport.org/immport-open/public/home/home
NCBI Gene	NCBI gene repository	
PRIDE	The PRIDE PRoteomics IDEntifications (PRIDE) database is a centralized, standards compliant, public data repository for proteomics data, including protein and peptide identifications, post-translational modifications and supporting spectral evidence. PRIDE is a core member in the ProteomeXchange (PX) consortium, which provides a single point for submitting mass spectrometry based proteomics data to public-domain repositories. Datasets are submitted to PRIDE via ProteomeXchange and are handled by expert biocurators.	https://www.ebi.ac.uk/pride/archive/
SRA	The Sequence Read Archive (SRA) stores raw sequencing data from the next generation of sequencing platforms including Roche 454 GS System, Illumina Genome Analyzer, Applied Biosystems SOLiD System, Helicos Heliscope, Complete Genomics, and Pacific Biosciences SMRT.	http://www.ncbi.nlm.nih.gov/sra

28. **lk_race**

Name	Description	Link
American Indian or Alaska Native	A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.	https://www.fda.gov/downloads/regulatoryinformation/guidances/ucm126396.pdf

Asian	A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.	https://www.fda.gov/downloads/regulatoryinformation/guidances/ucm126396.pdf
Black or African American	A person having origins in any of the black racial groups of Africa. Terms such as "Haitian" or "Negro" can be used in addition to "Black or African American."	https://www.fda.gov/downloads/regulatoryinformation/guidances/ucm126396.pdf
Native Hawaiian or Other Pacific Islander	A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.	https://www.fda.gov/downloads/regulatoryinformation/guidances/ucm126396.pdf
Not Specified	Race is not specified or not received. If no Race value is received, then this is the system default value.	https://www.fda.gov/downloads/regulatoryinformation/guidances/ucm126396.pdf
Other	A person having a Race that is some Other value not in CV Terms.	https://www.fda.gov/downloads/regulatoryinformation/guidances/ucm126396.pdf
Unknown	A person having a race that is Unknown.	https://www.fda.gov/downloads/regulatoryinformation/guidances/ucm126396.pdf
White	A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.	https://www.fda.gov/downloads/regulatoryinformation/guidances/ucm126396.pdf

29. **lk_reagent_type**

Name	Description	Link

Array	Arrays (including microarrays) are a set of probes immobilized on a surface. The probes can be oligonucleotides, cDNAs, antibodies and other molecules that recognize a target. Microarrays can be constructed by several methods including (but not limited to in situ oligo synthesis (e.g. Affymetrix), cDNA spotting, bead arrays (e.g. Illumina) and antibody spotting. The position and identity of probes are provided by the manufacturer. The probe identifiers and their target are referred to as annotation or translation of probe identifiers to bioinformatic identifiers. Microarrays can be used for gene expression (mRNA transcript quantification), genotyping, cytokine quantification, etc. Microarrays for gene expression fall into two general classes- single channel and dual channel. The channel refers to the wavelength scanned for fluorescent signals. Affymetrix microarrays are obligatory single channel. Many commercial and non-commercial microarray manufacturers use two channel.	http://purl.obolibrary.org/obo/OBI_0400147; http://purl.obolibrary.org/obo/OBI_0001204; http://purl.obolibrary.org/obo/OBI_0001307; http://purl.obolibrary.org/obo/OBI_0400149
CyTOF	Cytometry Time Of Flight CyTOF (DVS Sciences) or Mass cytometry, or , is a variation of flow cytometry in which antibodies are labeled with heavy metal ion tags rather than fluorochromes. Readout is by time-of-flight mass spectrometry.	http://en.wikipedia.org/wiki/Mass_cytometry
Cytometric Bead Array	An assay in which a series of beads coated with antibodies specific for different analytes and marked with discrete fluorescent labels are used to simultaneously capture and quantitate soluble analytes using flow cytometric analysis.	http://purl.obolibrary.org/obo/OBI_0000920
ELISA	Enzyme-Linked ImmunoSorbant Assay. Quantification of a molecule (e.g cytokine) by an antibody immobilization strategy.	http://purl.obolibrary.org/obo/OBI_0000661
ELISPOT	Enzyme-linked ImmunoSPOT. A variant of ELISA with increased resolution that allows quantifying the number of cells in a population that release a molecule (e.g. cytokine).	http://purl.obolibrary.org/obo/OBI_0600031

Flow Cytometry	Fluorescence Activated Cell Sorting.	http://purl.obolibrary.org/obo/OBI_0000916
Hemagglutination Inhibition	Quantitate serum antibody to a specific antigen by blocking agglutination of cells.	http://purl.obolibrary.org/obo/OBI_0000875
HLA Typing	Human Leukocyte Antigen typing.	http://purl.obolibrary.org/obo/OBI_0000435
KIR Typing	Killer cell immunoglobulin-like receptors.	http://purl.obolibrary.org/obo/OBI_0000435
Luminex xMAP	Microsphere based multiplexing system. Microspheres are color coded and linked to a detector or capture reagent (e.g. antibody, oligonucleotides, peptides, or receptors).	http://purl.obolibrary.org/obo/OBI_0000920
Neutralizing Antibody Titer	Measurement of how much antibody an organism has produced that recognizes a particular epitope, expressed as the inverse of the greatest dilution that still gives a positive result.	http://purl.obolibrary.org/obo/VO_0000397
Other	Other reagent.	http://immport.org/immport-open/public/home/documentation
PCR	Polymerase Chain Reaction is a technique to amplify a DNA template.	http://purl.obolibrary.org/obo/OBI_0000415
Sequencing	Sequencing is used to discover new sequence variants and to genotype a sample for known variants.	http://purl.obolibrary.org/obo/OBI_0600047
Virus Neutralization	Block a viral function.	http://purl.obolibrary.org/obo/OBI_0000872

30. **lk_release_status**

Name	Description
Initial	The Initial Data Release for the study
Unknown	The Data Release for the study is not known

Updated	The Data Release for the study is an update

31. **lk_research_focus**

Name	Description	Link
Atopy/Allergy	Atopy or Allergy research focus.	http://purl.obolibrary.org/obo/OBI_1110049
Autoimmune	Autoimmune research focus.	http://purl.obolibrary.org/obo/OBI_1110054
Cell Biology	The study of the internal workings of cells at the microscopic and molecular level.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=19.07e&ns=ncit&code=C17992&key=n750867443&b=1&n=null
Immune Response	Immune Response research focus.	http://purl.obolibrary.org/obo/GO_0006955
Infection Response	Infection Response research focus.	https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=SNOMED%20Clinical%20Terms%20US%20Edition&code=252101002&ns=SNOMED
Molecular Biology	The study of biology at a molecular level. It chiefly concerns itself with understanding the interactions between the various systems of a cell, including the interrelationship of DNA, RNA and protein synthesis and learning how these interactions are regulated. The field overlaps with other areas of biology, particularly genetics and biochemistry.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=19.07e&ns=ncit&code=C16872&key=n759199013&b=1&n=null

No Research Focus Specified	No Research Focus currently specified.	
Oncology	The study of tumors encompassing the physical, chemical, and biologic properties.	https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=17.04d&ns=NCI_Thesaurus&code=C17837&key=n608142342&m=1&b=1&n=null
Preterm Birth	Birth when a fetus is less than 37 weeks and 0 days gestational age.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=18.06d&ns=ncit&code=C92861&key=620784314&b=1&n=null
Transplantation	Transplantation research focus.	http://purl.obolibrary.org/obo/OBI_0000105
Vaccine Response	Vaccine Response research focus.	http://www.ebi.ac.uk/efo/EFO_0004645

32. **lk_rna_sequence_result_unit_type**

Name	Description	Link
result_unit_preferred		
FPKM	Fragments Per Kilobase Million: Normalized expression value of a given gene as measured by paired-end RNA sequencing	http://www.ncbi.nlm.nih.gov/pubmed/22872506

Not Specified	No value provided. Not stated explicitly or in detail.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C38046&ns=NCI_Thesaurus
RPKM	Reads Per Kilobase Million: Normalized expression value of a given gene as measured by single-end RNA sequencing	http://www.ncbi.nlm.nih.gov/pubmed/22872506
TPM	Transcripts per million reads- Measurement of mRNA abundance using RNA-seq data	http://www.ncbi.nlm.nih.gov/pubmed/22872506

33. **lk_sample_type**

Name	Description	Link
Amniotic Fluid	Amniotic fluid is a bodily fluid consisting of watery liquid surrounding and cushioning a growing fetus within the amnion. It allows the fetus to move freely without the walls of the uterus being too tight against its body. Buoyancy is also provided. The composition of the fluid changes over the course of gestation. Initially, amniotic fluid is similar to maternal plasma, mainly water with electrolytes. As the fetus develops, proteins, carbohydrates, lipids, phospholipids originating from the lungs, fetal cells, and urea are deposited in the fluid. database_cross_reference: MP:MPdatabase_cross_reference: ENVO:02000021	http://purl.obolibrary.org/obo/UBERON_0000173
B cell	CD3-, CD19+, CD20+	http://purl.obolibrary.org/obo/CL_0000236
Bone	Skeletal element that is composed of bone tissue.	http://purl.obolibrary.org/obo/UBERON_0001474
Bone Marrow	The soft tissue that fills the cavities of bones.	http://purl.obolibrary.org/obo/UBERON_0002371

Brachial lymph node	The lymph nodes located along the brachial vein that receive drainage from most of the free upper limb and send efferent vessels to the central axillary lymph nodes.	http://purl.obolibrary.org/obo/UBERON_0002525
Bronchoalveolar Lavage Fluid	Bronchoalveolar lavage (BAL; informally, "bronchoalveolar washing") is a medical procedure in which a bronchoscope is passed through the mouth or nose into the lungs and fluid is squirted into a small part of the lung and then collected for examination.	https://en.wikipedia.org/wiki/Bronchoalveolar_lavage
Carbohydrate	Any member of the class of organooxygen compounds that is a polyhydroxy-aldehyde or -ketone or a lactol resulting from their intramolecular condensation (monosaccharides); substances derived from these by reduction of the carbonyl group (alditols), by oxidation of one or more hydroxy groups to afford the corresponding aldehydes, ketones, or carboxylic acids, or by replacement of one or more hydroxy group(s) by a hydrogen atom; and polymeric products arising by intermolecular acetal formation between two or more such molecules (disaccharides, polysaccharides and oligosaccharides). Carbohydrates contain only carbon, hydrogen and oxygen atoms; prior to any oxidation or reduction, most have the empirical formula Cm(H2O)n. Compounds obtained from carbohydrates by substitution, etc., are known as carbohydrate derivatives and may contain other elements. Cyclitols are generally not regarded as carbohydrates.	http://purl.obolibrary.org/obo/CHEBI_16646
Cell culture supernatant	Supernatant of a cell culture is a material entity which contains media, supplements, and secreted products of the cells and becomes the environment of cultivated cell.	http://purl.obolibrary.org/obo/OBI_1000023
Cervical lymph nodes	Lymph nodes found in the neck.	https://en.wikipedia.org/wiki/Cervical_lymph_nodes
Colon	Last portion of the large intestine before it becomes the rectum.	http://purl.obolibrary.org/obo/UBERON_0001155

Colonic Lamina Propria	A lamina propria that is part of a colonic mucosa.	http://purl.obolibrary.org/obo/UBERON_0007177
Cord blood	Blood that remains in the placenta and in the attached umbilical cord after childbirthWP. database_cross_reference: http://en.wikipedia.org/wiki/Cord_blood	http://purl.obolibrary.org/obo/UBERON_0012168
Dendritic cell	CD3-, CD19, CD20, CD14-, CD16-, CD56-, HLA-DR+	http://purl.obolibrary.org/obo/CL_0000451
Dermis	The dermis is a layer of skin between the epidermis (with which it makes up the skin) and subcutaneous tissues, and is composed of two layers, the papillary and reticular dermis.	http://purl.obolibrary.org/obo/UBERON_0002067
DNA	High molecular weight, linear polymers, composed of nucleotides containing deoxyribose and linked by phosphodiester bonds; DNA contain the genetic information of organisms.	http://purl.obolibrary.org/obo/CHEBI_16991
Epithelium	Portion of tissue, that consists of one or more layers of epithelial cells connected to each other by cell junctions and which is underlain by a basal lamina. Examples: simple squamous epithelium, glandular cuboidal epithelium, transitional epithelium, myoepithelium[CARO].	http://purl.obolibrary.org/obo/UBERON_0000483
Fibroblast	A connective tissue cell which secretes an extracellular matrix rich in collagen and other macromolecules. Flattened and irregular in outline with branching processes; appear fusiform or spindle-shaped.	http://purl.obolibrary.org/obo/CL_0000057
Gastric lamina propria	The closest term in Uberson is "Mucosa of the stomach" : The mucosal layer that lines the stomach. It consists of epithelium, lamina propria, and the muscularis mucosae.	http://purl.obolibrary.org/obo/UBERON_0001199
Ileum	The portion of the small intestine that extends from the jejunum to the colon.	http://purl.obolibrary.org/obo/UBERON_0002116
Inguinal lymph node	The lymph nodes located in the groin area.	http://purl.obolibrary.org/obo/UBERON_0001542

Jejunum	The portion of the small intestine that extends from the duodenum to the ileum.	http://purl.obolibrary.org/obo/UBERON_0002115
Kidney	A paired organ of the urinary tract which has the production of urine as its primary function.	http://purl.obolibrary.org/obo/UBERON_0002113
Lipid	'Lipids' is a loosely defined term for substances of biological origin that are soluble in nonpolar solvents. They consist of saponifiable lipids, such as glycerides (fats and oils) and phospholipids, as well as nonsaponifiable lipids, principally steroids.	http://purl.obolibrary.org/obo/CHEBI_18059
Liver	An exocrine gland which secretes bile and functions in metabolism of protein and carbohydrate and fat, synthesizes substances involved in the clotting of the blood, synthesizes vitamin A, detoxifies poisonous substances, stores glycogen, and breaks down worn-out erythrocytes[GO].	http://purl.obolibrary.org/obo/UBERON_0002107
Lung	Respiration organ that develops as an oupocketing of the esophagus.	http://purl.obolibrary.org/obo/UBERON_0002048
Lung lymph node	Bronchopulmonary segment lymph node.	http://purl.obolibrary.org/obo/FMA_68286
Lymph node	Any of the rounded masses of lymphoid tissue that are surrounded by a capsule of connective tissue, are distributed along the lymphatic vessels, and contain numerous lymphocytes which filter the flow of lymph.	http://purl.obolibrary.org/obo/UBERON_0000029
Lymphocyte	A lymphocyte is a leukocyte commonly found in the blood and lymph that has the characteristics of a large nucleus, a neutral staining cytoplasm, and prominent heterochromatin. [database_cross_reference: GOC:add][database_cross_reference: ISBN:0781735149][database_cross_reference: ISBN:0683073696]	http://purl.obolibrary.org/obo/CL_0000542

Macrophage	A mononuclear phagocyte present in variety of tissues, typically differentiated from monocytes, capable of phagocytosing a variety of extracellular particulate material, including immune complexes, microorganisms, and dead cells. Morphology: Diameter 30_M-80 _M, abundant cytoplasm, low N/C ratio, eccentric nucleus. Irregular shape with pseudopods, highly adhesive. Contain vacuoles and phagosomes, may contain azurophilic granules; markers: Mouse and: CD68, in most cases CD11b. Mouse: in most cases F4/80+; role or process: immune, antigen presentation, and remodelling; lineage: hematopoietic, myeloid.	http://purl.obolibrary.org/obo/CL_0000235
Mesenteric lymph node	The lymph nodes located in the mesentery, of which there are 3 classes: ileocolic, juxtaintestinal mesenteric, and central superior group.	http://purl.obolibrary.org/obo/UBERON_0002509
Monocyte	CD3-, CD19, CD20, CD56-, CD14+	http://purl.obolibrary.org/obo/CL_0000576; http://purl.obolibrary.org/obo/CL_0000860
Nasal lavage fluid	Fluid obtained by irrigation or washout of the nasal cavity and nasal mucosa. [database_cross_reference: Mondofacto_Dictionary:http://www.mondofacto.com/facts/dictionary?]	http://purl.obolibrary.org/obo/BTO_0004977
Neutrophil	has_broad_synonym: polynuclear neutrophilic leucocyte; poly; polymorphonuclear leucocyte; PMN; polymorphonuclear neutrophil; polymorphonuclear leukocyte; polynuclear neutrophilic leukocyte Any of the immature or mature forms of a granular leukocyte that in its mature form has a nucleus with three to five lobes connected by slender threads of chromatin, and cytoplasm containing fine inconspicuous granules and stainable by neutral dyes. database_cross_reference: FMA:62860; BTO:0000130; CALOHA:TS-0688 [database_cross_reference: ISBN:0721601464]	http://purl.obolibrary.org/obo/CL_0000775

NK cell	A lymphocyte that can spontaneously kill a variety of target cells without prior antigenic activation via germline encoded activation receptors and also regulate immune responses via cytokine release and direct contact with other cells.	http://purl.obolibrary.org/obo/CL_0000623
Not Specified	Sample Type is not specified or not received. If no Sample Type value is received, then this is the system default value.	
Other	A sample type that is not provided in the preferred values list.	
PBMC	Peripheral Blood Mononuclear Cell- A leukocyte with a single non-segmented nucleus in the mature form.	http://purl.obolibrary.org/obo/CL_0000842
Placenta	Organ of metabolic interchange between fetus and mother, partly of embryonic origin and partly of maternal origin. The fetal portion of the placenta is known as the villous chorion. The maternal portion is known as the decidua basalis. The two portions are held together by anchoring villi that are anchored to the decidua basalis by the cytotrophoblastic shell. database_cross_reference: http://en.wikipedia.org/wiki/Placenta[database_cross_reference: http://www.med.umich.edu/lrc/coursepages/m1/embryology/embryo/06placenta.htm]	http://purl.obolibrary.org/obo/UBERON_0001987
Plasma	Body substance in liquid state contained in the lumen of arterial and venous trees, blood capillary and the cardiac chambers; constitutes the liquid phase of blood.	http://purl.obolibrary.org/obo/UBERON_0001969
Popliteal lymph node	The lymph nodes which drain the legs; contained in the popliteal fossa.	http://purl.obolibrary.org/obo/UBERON_0001543
Protein	A biological macromolecule minimally consisting of one polypeptide chain synthesized at the ribosome.	http://purl.obolibrary.org/obo/CHEBI_36080
Red Blood Cell	A red blood cell. In mammals, mature erythrocytes are biconcave disks containing hemoglobin whose function is to transport oxygen. database_cross_reference: MESH:A11.118.290database_cross_reference: GOC:tfm	http://purl.obolibrary.org/obo/CL_0000232

