IEDB Data Dictionary

IMPORTANT NOTES: Please read this sheet before reviewing the Data Dictionary

This workbook contains two worksheets. The first worksheet provides an overview and lists the minimum fields required to complete one valid epitope entry. The second worksheet lists the data dictionary defined for IEDB. The IEDB Data Dictionary lists all the fields along with their interpretation made for the project. The data dictionary also provides the data type for each field with some sample values. If the values for a field come from a controlled list of selection, it is indicated by the symbol (▼) in the dropdown column. Red colored text is used to indicate main classes under which various sub classes and/or fields are grouped. Classes are grouping of fields by their natural relationship. The final two columns (Data Availability and Comments) are specifically added to be used by large scale epitope discovery team members and other database users for providing input to the IEDB program. Contact the IEDB team for any questions or suggestions.

Required Fields

The following set of fields is the minimum required fields to be completed before an epitope record can be added to the database. Twenty six fields constitute five required fields category. Essentially one set from each category has to be filled out. These fields are highlighted in yellow in the data dictionary

#			Section Classification	Field Name	Comments
1	a		Reference - Journal Article	PubMed ID	At least one set of fields from Category # 1 (1a, 1b or 1c) has to be filled out.
	b	i	Reference - Submission	Author(s)	
		ii	Reference - Submission	Affiliation(s)	
	c		Reference - Patents	Patent Publication Number	
2	a		Epitope Structure	Linear Sequence	At least one of the three fields from Category # 2 (2a, 2b or 2c) has to be filled out.
	b		Epitope Structure	SMILES Structure	
	c		Epitope Structure	Conformational Sequence	
3	a		Epitope Structure	Epitopic Region / Domain	Mandatory field. This boolean field indicates whether the epitope that is captured is a minimal epitope or contained within a region / domain.
4	a		Epitope Source	Antigen Nature	At least one of the seven fields from Category # 4 (4a, 4b, 4c, 4d, 4e, 4f or 4g) has to be filled out. If the value of Natural Antigen, which is a boolean field, is 'no', all other Epitope-Source
	b		Epitope Source	Source Species	
	c		Epitope Source	Gene Name	
	d		Epitope Source	Protein Name	

	e		Epitope Source	GenBank ID	fields are ignored.
	f		Epitope Source	Swiss Prot ID	
	g		Epitope Source	PDB ID	
5	**a**	**i**	MHC Binding	MHC Allele	At least one set of fields from Category # 5 (5a, 5b, 5c, 5d) has to be filled out. All the fields in a subsection has to be filled out if that subsection is selected. For example, if 5a is chosen, all three fields (5a-i,ii,iii) have to be filled out. The following fields - Assay Type, and Qualitative Measurement, can be entered as "Unknown" if the data is unavailable. It's anticipated that most of the data imports from other existing databases might not have the assay related fields.
		ii	MHC Binding	Assay Type	
		iii	MHC Binding	Qualitative Measurement	
	b	**i**	Naturally Processed Ligands	MHC Allele	
		ii	Naturally Processed Ligands	Assay Type	
		iii	Naturally Processed Ligands	Qualitative Measurement	
	c	**i**	T Cell Response - Assay	MHC Allele	
		ii	T Cell Response - Assay	Assay Type	
		iii	T Cell Response - Assay	Qualitative Measurement	
	d	**i**	B Cell Response - Assay	Assay Type	
		ii	B Cell Response - Assay	Qualitative Measurement	