Saliva	A fluid produced in the oral cavity by salivary glands, typically used in predigestion, but also in other functions.	http://purl.obolibrary.org/obo/UBERON_0001836
Serum	Body substance derived from plasma by the elimination of fibrinogen.	http://purl.obolibrary.org/obo/UBERON_0001977
Skin of body	Nonparenchymatous organ that consists of the dermis and epidermis. Subdivisions of the skin surround various body parts; as a whole, the skin constitutes the external layer of the body.	http://purl.obolibrary.org/obo/UBERON_0002097
Spleen	The organ that functions to filter blood and to store red corpuscles and platelets.	http://purl.obolibrary.org/obo/UBERON_0002106
Stomach	An expanded region of the vertebrate alimentary tract that serves as a food storage compartment and digestive organ. A stomach is lined, in whole or in part by a glandular epithelium.	http://purl.obolibrary.org/obo/UBERON_0000945
Synovial fluid	Transudate contained in the synovial cavity of joints, and in the cavity of tendon sheaths and bursae.	http://purl.obolibrary.org/obo/UBERON_0001090
Synovial tissue	Thin, loose vascular connective tissue that makes up the membranes surrounding joints and the sheaths protecting tendons (particularly flexor tendons in the hands and feet) where they pass over bony prominences.	http://purl.obolibrary.org/obo/UBERON_0007616
T cell	CD3+	http://purl.obolibrary.org/obo/CL_0000084
Thymus	Anatomical structure of largely lymphoid tissue that functions in cell-mediated immunity by being the site where T cells develop.	http://purl.obolibrary.org/obo/UBERON_0002370
Tonsil	Either of the two small almond-shaped masses of lymph tissue found on either side of the oropharynx.	http://purl.obolibrary.org/obo/UBERON_0002372
Umbilical cord blood	Blood that remains in the placenta and in the attached umbilical cord after childbirth[WP]. [database_cross_reference: http://en.wikipedia.org/wiki/Cord_blood]	http://purl.obolibrary.org/obo/UBERON_0012168
Urinary bladder	Distensible musculomembranous organ situated in the anterior part of the pelvic cavity in which urine collects before excretion	http://purl.obolibrary.org/obo/UBERON_0001255

Urine	Excretion that is the output of a kidney database_cross_reference: http://en.wikipedia.org/wiki/Urine[database_cross_reference: https://github.com/geneontology/go-ontology/issues/11025]	http://purl.obolibrary.org/obo/UBERON_0001088
Vagina	A fibromuscular tubular tract leading from the uterus to the exterior of the body in female placental mammals and marsupials, or to the cloaca in female birds, monotremes, and some reptiles[WP]. [database_cross_reference: http://orcid.org/0000-0002-6601-2165] [database_cross_reference: http://en.wikipedia.org/wiki/Vagina]	http://purl.obolibrary.org/obo/UBERON_0000996
Whole blood	Circulating body substance which consists of blood plasma and hemoglobin-carrying red blood cells. Excludes blood analogues (see UBERON:0000179 haemolymphatic fluid).	http://purl.obolibrary.org/obo/UBERON_0000178

34. **lk_source_type**

Name	Description
CONTROL SAMPLE	Sample used to perform quality control of assay results.
EXPSAMPLE	Biological sample that is assayed or measured.
STANDARD CURVE	An analysis product from analyzing the assay result from known quantities and used to interpret the assay result from a sample.

35. **lk_species**

Name	Description	Link	ID
Anas platyrhynchos	Mallard duck	http://www.ncbi.nlm.nih.gov/taxonomy/?term=8839[uid]	8839

Aotus nancymaae	Ma's night monkey	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=37293	37293
Canis lupus familiaris	dog	https://www.ncbi.nlm.nih.gov/taxonomy/?term=9615[uid]	9615
Drosophila melanogaster	Fruit Fly	http://www.ncbi.nlm.nih.gov/taxonomy/?term=7227[uid]	7227
Gallus gallus	Chicken	http://www.ncbi.nlm.nih.gov/taxonomy/?term=9031[uid]	9031
Homo sapiens	Human	http://www.ncbi.nlm.nih.gov/taxonomy/?term=9606[uid]	9606
Macaca fascicularis	Macaca fascicularis	http://www.ncbi.nlm.nih.gov/taxonomy/?term=9541[uid]	9541
Macaca mulatta	Rhesus macaque	http://www.ncbi.nlm.nih.gov/taxonomy/?term=9544[uid]	9544
Mus musculus	Mouse	http://www.ncbi.nlm.nih.gov/taxonomy/?term=10090[uid]	10090

Mus musculus castaneus	Southeastern Asian house mouse	http://www.ncbi.nlm.nih.gov/taxonomy/?term=10091[uid]	10091
Mus spretus	Western wild mouse	http://www.ncbi.nlm.nih.gov/taxonomy/?term=10096[uid]	10096
Mustela putorius furo	domestic ferret	http://www.ncbi.nlm.nih.gov/taxonomy/?term=9669[uid]	9669
Pan troglodytes	Chimpanzee	https://www.ncbi.nlm.nih.gov/taxonomy/?term=9598[uid]	9598
Rattus norvegicus	Rat	http://www.ncbi.nlm.nih.gov/taxonomy/?term=10116[uid]	10116
Rattus rattus	Rat - Brown	http://www.ncbi.nlm.nih.gov/taxonomy/?term=10117[uid]	10117
Sus scrofa domesticus	domestic pig	http://www.ncbi.nlm.nih.gov/taxonomy/?term=9825[uid]	9825

36. **lk_study_file_type**

Name	Description	Link

Adverse Events	Study file type is Adverse Events.	https://immport.org/resources/documentation; https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C41331&ns=NCI_Thesaurus
Assessment Results	Study file type is Assessment Results.	https://immport.org/resources/documentation; https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C25217&ns=NCI_Thesaurus
Case Report Form	Study file type is Case Report Form.	https://immport.org/resources/documentation; https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C40988&ns=NCI_Thesaurus
Concomitant Medications	Study file type is Concomitant Medications.	https://immport.org/resources/documentation; https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C49568&ns=NCI_Thesaurus

Data Dictionary	Study file type is Data Dictionary.	https://immport.org/resources/documentation; https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C49461&ns=NCI_Thesaurus
Demographics	Study file type is Demographics.	https://immport.org/resources/documentation; https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C16495&ns=NCI_Thesaurus
Interventions	Study file type is Interventions.	https://immport.org/resources/documentation; https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C25218&ns=NCI_Thesaurus
Lab Test Results	Study file type is Lab Test Results (e.g. CBC, chemistry, cytokine).	https://immport.org/resources/documentation; https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C36292&ns=NCI_Thesaurus

Medical History Data	Study file type is Medical History Data	https://immport.org/resources/documentation; https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&ns=ncit&code=C18772
Protocol Deviation Data	Study file type is Protocol Deviation Data	https://immport.org/resources/documentation; https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&ns=ncit&code=C50996
Screening Data	Study file type is Screening Data	https://immport.org/resources/documentation; https://nciterms.nci.nih.gov/ncitbrowser/pages/concept_details.jsf?dictionary=NCI_Thesaurus&code=C48262
Study Data	Data associated with a study. For studies at a data curation level 0, this is the default setting for data linked to a study.	https://immport.org/resources/documentation
Study Medication	Study file type is Study Medication.	https://immport.org/resources/documentation; https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C459&ns=NCI_Thesaurus

Study Summary Description	Study Summary Description document.	https://immport.org/resources/documentation
Substance Use	Study file type is Substance Use.	https://immport.org/resources/documentation; https://nciterms.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C49615&ns=NCI_Thesaurus

37. **lk_subject_location**

Name	Description	Link
Afghanistan	A landlocked country that is located approximately in the center of Asia. It is bordered by Pakistan in the south and east Iran in the west, Turkmenistan, Uzbekistan and Tajikistan in the north, and China in the far northeast. Afghanistan is administratively divided into thirty-four (34) provinces (welayats). Each province is then divided into many provincial districts, and each district normally covers a city or several townships.	http://purl.obolibrary.org/obo/GAZ_00006882
Albania	A country in South Eastern Europe. Albania is bordered by Greece to the south-east, Montenegro to the north, Kosovo to the northeast, and the Republic of Macedonia to the east. It has a coast on the Adriatic Sea to the west, and on the Ionian Sea to the southwest. From the Strait of Otranto, Albania is less than 100 km from Italy. Albania is divided into 12 administrative divisions called (Albanian: official qark/qarku, but often prefekture/prefektura Counties), 36 districts (Rrethe) and 351 municipalities (Bashkia) and communes (Komuna).	http://purl.obolibrary.org/obo/GAZ_00002953

Algeria	A country in North Africa. It is bordered by Tunisia in the northeast, Libya in the east, Niger in the southeast, Mali and Mauritania in the southwest, a few km of the Western Sahara in the west, Morocco in the northwest, and the Mediterranean Sea in the north. It divided into 48 provinces (wilayas), 553 districts (dairas) and 1,541 municipalities (communes, baladiyahs).	http://purl.obolibrary.org/obo/GAZ_00000563
Andorra	A small landlocked country in western Europe, located in the eastern Pyrenees mountains and bordered by Spain (Catalonia) and France. Andorra consists of seven communities known as parishes (Catalan: parroquies, singular - parroquia). Until relatively recently, it had only six parishes; the seventh, Escaldes-Engordany, was created in 1978. Some parishes have a further territorial subdivision. Ordino, La Massana and Sant Julia de Loria are subdivided into quarts (quarters), while Canillo is subdivided into veinats (neighborhoods). Those mostly coincide with villages, which are found in all parishes.	http://purl.obolibrary.org/obo/GAZ_00002948
Angola	A country in south-central Africa bordering Namibia to the south, Democratic Republic of the Congo to the north, and Zambia to the east, and with a west coast along the Atlantic Ocean. The exclave province Cabinda has a border with the Republic of the Congo and the Democratic Republic of the Congo.	http://purl.obolibrary.org/obo/GAZ_00001095
Antigua and Barbuda	An island nation located on the eastern boundary of the Caribbean Sea with the Atlantic Ocean.	http://purl.obolibrary.org/obo/GAZ_00006883

Argentina	A South American country, constituted as a federation of twenty-three provinces and an autonomous city. It is bordered by Paraguay and Bolivia in the north, Brazil and Uruguay in the northeast, and Chile in the west and south. The country claims the British controlled territories of the Falkland Islands and South Georgia and the South Sandwich Islands. Argentina also claims 969,464 km2 of Antarctica, known as Argentine Antarctica, overlapping other claims made by Chile and the United Kingdom. Argentina is subdivided into twenty-three provinces (Spanish: provincias, singular provincia) and one federal district (Capital de la Republica or Capital de la Nacion, informally the Capital Federal). The federal district and the provinces have their own constitutions, but exist under a federal system. Provinces are then divided into departments (Spanish: departamentos, singular departamento), except for Buenos Aires Province, which is divided into partidos.	http://purl.obolibrary.org/obo/GAZ_00002928
Armenia	A landlocked mountainous country in Eurasia between the Black Sea and the Caspian Sea in the Southern Caucasus. It borders Turkey to the west, Georgia to the north, Azerbaijan to the east, and Iran and the Nakhchivan exclave of Azerbaijan to the south. A transcontinental country at the juncture of Eastern Europe and Western Asia. A former republic of the Soviet Union. Armenia is divided into ten marzes (provinces, singular marz), with the city (kaghak) of Yerevan having special administrative status as the country's capital.	http://purl.obolibrary.org/obo/GAZ_00004094

Australia	A country in the southern hemisphere comprising the mainland of the world's smallest continent, the major island of Tasmania, and a number of other islands in the Indian and Pacific Oceans. The neighbouring countries are Indonesia, East Timor, and Papua New Guinea to the north, the Solomon Islands, Vanuatu, and New Caledonia to the north-east, and New Zealand to the south-east. Australia has six states, two major mainland territories, and other minor territories.	http://purl.obolibrary.org/obo/GAZ_00000463
Austria	A landlocked country in Central Europe. It borders both Germany and the Czech Republic to the north, Slovakia and Hungary to the east, Slovenia and Italy to the south, and Switzerland and Liechtenstein to the west. The capital is the city of Vienna on the Danube River. Austria is divided into nine states (Bundeslander). These states are then divided into districts (Bezirke) and cities (Statutarstadte). Districts are subdivided into municipalities (Gemeinden). Cities have the competencies otherwise granted to both districts and municipalities.	http://purl.obolibrary.org/obo/GAZ_00002942
Azerbaijan	A country in the he South Caucasus region of Eurasia, it is bounded by the Caspian Sea to the east, Russia to the north, Georgia to the northwest, Armenia to the west, and Iran to the south. The Azerbaijani exclave of Nakhchivan is bordered by Armenia to the north and east, Iran to the south and west, and Turkey to the northwest. Nagorno-Karabakh, along with 7 other districts in Azerbaijan's southwest, have been controlled by Armenia since the end of the Nagorno-Karabakh War in 1994. Azerbaijan is divided into 59 rayons 11 city districts (saharlar), and one autonomous republic (muxtar respublika).	http://purl.obolibrary.org/obo/GAZ_00004941

Bahamas	A country consisting of two thousand cays and seven hundred islands that form an archipelago. It is located in the Atlantic Ocean, southeast of Florida and the United States, north of Cuba, the island of Hispanola and the Caribbean, and northwest of the British overseas territory of the Turks and Caicos Islands. It is divided into 32 districts, plus New Providence, whose affairs are handled directly by the central government.	http://purl.obolibrary.org/obo/GAZ_00002733
Bahrain	A borderless island country in the Persian Gulf. Saudi Arabia lies to the west and is connected to Bahrain by the King Fahd Causeway, and Qatar is to the south across the Gulf of Bahrain. Bahrain is split into five governorates.	http://purl.obolibrary.org/obo/GAZ_00005281
Bangladesh	A country in South Asia. It is bordered by India on all sides except for a small border with Myanmar to the far southeast and by the Bay of Bengal to the south. Bangladesh is divided into six administrative divisions. Divisions are subdivided into districts (zila). There are 64 districts in Bangladesh, each further subdivided into upazila (subdistricts) or thana ("police stations").	http://purl.obolibrary.org/obo/GAZ_00003750
Barbados	Barbados	http://purl.obolibrary.org/obo/GAZ_00001251
Belarus	A landlocked country in Eastern Europe, that borders Russia to the north and east, Ukraine to the south, Poland to the west, and Lithuania and Latvia to the north. Its capital is Minsk. Belarus is divided into six voblasts, or provinces. Voblasts are further subdivided into raions (commonly translated as districts or regions). As of 2002, there are six voblasts, 118 raions, 102 towns and 108 urbanized settlements. Minsk is given a special status, due to the city serving as the national capital.	http://purl.obolibrary.org/obo/GAZ_00006886

Belgium	A country in northwest Europe. Belgium shares borders with France (620 km), Germany (167 km), Luxembourg (148 km) and the Netherlands (450 km). The Flemish Region (Flanders) and the Walloon Region (Wallonia) each comprise five provinces; the third region, Brussels-Capital Region, is not a province, nor does it contain any Together, these comprise 589 municipalities, which in general consist of several sub-municipalities (which were independent municipalities before the municipal merger operation mainly in 1977).	http://purl.obolibrary.org/obo/GAZ_00002938
Belize	A country in Central America. It is the only officially English speaking country in the region. Belize was a British colony for more than a century and was known as British Honduras until 1973. It became an independent nation within The Commonwealth in 1981. Belize is divided into 6 districts, which are further divided into 31 constituencies.	http://purl.obolibrary.org/obo/GAZ_00002934
Benin	A country in Western Africa. It borders Togo to the west, Nigeria to the east and Burkina Faso and Niger to the north; its short coastline to the south leads to the Bight of Benin. Its capital is Porto Novo, but the seat of government is Cotonou. Benin is divided into 12 departments and subdivided into 77 communes.	http://purl.obolibrary.org/obo/GAZ_00000904
Bermuda	A British overseas territory in the North Atlantic Ocean. Located off the east coast of the United States, it is situated around 1770 km NE of Miami, Florida and 1350 km S of Halifax, Nova Scotia. Comprised of approximately 138 islands.	http://purl.obolibrary.org/obo/GAZ_00001264

Bhutan	A landlocked nation in South Asia. It is located amidst the eastern end of the Himalaya Mountains and is bordered to the south, east and west by India and to the north by Tibet. Bhutan is separated from Nepal by the Indian State of Sikkim. Bhutan is divided into four dzongdey (administrative zones). Each dzongdey is further divided into dzongkhag (districts). There are twenty dzongkhag in Bhutan. Large dzongkhags are further divided into subdistricts known as dungkhag. At the basic level, groups of villages form a constituency called gewog.	http://purl.obolibrary.org/obo/GAZ_00003920
Bolivia	A landlocked country in central South America. It is bordered by Brazil on the north and east, Paraguay and Argentina on the south, and Chile and Peru on the west. Bolivia is divided into 9 departments (Spanish: departamentos). Each of the departments is subdivided into provinces (provincias), which are further subdivided into municipalities (municipios).	http://purl.obolibrary.org/obo/GAZ_00002511
Borneo	Borneo	http://purl.obolibrary.org/obo/GAZ_00025355
Bosnia and Herzegovina	A country on the Balkan peninsula of Southern Europe. Bordered by Croatia to the north, west and south, Serbia to the east, and Montenegro to the south, Bosnia and Herzegovina is mostly landlocked, except for 26 km of the Adriatic Sea coastline. Bosnia and Herzegovina is now divided into three political regions of which one, the Brcko District is part of the other two, the Federacija Bosne i Hercegovine and the Republika Srpska. All three have an equal constitutional status on the whole territory of Bosnia and Herzegovina.	http://purl.obolibrary.org/obo/GAZ_00006887
Botswana	A landlocked nation in Southern Africa. It is bordered by South Africa to the south and southeast, Namibia to the west, Zambia to the north, and Zimbabwe to the northeast. Botswana is divided into nine districts, which are subdivided into a total twenty-eight subdistricts.	http://purl.obolibrary.org/obo/GAZ_00001097