IEDB Data Dictionary

Data Field #	REFERENCE – Journal Article	Reference is a source from which Epitope and its related information are extracted. Journal Article refers to manuscripts published in Journals.	Sample Values	Data Type	Drop down	Data Availability	Comments
1	PubMed ID	Unique identifier for records available through PubMed Search Interface. PubMed, a service of the National Library of Medicine, includes over 15 million citations for biomedical articles back to the 1950's. These citations are from MEDLINE and additional life science journals	10562307	Number			
2	Journal Title	Title of journal containing the article	J Clin Invest	Varchar2(200)			
3	Journal ISSN	ISSN of Journal in which article is present. ISSN (International Standard Serial Number) is an eight-digit number which identifies periodical publications.	0021-9738	Varchar2(15)			
4	Journal Volume	Volume number of journal containing the article	104	Varchar2(15)			
5	Journal Issue	Issue number of journal containing the article	10	Number			
6	Journal Date	Publication date of the article in Journal	Nov 1999	Date			
7	Article Title	Title of the article	Naturally processed and presented epitopes of the islet cell autoantigen IA-2 eluted from HLA-DR4	Varchar2(400)			
8	Article Priority	Priority flag if article contains epitope data related to A-C class pathogens	No	Varchar2(1)			
9	Pages	Page numbers (start and end) of article in the Journal	1449-57	Varchar2(24)			
10	Authors	Name of author(s) listed in the article	Peakman M, Stevens EJ, Lohmann T, Alexander A, Tomlinson AJ, Trucco M, Gorga JC, Chicz RM	Varchar2(300)			
11	Affiliations	Institution(s) to which author(s) belong.	Department of Immunology, Denmark Hill Campus, London SE5	Varchar2(300)			
12	MeSH List	List of MeSH terms in article. MeSH stands for Medical Subject Headings. MeSH is NLM's controlled vocabulary used for indexing articles for MEDLINE/PubMed. MeSH terminology provides a consistent way to retrieve information that may use different terminology for the same concepts.	Amino Acid Sequence, Antigen-Presenting Cells, Arthritis, Rheumatoid	Varchar2(400)			
13	Chemical List	List of Chemicals referenced in the article	HLA-DR4 Antigen, Peptide Fragments, IA-2 protein	Varchar2(240)			
14	Keywords	Keywords listed by the author(s) of the article.	Naturally processed, epitopes	Varchar2(2000)			
15	Abstract	Short summary placed prior to the introduction, often with different line justification (block quote) from the rest of the article, used to help readers determine the purpose of the article		Varchar2(4000)			
16	Comment	Comments on article supplied by curator, specifically if certain data is in supplementary materials of the article		Varchar2(2000)			

Data Field #						REFERENCE –Submission	Submission refers to epitope and its related information submitted to IEDB. Data from Large scale antibody and T cell epitope discovery contracts and those transferred from other websites fall under this section.	Sample Values	Data Type	Drop down	Data Availability	Comments
	17					Submission ID	Unique identifier of submission as generated by system	84823746	Number			
	18					Date	Submission date generated by system	12/7/04	Date			
	19					Title	Optional title entered by submitting author(s)	Identification of Class I / II restricted epitopes from Variola and Vaccinia Viruses	Varchar2(400)			
	20					Priority	Priority flag if reference contains epitope data related to A-C class pathogens	Yes	Varchar2(5)			
	21					Submitter Name	Name of person(s) who submits the epitope and its related data to IEDB	Valerie Pasquetto	Varchar2(85)			
	22					Author(s)	Name of author(s) to be listed in citations regarding the specific submission	Oseroff C, Pasquetto V, Sette A	Varchar2(300)			
	23					Affiliation(s)	Institution(s) to which author(s) belong	La Jolla Institute for Allergy and Immunology	Varchar2(300)			
	24					Keywords	Keywords related to the submission, entered by the submitter	Vaccinia Virus, A C pathogenss	Varchar2(2000)			
	25					Abstract	Abstract entered by submitter(s)		Varchar2(4000)			

Data Field #						REFERENCE – Patents	Issued or pending patents that contain epitope and its related information.	Sample Values	Data Type	Drop down	Data Availability	Comments
	26					Patent Publication Number	Unique identifier for patent as assigned by USPTO or WO	6,602,510	Varchar2(35)			
	27					Publication Date	Date of patent official publication	Dec 2000	Date			
	28					Title	Official patent title	HLA class I A2 tumor associated antigen peptides and vaccine compositions	Varchar2(400)			
	29					Priority	Priority flag is patent contains data on A-C class pathogens	No	Varchar2(5)			
	30					Inventor(s)	Inventor(s) of patented item	Fikes JD, Sette A, Sidney J, Southwood S, Celis E, Keogh E, Chesnut R	Varchar2(200)			
	31					Assignee	Name of individual or entity to which patent ownership was assigned to at the time of patent issue	Epimmune Inc	Varchar2(200)			
	32					Keyword(s)	Keywords related to patent article, added by curator	HLA, epitope, tumor, vaccine	Varchar2(2000)			
	33					Abstract	Name of individual or entity to which patent ownership was assigned to at the time of patent issue		Varchar2(4000)			

Data Field #						EPITOPE – STRUCTURE	An epitope is defined as the chemical structure recognized by antigen specific receptors of the immune system (antibodies and/or T cell receptors). In the case of most T cell epitopes, the epitope is defined as the structure that is presented in association with specific MHC molecules, and is bound by the variable regions of specific TCRs. Likewise, a B cell epitope is any structure bound by antibodies (monoclonal or polyclonal) through their variable regions. Both linear and conformational epitopes are considered within the scope of the database. Data relating to MHC bound peptides is also included even in the absense of available T cell recognition data. The Epitope Structure captures the physical and chemical features of an epitope	Sample Values	Data Type	Drop down	Data Availability	Comments
	34					Epitope Name	Name of the epitope as used in the reference	NP 218-226	Varchar2(200)			
	35					Chemical Type	Categorization of epitope compound as lipid, carbohydrate, DNA, RNA, peptide, organic, inorganic, etc.	Peptide, Lipid	Varchar2(35)	▼		
	36					Continuous Epitope	Discontinuous epitopes, on a protein antigen are formed from several separate regions in the primary sequence of a protein brought together by protein folding. Antibodies that bind discontinuous epitopes bind only native folded proteins.	Continuous/ Discontinuous	Varchar2(85)	▼		
	37					SMILES Structure	SMILES notation for 2-D structure of epitope. SMILES stand for Simplified Molecular Input Line Entry Specification. SMILES is widely used as a general-purpose chemical nomenclature and data exchange format	CN1CCC[C@H]1c2cccnc2 (*SMILES structure for Nicotine*)	Varchar2(3500)			
	38					Linear Sequence	Linear sequence of epitope amino acids, if epitope is a peptide. Linear sequence field also captures continuous epitopes that has a conformation. Other chemical structures are captured using SMILES structure.	AYERMCNIL	Varchar2(50)			
	39					Conformational Sequence	Sometimes epitopes that contain conformational determinant consists of amino acid residues that are not contiguous within the protein, but are brought together on the surface by folding of the protein. In such cases the discontinuous amino acid sequence constituting the epitope are entered in alphanumeric or position notation.	A21,Y22,E33,R34,M35,S80,N81,I82,L83	Varchar2(2000)			
	40					Modification Type	Modification Type captures post-translational modification of the epitope and other modifications including formylation, oxidation of cystine, etc. Post-translational modification is the enzymatic processing of a polypeptide chain after translation from messenger RNA and after peptide bond formation has occurred. IEDB conforms to the SWISS-PROT standard list for post-translational modification categories but supplemented with additional ones as appropriate.	Sulfhydryl modification	Varchar2(85)	▼		
	41					Modified Sequence	Indicates the residues that are modified by the modification type. Single letter amino acid code of the residue is used followed by the it's position within the epitope.	S6	Varchar2(4000)			
	42					Author Identified Mimotopes	Mimotope is a structure unrelated to the antigen or immunogen that is recognized by the same antigen receptor. If yes, the specific mimotope information is captured in the comments.	Yes / No	Varchar2(85)			
	43					Comments	Curator added comments		Varchar2(2000)			