Brazil	A country in South America. Bordered by the Atlantic Ocean and by Venezuela, Suriname, Guyana and the department of French Guiana to the north, Colombia to the northwest, Bolivia and Peru to the west, Argentina and Paraguay to the southwest, and Uruguay to the south. Federation of twenty-six states (estados) and one federal district (Distrito Federal). The states are subdivided into municipalities. For statistical purposes, the States are grouped into five main regions: North, Northeast, Central-West, Southeast and South.	http://purl.obolibrary.org/obo/GAZ_00002828
Brunei Darussalam	A country located on the north coast of the island of Borneo, in Southeast Asia. Apart from its coastline with the South China Sea it is completely surrounded by the State of Sarawak, Malaysia, and in fact it is separated into two parts by Limbang, which is part of Sarawak. Brunei is divided into four districts (daerah), the districts are subdivided into thirty-eight mukims, which are then divided into kampong (villages).	http://purl.obolibrary.org/obo/GAZ_00003901
Bulgaria	A country in Southeastern Europe, borders five other countries; Romania to the north (mostly along the Danube), Serbia and the Republic of Macedonia to the west, and Greece and Turkey to the south. The Black Sea defines the extent of the country to the east. Since 1999, it has consisted of twenty-eight provinces. The provinces subdivide into 264 municipalities.	http://purl.obolibrary.org/obo/GAZ_00002950
Burkina Faso	A landlocked nation in West Africa. It is surrounded by six countries: Mali to the north, Niger to the east, Benin to the south east, Togo and Ghana to the south, and Cote d'Ivoire to the south west. Burkina Faso is divided into thirteen regions, forty-five provinces, and 301 departments (communes).	http://purl.obolibrary.org/obo/GAZ_00000905

Burundi	A small country in the Great Lakes region of Africa. It is bordered by Rwanda on the north, Tanzania on the south and east, and the Democratic Republic of the Congo on the west. Although the country is landlocked, much of its western border is adjacent to Lake Tanganyika. Burundi is divided into 17 provinces, 117 communes, and 2,638 collines.	http://purl.obolibrary.org/obo/GAZ_00001090
Cambodia	A country in Southeast Asia. The country borders Thailand to its west and northwest, Laos to its northeast, and Vietnam to its east and southeast. In the south it faces the Gulf of Thailand.	http://purl.obolibrary.org/obo/GAZ_00006888
Cameroon	A country of central and western Africa. It borders Nigeria to the west; Chad to the northeast; the Central African Republic to the east; and Equatorial Guinea, Gabon, and the Republic of the Congo to the south. Cameroon's coastline lies on the Bight of Bonny, part of the Gulf of Guinea and the Atlantic Ocean. The Republic of Cameroon is divided into ten provinces and 58 divisions or departments. The divisions are further sub-divided into sub-divisions (arrondissements) and districts.	http://purl.obolibrary.org/obo/GAZ_00001093
Canada	A country occupying most of northern North America, extending from the Atlantic Ocean in the east to the Pacific Ocean in the west and northward into the Arctic Ocean. Canada is a federation composed of ten provinces and three territories; in turn, these may be grouped into regions. Western Canada consists of British Columbia and the three Prairie provinces (Alberta, Saskatchewan, and Manitoba). Central Canada consists of Quebec and Ontario. Atlantic Canada consists of the three Maritime provinces (New Brunswick, Prince Edward Island, and Nova Scotia), along with Newfoundland and Labrador. Eastern Canada refers to Central Canada and Atlantic Canada together. Three territories (Yukon, Northwest Territories, and Nunavut) make up Northern Canada.	http://purl.obolibrary.org/obo/GAZ_00002560

Cape Verde	A republic located on an archipelago in the Macaronesia ecoregion of the North Atlantic Ocean, off the western coast of Africa. Cape Verde is divided into 22 municipalities (concelhos), and subdivided into 32 parishes (freguesias).	http://purl.obolibrary.org/obo/GAZ_00001227
Central African Republic	A landlocked country in Central Africa. It borders Chad in the north, Sudan in the east, the Republic of the Congo and the Democratic Republic of the Congo in the south, and Cameroon in the west. The Central African Republic is divided into 14 administrative prefectures (prefectures), along with 2 economic prefectures (prefectures economiques) and one autonomous commune. The prefectures are further divided into 71 sub-prefectures (sous-prefectures).	http://purl.obolibrary.org/obo/GAZ_00001089
Chad	A landlocked country in central Africa. It is bordered by Libya to the north, Sudan to the east, the Central African Republic to the south, Cameroon and Nigeria to the southwest, and Niger to the west. Chad is divided into 18 regions. The departments are divided into 200 sub-prefectures, which are in turn composed of 446 cantons. This is due to change.	http://purl.obolibrary.org/obo/GAZ_00000586

Chile	A country in South America occupying a long and narrow coastal strip wedged between the Andes mountains and the Pacific Ocean. The Pacific forms the country's entire western border, with Peru to the north, Bolivia to the northeast, Argentina to the east, and the Drake Passage at the country's southernmost tip. Chile claims 1,250,000 km2 of territory in Antarctica. Chile is divided into 15 regions. Every region is further divided into provinces. Finally each province is divided into communes. Each region is designated by a name and a Roman numeral, assigned from north to south. The only exception is the region housing the nation's capital, which is designated RM, that stands for Region Metropolitana (Metropolitan Region). Two new regions were created in 2006: Arica-Parinacota in the north, and Los Rios in the south. Both became operative in 2007-10.	http://purl.obolibrary.org/obo/GAZ_00002825
China	A large country in Northeast Asia. China borders 14 nations (counted clockwise from south): Vietnam, Laos, Burma, India, Bhutan, Nepal, Pakistan, Afghanistan, Tajikistan, Kyrgyzstan, Kazakhstan, Russia, Mongolia and North Korea. Additionally the border between PRC and ROC is located in territorial waters. The People's Republic of China has administrative control over twenty-two provinces and considers Taiwan to be its twenty-third province. There are also five autonomous regions, each with a designated minority group; four municipalities; and two Special Administrative Regions that enjoy considerable autonomy. The People's Republic of China administers 33 province-level regions, 333 prefecture-level regions, 2,862 county-level regions, 41,636 township-level regions, and several village-level regions.	http://purl.obolibrary.org/obo/GAZ_00002845

Colombia	A country located in the northwestern region of South America. Colombia is bordered to the east by Venezuela and Brazil; to the south by Ecuador and Peru; to the North by the Atlantic Ocean, through the Caribbean Sea; to the north-west by Panama; and to the west by the Pacific Ocean. Besides the countries in South America, the Republic of Colombia is recognized to share maritime borders with the Caribbean countries of Jamaica, Haiti, the Dominican Republic and the Central American countries of Honduras, Nicaragua, and Costa Rica. Colombia is divided into 32 departments and one capital district which is treated as a department. There are in total 10 districts assigned to cities in Colombia including Bogota, Barranquilla, Cartagena, Santa Marta, Tunja, Cucuta, Popayan, Buenaventura, Tumaco and Turbo. Colombia is also subdivided into some municipalities which form departments, each with a municipal seat capital city assigned. Colombia is also subdivided into corregimientos which form municipalities.	http://purl.obolibrary.org/obo/GAZ_00002929
Comoros	An island nation in the Indian Ocean, located off the eastern coast of Africa on the northern end of the Mozambique Channel between northern Madagascar and northeastern Mozambique.	http://purl.obolibrary.org/obo/GAZ_00005820
Cook Islands	A self-governing parliamentary democracy in free association with New Zealand. The fifteen small islands in this South Pacific Ocean country have a total land area of 240 km2, but the Cook Islands Exclusive Economic Zone (EEZ) covers 1.8 million km2 of ocean.	http://purl.obolibrary.org/obo/GAZ_00053798
Costa Rica	A republic in Central America, bordered by Nicaragua to the north, Panama to the east-southeast, the Pacific Ocean to the west and south, and the Caribbean Sea to the east. Costa Rica is composed of seven provinces, which in turn are divided into 81 cantons.	http://purl.obolibrary.org/obo/GAZ_00002901

Croatia	A country at the crossroads of the Mediterranean, Central Europe, and the Balkans. Its capital is Zagreb. Croatia borders with Slovenia and Hungary to the north, Serbia to the northeast, Bosnia and Herzegovina to the east, Montenegro to the far southeast, and the Adriatic Sea to the south. Croatia is divided into 21 counties (zupanija) and the capital Zagreb's city district.	http://purl.obolibrary.org/obo/GAZ_00002719
Cuba	A country that consists of the island of Cuba (the largest and second-most populous island of the Greater Antilles), Isla de la Juventud and several adjacent small islands. Fourteen provinces and one special municipality (the Isla de la Juventud) now compose Cuba.	http://purl.obolibrary.org/obo/GAZ_00003762
Curacao	One of five island areas of the Netherlands Antilles.	http://purl.obolibrary.org/obo/GAZ_00012582
Czech Republic	A landlocked country in Central Europe. It has borders with Poland to the north, Germany to the northwest and southwest, Austria to the south, and Slovakia to the east. The capital and largest city is Prague. The country is composed of the historic regions of Bohemia and Moravia, as well as parts of Silesia. Since 2000, the Czech Republic is divided into thirteen regions (kraje, singular kraj) and the capital city of Prague. The older seventy-six districts (okresy, singular okres) including three 'statutory cities' (without Prague, which had special status) were disbanded in 1999 in an administrative reform; they remain as territorial division and seats of various branches of state administration. Since 2003-01-01, the regions have been divided into around 203 Municipalities with Extended Competence (unofficially named "Little Districts" (Czech: 'male okresy') which took over most of the administration of the former District Authorities. Some of these are further divided into Municipalities with Commissioned Local Authority. However, the old districts still exist as territorial units and remain as seats of some of the offices.	http://purl.obolibrary.org/obo/GAZ_00002954

Democratic Republic of the Congo	A country of central Africa. It borders the Central African Republic and Sudan on the north, Uganda, Rwanda, and Burundi on the east, Zambia and Angola on the south, the Republic of the Congo on the west, and is separated from Tanzania by Lake Tanganyika on the east. The country enjoys access to the ocean through a 40 km stretch of Atlantic coastline at Muanda and the roughly 9 km wide mouth of the Congo river which opens into the Gulf of Guinea. Congo Kinshasa is now divided into 11 Provinces, to be redistributed into 25 Provinces from 2.2009. Each Province is divided into Zones.	http://purl.obolibrary.org/obo/GAZ_00001086
Denmark	A nation situated in Scandinavia in northern Europe (Metropolitan Denmark) plus its two autonomous provinces, Greenland and The Faroe Islands. Denmark is divided into five regions and a total of 98 municipalities, plus two autonomous provinces.	http://purl.obolibrary.org/obo/GAZ_00002635
Djibouti	A country in eastern Africa. Djibouti is bordered by Eritrea in the north, Ethiopia in the west and south, and Somalia in the southeast. The remainder of the border is formed by the Red Sea and the Gulf of Aden. On the other side of the Red Sea, on the Arabian Peninsula, 20 km from the coast of Djibouti, is Yemen. The capital of Djibouti is the city of Djibouti. Djibouti is divided into 5 regions and one city. It is further subdivided into 11 districts.	http://purl.obolibrary.org/obo/GAZ_00000582
Dominica	An island nation in the Caribbean Sea. Dominica is divided into ten parishes.	http://purl.obolibrary.org/obo/GAZ_00006890

Dominican Republic	A country in the West Indies that occupies the E two-thirds of the Hispaniola island. The Dominican Republic's shores are washed by the Atlantic Ocean to the north and the Caribbean Sea to the south. The Mona Passage, a channel about 130 km wide, separates the country (and the Hispaniola) from Puerto Rico. The Dominican Republic is divided into 31 provinces. Additionally, the national capital, Santo Domingo, is contained within its own Distrito Nacional (National District). The provinces are divided into municipalities (municipios; singular municipio).	http://purl.obolibrary.org/obo/GAZ_00003952
Ecuador	A country in South America, bordered by Colombia on the north, by Peru on the east and south, and by the Pacific Ocean to the west. The country also includes the Galapagos Islands (Archipelago de Colon) in the Pacific, about 965 km west of the mainland. Ecuador is divided into 24 provinces, divided into 199 cantons and subdivided into parishes (or parroquias).	http://purl.obolibrary.org/obo/GAZ_00002912
Egypt	A country in North Africa that includes the Sinai Peninsula, a land bridge to Asia. Egypt borders Libya to the west, Sudan to the south, and the Gaza Strip and Israel to the east. The northern coast borders the Mediterranean Sea and the island of Cyprus; the eastern coast borders the Red Sea. Egypt is divided into 26 governorates (in Arabic, called muhafazat, singular muhafazah). The governorates are further divided into regions (markazes).	http://purl.obolibrary.org/obo/GAZ_00003934
El Salvador	A country in Central America, bordering the Pacific Ocean between Guatemala and Honduras. El Salvador is divided into 14 departments (departamentos), which, in turn, are subdivided into 267 municipalities (municipios).	http://purl.obolibrary.org/obo/GAZ_00002935

England	The largest and most populous constituent country of the United Kingdom of Great Britain and Northern Ireland. The subdivisions of England consists of as many as four levels of subnational division and at some levels there are a variety of types of administrative entity. They have been created for the purposes of local government in England.	http://purl.obolibrary.org/obo/GAZ_00002641
Equatorial Guinea	A country in Central Africa. It is one of the smallest countries in continental Africa, and comprises two regions: Rio Muni, continental region including several offshore islands; and Insular Region containing Annobon island in the South Atlantic Ocean, and Bioko island (formerly Fernando Po) that contains the capital, Malabo. Equatorial Guinea is divided into seven provinces which are divided into districts.	http://purl.obolibrary.org/obo/GAZ_00001091
Eritrea	A country situated in northern East Africa. It is bordered by Sudan in the west, Ethiopia in the south, and Djibouti in the southeast. The east and northeast of the country have an extensive coastline on the Red Sea, directly across from Saudi Arabia and Yemen. The Dahlak Archipelago and several of the Hanish Islands are part of Eritrea. Eritrea is divided into six regions (zobas) and subdivided into districts ("sub-zobas").	http://purl.obolibrary.org/obo/GAZ_00000581

Estonia	A country in Northern Europe. Estonia has land borders to the south with Latvia and to the east with Russia. It is separated from Finland in the north by the Gulf of Finland and from Sweden in the west by the Baltic Sea. Estonia is divided into 15 counties. (maakonnad; sing. - maakond). Estonian counties are divided into rural (vallad, singular vald) and urban (linnad, singular linn; alevid, singular alev; alevikud, singular alevik) municipalities. The municipalities comprise populated places (asula or asustusuksus) - various settlements and territorial units that have no administrative function. A group of populated places form a rural municipality with local administration. Most towns constitute separate urban municipalities, while some have joined with surrounding rural municipalities.	http://purl.obolibrary.org/obo/GAZ_00002959
Ethiopia	A country situated in the Horn of Africa that has been landlocked since the independence of its northern neighbor Eritrea in 1993. Apart from Eritrea to the north, Ethiopia is bordered by Sudan to the west, Kenya to the south, Djibouti to the northeast, and Somalia to the east. Since 1996 Ethiopia has had a tiered government system consisting of a federal government overseeing ethnically-based regional states, zones, districts (woredas), and neighborhoods (kebele). It is divided into nine ethnically-based administrative states (kililoch, singular kilil) and subdivided into sixty-eight zones and two chartered cities (astedader akababiwoch, singular astedader akababi): Addis Ababa and Dire Dawa. It is further subdivided into 550 woredas and six special woredas.	http://purl.obolibrary.org/obo/GAZ_00000567
Fiji	An island nation in the South Pacific Ocean east of Vanuatu, west of Tonga and south of Tuvalu. The country occupies an archipelago of about 322 islands, of which 106 are permanently inhabited, and 522 islets. The two major islands, Viti Levu and Vanua Levu, account for 87% of the population.	http://purl.obolibrary.org/obo/GAZ_00006891

Finland	A Nordic country situated in the Fennoscandian region of Northern Europe. It has borders with Sweden to the west, Russia to the east, and Norway to the north, while Estonia lies to its south across the Gulf of Finland. The capital city is Helsinki. Finland is divided into six administrative provinces (laani, plural laanit). These are divided into 20 regions (maakunt), 77 subregions (seutukunta) and then into municipalities (kunta).	http://purl.obolibrary.org/obo/GAZ_00002937
Gabon	A country in west central Africa sharing borders with Equatorial Guinea, Cameroon, Republic of the Congo and the Gulf of Guinea. The capital and largest city is Libreville. Gabon is divided into 9 provinces and further divided into 37 departments.	http://purl.obolibrary.org/obo/GAZ_00001092
Gambia	A country in Western Africa. It is the smallest country on the African continental mainland and is bordered to the north, east, and south by Senegal, and has a small coast on the Atlantic Ocean in the west. Flowing through the centre of the country and discharging to the Atlantic Ocean is the Gambia River. The Gambia is divided into five divisions and one city (Banjul). The divisions are further subdivided into 37 districts.	http://purl.obolibrary.org/obo/GAZ_00000907

Georgia	A Eurasian country in the Caucasus located at the east coast of the Black Sea. In the north, Georgia has a 723 km common border with Russia, specifically with the Northern Caucasus federal district. The following Russian republics/subdivisions: from west to east: border Georgia: Krasnodar Krai, Karachay-Cherkessia, Kabardino-Balkaria, North Ossetia-Alania, Ingushetia, Chechnya, Dagestan. Georgia also shares borders with Azerbaijan (322 km) to the south-east, Armenia (164 km) to the south, and Turkey (252 km) to the south-west. It is a transcontinental country, located at the juncture of Eastern Europe and Western Asia. Georgia is divided into 9 regions, 2 autonomous republics (avtonomiuri respublika), and 1 city (k'alak'i). The regions are further subdivided into 69 districts (raioni).	http://purl.obolibrary.org/obo/GAZ_00004942
Germany	A country in Central Europe. It is bordered to the north by the North Sea, Denmark, and the Baltic Sea; to the east by Poland and the Czech Republic; to the south by Austria and Switzerland; and to the west by France, Luxembourg, Belgium, and the Netherlands. Germany comprises 16 states (Lander, Bundeslander), which are further subdivided into 439 districts (Kreise/Landkreise) and cities (kreisfreie Stadte).	http://purl.obolibrary.org/obo/GAZ_00002646
Ghana	A country in West Africa. It borders Cote d'Ivoire to the west, Burkina Faso to the north, Togo to the east, and the Gulf of Guinea to the south. Ghana is a divided into 10 regions, subdivided into a total of 138 districts.	http://purl.obolibrary.org/obo/GAZ_00000908

Greece	A country in southeastern Europe, situated on the southern end of the Balkan Peninsula. It has borders with Albania, the former Yugoslav Republic of Macedonia and Bulgaria to the north, and Turkey to the east. The Aegean Sea lies to the east and south of mainland Greece, while the Ionian Sea lies to the west. Both parts of the Eastern Mediterranean basin feature a vast number of islands. Greece consists of thirteen peripheries subdivided into a total of fifty-one prefectures (nomoi, singular nomos). There is also one autonomous area, Mount Athos, which borders the periphery of Central Macedonia.	http://purl.obolibrary.org/obo/GAZ_00002945
Greenland	A self-governing Danish province located between the Arctic and Atlantic Oceans, east of the Canadian Arctic Archipelago.	http://purl.obolibrary.org/obo/GAZ_00001507
Grenada	Grenada	http://purl.obolibrary.org/obo/GAZ_02000573
Guatemala	A country in Central America bordered by Mexico to the northwest, the Pacific Ocean to the southwest, Belize and the Caribbean Sea to the northeast, and Honduras and El Salvador to the southeast. Guatemala is divided into 22 departments (departamentos) and sub-divided into about 332 municipalities (municipios).	http://purl.obolibrary.org/obo/GAZ_00002936
Guinea	A nation in West Africa, formerly known as French Guinea. Guinea's territory has a curved shape, with its base at the Atlantic Ocean, inland to the east, and turning south. The base borders Guinea-Bissau and Senegal to the north, and Mali to the north and north-east; the inland part borders Cote d'Ivoire to the south-east, Liberia to the south, and Sierra Leone to the west of the southern tip.	http://purl.obolibrary.org/obo/GAZ_00000909

Guinea-Bissau	A country in western Africa, and one of the smallest nations in continental Africa. It is bordered by Senegal to the north, and Guinea to the south and east, with the Atlantic Ocean to its west. Formerly the Portuguese colony of Portuguese Guinea, upon independence, the name of its capital, Bissau, was added to the country's name in order to prevent confusion between itself and the Republic of Guinea.	http://purl.obolibrary.org/obo/GAZ_00000910
Guyana	A country in the N of South America. Guyana lies north of the equator, in the tropics, and is located on the Atlantic Ocean. Guyana is bordered to the east by Suriname, to the south and southwest by Brazil and to the west by Venezuela. Guyana is divided into 10 regions. The regions of Guyana are divided into 27 neighborhood councils.	http://purl.obolibrary.org/obo/GAZ_00002522
Haiti	A country located in the Greater Antilles archipelago on the Caribbean island of Hispaniola, which it shares with the Dominican Republic. Haiti is divided into 10 departments. The departments are further divided into 41 arrondissements, and 133 communes which serve as second and third level administrative divisions.	http://purl.obolibrary.org/obo/GAZ_00003953
Honduras	A republic in Central America. The country is bordered to the west by Guatemala, to the southwest by El Salvador, to the southeast by Nicaragua, to the south by the Pacific Ocean at the Gulf of Fonseca, and to the north by the Gulf of Honduras, a large inlet of the Caribbean Sea. Honduras is divided into 18 departments. The capital city is Tegucigalpa Central District of the department of Francisco Morazan.	http://purl.obolibrary.org/obo/GAZ_00002894

Hungary	A landlocked country in the Carpathian Basin of Central Europe, bordered by Austria, Slovakia, Ukraine, Romania, Serbia, Croatia, and Slovenia. Its capital is Budapest. Hungary is divided into 19 counties (megyek, singular: megye). In addition, the capital city (fovaros), Budapest, is independent of any county government. The counties are further subdivided into 173 subregions (kistersegek), and Budapest is comprised of its own subregion. Since 1996, the counties and City of Budapest have been grouped into 7 regions for statistical and development purposes. These seven regions constitute NUTS second-level units of Hungary.	http://purl.obolibrary.org/obo/GAZ_00002952
Iceland	A country in northern Europe, comprising the island of Iceland and its outlying islands in the North Atlantic Ocean between the rest of Europe and Greenland.	http://purl.obolibrary.org/obo/GAZ_00000843
India	A country in South Asia. Bounded by the Indian Ocean on the south, the Arabian Sea on the west, and the Bay of Bengal on the east, India has a coastline of 7,517 km. It borders Pakistan to the west; China, Nepal, and Bhutan to the north-east; and Bangladesh and Burma to the east. India is in the vicinity of Sri Lanka, the Maldives, and Indonesia in the Indian Ocean. India is a federal republic of twenty-eight states and seven Union Territories. Each state or union territory is divided into basic units of government and administration called districts. There are nearly 600 districts in India. The districts in turn are further divided into tehsils and eventually into villages.	http://purl.obolibrary.org/obo/GAZ_00002839

Indonesia	An archipelagic state in Southeast Asia. The country shares land borders with Papua New Guinea, East Timor and Malaysia. Other neighboring countries include Singapore, the Philippines, Australia, and the Indian territory of the Andaman and Nicobar Islands. Indonesia consists of 33 provinces, five of which have special status. The provinces are subdivided into regencies (kabupaten, distrik in Papua and West Papua Provinces) and cities (kota), which are further subdivided into subdistricts (kecamatan), and again into village groupings (either desa or kelurahan).	http://purl.obolibrary.org/obo/GAZ_00003727
Iran	A country in Central Eurasia. Iran is bounded by the Gulf of Oman and the Persian Gulf to the south and the Caspian Sea to its north. It borders Armenia, Azerbaijan, Turkmenistan to the north, Afghanistan and Pakistan to the east, and Turkey and Iraq to the west. Iran is divided into 30 provinces (ostan). The provinces are divided into counties (shahrestan), and subdivided into districts (bakhsh) and sub-districts (dehestan).	http://purl.obolibrary.org/obo/GAZ_00004474
Iraq	A country in the Middle East spanning most of the northwestern end of the Zagros mountain range, the eastern part of the Syrian Desert and the northern part of the Arabian Desert. It shares borders with Kuwait and Saudi Arabia to the south, Jordan to the west, Syria to the northwest, Turkey to the north, and Iran to the east. It has a very narrow section of coastline at Umm Qasr on the Persian Gulf. There are two major flowing rivers: the Tigris and the Euphrates. Iraq is divided into 18 governorates (or provinces) (muhafazah). The governorates are divided into qadhas (or districts).	http://purl.obolibrary.org/obo/GAZ_00004483

Israel	A country in Western Asia located on the eastern edge of the Mediterranean Sea. It borders Lebanon in the north, Syria in the northeast, Jordan in the east, and Egypt on the southwest. The West Bank and Gaza Strip, which are partially administrated by the Palestinian National Authority, are also adjacent. The State of Israel is divided into six main administrative districts, known as mehozot (singular mahoz). Districts are further divided into fifteen sub-districts known as nafot (singular: nafa), which are themselves partitioned into fifty natural regions.	http://purl.obolibrary.org/obo/GAZ_00002476
Italy	A country located on the Italian Peninsula in Southern Europe, and on the two largest islands in the Mediterranean Sea, Sicily and Sardinia. Italy shares its northern Alpine boundary with France, Switzerland, Austria and Slovenia. The independent states of San Marino and the Vatican City are enclaves within the Italian Peninsula, while Campione d'Italia is an Italian exclave in Switzerland. Italy is subdivided into 20 regions (regioni, singular regione). Five of these regions have a special autonomous status that enables them to enact legislation on some of their local matters. It is further divided into 109 provinces (province) and 8,101 municipalities (comuni).	http://purl.obolibrary.org/obo/GAZ_00002650
Ivory Coast	A country in West Africa. It borders Liberia and Guinea to the west, Mali and Burkina Faso to the north, Ghana to the east, and the Gulf of Guinea to the south. Cote d'Ivoire is divided into nineteen regions (regions). The regions are further divided into 58 departments.	http://purl.obolibrary.org/obo/GAZ_00000906
Jamaica	A nation of the Greater Antilles. Jamaica is divided into 14 parishes, which are grouped into three historic counties that have no administrative relevance.	http://purl.obolibrary.org/obo/GAZ_00003781
Japan	An island country in East Asia. Located in the Pacific Ocean, it lies to the east of China, Korea and Russia, stretching from the Sea of Okhotsk in the north to the East China Sea in the south.	http://purl.obolibrary.org/obo/GAZ_00002747

Java	An island of Indonesia and the site of its capital city, Jakarta. It lies between Sumatra to the northwest and Bali to the east. Borneo lies to the north and Christmas Island to the south. Java is almost entirely of volcanic origin; it contains no fewer than thirty-eight mountains forming an east-west spine which have at one time or another been active volcanoes.	http://purl.obolibrary.org/obo/GAZ_00024383
Jordan	A country in Southwest Asia, bordered by Syria to the north, Iraq to the north-east, Israel and the West Bank to the west, and Saudi Arabia to the east and south. It shares the coastlines of the Dead Sea, and the Gulf of Aqaba with Israel, Saudi Arabia, and Egypt. Jordan is divided into 12 provinces called governorates. The Governorates are subdivided into approximately fifty-two nahias.	http://purl.obolibrary.org/obo/GAZ_00002473
Kazakhstan	A country in Central Asia and Europe. It is bordered by Russia, Kyrgyzstan, Turkmenistan, Uzbekistan and China. The country also borders on a significant part of the Caspian Sea. Kazakhstan is divided into 14 provinces and two municipal districts. The provinces of Kazakhstan are divided into raions.	http://purl.obolibrary.org/obo/GAZ_00004999
Kenya	A country in Eastern Africa. It is bordered by Ethiopia to the north, Somalia to the east, Tanzania to the south, Uganda to the west, and Sudan to the northwest, with the Indian Ocean running along the southeast border. Kenya comprises eight provinces each headed by a Provincial Commissioner (centrally appointed by the president). The provinces (mkoa singular mikoa plural in Swahili) are subdivided into districts (wilaya). There were 69 districts as of 1999 census. Districts are then subdivided into 497 divisions (taarafa). The divisions are then subdivided into 2,427 locations (kata) and then 6,612 sublocations (kata ndogo). The City of Nairobi enjoys the status of a full administrative province.	http://purl.obolibrary.org/obo/GAZ_00001101

Kiribati	An island nation located in the central tropical Pacific Ocean. It is composed of 32 atolls and one raised coral island dispersed over 3,500,000 km2 straddling the equator and bordering the International Date Line to the east. It is divided into three island groups which have no administrative function, including a group which unites the Line Islands and the Phoenix Islands (ministry at London, Christmas). Each inhabited island has its own council (three councils on Tarawa: Betio, South-Tarawa, North-Tarawa; two councils on Tabiteuea).	http://purl.obolibrary.org/obo/GAZ_00006894
Kosovo	A country on the Balkan Peninsula. Kosovo borders Central Serbia to the north and east, Montenegro to the northwest, Albania to the west and the Republic of Macedonia to the south. Kosovo is divided into 7 districts (Rreth) and 30 municipalities. Serbia does not recognise the unilateral secession of Kosovo[8] and considers it a United Nations-governed entity within its sovereign territory, the Autonomous Province of Kosovo and Metohija.	http://purl.obolibrary.org/obo/GAZ_00011337
Kurdistan	An extensive plateau and mountainous area in the Middle East, inhabited mainly by Kurds. It covers large parts of eastern Turkey, northern Iraq, northwestern Iran and smaller parts of northern Syria and Armenia. It roughly includes Zagros and eastern Taurus mountain ranges.	http://purl.obolibrary.org/obo/GAZ_00002468
Kuwait	A sovereign emirate on the coast of the Persian Gulf, enclosed by Saudi Arabia to the south and Iraq to the north and west. Kuwait is divided into six governorates (muhafazat, singular muhafadhah).	http://purl.obolibrary.org/obo/GAZ_00005285

Kyrgyzstan	A country in Central Asia. Landlocked and mountainous, it is bordered by Kazakhstan to the north, Uzbekistan to the west, Tajikistan to the southwest and China to the east. Kyrgyzstan is divided into seven provinces (oblast. The capital, Bishkek, and the second large city Osh are administratively the independent cities (shaar) with a status equal to a province. Each province comprises a number of districts (raions).	http://purl.obolibrary.org/obo/GAZ_00006893
Laos	A landlocked country in southeast Asia, bordered by Burma (Myanmar) and China to the northwest, Vietnam to the east, Cambodia to the south, and Thailand to the west. Laos is divided into sixteen provinces (qwang) and Vientiane Capital (Na Kone Luang Vientiane). The provinces further divided into districts (muang).	http://purl.obolibrary.org/obo/GAZ_00006889
Latvia	A country in Northern Europe. Latvia shares land borders with Estonia to the north and Lithuania to the south, and both Russia and Belarus to the east. It is separated from Sweden in the west by the Baltic Sea. The capital of Latvia is Riga. Latvia is divided into 26 districts (raioni). There are also seven cities (lielpilsetas) that have a separate status. Latvia is also historically, culturally and constitutionally divided in four or more distinct regions.	http://purl.obolibrary.org/obo/GAZ_00002958
Lebanon	A small, mostly mountainous country in Western Asia, on the eastern shore of the Mediterranean Sea. It is bordered by Syria to the north and east, and Israel to the south. Lebanon is divided into six governorates (mohaafazaat, which are further subdivided into twenty-five districts (aqdya, singular: qadaa).	http://purl.obolibrary.org/obo/GAZ_00002478
Lesotho	A land-locked country, entirely surrounded by the Republic of South Africa. Lesotho is divided into ten districts; these are further subdivided into 80 constituencies, which consists of 129 local community councils.	http://purl.obolibrary.org/obo/GAZ_00001098
Liberia	A country on the west coast of Africa, bordered by Sierra Leone, Guinea, Cote d'Ivoire, and the Atlantic Ocean.	http://purl.obolibrary.org/obo/GAZ_00000911

Libya	A country in North Africa. Bordering the Mediterranean Sea to the north, Libya lies between Egypt to the east, Sudan to the southeast, Chad and Niger to the south, and Algeria and Tunisia to the west. There are thirty-four municipalities of Libya, known by the Arabic term sha'biyat (singular sha'biyah). These came recently (in the 1990s to replaced old Baladiyat systam. The Baladiyat system in turn was introduced to replace the system of muhafazah (governorates or provinces) that existed from the 1960s to the 1970s.	http://purl.obolibrary.org/obo/GAZ_00000566
Liechtenstein	A tiny, doubly landlocked alpine country in Western Europe, bordered by Switzerland to its west and by Austria to its east. The principality of Liechtenstein is divided into 11 municipalities called Gemeinden (singular Gemeinde). The Gemeinden mostly consist only of a single town. Five of them fall within the electoral district Unterland (the lower county), and the remainder within Oberland (the upper county).	http://purl.obolibrary.org/obo/GAZ_00003858
Lithuania	A country located along the south-eastern shore of the Baltic Sea, sharing borders with Latvia to the north, Belarus to the southeast, Poland, and the Russian exclave of the Kaliningrad Oblast to the southwest. Lithuania has a three-tier administrative division: the country is divided into 10 counties (singular apskritis, plural, apskritys) that are further subdivided into 60 municipalities (singular savivaldybe, plural savivaldybes) which consist of over 500 elderates (singular seniunija, plural seniunijos).	http://purl.obolibrary.org/obo/GAZ_00002960
Luxembourg	A small landlocked country in western Europe, bordered by Belgium, France, and Germany. Luxembourg is divided into 3 districts, which are further divided into 12 cantons and then 116 communes. Twelve of the communes have city status, of which the city of Luxembourg is the largest.	http://purl.obolibrary.org/obo/GAZ_00002947

Macedonia	A landlocked country on the Balkan peninsula in southeastern Europe. It is bordered by Serbia and Kosovo to the north, Albania to the west, Greece to the south, and Bulgaria to the east. In 2004-08, the Republic of Macedonia was reorganised into 85 municipalities (opstini; singular opstina), 10 of which comprise Greater Skopje. This is reduced from the previous 123 municipalities established in 1996-09. Prior to this, local government was organised into 34 administrative districts.	http://purl.obolibrary.org/obo/GAZ_00006895
Malawi	A country in southeastern Africa. It is bordered by Zambia to the north-west, Tanzania to the north and Mozambique, which surrounds it on the east, south and west. Malawi is divided into three regions (the Northern, Central and Southern regions), which are further divided into twenty-seven districts, which in turn are further divided into 137 traditional authorities and 68 sub-chiefdoms.	http://purl.obolibrary.org/obo/GAZ_00001105
Malaysia	A country that consists of thirteen states and three federal territories in Southeast Asia. The country is separated into two regions, Peninsular Malaysia and Malaysian Borneo, by the South China Sea. Malaysia borders Thailand, Indonesia, Singapore, Brunei and the Philippines. Malaysia consists of 13 states (Negeri) and 3 federal territories.	http://purl.obolibrary.org/obo/GAZ_00003902
Mali	A landlocked country in northern Africa. It borders Algeria on the north, Niger on the east, Burkina Faso and the Cote d'Ivoire on the south, Guinea on the south-west, and Senegal and Mauritania on the west. Mali is divided into 8 regions (regions) and 1 district, and subdivided into 49 cercles, totalling 288 arrondissements.	http://purl.obolibrary.org/obo/GAZ_00000584

Mauritania	A country in North-West Africa. It is bordered by the Atlantic Ocean on the west, by Senegal on the southwest, by Mali on the east and southeast, by Algeria on the northeast, and by Western Sahara on the northwest (most of which is occupied by Morocco). The capital and largest city is Nouakchott, located on the Atlantic coast. Mauritania is divided into 12 regions (regions) and one capital district, which in turn are subdivided into 44 departments (departements).	http://purl.obolibrary.org/obo/GAZ_00000583
Metropolitan Denmark	That part of the Kingdom of Denmark located in continental Europe. The mainland is bordered to the south by Germany; Denmark is located to the southwest of Sweden and the south of Norway. Denmark borders both the Baltic and the North Sea. The country consists of a large peninsula, Jutland (Jylland) and a large number of islands, most notably Zealand (Sjaelland), Funen (Fyn), Vendsyssel-Thy, Lolland, Falster and Bornholm as well as hundreds of minor islands often referred to as the Danish Archipelago.	http://purl.obolibrary.org/obo/GAZ_00005852
Metropolitan France	A part of the country of France that extends from the Mediterranean Sea to the English Channel and the North Sea, and from the Rhine to the Atlantic Ocean. Metropolitan France is bordered by Belgium, Luxembourg, Germany, Switzerland, Italy, Monaco, Andorra, and Spain. Due to its overseas departments.	http://purl.obolibrary.org/obo/GAZ_00003940
Metropolitan Norway	That part of the Kingdom of Norway that occupies the W part of the Scandinavian Peninusula and adjoining islands. Metropolitan Norway is divided into nineteen first-level administrative regions known as fylker ("counties", singular fylke) and 430[19] second-level kommuner ("municipalities", singular kommune).	http://purl.obolibrary.org/obo/GAZ_00005851
Metropolitan Portugal	That part of the Portugese Republic that occupies the W part of the Iberian Peninsula, and immediately adjacent islands.	http://purl.obolibrary.org/obo/GAZ_00004126