	44					Epitopic Region / Domain	If the exact location of the epitope in its source is unknown, but the region or domain in which it may be contained is less than 50 residues in length or 5000 daltons in molecular weight, the region or domain is captured as an epitope with this field specified as "Yes". When the value is "Yes", the epitope structure fields does not represent the epitope, but rather the region in which it is present.	Yes / No	Varchar2(1)			
Data Field #						**EPITOPE – SOURCE**	**Epitope Source refers to the phylogenetic or chemical source of the epitope.**	**Sample Values**	**Data Type**	**Drop down**	**Data Availability**	**Comments**
	45					Source Species	Source species of antigen containing the epitope, selected from a hierarchical list of species from NCBI taxonomy database .	Influenza A Virus	Varchar2(150)	▼		
	46					Species Strain	Strain of epitope source species either as specified in NCBI Taxonomy database or recorded by the curator.	A/PR/84	Varchar2(85)			
	47					Chemical Type	Categorization of antigen compound as protein, lipid, carbohydrate, DNA, RNA, organic, inorganic, etc.	Protein	Varchar2(35)	▼		
	48					Gene Name	Name of the Gene coding for the epitope	NP	Varchar2(200)			
	49					Protein Name	Name of the Protein containing epitope	Nucleoprotein (NP)	Varchar2(200)			
	50					Swiss-Prot ID	Unique identifier of protein sequence in Swiss-Prot database. If the protein sequence identifier is not provider by the author, curator finds them, when applicable.	Q07539	Varchar2(35)			
	51					Epitope Starting Position	Starting position of continuous epitope in the source antigen sequence as mentioned in the reference. Position of residues in discontinuous epitopes are captured in Conformation Sequence field.	218	Number			
	52					Epitope Ending Position	Ending position of the continuous epitope in the source antigen sequence as mentioned in the reference. Position of residues in discontinuous epitopes are captured in Conformation Sequence field.	226	Number			
	53					Epitope Swiss-Prot / GenBank Positions	Starting and Ending Position of epitope in source antigen. Entered only if the author specified epitope positions is different from those in the protein sequence identified by the curator	219-227	Varchar2(35)			
	54					GenBank ID	Unique identifier of gene sequence in GenBank database	M23976	Varchar2(35)			
	55					PDB ID	Identification of source if structure is present in PDB.	1AIL	Varchar2(35)			
	56					Epitope PDB positions	List of PDB positions of residues representing epitope	D20-D22, D129-D132, C25-C29, C126-C127, C20-C22	Varchar2(200)			
	57					Functional multimer	Number of monomers if the antigen structure is a functional multimer.	1	Number			
	58					Epitope Source Nature	Indicates whether the antigen is a natural or artificial. Natural here refers to things that exist in nature.	Natural Antigen / Artificial Antigen	Varchar2(85)	▼		
	59					Comments	Curator added comments		Varchar2(2000)			

Data Field #						MHC BINDING	MHC Binding captures the details of MHC molecules and epitope binding information with the MHC molecule along with Epitope-MHC complex details, if available.	Sample Values	Data Type	Drop down	Data Availability	Comments
						Binding Details	This sub section captures the MHC binding details.					
		60				Source Species of MHC	Species of the MHC molecule, selected from a hierarchical list of species from NCBI taxonomy database .	Human	Varchar2(150)	▼		
		61				Species Strain	Strain of MHC source species either as specified in NCBI Taxonomy database or recorded by the curator.		Varchar2(85)			
		62				MHC Class	MHC is broadly divided into class I and class II. There are also non-classical MHC molecules. In general, MHC class I molecules present peptides generated in the cytosol to CD8 T cells and MHC class II molecules present peptides to CD4 T cells.	I	Varchar2(35)	▼		
		63				MHC Allele	Alleles are mutually exclusive forms of the same gene, occupying the same locus on homologous chromosomes within a species, and governing the same biochemical and developmental process.IEDB conforms to HLA workshop nomeclature for the HLA alleles and Immuno Polymorphism Database (IPD) for other MHC alleles, where applicable.This field captures the MHC Allele that epitope binds to.	HLA A*0201	Varchar2(35)	▼		
		64				Assay type	Name of the experimental setup used to measure epitope binding to MHC molecule	Competition Assay / Stabilization Assay	Varchar2(50)	▼		
		65				Response Measured	Type of parameter measured using the assay.	IC 50 / EC50	Varchar2(85)	▼		
		66				Qualitative Measurement	Qualitative assessment of the binding value measured using the assay as reported in the reference.	Positive / Negative	Varchar2(35)	▼		
		67				Measurement Inequality	Inequality of the quantitative measurement captured. By default, measurement inequality is "=".	> / < / >= / <= / =	Varchar2(5)	▼		
		68				Quantitative Measurement	Actual numerical value measured using the assay as reported in the reference.	10	Number			
		69				Units	Standard quantities of measurement which are specific to a type of measurement.	nM	Varchar2(15)	▼		
		70				Location of Data	Free text mentioning the location of Assay related data in the reference.	Table 4, Page 324	Varchar2(35)			
		71				Comments	Curator added comments		Varchar2(2000)			
						Chain #1	MHC molecules are comprised of two polypeptide chains – alpha chain and beta chain or beta-2-microglobulin. This sub section captures fields related to alpha chain					
		72				Chain type	Name of MHC polypeptide chain	Class I Alpha	Varchar2(35)	▼		
		73				Gen Bank ID	GenBank ID of MHC Chain. It's the unique identifier of gene sequence in GenBank database	K02883	Varchar2(35)			
		74				Swiss Prot ID	Swiss-Prot ID of MHC Chain. It's the unique identifier of protein sequence in SWISS-PROT database	P01892	Varchar2(35)			
		75				PDB ID	It's a unique PDB identifier of molecular chain representing MHC chain.	1AKJ	Varchar2(35)			
						Chain #2	This sub section captures fields related to beta chain or beta-2-microglobulin.					
		76				Chain type	Name of MHC polypeptide chain	Beta-2-microglobulin	Varchar2(35)	▼		
		77				Gen Bank ID	GenBank ID of MHC Chain. It's the unique identifier of gene sequence in GenBank database	M17987	Varchar2(35)			

		78				Swiss Prot ID	Swiss-Prot ID of MHC Chain. It's the unique identifier of protein sequence in SWISS-PROT database	P61769	Varchar2(35)			
		79				PDB ID	It's a unique PDB identifier of molecular chain representing MHC chain.	1BOR	Varchar2(35)			
						Epitope-MHC Complex	This sub section captures all related structure fields if structure information for epitope-MHC complex is available					
		80				Complex PDB ID	Unique four-letter PDB identifier of molecular structure representing epitope-MHC complex.	1ABC	Varchar2(35)			
		81				Antigen residues interacting with MHC	List of epitope residues interacting with MHC	H 103, E 120	Varchar2(200)			
		82				MHC residues interacting with antigen	List of MHC residues interacting with epitope	F 111, S 222	Varchar2(200)			
		83				Antigen Contact Area	Contact area of epitope interacting with MHC	800	Number			
		84				MHC Contact Area	Contact area of MHC interacting with epitope	760	Number			
		85				Interacting atom pairs	Pairs of atoms involved in the interaction between epitope and MHC	A 103 OG1, B 111 N3	Varchar2(2000)			
		86				Allosteric effect	This Boolean field indicates whether an allosteric effect has taken place. Allosteric effect is of or involving a change in the shape and activity of a molecule's structure that results from molecular binding with a regulatory substance at a site other than the active one where changes take place.	No / Yes	Varchar2(1)			
		87				Cofactor/Effector Name	The name of cofactor changing the epitope-MHC interaction activity if such a change has taken place.	Human Membrane cofactor protein	Varchar2(200)			
	88					**Comments**	Curator added comments		Varchar2(2000)			

Data Field #						**PEPTIDE ELUTION DATA**	**Peptide Elution Data captures information relating to the determination of epitopes that are naturally bound by MHC molecules. Antigen-presenting cells process antigens and present peptide epitopes complexed with MHC molecules.**	**Sample Values**	**Data Type**	**Drop down**	**Data Availability**	**Comments**
						Antigen Presentation	This sub section captures information about the antigen presenting cells. These are cells that process and present eptiopes to effector cells.					
						MHC	This section captures the details of MHC molecules presented by the Antigen presenting cells					
				89		MHC Class	Classification of Major Histocompatibility Complex (MHC). The MHC is a cluster of genes important in immune recognition and signaling between cells of the immune system.	I	Varchar2(35)	▼		
				90		MHC Allele	Alleles are mutually exclusive forms of the same gene, occupying the same locus on homologous chromosomes within a species, and governing the same biochemical and developmental process.IEDB conforms to HLA workshop nomeclature for the HLA alleles and Immuno Polymorphism Database (IPD) for other MHC alleles, where applicable.This field captures the MHC Allele that epitope binds to.	HLA A*0201	Varchar2(35)	▼		