Metropolitan Spain	That part of the Kingdom of Spain that occupies the Iberian Peninsula plus the Balaeric Islands. The Spanish mainland is bordered to the south and east almost entirely by the Mediterranean Sea (except for a small land boundary with Gibraltar); to the north by France, Andorra, and the Bay of Biscay; and to the west by the Atlantic Ocean and Portugal.	http://purl.obolibrary.org/obo/GAZ_00003936
Mexico	A federal constitutional republic in North America. It is bounded on the north by the United States; on the south and west by the North Pacific Ocean; on the southeast by Guatemala, Belize, and the Caribbean Sea; and on the east by the Gulf of Mexico. The United Mexican States comprise a federation of thirty-one states and a federal district, the capital Mexico City.	http://purl.obolibrary.org/obo/GAZ_00002852
Moldova	A landlocked country in Eastern Europe, located between Romania to the west and Ukraine to the north, east and south. Moldova is divided into thirty-two districts (raioane, singular raion); three municipalities (Balti, Chisinau, Tighina); and two autonomous regions (Gagauzia and Transnistria). The cities of Comrat and Tiraspol also have municipality status, however not as first-tier subdivisions of Moldova, but as parts of the regions of Gagauzia and Transnistria, respectively. The status of Transnistria is however under dispute. Although it is de jure part of Moldova and is recognized as such by the international community, Transnistria is not de facto under the control of the central government of Moldova. It is administered by an unrecognized breakaway authority under the name Pridnestrovian Moldovan Republic.	http://purl.obolibrary.org/obo/GAZ_00003897
Monaco	A small country that is completely bordered by France to the north, west, and south; to the east it is bordered by the Mediterranean Sea. It consists of a single municipality (commune) currently divided into 4 quartiers and 10 wards.	http://purl.obolibrary.org/obo/GAZ_00003857

Mongolia	A country in East-Central Asia. The landlocked country borders Russia to the north and China to the south. The capital and largest city is Ulan Bator. Mongolia is divided into 21 aimags (provinces), which are in turn divided into 315 sums (districts). The capital Ulan Bator is administrated separately as a khot (municipality) with provincial status.	http://purl.obolibrary.org/obo/GAZ_00008744
Montenegro	A country located in Southeastern Europe. It has a coast on the Adriatic Sea to the south and borders Croatia to the west, Bosnia and Herzegovina to the northwest, Serbia and its partially recognized breakaway southern province of Kosovo to the northeast and Albania to the southeast. Its capital and largest city is Podgorica. Montenegro is divided into twenty-one municipalities (opstina), and two urban municipalities, subdivisions of Podgorica municipality.	http://purl.obolibrary.org/obo/GAZ_00006898
Montserrat	A British overseas territory located in the Leeward Islands. Montserrat is divided into three parishes.	http://purl.obolibrary.org/obo/GAZ_00003988
Morocco	A country in North Africa. It has a coast on the Atlantic Ocean that reaches past the Strait of Gibraltar into the Mediterranean Sea. Morocco has international borders with Algeria to the east, Spain to the north (a water border through the Strait and land borders with two small Spanish autonomous cities, Ceuta and Melilla), and Mauritania to the south. Morocco is divided into 16 regions, and subdivided into 62 prefectures and provinces. Because of the conflict over Western Sahara, the status of both regions of "Saguia el-Hamra" and "Rio de Oro" is disputed.	http://purl.obolibrary.org/obo/GAZ_00000565

Mozambique	A country in southeastern Africa bordered by the Indian Ocean to the east, Tanzania to the north, Malawi and Zambia to the northwest, Zimbabwe to the west and Swaziland and South Africa to the southwest. Mozambique is divided into ten provinces (provincias) and one capital city (cidade capital) with provincial status. The provinces are subdivided into 129 districts (distritos). Districts are further divided in "Postos Administrativos" (Administrative Posts) and these in Localidades (Localities) the lowest geographical level of central state administration.	http://purl.obolibrary.org/obo/GAZ_00001100
Myanmar	A country in SE Asia that is bordered by China on the north, Laos on the east, Thailand on the southeast, Bangladesh on the west, and India on the northwest, with the Bay of Bengal to the southwest. Myanmar is divided into seven states and seven divisions. The administrative divisions are further subdivided into districts, which are further subdivided into townships, wards, and villages.	http://purl.obolibrary.org/obo/GAZ_00006899
Namibia	A country in southern Africa on the Atlantic coast. It shares borders with Angola and Zambia to the north, Botswana to the east, and South Africa to the south. Namibia is divided into 13 regions and subdivided into 102 constituencies.	http://purl.obolibrary.org/obo/GAZ_00001096
Nauru	An island nation in the Micronesian South Pacific. The nearest neighbour is Banaba Island in the Republic of Kiribati, 300 km due east. Nauru is divided into fourteen administrative districts which are grouped into eight electoral constituencies.	http://purl.obolibrary.org/obo/GAZ_00006900

Nepal	A landlocked nation in South Asia. It is bordered by the Tibet Autonomous Region of the People's Republic of China to the northeast and India to the south and west; it is separated from Bhutan by the Indian State of Sikkim and from Bangladesh by a small strip of the Indian State of West Bengal, known as the "Chicken's Neck". The Himalaya mountain range runs across Nepal's north and western parts, and eight of the world's ten highest mountains, including the highest, Mount Everest are situated within its territory. Nepal is divided into 14 zones and 75 districts, grouped into 5 development regions.	http://purl.obolibrary.org/obo/GAZ_00004399
Netherlands	The European part of the Kingdom of the Netherlands. It is bordered by the North Sea to the north and west, Belgium to the south, and Germany to the east. The Netherlands is divided into twelve administrative regions, called provinces. All provinces of the Netherlands are divided into municipalities (gemeenten), together 443 (2007).	http://purl.obolibrary.org/obo/GAZ_00002946
New Zealand	A nation in the south-western Pacific Ocean comprising two large islands (the North Island and the South Island) and numerous smaller islands, most notably Stewart Island/Rakiura and the Chatham Islands.	http://purl.obolibrary.org/obo/GAZ_00000469

Nicaragua	A republic in Central America. It is also the least densely populated with a demographic similar in size to its smaller neighbors. The country is bordered by Honduras to the north and by Costa Rica to the south. The Pacific Ocean lies to the west of the country, while the Caribbean Sea lies to the east. For administrative purposes it is divided into 15 departments (departamentos) and two self-governing regions (autonomous communities) based on the Spanish model. The departments are then subdivided into 153 municipios (municipalities). The two autonomous regions are Region Autonoma del Atlantico Norte and Region Autonoma del Atlantico Sur, often referred to as RAAN and RAAS, respectively. Until they were granted autonomy in 1985 they formed the single department of Zelaya.	http://purl.obolibrary.org/obo/GAZ_00002978
Niger	A landlocked country in Western Africa, named after the Niger River. It borders Nigeria and Benin to the south, Burkina Faso and Mali to the west, Algeria and Libya to the north and Chad to the east. The capital city is Niamey. Niger is divided into 7 departments and one capital district. The departments are subdivided into 36 arrondissements and further subdivided into 129 communes.	http://purl.obolibrary.org/obo/GAZ_00000585
Nigeria	A federal constitutional republic comprising thirty-six states and one Federal Capital Territory. The country is located in West Africa and shares land borders with the Republic of Benin in the west, Chad and Cameroon in the east, and Niger in the north. Its coast lies on the Gulf of Guinea, part of the Atlantic Ocean, in the south. The capital city is Abuja. Nigeria is divided into thirty-six states and one Federal Capital Territory, which are further sub-divided into 774 Local Government Areas (LGAs).	http://purl.obolibrary.org/obo/GAZ_00000912
Niue Fekai	An island nation located in the South Pacific Ocean. Although self-governing, Niue is in free association with New Zealand, meaning that the Sovereign in Right of New Zealand is also Niue's head of state.	http://purl.obolibrary.org/obo/GAZ_00006902

North America	North America	http://purl.obolibrary.org/obo/GAZ_00000458
North Korea	A state in East Asia in the northern half of the Korean Peninsula, with its capital in the city of Pyongyang. To the south and separated by the Korean Demilitarized Zone is South Korea, with which it formed one nation until division following World War II. At its northern Amnok River border are China and, separated by the Tumen River in the extreme north-east, Russia.	http://purl.obolibrary.org/obo/GAZ_00002801
Northern Ireland	One of the four countries of the United Kingdom. Situated in the north-east of the island of Ireland, it shares a border with the Republic of Ireland to the south and west.	http://purl.obolibrary.org/obo/GAZ_00002638
Norway	A country and constitutional monarchy in Northern Europe that occupies the western portion of the Scandinavian Peninsula. It is bordered by Sweden, Finland, and Russia. The Kingdom of Norway also includes the Arctic island territories of Svalbard and Jan Mayen. Norwegian sovereignty over Svalbard is based upon the Svalbard Treaty, but that treaty does not apply to Jan Mayen. Bouvet Island in the South Atlantic Ocean and Peter I Island and Queen Maud Land in Antarctica are external dependencies, but those three entities do not form part of the kingdom.	http://purl.obolibrary.org/obo/GAZ_00002699
Oman	A country in southwest Asia, on the southeast coast of the Arabian Peninsula. It borders the United Arab Emirates on the northwest, Saudi Arabia on the west, and Yemen on the southwest. The coast is formed by the Arabian Sea on the south and east, and the Gulf of Oman on the northeast. The country also contains Madha, an exclave enclosed by the United Arab Emirates, and Musandam, an exclave also separated by Emirati territory. Oman is divided into four governorates (muhafazah) and five regions (mintaqat). The regions are subdivided into provinces (wilayat).	http://purl.obolibrary.org/obo/GAZ_00005283

Pakistan	A country in Middle East which lies on the Iranian Plateau and some parts of South Asia. It is located in the region where South Asia converges with Central Asia and the Middle East. It has a 1,046 km coastline along the Arabian Sea in the south, and is bordered by Afghanistan and Iran in the west, India in the east and China in the far northeast. Pakistan is subdivided into four provinces and two territories. In addition, the portion of Kashmir that is administered by the Pakistani government is divided into two separate administrative units. The provinces are divided into a total of 105 zillas (districts). A zilla is further subdivided into tehsils (roughly equivalent to counties). Tehsils may contain villages or municipalities. There are over five thousand local governments in Pakistan.	http://purl.obolibrary.org/obo/GAZ_00005246
Palau	A nation that consists of eight principal islands and more than 250 smaller ones lying roughly 500 miles southeast of the Philippines.	http://purl.obolibrary.org/obo/GAZ_00006905
Palestinian Territories	The territory under the administration of the Palestine National Authority, as established by the Oslo Accords. The PNA divides the Palestinian territories into 16 governorates.	http://purl.obolibrary.org/obo/GAZ_00002475
Panama	The southernmost country of Central America. Situated on an isthmus, some categorize it as a transcontinental nation connecting the north and south part of America. It borders Costa Rica to the north-west, Colombia to the south-east, the Caribbean Sea to the north and the Pacific Ocean to the south. Panama's major divisions are nine provinces and five indigenous territories (comarcas indigenas). The provincial borders have not changed since they were determined at independence in 1903. The provinces are divided into districts, which in turn are subdivided into sections called corregimientos. Configurations of the corregimientos are changed periodically to accommodate population changes as revealed in the census reports.	http://purl.obolibrary.org/obo/GAZ_00002892

Papua New Guinea	Papua New Guinea	http://purl.obolibrary.org/obo/GAZ_00003922
Paraguay	A landlocked country in South America. It lies on both banks of the Paraguay River, bordering Argentina to the south and southwest, Brazil to the east and northeast, and Bolivia to the northwest, and is located in the very heart of South America. Paraguay consists of seventeen departments and one capital district (distrito capital). Each department is divided into districts.	http://purl.obolibrary.org/obo/GAZ_00002933
Peru	A country in western South America. It is bordered on the north by Ecuador and Colombia, on the east by Brazil, on the southeast by Bolivia, on the south by Chile, and on the west by the Pacific Ocean. Peru is divided into 25 regions and the province of Lima. These regions are subdivided into provinces, which are composed of districts (provincias and distritos). There are 195 provinces and 1833 districts in Peru. The Lima Province, located in the central coast of the country, is unique in that it doesn't belong to any of the twenty-five regions. The city of Lima, which is the nation's capital, is located in this province. Callao is its own region, even though it only contains one province, the Constitutional Province of Callao.	http://purl.obolibrary.org/obo/GAZ_00002932
Philippines	An archipelagic nation located in Southeast Asia. The Philippine archipelago comprises 7,107 islands in the western Pacific Ocean, bordering countries such as Indonesia, Malaysia, Palau and the Republic of China, although it is the only Southeast Asian country to share no land borders with its neighbors. The Philippines is divided into three island groups: Luzon, Visayas, and Mindanao. These are divided into 17 regions, 81 provinces, 136 cities, 1,494 municipalities and 41,995 barangays.	http://purl.obolibrary.org/obo/GAZ_00004525

Poland	A country in Central Europe. Poland is bordered by Germany to the west; the Czech Republic and Slovakia to the south; Ukraine, Belarus and Lithuania to the east; and the Baltic Sea and Kaliningrad Oblast, a Russian exclave, to the north. The administrative division of Poland since 1999 has been based on three levels of subdivision. The territory of Poland is divided into voivodeships (provinces); these are further divided into powiats (counties), and these in turn are divided into gminas (communes or municipalities). Major cities normally have the status of both gmina and powiat. Poland currently has 16 voivodeships, 379 powiats (including 65 cities with powiat status), and 2,478 gminas.	http://purl.obolibrary.org/obo/GAZ_00002939
Qatar	An Arab emirate in Southwest Asia, occupying the small Qatar Peninsula on the northeasterly coast of the larger Arabian Peninsula. It is bordered by Saudi Arabia to the south; otherwise the Persian Gulf surrounds the state. Qatar is divided into ten municipalities (Arabic: baladiyah), which are further divided into zones (districts).	http://purl.obolibrary.org/obo/GAZ_00005286
Republic of Congo	A country in Central Africa. It is bordered by Gabon, Cameroon, the Central African Republic, the Democratic Republic of the Congo, the Angolan exclave province of Cabinda, and the Gulf of Guinea. The Republic of the Congo is divided into 10 regions (regions) and one commune, the capital Brazzaville. The regions are subdivided into forty-six districts.	http://purl.obolibrary.org/obo/GAZ_00001088

Republic of Ireland	A country in north-western Europe. The modern sovereign state occupies five-sixths of the island of Ireland, which was partitioned in 1921. It is bordered by Northern Ireland (part of the United Kingdom) to the north, by the Atlantic Ocean to the west and by the Irish Sea to the east. Administration follows the 34 "county-level" counties and cities of Ireland. Of these twenty-nine are counties, governed by county councils while the five cities of Dublin, Cork, Limerick, Galway and Waterford have city councils, (previously known as corporations), and are administered separately from the counties bearing those names. The City of Kilkenny is the only city in the republic which does not have a "city council"; it is still a borough but not a county borough and is administered as part of County Kilkenny. Ireland is split into eight regions for NUTS statistical purposes. These are not related to the four traditional provinces but are based on the administrative counties.	http://purl.obolibrary.org/obo/GAZ_00002943
Romania	A country in Southeastern Europe. It shares a border with Hungary and Serbia to the west, Ukraine and the Republic of Moldova to the northeast, and Bulgaria to the south. Romania has a stretch of sea coast along the Black Sea. It is located roughly in the lower basin of the Danube and almost all of the Danube Delta is located within its territory. Romania is divided into forty-one counties (judete), as well as the municipality of Bucharest (Bucuresti) - which is its own administrative unit. The country is further subdivided into 319 cities and 2686 communes (rural localities).	http://purl.obolibrary.org/obo/GAZ_00002951

Russia	A transcontinental country extending over much of northern Eurasia. Russia shares land borders with the following countries (counter-clockwise from northwest to southeast): Norway, Finland, Estonia, Latvia, Lithuania (Kaliningrad Oblast), Poland (Kaliningrad Oblast), Belarus, Ukraine, Georgia, Azerbaijan, Kazakhstan, China, Mongolia and North Korea. The Russian Federation comprises 83 federal subjectsm 46 oblasts(provinces), 21 republics, 9 krais (territories), 4 autonomous okrugs (autonomous districts), one autonomous oblast, and two federal cities. The federal subjects are grouped into seven federal districts. These subjects are divided into districts (raions), cities/towns and urban-type settlements, and, at level 4, selsovets (rural councils), towns and urban-type settlements under the jurisdiction of the district and city districts.	http://purl.obolibrary.org/obo/GAZ_00002721
Rwanda	A small landlocked country in the Great Lakes region of east-central Africa, bordered by Uganda, Burundi, the Democratic Republic of the Congo and Tanzania. Rwanda is divided into five provinces (intara) and subdivided into thirty districts (akarere). The districts are divided into sectors (imirenge).	http://purl.obolibrary.org/obo/GAZ_00001087
Saint Kitts-Nevis	A federal two-island nation in the West Indies. Located in the Leeward Islands. Saint Kitts and Nevis are geographically part of the Leeward Islands. To the north-northwest lie the islands of Saint Eustatius, Saba, Saint Barthelemy, and Saint-Martin/Sint Maarten. To the east and northeast are Antigua and Barbuda, and to the southeast is the small uninhabited island of Redonda, and the island of Montserrat. The federation of Saint Kitts and Nevis is divided into fourteen parishes: nine divisions on Saint Kitts and five on Nevis.	http://purl.obolibrary.org/obo/GAZ_00006906
Saint Lucia	An island nation in the eastern Caribbean Sea on the boundary with the Atlantic Ocean.	http://purl.obolibrary.org/obo/GAZ_00006909

Saint Vincent and the Grenadines	An island nation in the Lesser Antilles chain of the Caribbean Sea.	http://purl.obolibrary.org/obo/GAZ_02000565
Samoa	A country governing the western part of the Samoan Islands archipelago in the South Pacific Ocean. Samoa is made up of eleven itumalo (political districts).	http://purl.obolibrary.org/obo/GAZ_00006910
San Marino	A country in the Apennine Mountains. It is a landlocked enclave, completely surrounded by Italy. San Marino is an enclave in Italy, on the border between the regioni of Emilia Romagna and Marche. Its topography is dominated by the Apennines mountain range. San Marino is divided into nine municipalities, known locally as Castelli (singular castello).	http://purl.obolibrary.org/obo/GAZ_00003102
Sao Tome and Principe	An island nation in the Gulf of Guinea, off the western equatorial coast of Africa. It consists of two islands: Sao Tome and Principe, located about 140 km apart and about 250 and 225 km respectively, off of the northwestern coast of Gabon. Both islands are part of an extinct volcanic mountain range. Sao Tome and Principe is divided into 2 provinces: Principe, Sao Tome. The provinces are further divided into seven districts, six on Sao Tome and one on Principe (with Principe having self-government since 1995-04-29).	http://purl.obolibrary.org/obo/GAZ_00006927
Saudi Arabia	A country on the Arabian Peninsula. It is bordered by Jordan on the northwest, Iraq on the north and northeast, Kuwait, Qatar, Bahrain, and the United Arab Emirates on the east, Oman on the southeast, and Yemen on the south. The Persian Gulf lies to the northeast and the Red Sea to its west. Saudi Arabia is divided into 13 provinces or regions (manatiq; singular mintaqah). Each is then divided into Governorates.	http://purl.obolibrary.org/obo/GAZ_00005279

Scotland	A country that is part of the United Kingdom. Occupying the northern third of the island of Great Britain, it shares a border with England to the south and is bounded by the North Sea to the east, the Atlantic Ocean to the north and west, and the North Channel and Irish Sea to the southwest. In addition to the mainland, Scotland includes over 790 islands including the Northern Isles and the Hebrides.	http://purl.obolibrary.org/obo/GAZ_00002639
Senegal	A country south of the Senegal River in western Africa. Senegal is bounded by the Atlantic Ocean to the west, Mauritania to the north, Mali to the east, and Guinea and Guinea-Bissau to the south. The Gambia lies almost entirely within Senegal, surrounded on the north, east and south; from its western coast Gambia's territory follows the Gambia River more than 300 km inland. Dakar is the capital city of Senegal, located on the Cape Verde Peninsula on the country's Atlantic coast. Senegal is subdivided into 11 regions and further subdivided into 34 Departements, 103 Arrondissements (neither of which have administrative function) and by Collectivites Locales.	http://purl.obolibrary.org/obo/GAZ_00000913
Serbia	A landlocked country in Central and Southeastern Europe, covering the southern part of the Pannonian Plain and the central part of the Balkan Peninsula. It is bordered by Hungary to the north; Romania and Bulgaria to the east; Republic of Macedonia, Montenegro to the south; Croatia and Bosnia and Herzegovina to the west. The capital is Belgrade. Serbia is divided into 29 districts plus the City of Belgrade. The districts and the city of Belgrade are further divided into municipalities. Serbia has two autonomous provinces: Kosovo and Metohija in the south (5 districts, 30 municipalities), and Vojvodina in the north (7 districts, 46 municipalities).	http://purl.obolibrary.org/obo/GAZ_00002957

Sierra Leone	A country in West Africa. It is bordered by Guinea in the north and east, Liberia in the southeast, and the Atlantic Ocean in the southwest and west. The Republic of Sierra Leone is composed of 3 provinces and one area called the Western Area; the provinces are further divided into 12 districts. The Western Area is also divided into 2 districts.	http://purl.obolibrary.org/obo/GAZ_00000914
Singapore	An island nation located at the southern tip of the Malay Peninsula. It lies 137 km north of the Equator, south of the Malaysian State of Johor and north of Indonesia's Riau Islands. Singapore consists of 63 islands, including mainland Singapore. There are two man-made connections to Johor, Malaysia, Johor-Singapore Causeway in the north, and Tuas Second Link in the west. Since 2001-11-24, Singapore has had an administrative subdivision into 5 districts. It is also divided into five Regions, urban planning subdivisions with no administrative role.	http://purl.obolibrary.org/obo/GAZ_00003923
Slovak Republic	A landlocked country in Central Europe. The Slovak Republic borders the Czech Republic and Austria to the west, Poland to the north, Ukraine to the east and Hungary to the south. The largest city is its capital, Bratislava. Slovakia is subdivided into 8 kraje (singular - kraj, usually translated as regions. The kraje are subdivided into many okresy (singular okres, usually translated as districts). Slovakia currently has 79 districts.	http://purl.obolibrary.org/obo/GAZ_00002956
Slovenia	A country in southern Central Europe bordering Italy to the west, the Adriatic Sea to the southwest, Croatia to the south and east, Hungary to the northeast, and Austria to the north. The capital of Slovenia is Ljubljana. As of 2005-05 Slovenia is divided into 12 statistical regions for legal and statistical purposes. Slovenia is divided into 210 local municipalities, eleven of which have urban status.	http://purl.obolibrary.org/obo/GAZ_00002955

Solomon Islands	A nation in Melanesia, east of Papua New Guinea, consisting of nearly one thousand islands. Together they cover a land mass of 28,400 km2. The capital is Honiara, located on the island of Guadalcanal.	http://purl.obolibrary.org/obo/GAZ_00005275
Somalia	A country located in the Horn of Africa. It is bordered by Djibouti to the northwest, Kenya on its southwest, the Gulf of Aden with Yemen on its north, the Indian Ocean at its east, and Ethiopia to the west. Prior to the civil war, Somalia was divided into eighteen regions (gobollada, singular gobol), which were in turn subdivided into districts. On a de facto basis, northern Somalia is now divided up among the quasi-independent states of Puntland, Somaliland, Galmudug and Maakhir.	http://purl.obolibrary.org/obo/GAZ_00001104
South Africa	A country located at the southern tip of Africa. It borders the Atlantic and Indian oceans and Namibia, Botswana, Zimbabwe, Mozambique, Swaziland, and Lesotho, an independent enclave surrounded by South African territory. It is divided into nine provinces which are further subdivided into 52 districts: 6 metropolitan and 46 district municipalities. The 46 district municipalities are further subdivided into 231 local municipalities. The district municipalities also contain 20 district management areas (mostly game parks) that are directly governed by the district municipalities. The six metropolitan municipalities perform the functions of both district and local municipalities.	http://purl.obolibrary.org/obo/GAZ_00001094
South Korea	A republic in East Asia, occupying the southern half of the Korean Peninsula. South Korea is divided into 8 provinces (do), 1 special autonomous province (teukbyeol jachido), 6 metropolitan cities (gwangyeoksi), and 1 special city (teukbyeolsi). These are further subdivided into a variety of smaller entities, including cities (si), counties (gun), districts (gu), towns (eup), townships (myeon), neighborhoods (dong) and villages (ri).	http://purl.obolibrary.org/obo/GAZ_00002802

South Sudan	A state located in Africa with Juba as its capital city. It's bordered by Ethiopia to the east, Kenya, Uganda, and the Democratic Republic of the Congo to the south, and the Central African Republic to the west and Sudan to the North. Southern Sudan includes the vast swamp region of the Sudd formed by the White Nile, locally called the Bahr el Jebel.	http://purl.obolibrary.org/obo/GAZ_00233439
Sri Lanka	An island nation in South Asia, located about 31 km off the southern coast of India. Sri Lanka is divided into 9 provinces and 25 districts. Districts are divided into Divisional Secretariats.	http://purl.obolibrary.org/obo/GAZ_00003924
Sudan	A country in North Africa. It is bordered by Egypt to the north, the Red Sea to the northeast, Eritrea and Ethiopia to the east, Kenya and Uganda to the southeast, Democratic Republic of the Congo and the Central African Republic to the southwest, Chad to the west and Libya to the northwest. Sudan is divided into twenty-six states (wilayat, singular wilayah) which in turn are subdivided into 133 districts.	http://purl.obolibrary.org/obo/GAZ_00000560
Sumatra	An Indonesian island that runs approximately 1,790 km northwest - southeast, crossing the equator near the center. At its widest point the island spans 435 km. The interior of the island is dominated by two geographical regions: the Barisan Mountains in the west and swampy plains in the east. To the southeast is Java, separated by the Sunda Strait. To the north is the Malay Peninsula, separated by the Straits of Malacca. To the east is Borneo, across the Karimata Strait. West of the island is the Indian Ocean. The backbone of the island is the Barisan mountains chain, with the active volcano Mount Kerinci's 3,805 m the highest point, located at about the midpoint of the range. The volcanic activity of this region endowed the region with fertile land and beautiful sceneries, for instance around the Lake Toba. It also contains deposits of coal and gold.	http://purl.obolibrary.org/obo/GAZ_00024432

Suriname	A country in northern South America. It is situated between French Guiana to the east and Guyana to the west. The southern border is shared with Brazil and the northern border is the Atlantic coast. The southernmost border with French Guiana is disputed along the Marowijne river. Suriname is divided into 10 districts, each of which is divided into Ressorten.	http://purl.obolibrary.org/obo/GAZ_00002525
Swaziland	A small, landlocked country in Africa embedded between South Africa in the west, north and south and Mozambique in the east. Swaziland is divided into four districts, each of which is divided into Tinkhundla (singular, Inkhundla).	http://purl.obolibrary.org/obo/GAZ_00001099
Sweden	A Nordic country on the Scandinavian Peninsula in Northern Europe. It has borders with Norway (west and north) and Finland (northeast). Sweden is a unitary state, currently divided into twenty-one counties (lan). Each county further divides into a number of municipalities or kommuner, with a total of 290 municipalities in 2004.	http://purl.obolibrary.org/obo/GAZ_00002729
Switzerland	A federal republic in Europe. Switzerland is bordered by Germany, France, Italy, Austria and Liechtenstein. The Swiss Confederation consists of 26 cantons. The Cantons comprise a total of 2,889 municipalities. Within Switzerland there are two enclaves: Busingen belongs to Germany, Campione d'Italia belongs to Italy.	http://purl.obolibrary.org/obo/GAZ_00002941
Syria	A country in Southwest Asia, bordering Lebanon, the Mediterranean Sea and the island of Cyprus to the west, Israel to the southwest, Jordan to the south, Iraq to the east, and Turkey to the north. Syria has fourteen governorates, or muhafazat (singular: muhafazah). The governorates are divided into sixty districts, or manatiq (singular: mintaqah), which are further divided into sub-districts, or nawahi (singular: nahia).	http://purl.obolibrary.org/obo/GAZ_00002474

Tahiti	The largest island in the Windward group of the French Polynesia, located in the archipelago of Society Islands in the southern Pacific Ocean. Tahiti is some 45 km long at the widest point and covers 1,045 km2, with the highest elevation being at 2,241 m) above sea level (Mount Orohena). The island consists of two roughly round portions centered on volcanic mountains, connected by a short isthmus named after the small town of Taravao, which sits there. The northwestern part is known as Tahiti Nui ("big Tahiti"), and the southeastern part, much smaller, is known as Tahiti Iti ("small Tahiti") or Taiarapu.	http://purl.obolibrary.org/obo/GAZ_00005328
Tajikistan	A mountainous landlocked country in Central Asia. Afghanistan borders to the south, Uzbekistan to the west, Kyrgyzstan to the north, and People's Republic of China to the east. Tajikistan consists of 4 administrative divisions. These are the provinces (viloyat) of Sughd and Khatlon, the autonomous province of Gorno-Badakhshan (abbreviated as GBAO), and the Region of Republican Subordination (RRP, Raiony Respublikanskogo Podchineniya in Russian; formerly known as Karotegin Province). Each region is divided into several districts (nohiya or raion).	http://purl.obolibrary.org/obo/GAZ_00006912

Tanzania	A country in East Africa bordered by Kenya and Uganda on the north, Rwanda, Burundi and the Democratic Republic of the Congo on the west, and Zambia, Malawi and Mozambique on the south. To the east it borders the Indian Ocean. Tanzania is divided into 26 regions (mkoa), twenty-one on the mainland and five on Zanzibar (three on Unguja, two on Pemba). Ninety-eight districts (wilaya), each with at least one council, have been created to further increase local authority; the councils are also known as local government authorities. Currently there are 114 councils operating in 99 districts; 22 are urban and 92 are rural. The 22 urban units are further classified as city councils (Dar es Salaam and Mwanza), municipal councils (Arusha, Dodoma, Iringa, Kilimanjaro, Mbeya, Morogoro, Shinyanga, Tabora, and Tanga) or town councils (the remaining eleven communities).	http://purl.obolibrary.org/obo/GAZ_00001103
Tawain	A state in East Asia with de facto rule of the island of Tawain and adjacent territory. The Republic of China currently administers two historical provinces of China (one completely and a small part of another one) and centrally administers two direct-controlled municipalities.	http://purl.obolibrary.org/obo/GAZ_00005341
Thailand	A country in Southeast Asia. To its east lie Laos and Cambodia; to its south, the Gulf of Thailand and Malaysia; and to its west, the Andaman Sea and Burma. Its capital and largest city is Bangkok. Thailand is divided into 75 provinces (changwat), which are gathered into 5 groups of provinces by location. There are also 2 special governed districts: the capital Bangkok (Krung Thep Maha Nakhon) and Pattaya, of which Bangkok is at provincial level and thus often counted as a 76th province.	http://purl.obolibrary.org/obo/GAZ_00003744

Timor-Leste	A country in Southeast Asia. It comprises the eastern half of the island of Timor, the nearby islands of Atauro and Jaco, and Oecussi-Ambeno, an exclave on the northwestern side of the island, within Indonesian West Timor. The small country of 15,410 km2 is located about 640 km northwest of Darwin, Australia. East Timor is divided into thirteen administrative districts, are subdivided into 65 subdistricts, 443 sucos and 2,336 towns, villages and hamlets.	http://purl.obolibrary.org/obo/GAZ_00006913
Togo	A country in West Africa bordering Ghana in the west, Benin in the east and Burkina Faso in the north. In the south, it has a short Gulf of Guinea coast, on which the capital Lome is located.	http://purl.obolibrary.org/obo/GAZ_00000915
Tonga	An island nation in the Pacific Ocean.	http://purl.obolibrary.org/obo/GAZ_00006916
Trinidad and Tobago	An archipelagic state in the southern Caribbean, lying northeast of the South American nation of Venezuela and south of Grenada in the Lesser Antilles. It also shares maritime boundaries with Barbados to the northeast and Guyana to the southeast. The country covers an area of 5,128 km2and consists of two main islands, Trinidad and Tobago, and 21 smaller islands.	http://purl.obolibrary.org/obo/GAZ_00003767
Tunisia	A country situated on the Mediterranean coast of North Africa. It is bordered by Algeria to the west and Libya to the southeast. Tunisia is subdivided into 24 governorates, divided into 262 "delegations" or "districts" (mutamadiyat), and further subdivided into municipalities (shaykhats).	http://purl.obolibrary.org/obo/GAZ_00000562

Turkey	A Eurasian country that stretches across the Anatolian peninsula in western Asia and Thrace (Rumelia) in the Balkan region of southeastern Europe. Turkey borders eight countries: Bulgaria to the northwest; Greece to the west, Georgia to the northeast; Armenia, Azerbaijan (the exclave of Nakhichevan), and Iran to the east; and Iraq and Syria to the southeast. The Mediterranean Sea and Cyprus are to the south; the Aegean Sea and Archipelago are to the west; and the Black Sea is to the north. Separating Anatolia and Thrace are the Sea of Marmara and the Turkish Straits (the Bosporus and the Dardanelles), which are commonly reckoned to delineate the border between Asia and Europe, thereby making Turkey transcontinental. The territory of Turkey is subdivided into 81 provinces for administrative purposes. The provinces are organized into 7 regions for census purposes; however, they do not represent an administrative structure. Each province is divided into districts, for a total of 923 districts.	http://purl.obolibrary.org/obo/GAZ_00000558
Turkmenistan	A country in Central Asia. It is bordered by Afghanistan to the southeast, Iran to the southwest, Uzbekistan to the northeast, Kazakhstan to the northwest, and the Caspian Sea to the west. It was a constituent republic of the Soviet Union, the Turkmen Soviet Socialist Republic. Turkmenistan is divided into five provinces or welayatlar (singular - welayat) and one independent city.	http://purl.obolibrary.org/obo/GAZ_00005018
Tuvalu	A Polynesian island nation located in the Pacific Ocean midway between Hawaii and Australia.	http://purl.obolibrary.org/obo/GAZ_00009715

Uganda	A landlocked country in East Africa, bordered on the east by Kenya, the north by Sudan, on the west by the Democratic Republic of the Congo, on the southwest by Rwanda, and on the south by Tanzania. The southern part of the country includes a substantial portion of Lake Victoria, within which it shares borders with Kenya and Tanzania. Uganda is divided into 80 districts, spread across four administrative regions: Northern, Eastern, Central and Western. The districts are subdivided into counties.	http://purl.obolibrary.org/obo/GAZ_00001102
Ukraine	A country in Eastern Europe. It borders Russia to the east, Belarus to the north, Poland, Slovakia and Hungary to the west, Romania and Moldova to the southwest, and the Black Sea and Sea of Azov to the south. Ukraine is subdivided into twenty-four oblasts (provinces) and one autonomous republic (avtonomna respublika), Crimea. Additionally, the cities of Kiev, the capital, and Sevastopol, both have a special legal status. The 24 oblasts and Crimea are subdivided into 490 raions (districts), or second-level administrative units.	http://purl.obolibrary.org/obo/GAZ_00002724
United Arab Emirates	A Middle Eastern federation of seven states situated in the southeast of the Arabian Peninsula in Southwest Asia on the Persian Gulf, bordering Oman and Saudi Arabia. The seven states, termed emirates, are Abu Dhabi, Ajman, Dubai, Fujairah, Ras al-Khaimah, Sharjah, and Umm al-Quwain.	http://purl.obolibrary.org/obo/GAZ_00005282

United States of America	A federal constitutional republic comprising fifty states and a federal district. The country is situated mostly in central North America, where its forty-eight contiguous states and Washington, DC, the capital district, lie between the Pacific and Atlantic Oceans, bordered by Canada to the north and Mexico to the south. The State of Alaska is in the northwest of the continent, with Canada to its east and Russia to the west across the Bering Strait, and the State of Hawaii is in the mid-Pacific. The United States also possesses several territories, or insular areas, that are scattered around the Caribbean and Pacific. The states are divided into smaller administrative regions, called counties in most states, exceptions being Alaska (parts of the state are organized into subdivisions called boroughs; the rest of the state's territory that is not included in any borough is divided into "census areas"), and Louisiana (which is divided into county-equivalents that are called parishes). There are also independent cities which are within particular states but not part of any particular county or consolidated city-counties. Another type of organization is where the city and county are unified and function as an independent city. There are thirty-nine independent cities in Virginia and other independent cities or city-counties are San Francisco, California, Baltimore, Maryland, St. Louis, Missouri, Denver, Colorado and Carson City, Nevada. Counties can include a number of cities, towns, villages, or hamlets, or sometimes just a part of a city. Counties have varying degrees of political and legal significance, but they are always administrative divisions of the state. Counties in many states are further subdivided into townships, which, by definition, are administrative divisions of a county. In some states, such as Michigan, a township can file a charter with the state government, making itself into a "charter township", which is a type of mixed municipal and township	http://purl.obolibrary.org/obo/GAZ_00002459

	status (giving the township some of the rights of a city without all of the responsibilities), much in the way a metropolitan municipality is a mixed municipality and county.	
Uruguay	A country located in the southeastern part of South America. It is bordered by Brazil to the north, by Argentina across the bank of both the Uruguay River to the west and the estuary of Rio de la Plata to the southwest, and the South Atlantic Ocean to the southeast. Uraguay consists of 19 departments (departamentos, singular - departamento).	http://purl.obolibrary.org/obo/GAZ_00002930
US: Alabama	A state located in the southern region of the United States of America. It is bordered by Tennessee to the north, Georgia to the east, Florida and the Gulf of Mexico to the south, and Mississippi to the west.	http://purl.obolibrary.org/obo/GAZ_00006881
US: Alaska	A state in the United States of America, in the extreme northwest portion of the North American continent. The state is bordered by Yukon Territory and British Columbia, Canada to the east, the Gulf of Alaska and the Pacific Ocean to the south, the Bering Sea, Bering Strait, and Chukchi Sea to the west, and the Beaufort Sea and the Arctic Ocean.	http://purl.obolibrary.org/obo/GAZ_00002521
US: Arizona	A state located in the southwestern region of the United States. It borders New Mexico, Utah, Nevada, California, touches Colorado, and has a 626 km international border with the States of Sonora and Baja California in Mexico.	http://purl.obolibrary.org/obo/GAZ_00002518
US: Arkansas	A state located in the southern region of the United States. Arkansas shares a border with six states, with its eastern border largely defined by the Mississippi River. Arkansas shares its southern border with Louisiana, its northern border with Missouri, its eastern border with Tennessee and Mississippi, and its western border with Texas and Oklahoma.	http://purl.obolibrary.org/obo/GAZ_00004441