						MHC Chain #1	MHC molecules are comprised of two polypeptide chains – alpha chain and beta chain or beta-2-microglobulin. This sub section captures fields related to alpha chain					
					91	Chain type	Name of MHC polypeptide chain	Class I Alpha	Varchar2(35)	▼		
					92	Gen Bank ID	GenBank ID of MHC Chain. It's the unique identifier of gene sequence in GenBank database	K02883	Varchar2(35)			
					93	Swiss Prot ID	Swiss-Prot ID of MHC Chain. It's the unique identifier of protein sequence in SWISS-PROT database	P01892	Varchar2(35)			
					94	PDB ID	It's a unique PDB identifier of molecular chain representing MHC chain.	1AKJ	Varchar2(35)			
						MHC Chain #2	This sub section captures fields related to beta chain or beta-2-microglobulin.					
					95	Chain type	Name of MHC polypeptide chain	Beta-2-microglobulin	Varchar2(35)	▼		
					96	Gen Bank ID	GenBank ID of MHC Chain. It's the unique identifier of gene sequence in GenBank database	M17987	Varchar2(35)			
					97	Swiss Prot ID	Swiss-Prot ID of MHC Chain. It's the unique identifier of protein sequence in SWISS-PROT database	P61769	Varchar2(35)			
					98	PDB ID	It's a unique PDB identifier of molecular chain representing MHC chain.	1BOR	Varchar2(35)			
						Source Species	This sub section captures the species information the antigen presenting cells, which express the MHC molecules.					
				99		Species	Source species of the antigen presenting cells, selected from a hierarchical list of species from NCBI taxonomy database and ICTV	Human	Varchar2(150)	▼		
				100		Species Strain	Strain of the species either as specified in NCBI Taxonomy database or recorded by the curator.		Varchar2(85)			
				101		Sex	Sex of the individuals tested	Male	Varchar2(10)	▼		
				102		Age	Age of the individuals tested	20	Varchar2(35)			
				103		MHC types present	List of MHC Alleles expressed by the antigen presenting cells	A*0201, B*1801	Varchar2(85)			
				104		Disease Name	Disease state of the individual(s) as a result of immunization or the disease the individual(s) are associated with. IEDB conforms to International Classification of Diseases (ICD-10), if available	HCV infection	Varchar2(200)	▼		
				105		Disease Stage	Disease stage of the individual(s) at the stage when effector cells are assayed for response.	Chronic	Varchar2(85)	▼		
						Antigen Presenting Cells	This sub section stores the name of antigen presenting cells and its origin					
				106		Tissue or Cell Type	Name of the tissue or cell type of the antigen presenting cells	PBMC / Spleen / etc	Varchar2(85)	▼		
				107		Origin	Origin of the cells (ex vivo, in vivo, in vitro, cell lines, clones)	ex vivo / Cell line / clone / etc	Varchar2(85)	▼		
						Antigen	Substance that is used to detect the immune response elicited by the immunization, and from which the epitope presented by the MHC molecule, is derived. In this context the antigen is the molecular structure that contains the epitope, and from which epitope is derived as a result of natural processing.					
			108			Antigen Type	This field indicates if Antigen is same as one of the following - epitope, source protein of the epitope, source species of the epitope, or peptide containing the epitope. If antigen is none of these choices, other antigen fields that are listed below are filled out.	Epitope / Source Protein / Source Species / Peptide containing Epitope	Varchar2(85)	▼		
			109			Antigen Name	Name of antigen as mentioned in the reference	NP 218-226	Varchar2(200)			
			110			Gene Name	Gene name coding for the antigen used in the assay	NP	Varchar2(200)			