US: California	A state on the West Coast of the United States, along the Pacific Ocean. It is bordered by Oregon to the north, Nevada to the east, Arizona to the southeast, and to the south the Mexican state of Baja California.	http://purl.obolibrary.org/obo/GAZ_00002461
US: Colorado	A state located in the Rocky Mountain region of the United States of America.	http://purl.obolibrary.org/obo/GAZ_00006254
US: Connecticut	A state located in the New England region of the northeastern United States of America. The state borders New York to the west and south (Long Island by sea), Massachusetts to the north, and Rhode Island to the east. Portions of southwestern Connecticut are considered part of the New York metropolitan area.	http://purl.obolibrary.org/obo/GAZ_00002591
US: Delaware	A state located on the Atlantic Coast in the Mid-Atlantic region of the United States. Delaware is located in the eastern section of the Delmarva Peninsula, between Delaware Bay and Chesapeake Bay. Delaware is bounded to the north by Pennsylvania; to the east by the Delaware River, Delaware Bay, New Jersey and the Atlantic Ocean; and to the west and south by Maryland.	http://purl.obolibrary.org/obo/GAZ_00002878
US: District of Columbia	The area which constitutes of, and is coextensive with, the city of Washington, the Capital of the United States. The District of Columbia is not a state.	http://purl.obolibrary.org/obo/GAZ_00003175
US: Florida	A state located in the southeastern region of the United States, bordering Alabama to the northwest and Georgia to the northeast. Much of the land mass of the state is a large peninsula with the Gulf of Mexico to the west and south, and the Atlantic Ocean to the east.	http://purl.obolibrary.org/obo/GAZ_00002888

US: Georgia	Georgia is bordered on the south by Florida; on the east by the Atlantic Ocean and South Carolina; on the west by Alabama and by Florida in the extreme southwest; and on the north by Tennessee and North Carolina. The northern part of the state is in the Blue Ridge Mountains, a mountain range in the vast mountain system of the Appalachians. The central piedmont extends from the foothills to the fall line, where the rivers cascade down in elevation to the continental coastal plain of the southern part of the state.	http://purl.obolibrary.org/obo/GAZ_00002611
US: Hawaii	A state in the United States, located on an archipelago in the central Pacific Ocean southwest of the continental United States, southeast of Japan, and northeast of Australia.	http://purl.obolibrary.org/obo/GAZ_00003939
US: Idaho	A state in the Pacific Northwest region of the United States of America. Idaho borders six states and one Canadian province, but does not border the Pacific Ocean at any point and is not, as such, a coastal state. The states of Washington and Oregon are to the west, Nevada and Utah are to the south, and Montana and Wyoming are to the east. The province of British Columbia, to the north, also shares a small (77 km) border with Idaho.	http://purl.obolibrary.org/obo/GAZ_00006291
US: Illinois	A midwestern state of the United States of America. The Northeastern border of Illinois is Lake Michigan. Its eastern border with Indiana is all of the land west of the Wabash River, and a north-south line above Post Vincennes, or 87deg31min30secW. Its northern border with Wisconsin is fixed at 42deg30minN. Its western border with Missouri and Iowa is the Mississippi River. Its southern border with Kentucky is the Ohio River. Illinois also borders Michigan, but only via a water boundary in Lake Michigan.	http://purl.obolibrary.org/obo/GAZ_00003142

US: Indiana	A midwestern state of the United States of America. Indiana is bounded on the north by Lake Michigan and the state of Michigan; on the east by Ohio; on the south by Kentucky, with which it shares the Ohio River as a border; and on the west by Illinois. Indiana is one of the Great Lakes states.	http://purl.obolibrary.org/obo/GAZ_00004439
US: Iowa	A state located in the Midwestern region of the United States of America. Iowa is bordered by the Mississippi River on the east; the Missouri River and the Big Sioux River on the west; the northern boundary is a line along 43 degrees, 30 minutes north latitude. The southern border is the Des Moines River and a line along approximately 40 degrees 35 minutes north.	http://purl.obolibrary.org/obo/GAZ_00004438
US: Kansas	A state in the central region of the United States of America. Kansas is bordered by Nebraska on the north; Missouri on the east; Oklahoma on the south; and Colorado on the west.	http://purl.obolibrary.org/obo/GAZ_00004435
US: Kentucky	A state located in the East Central United States of America. Kentucky borders on seven states, from both the Midwest and the Southeast. West Virginia lies to the east, Virginia to the southeast, Tennessee to the south, Missouri to the west, Illinois and Indiana to the northwest, and Ohio to the north and northeast.	http://purl.obolibrary.org/obo/GAZ_00004440
US: Louisiana	A state located in the southern region of the United States of America. Louisiana is bordered to the west by the State of Texas; to the north by Arkansas; to the east by the State of Mississippi; and to the south by the Gulf of Mexico.	http://purl.obolibrary.org/obo/GAZ_00004432
US: Maine	A state in the New England region of the northeastern United States of America, bordering the Atlantic Ocean to the southeast, New Hampshire to the southwest, the Canadian provinces of Quebec to the northwest and New Brunswick to the northeast.	http://purl.obolibrary.org/obo/GAZ_00002602
US: Maryland	A state located in the Mid Atlantic region of the United States, bordering Virginia, West Virginia and the District of Columbia to the south and west, Pennsylvania to the north, and Delaware to the east.	http://purl.obolibrary.org/obo/GAZ_00002519

US: Massachusetts	A state located in the New England region of the northeastern United States. It borders Rhode Island and Connecticut to the south, New York to the west, and Vermont and New Hampshire to the north. To the east, it borders the Atlantic Ocean.	http://purl.obolibrary.org/obo/GAZ_00002537
US: Michigan	A Midwestern state of the United States of America. Michigan consists of two peninsulas that lie between 82deg30minW to about 90deg30minW longitude, and are separated by the Straits of Mackinac. With the exception of two small areas that are drained by the Mississippi River by way of the Wisconsin River in the Upper Peninsula and by way of the Kankakee-Illinois River in the Lower Peninsula, Michigan is drained by the Great Lakes-Saint Lawrence watershed. The Great Lakes that border Michigan from east to west are Lake Erie, Lake Huron, Lake Michigan and Lake Superior. The state is bounded on the south by the states of Ohio and Indiana, sharing land and water boundaries with both.	http://purl.obolibrary.org/obo/GAZ_00003152
US: Minnesota	A state in the Midwestern region of the United States. The state shares a Lake Superior water border with Michigan and Wisconsin on the northeast; the remainder of the eastern border is with Wisconsin. Iowa is to the south, North Dakota and South Dakota to the west, and the Canadian provinces of Ontario and Manitoba to the north.	http://purl.obolibrary.org/obo/GAZ_00002539
US: Mississippi	A state located in the Deep South of the United States. Jackson is the state capital and largest city. Mississippi is bordered on the north by Tennessee, on the east by Alabama, on the south by Louisiana and a narrow coast on the Gulf of Mexico, and on the west, across the Mississippi River, by Louisiana and Arkansas.	http://purl.obolibrary.org/obo/GAZ_00004430

US: Missouri	A state in the Midwest region of the United States. Missouri is bounded on the north by Iowa; on the east, across the Mississippi River, by Illinois, Kentucky, and Tennessee; on the south by Arkansas; and on the west by Oklahoma, Kansas, and Nebraska (the last across the Missouri River).	http://purl.obolibrary.org/obo/GAZ_00004431
US: Montana	A state in the Western United States. To the north, Montana and Canada share a 877 km border. The state borders the Canadian provinces of British Columbia, Alberta, and Saskatchewan. To the east, the state borders North Dakota and South Dakota. To the south is Wyoming and to the west and southwest is Idaho.	http://purl.obolibrary.org/obo/GAZ_00002606
US: Nebraska	A state located on the Great Plains of the Midwestern United States and Western United States.	http://purl.obolibrary.org/obo/GAZ_00005070
US: Nevada	A state located in the western region of the United States of America. Nevada is almost entirely within the Basin and Range Province, and is broken up by many north-south mountain ranges. Most of these ranges have endorheic valleys between them, which belies the image portrayed by the term Great Basin. The southern third of the state, where the Las Vegas area is situated, is within the Mojave Desert.	http://purl.obolibrary.org/obo/GAZ_00004444
US: New Hampshire	A state in the New England region of the northeastern United States of America. It borders Massachusetts to the south, Vermont to the west, Maine to the east, and the Canadian province of Quebec to the north.	http://purl.obolibrary.org/obo/GAZ_00004428
US: New Jersey	A state in the Mid-Atlantic and Northeastern regions of the United States. It is bordered on the north by New York, on the east by the Atlantic Ocean, on the southwest by Delaware, and on the west by Pennsylvania. New Jersey lies within the sprawling metropolitan areas of New York and Philadelphia.	http://purl.obolibrary.org/obo/GAZ_00002557
US: New Mexico	A state located in the southwestern region of the United States.	http://purl.obolibrary.org/obo/GAZ_00004427

US: New York	US: New York	http://purl.obolibrary.org/obo/GAZ_00002514
US: North Carolina	A state located on the Atlantic Seaboard in the southeastern United States. The state borders South Carolina and Georgia to the south, Tennessee to the west and Virginia to the north.	http://purl.obolibrary.org/obo/GAZ_00002520
US: North Dakota	A state located in the Midwestern and Western regions of the United States of America.	http://purl.obolibrary.org/obo/GAZ_00004442
US: Ohio	A Midwestern state of the United States. Ohio's southern border is defined by the Ohio River (with the border being at the 1793 low-water mark on the north side of the river), and much of the northern border is defined by Lake Erie. Ohio's neighbors are Pennsylvania to the east, Michigan to the northwest, Ontario Canada, to the north, Indiana to the west, Kentucky on the south, and West Virginia on the southeast.	http://purl.obolibrary.org/obo/GAZ_00004421
US: Oklahoma	A state located in the South Central region and Southern Region of the United States of America. It is bounded on the east by Arkansas and Missouri, on the north by Kansas, on the northwest by Colorado, on the far west by New Mexico, and on the south and near-west by Texas.	http://purl.obolibrary.org/obo/GAZ_00002546
US: Oregon	A state in the Pacific Northwest region of the United States. Oregon is located on the Pacific coast between Washington to the north, California to the south, Nevada on the southeast and Idaho to the east. The Columbia and Snake rivers delineate much of Oregon's northern and eastern boundaries respectively.	http://purl.obolibrary.org/obo/GAZ_00002515
US: Pennsylvania	A state located in the Northeastern and Middle Atlantic regions of the United States. The state borders Delaware and Maryland to the south, West Virginia to the southwest, Ohio to the west, New York and Canada to the north, and New Jersey to the east.	http://purl.obolibrary.org/obo/GAZ_00002542

US: Rhode Island	A state in the New England region of the United States. By land Rhode Island borders Connecticut to the west and Massachusetts to the north and east. Rhode Island also shares a water border with New York to the southwest.	http://purl.obolibrary.org/obo/GAZ_00002531
US: South Carolina	A state in the southern region (Deep South) of the United States. It borders Georgia to the south and North Carolina to the north.	http://purl.obolibrary.org/obo/GAZ_00002524
US: South Dakota	A state located in the Midwestern region of the United States of America.	http://purl.obolibrary.org/obo/GAZ_00004443
US: Tennessee	A state located in the Southern United States. The capital city is Nashville, and the largest city is Memphis. Tennessee borders eight other states: Kentucky and Virginia to the north; North Carolina to the east; Georgia, Alabama and Mississippi on the south; Arkansas and Missouri on the Mississippi River to the west.	http://purl.obolibrary.org/obo/GAZ_00004411
US: Texas	A state located in the South Central United States. The Rio Grande, Red River and Sabine River form natural state borders, Oklahoma on the north, Louisiana and Arkansas on the east, and the Mexican states of Chihuahua, Coahuila, Nuevo Leon, and Tamaulipas to the south.	http://purl.obolibrary.org/obo/GAZ_00002580
US: Utah	A western state of the United States. Utah has three distinct geological regions: the Rocky Mountains, the Great Basin, and the Colorado Plateau.	http://purl.obolibrary.org/obo/GAZ_00004413
US: Vermont	A state in the New England region of the northeastern United States of America. It is bordered by Massachusetts to the south, New Hampshire to the east, New York to the west, and the Canadian province of Quebec to the north.	http://purl.obolibrary.org/obo/GAZ_00004429

US: Virginia	A state on the Atlantic Coast of the Southern United States. Virginia is bordered by Maryland and the District of Columbia to the north and east; the Atlantic Ocean to the east; by North Carolina and Tennessee to the south; by Kentucky to the west and by West Virginia to the north and west. Due to a peculiarity of Virginia's original charter, its boundary with Maryland does not extend past the low-water mark of the southern shore of the Potomac River, so Maryland and the District of Columbia contain the whole width of the river rather than splitting it between them and Virginia. The southern border is defined as the 36deg30min parallel north.	http://purl.obolibrary.org/obo/GAZ_00003171
US: Washington	The Northwestern-most state of the contiguous United States. Its northern border lies mostly along the 49th parallel, and then via marine boundaries through the Strait of Georgia, Haro Strait and Strait of Juan de Fuca, with the Canadian province of British Columbia to the north. Washington borders Oregon to the south, with the Columbia River forming most of the boundary and the 46th parallel forming the eastern part of the southern boundary. To the east Washington borders Idaho, bounded mostly by the meridian running north from the confluence of the Snake River and Clearwater River, except for the southernmost section where the border follows the Snake River. To the west of Washington lies the Pacific Ocean.	http://purl.obolibrary.org/obo/GAZ_00002553
US: West Virginia	A state in the Appalachian, Upland South, and Mid-Atlantic regions of the United States, bordered by Virginia on the southeast, Kentucky on the southwest, Ohio on the northwest, and Pennsylvania and Maryland on the northeast. The capital and largest city is Charleston.	http://purl.obolibrary.org/obo/GAZ_00004414

US: Wisconsin	A State located in the north-central part of the United States. Wisconsin is bordered by the Montreal River; Lake Superior and Michigan to the north; by Lake Michigan to the east; by Illinois to the south; and by Iowa and Minnesota to the west. The state's boundaries include the Mississippi River and Saint Croix River in the west, and the Menominee River in the northeast Wisconsin's capital is Madison, and its largest city is Milwaukee.	http://purl.obolibrary.org/obo/GAZ_00002586
US: Wyoming	A state in the northwestern region of the United States. Wyoming is bordered on the north by Montana, on the east by South Dakota and Nebraska, on the south by Colorado, on the southwest by Utah, and on the west by Idaho.	http://purl.obolibrary.org/obo/GAZ_00002533
Uzbekistan	A doubly landlocked country in Central Asia, formerly part of the Soviet Union. It shares borders with Kazakhstan to the west and to the north, Kyrgyzstan and Tajikistan to the east, and Afghanistan and Turkmenistan to the south. Uzbekistan is divided into twelve provinces (viloyatlar) one autonomous republic (respublika and one independent city (shahar).	http://purl.obolibrary.org/obo/GAZ_00004979
Vanuatu	An island nation located in the South Pacific Ocean.	http://purl.obolibrary.org/obo/GAZ_00006918
Vatican City	A landlocked sovereign city-state whose territory consists of a walled enclave within the City of Rome. It includes extraterritorial buildings and property in Rome and elsewhere it Italy.	http://purl.obolibrary.org/obo/GAZ_00003103

Venezuela	A country on the northern coast of South America. The country comprises a continental mainland and numerous islands located off the Venezuelan coastline in the Caribbean Sea. The Bolivarian Republic of Venezuela possesses borders with Guyana to the east, Brazil to the south, and Colombia to the west. Trinidad and Tobago, Grenada, St. Lucia, Barbados, Curacao, Bonaire, Aruba, Saint Vincent and the Grenadines and the Leeward Antilles lie just north, off the Venezuelan coast. Venezuela is divided into twenty-three states (Estados), a capital district (distrito capital) corresponding to the city of Caracas, the Federal Dependencies (Dependencias Federales, a special territory), and Guayana Esequiba (claimed in a border dispute with Guyana). Venezuela is further subdivided into 335 municipalities (municipios); these are subdivided into over one thousand parishes (parroquias).	http://purl.obolibrary.org/obo/GAZ_00002931
Vietnam	The easternmost country on the Indochina Peninsula in Southeast Asia. It borders the Gulf of Thailand, Gulf of Tonkin, and South China Sea, alongside China, Laos, and Cambodia.	http://purl.obolibrary.org/obo/GAZ_00003756
Wales	One of the four constituent countries of the United Kingdom of Great Britain and Northern Ireland. It is located in the south-west of the island of Great Britain and is bordered by England to the east, the Bristol Channel (Mor Hafren) to the south and the Irish Sea (Mor Iwerddon) to the west and north, and also by the estuary of the River Dee (Afon Dyfrdwy) in the north-east. Wales is divided into 22 unitary authorities. There are nine counties, three cities, and ten county boroughs, although all have equal powers. Collectively these are known as the principal areas of Wales. They came into being on 1996-04-01.	http://purl.obolibrary.org/obo/GAZ_00002640
Western Sahara	A territory of northwestern Africa, bordered by Morocco to the north, Algeria in the northeast, Mauritania to the east and south, and the Atlantic Ocean on the west. Western Sahara is administratively divided into four regions.	http://purl.obolibrary.org/obo/GAZ_00000564