			111			Chemical Type	Categorization of antigen compound as protein, lipid, carbohydrate, DNA, RNA, organic, inorganic, etc.	Peptide, Lipid	Varchar2(35)	▼		
			112			Source Species	Source Species that produced the antigen used in the assay, selected from a hierarchical list of species from NCBI taxonomy database	Influenza A Virus	Varchar2(150)	▼		
			113			Species Strain	Strain of the species either as specified in NCBI Taxonomy database or recorded by the curator.		Varchar2(85)			
			114			SMILES Structure	SMILES notation for 2-D structure. SMILES stand for Simplified Molecular Input Line Entry Specification. SMILES is widely used as a general-purpose chemical nomenclature and data exchange format		Varchar2(3500)			
			115			Sequence	Linear sequence of antigen amino acids. Other chemical structures will be captured using SMILES structure.	AYERMCNIL	Varchar2(500)			
			116			GenBank ID	Unique identifier of antigen used in the assay in GenBank database	K02883	Varchar2(35)			
			117			Swiss Prot ID	Unique identifier of sequence of antigen used in the assay in Swiss-Prot database	P01892	Varchar2(35)			
			118			PDB ID	Unique PDB identifier of molecular chain representing antigen used in the assay	1AKJ	Varchar2(35)			
						Carrier / Vector	Carrier is a molecular structure that is not normally associated with the epitope. The epitope is covalently linked in vitro or in vivo, thereby in general modulating its immunogenicity, antigenicity or processing. A vector is an entity (virus, bacteria) in which the epitope is incorporated for the purpose of delivering to the cells or organism.					
				119		Carrier Name	Name of carrier as reported in the reference.	MUC1 Glycoprotein B cell Epitope	Varchar2(200)			
				120		Chemical Type	Categorization of carrier compound as protein, lipid, carbohydrate, DNA, RNA, organic, inorganic, etc.	Peptide	Varchar2(35)	▼		
				121		SMILES Structure	SMILES notation for 2-D structure. SMILES stand for Simplified Molecular Input Line Entry Specification. SMILES is widely used as a general-purpose chemical nomenclature and data exchange format		Varchar2(3500)			
				122		Source Species	Source species from which the carrier is derived. The values are selected from a hierarchical list of species from NCBI taxonomy database and ICTV	Human	Varchar2(150)	▼		
				123		Species Strain	Strain of the species if not specified in NCBI Taxonomy database, which usually has strain information for species.		Varchar2(85)			
				124		Sequence	Linear sequence of carrier amino acids. Other chemical structures will be captured using SMILES structure.	YKQGGFLGL	Varchar2(4000)			
				125		GenBank ID	Unique identifier of carrier in GenBank database	X91302	Varchar2(35)			
				126		Swiss Prot ID	Unique identifier of carrier sequence in SWISS-PROT database	Q68840	Varchar2(35)			
				127		PDB ID	Unique PDB identifier of molecular chain representing carrier	1CWX	Varchar2(35)			
		128				**Special Culture Conditions**	Free text capturing any special culture conditions used in the assay		Varchar2(500)			
						Assay Information	This section captures information about the experiment used to detect the immune response of epitopes that are naturally bound by MHC molecules					
			129			Assay Type	Name of the experimental setup used to measure the immune response.	Mass Spectrometry	Varchar2(50)	▼		
			130			Response Measured	Type of response measured using the assay.	Presentation of Peptides	Varchar2(85)	▼		

			131			Qualitative Measurement	Qualitative assessment of the value measured using the assay as reported in the reference.	Positive / Negative	Varchar2(35)	▼		
			132			Measurement Inequality	Inequality of the quantitative measurement captured. By default, measurement inequality is "=".	> / < / >= / <= / =	Varchar2(5)	▼		
			133			Quantitative Measurement	Actual numerical value measured using the assay as reported in the reference.	1635	Number			
			134			Units	Standard quantities of measurement which are specific to a type of measurement.	amu	Varchar2(15)	▼		
			135			Location of Data	Free text mentioning the location of Assay related data in the reference.	Figure 2	Varchar2(35)			
		136				Comments	Comments entered by Curator related to peptide elution data.		Varchar2(2000)			