Yemen	A country located on the Arabian Peninsula in Southwest Asia. Yemen is bordered by Saudi Arabia to the North, the Red Sea to the West, the Arabian Sea and Gulf of Aden to the South, and Oman to the east. Yemen's territory includes over 200 islands, the largest of which is Socotra, about 415 km to the south of Yemen, off the coast of Somalia. As of 2004-02, Yemen is divided into twenty governorates (muhafazah) and one municipality. The population of each governorate is listed in the table below. The governorates of Yemen are divided into 333 districts (muderiah). The districts are subdivided into 2,210 sub-districts, and then into 38,284 villages (as of 2001).	http://purl.obolibrary.org/obo/GAZ_00005284
Yugoslavia (formerly)	A former state. The six countries that were once part of Yugoslavia are Bosnia-Herzegovina, Croatia, Macedonia, Montenegro, Serbia, and Slovenia.	http://purl.obolibrary.org/obo/GAZ_00052663
Zambia	A landlocked country in Southern Africa. The neighbouring countries are the Democratic Republic of the Congo to the north, Tanzania to the north-east, Malawi to the east, Mozambique, Zimbabwe, Botswana, and Namibia to the south, and Angola to the west. The capital city is Lusaka. Zambia is divided into nine provinces. Each province is subdivided into several districts with a total of 73 districts.	http://purl.obolibrary.org/obo/GAZ_00001107
Zimbabwe	A landlocked country in the southern part of the continent of Africa, between the Zambezi and Limpopo rivers. It is bordered by South Africa to the south, Botswana to the southwest, Zambia to the northwest, and Mozambique to the east. Zimbabwe is divided into eight provinces and two cities with provincial status. The provinces are subdivided into 59 districts and 1,200 municipalities.	http://purl.obolibrary.org/obo/GAZ_00001106

38. **lk_t0_event**

Name	Description	Link

Not Specified	Time Zero Event (TZ0) is not specified or not received. If no Time Zero Event value is received, then this is the system default value.	http://bioportal.bioontology.org/ontologies/PATO?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FPATO_0000165
Other	Time Zero Event (TZ0) is the some Other time value not in CV Terms.	http://bioportal.bioontology.org/ontologies/PATO?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FPATO_0000165
Time of enrollment	Time Zero Event (TZ0) is the Time of enrollment.	http://bioportal.bioontology.org/ontologies/PATO?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FPATO_0000165
Time of infection	Time Zero Event (TZ0) is the Time of infection.	http://bioportal.bioontology.org/ontologies/PATO?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FPATO_0000165
Time of initial treatment	Time Zero Event (TZ0) is the Time of initial treatment.	http://bioportal.bioontology.org/ontologies/PATO?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FPATO_0000165

Time of initial vaccine administration	Time Zero Event (TZ0) is the Time of initial vaccine administration.	http://bioportal.bioontology.org/ontologies/PATO?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FPATO_0000165
Time of transplantation	Time Zero Event (TZ0) is the Time of Transplantation.	http://bioportal.bioontology.org/ontologies/PATO?p=classes&conceptid=http%3A%2F%2Fpurl.obolibrary.org%2Fobo%2FPATO_0000165

39. **lk_temperature_unit**

Name	Description	Link
C	Celsius	http://purl.obolibrary.org/obo/UO_0000027
F	Fahrenheit	http://purl.obolibrary.org/obo/UO_0000195
K	Kelvin	http://purl.obolibrary.org/obo/UO_0000012
Not Specified	No value provided. Not stated explicitly or in detail.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C38046&ns=NCI_Thesaurus

40. **lk_time_unit**

Name	Description	Link

d.p.c.	Unit of Days Post Coitum (d.p.c.).	https://en.wikipedia.org/wiki/Days_post_coitum
Days	Unit of Days.	http://bioportal.bioontology.org/ontologies/NCIT/?p=classes&conceptid=http%3A%2F%2Fncicb.nci.nih.gov%2Fxml%2Fowl%2FEVS%2FThesaurus.owl%23C25301
Hours	Unit of Hours.	http://bioportal.bioontology.org/ontologies/NCIT?p=classes&conceptid=http%3A%2F%2Fncicb.nci.nih.gov%2Fxml%2Fowl%2FEVS%2FThesaurus.owl%23C25529
Minutes	Unit of Minutes.	http://bioportal.bioontology.org/ontologies/NCIT?p=classes&conceptid=http%3A%2F%2Fncicb.nci.nih.gov%2Fxml%2Fowl%2FEVS%2FThesaurus.owl%23C48154

Months	Unit of Months.	http://bioportal.bioontology.org/ontologies/NCIT?p=classes&conceptid=http%3A%2F%2Fncicb.nci.nih.gov%2Fxml%2Fowl%2FEVS%2FThesaurus.owl%23C29846
Not Specified	Unit is not specified or not received. If no Unit value is received, then this is the system default value.	
Seconds	Unit of Seconds.	http://bioportal.bioontology.org/ontologies/NCIT?p=classes&conceptid=http%3A%2F%2Fncicb.nci.nih.gov%2Fxml%2Fowl%2FEVS%2FThesaurus.owl%23C25666
Weeks	Unit of Weeks.	http://bioportal.bioontology.org/ontologies/NCIT/?p=classes&conceptid=http%3A%2F%2Fncicb.nci.nih.gov%2Fxml%2Fowl%2FEVS%2FThesaurus.owl%23C29844

Years	Unit of Years.	http://bioportal.bioontology.org/ontologies/NCIT/?p=classes&conceptid=http%3A%2F%2Fncicb.nci.nih.gov%2Fxml%2Fowl%2FEVS%2FThesaurus.owl%23C29848

41. **lk_titer_unit**

Name	Description	Link
titer_unit_preferred		
Antibody titer	Antibody titer is a titer of antibody that shows how much antibody an organism has produced that recognizes a particular epitope, expressed as the greatest dilution ratio (or its reciprocal) that still gives a positive result. ELISA is a common means of determining antibody titers.	http://purl.obolibrary.org/obo/VO_0000150
Not Specified	No value provided. Not stated explicitly or in detail.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C38046&ns=NCI_Thesaurus

42. **lk_transcript_type**

Name	Description
transcript_preferred	
lincRNA	lincRNA
mRNA	mRNA
snRNA	snRNA

43. **lk_unit_of_measure**

Name	Description	Link
unit_of_measure_preferred		

AI	Antibody Index	https://www.aacc.org/publications/cln/articles/2014/june/ana-testing
Antibody titer	Antibody titer is a titer of antibody that shows how much antibody an organism has produced that recognizes a particular epitope, expressed as the greatest dilution ratio (or its reciprocal) that still gives a positive result. ELISA is a common means of determining antibody titers.	http://purl.obolibrary.org/obo/VO_0000150
C	Celsius	http://purl.obolibrary.org/obo/UO_0000027
cells	cell count	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C48938&ns=NCI_Thesaurus
cells/ul	A unit of cell concentration expressed as a number of cells per unit volume equal to one microliter.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C67242&ns=NCI_Thesaurus
Cq	Threshold cycle (or Ct or Cq) is a count which is defined as the fractional PCR cycle number at which the reporter fluorescence is greater than the threshold in the context of the RT-qPCR assay.	http://purl.obolibrary.org/obo/STATO_0000190
Ct	Threshold cycle (or Ct or Cq) is a count which is defined as the fractional PCR cycle number at which the reporter fluorescence is greater than the threshold in the context of the RT-qPCR assay.	http://purl.obolibrary.org/obo/STATO_0000190
Delta Ct	Difference between the target gene and the reference gene.	http://www.ncbi.nlm.nih.gov/pubmed/?term=PMID%3A11846609

Delta Delta Ct	Difference between the Delta Ct target gene of the treated sample and the Delta Ct of the target gene of the untreated sample.	http://www.ncbi.nlm.nih.gov/pubmed/?term=PMID%3A11846609
DK units/ml	The NIDDK calibrators were tested together with dilutions of the WHO reference serum using harmonized assays on five occasions in the BDC, Bristol, and Munich laboratories and reported as WHO units/ml by calibration as previously described. For each of the NIDDK calibrators, the median value of the WHO units/ml obtained for the 15 measurements was assigned as its calibrator unit. The assigned units were termed digestive and kidney units (DK units)/ml.	https://repository.niddk.nih.gov/studies/aab-calibrators/
F	Fahrenheit	http://purl.obolibrary.org/obo/UO_0000195
FPKM	Fragments Per Kilobase Million: Normalized expression value of a given gene as measured by paired-end RNA sequencing	http://www.ncbi.nlm.nih.gov/pubmed/22872506
gm	gram	http://purl.obolibrary.org/obo/UO_0000021
HAU	hemagglutination units	http://en.wikipedia.org/wiki/Virus_quantification
IU	The unitage assigned by the WHO to International Biological Standards - substances, classed as biological according to the criteria provided by WHO Expert Committee on Biological Standardization (e.g. hormones, enzymes, and vaccines), to enable the results of biological and immunological assay procedures to be expressed in the same way throughout the world. The definition of an international unit is generally arbitrary and technical, and has to be officially approved by the International Conference for Unification of Formulae.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C48579&ns=NCI_Thesaurus

IU/ml	A unit of arbitrary substance concentration (biologic activity concentration) defined as the concentration of one international unit per one milliliter of system volume.	https://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&version=18.06d&ns=ncit&code=C67377
K	Kelvin	http://purl.obolibrary.org/obo/UO_0000012
M	molar	http://purl.obolibrary.org/obo/UO_0000062
MFI at 90th percentile	Mean Fluorescence Intensity at 90th Percentile. MFI : A unit of measure equal to the geometric mean fluorescence intensity of a log-normal distribution of fluorescence signals.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C96687&ns=NCI_Thesaurus
mg	milligram	http://purl.obolibrary.org/obo/UO_0000022
mg/ml	microgram per milliliter	http://purl.bioontology.org/ontology/SNOMEDCT/258798001
ml	milliliter	http://purl.obolibrary.org/obo/UO_0000098
mM	millimolar	http://purl.obolibrary.org/obo/UO_0000063
MOI	multiplicity of infection	http://en.wikipedia.org/wiki/Multiplicity_of_infection
ng	nanogram	http://purl.obolibrary.org/obo/UO_0000024

ng/ml	nanogram per milliliter	http://purl.bioontology.org/ontology/SNOMEDCT/258806002
ng/nl	nanogram per nanoliter	
ng/ul	nanogram per microliter	http://purl.bioontology.org/ontology/SNOMEDCT/272082007
nl	nanoliter	http://purl.obolibrary.org/obo/UO_0000102
nM	nanomolar	http://purl.obolibrary.org/obo/UO_0000065
Not Specified	No value provided. Not stated explicitly or in detail.	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C38046&ns=NCI_Thesaurus
percentage	A fraction or ratio with 100 understood as the denominator. e.g. percentage of a cell population of interest within a parent population	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C25613&ns=NCI_Thesaurus
pg	picogram	http://purl.obolibrary.org/obo/UO_0000025
pg/ml	picogram per milliliter	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C67327&ns=NCI_Thesaurus
pg/nl	picogram per nanoliter	

pg/ul	picogram per microliter	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C67306&ns=NCI_Thesaurus
pl	picoliter	http://purl.obolibrary.org/obo/UO_0000103
pM	picomolar	http://purl.obolibrary.org/obo/UO_0000066
RPKM	Reads Per Kilobase Million: Normalized expression value of a given gene as measured by single-end RNA sequencing	http://www.ncbi.nlm.nih.gov/pubmed/22872506
stim/unstim fold change	Fold change comparing stimulated vs unstimulated sample	
TCID50	mean tissue culture infective dose	http://en.wikipedia.org/wiki/Virus_quantification
TPM	Transcripts per million reads-Measurement of mRNA abundance using RNA-seq data	http://www.ncbi.nlm.nih.gov/pubmed/22872506
ug	microgram	http://purl.obolibrary.org/obo/UO_0000023
ug/ml	microgram per milliliter	http://purl.bioontology.org/ontology/SNOMEDCT/258801007
ug/ul	microgram per microliter	http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&code=C42576&ns=NCI_Thesaurus
ul	microliter	http://purl.obolibrary.org/obo/UO_0000101

uM	micromolar	http://purl.bioontology.org/ontology/SNOMEDCT/258814008
units/ml	Enzyme Unit per Milliliter. Unit of catalytic activity concentration defined as activity equal to one enzyme unit per one milliliter of system volume.	http://purl.bioontology.org/ontology/SNOMEDCT/259002007

44. **lk_virus_strain**

Name	Description	Link	ID
virus_strain_preferred			
A/Anhui/1/2005	A/Anhui/1/2005	https://www.fludb.org/brc/fluStrainDetails.spg?strainName=A%2FAnhui%2F1%2F2005%28H5N1	0
A/Brisbane/10/2007	The virus strain name is: 'A/Brisbane/10/2007'. The virus name : 'H3N2', and season_list is: '2008-2009,2009-2010'.	http://www.fda.gov/BiologicsBloodVaccines/GuidanceCompliance RegulatoryInformation/Post-MarketActivities/LotReleases/ucm062928.htm	476294
A/Brisbane/59/2007	The virus strain name is: 'A/Brisbane/59/2007'. The virus name : 'H1N1', and season_list is: '2008-2009,2009-2010'.	http://www.fda.gov/BiologicsBloodVaccines/GuidanceCompliance RegulatoryInformation/Post-MarketActivities/LotReleases/ucm062928.htm	504904

A/California/04/2009	The virus strain name is: 'A/California/04/2009'. The virus name : 'H1N1', and season_list is: 'NA'.	https://www.fludb.org/brc/fluStrainDetails.spg?strainName=A%2FCalifornia%2F04%2F2009%28H1N1%29	0
A/California/7/2009	The virus strain name is: 'A/California/7/2009'. The virus name : 'H1N1', and season_list is: '2010-2011,2011-2012,2012-2013'.	http://www.fda.gov/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Post-MarketActivities/LotReleases/ucm062928.htm	1316510
A/Egypt/306	A/Egypt/306	https://www.fludb.org/brc/fluStrainDetails.spg?strainName=A%2FEgypt%2F306%28H1N1	0
A/Indonesia/5/2005	A/Indonesia/5/2005(H5N1)	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=400788	400788
A/New Caledonia/20/1999	The virus strain name is: 'A/New Caledonia/20/1999'. The virus name : 'H1N1', and season_list is: '2005-2006, 2006-2007'.	http://www.fda.gov/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Post-MarketActivities/LotReleases/ucm062928.htm	381512

A/Perth/16/2009	The virus strain name is: 'A/Perth/16/2009'. The virus name : 'H3N2', and season_list is: '2010-2011,2011-2012'.	http://www.fda.gov/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Post-MarketActivities/LotReleases/ucm062928.htm	654811
A/Puerto Rico/8/1934	A/Puerto Rico/8/1934(H1N1)	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=183764	211044
A/Solomon Islands/3/2006	The virus strain name is: 'A/Solomon Islands/3/2006'. The virus name : 'H1N1', and season_list is: '2007-2008'.	http://www.fda.gov/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Post-MarketActivities/LotReleases/ucm062928.htm	464623
A/South Dakota/06/2007	The virus strain name is: 'A/South Dakota/06/2007'. The virus name : 'H1N1', and season_list is: '2009 Southern Hemisphere'.	https://www.fludb.org/brc/fluStrainDetails.spg?strainName=A%2FSouth+Dakota%2F06%2F2007%28H1N1%29	0

A/Texas/50/2012	The virus strain name is: 'A/Texas/50/2012'. The virus name : 'H3N2', and season_list is: '2013-2014, 2014-2015'.	https://www.fludb.org/brc/fluStrainDetails.spg?strainName=A%2FTexas%2F50%2F2012%28H3N2%29	0
A/Turkey/15/2006	A/Turkey/15/2006	https://www.fludb.org/brc/fluStrainDetails.spg?strainName=A%2FTurkey%2F15%2F2006%28H5N1	0
A/Uruguay/716/2007	The virus strain name is: 'A/Uruguay/716/2007'. The virus name : 'H3N2', and season_list is: '2008-2009,2009-2010'.	http://www.fda.gov/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Post-MarketActivities/LotReleases/ucm062928.htm	0
A/Victoria/3/1975	The virus strain name is: 'A/Victoria/3/1975'. The virus name : 'H3N2', and season_list is: 'NA'.	https://www.fludb.org/brc/fluStrainDetails.spg?strainName=A%2FVictoria%2F3%2F1975%28H3N2%29	392809

A/Victoria/361/2011	The virus strain name is: 'A/Victoria/361/2011'. The virus name : 'H3N2', and season_list is: '2012-2013'.	http://www.fda.gov/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Post-MarketActivities/LotReleases/ucm062928.htm	1268360
A/Vietnam/1196/2004	A/Vietnam/1196/2004	https://www.fludb.org/brc/fluStrainDetails.spg?strainName=A%2FVietnam%2F1196%2F2004%28H5N1	0
A/Wisconsin/67/2005	The virus strain name is: 'A/Wisconsin/67/2005'. The virus name : 'H3N2', and season_list is: '2006-2007,2007-2008'.	http://www.fda.gov/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Post-MarketActivities/LotReleases/ucm062928.htm	393902
A/X-31	A/X-31(H3N2)	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=132504	132504
B/Brisbane/03/2007	B/Brisbane/03/2007	https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1600158	1600158

B/Brisbane/60/2008	The virus strain name is: 'B/Brisbane/60/2008'. The virus name : 'B', and season_list is: '2009-2010'.	http://www.fda.gov/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Post-MarketActivities/LotReleases/ucm062928.htm	604436
B/Florida/4/2006	The virus strain name is: 'B/Florida/4/2006'. The virus name : 'B', and season_list is: '2008-2009'.	http://www.fda.gov/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Post-MarketActivities/LotReleases/ucm062928.htm	461739
B/Lee/1940	The virus strain name is: 'B/Lee/1940'. The virus name : 'B', and season_list is: 'NA'.	https://www.fludb.org/brc/fluStrainDetails.spg?strainName=B%2FLee%2F1940	0
B/Malaysia/2506/2004	The virus strain name is: 'B/Malaysia/2506/2004'. The virus name : 'B', and season_list is: '2006-2007,2007-2008'.	http://www.fda.gov/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Post-MarketActivities/LotReleases/ucm062928.htm	464417

B/Massachusetts/02/2012	The virus strain name is: 'B/Massachusetts/02/2012'. The virus name : 'B', and season_list is: '2012-2013'.	http://www.fda.gov/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Post-MarketActivities/LotReleases/ucm062928.htm	1321139
B/Shanghai/361/2002	The virus strain name is: 'B/Shangai/361/2002'. The virus name : 'B', and season_list is: '2005-2006'.	http://www.fda.gov/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Post-MarketActivities/LotReleases/ucm062928.htm	335812
B/Wisconsin/01/2010	The virus strain name is: 'B/Wisconsin/01/2010'. The virus name : 'B', and season_list is: '2012-2013'.	http://www.fda.gov/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Post-MarketActivities/LotReleases/ucm062928.htm	1089607

45. **lk_yes_no**

Name	Description
No	No
Yes	Yes