Data Field #						T-CELL RESPONSE	T Cell Response captures all the cell mediated immunity and it's divided into two broad sub sections – Immunization and Assay.	Sample Values	Data Type	Drop down	Data Availability	Comments
						IMMUNIZATION	Immunization describes how the immune system is exposed to an immunogen. This sub section has categories that capture information about the immunized species, immunogen and in vitro or in vivo immunization.					
						Immunized Species	Information about the source species that is being immunized					
			137			Species	Species that received immunization by immunogen, selected from a hierarchical list of species from NCBI taxonomy database and ICTV	Mus musculus (Mouse)	Varchar2(150)	▼		
			138			Strain / Ethnicity	Genetic variant or an inbred line of a higher organism. The values for strain are either as specified in NCBI Taxonomy database or recorded by the curator. In case of human this field store information relating to the ethnicity individuals studied, conforming to HLA workshop conventions, if applicable. Ethnicity relates to large groups of people classed according to common racial, national, tribal, religious, linguistic, or cultural origin or background.	Balb/c	Varchar2(85)			
			139			Sex	Sex of the individuals tested	Female	Varchar2(10)			
			140			Age	Age of the individuals tested	6-8weeks	Varchar2(35)			
			141			MHC types present	List of MHC Alleles expressed in the immunized species	H2-d	Varchar2(85)	▼		
			142			Disease Name	Disease state of the individual(s) as a result of immunization or the disease the individual(s) are associated with. IEDB conforms to International Classification of Diseases (ICD-10), if available	HCV infection	Varchar2(85)	▼		
			143			Disease Stage	Disease stage of the individual(s) at the stage when effector cells are assayed for response.	Chronic	Varchar2(85)	▼		
			144			Immunization Category	This field captures how the species was immunized.	Natural Infection or exposure, Administration, etc	Varchar2(85)	▼		
						Immunogen	Substance that is capable of inducing an immune response (antibody response or cell mediated immunity) and contains the epitope.					

			145			Immunogen Type	This field indicates if immunogen is same as one of the following - epitope, source protein of the epitope, source species of the epitope, or peptide containing the epitope. If immunogen is none of these choices, other imunogen fields that are listed below are filled out.	Epitope / Source Protein / Source Species / Peptide containing Epitope	Varchar2(85)	▼		
			146			Immunogen Name	Name of immunogen as mentioned in the reference.	HCV	Varchar2(200)			
			147			Chemical Type	Categorization of immunogen compound as protein, lipid, carbohydrate, DNA, RNA, organic, inorganic, etc.	DNA / RNA	Varchar2(35)	▼		
			148			SMILES Structure	SMILES notation for 2-D structure. SMILES stand for Simplified Molecular Input Line Entry Specification. SMILES is widely used as a general-purpose chemical nomenclature and data exchange format		Varchar2(3500)			
			149			Source Species	Source species that produces the immunogen, selected from a hierarchical list of species from NCBI taxonomy database and ICTV	Hepatitis C virus	Varchar2(150)	▼		
			150			Species Strain	Strain of the species either as specified in NCBI Taxonomy database or recorded by the curator.		Varchar2(85)			
			151			Sequence	Linear sequence of immunogen amino acids. Other chemical structures will be captured using SMILES structure.		Varchar2(4000)			
			152			GenBank ID	Unique identifier of immunogen in GenBank database	X91302	Varchar2(35)			
			153			Swiss Prot ID	Unique identifier of immunogen sequence in SWISS-PROT database	Q68840	Varchar2(35)			
			154			PDB ID	Unique PDB identifier of molecular chain representing immunogen	1CWX	Varchar2(35)			
						Carrier / Vector	Carrier is a molecular structure that is not normally associated with the epitope. The epitope is covalently linked in vitro or in vivo, thereby in general modulating its immunogenicity, antigenicity or processing. A vector is an entity (virus, bacteria) in which the epitope is incorporated for the purpose of delivering to the cells or organism.					
				155		Carrier Name	Name of carrier as reported in the reference.	MUC1 Glycoprotein B cell Epitope	Varchar2(200)			
				156		Chemical Type	Categorization of carrier compound as protein, lipid, carbohydrate, DNA, RNA, organic, inorganic, etc.	Peptide	Varchar2(35)	▼		
				157		SMILES Structure	SMILES notation for 2-D structure. SMILES stand for Simplified Molecular Input Line Entry Specification. SMILES is widely used as a general-purpose chemical nomenclature and data exchange format		Varchar2(3500)			
				158		Source Species	Source species that produces the carrier, selected from a hierarchical list of species from NCBI taxonomy database and ICTV	Human	Varchar2(150)	▼		
				159		Sequence	Linear sequence of carrier amino acids. Other chemical structures will be captured using SMILES structure.	YKQGGFLGL	Varchar2(4000)			
				160		Species Strain	Strain of the species either as specified in NCBI Taxonomy database or recorded by the curator.		Varchar2(85)			
				161		GenBank ID	Unique identifier of carrier in GenBank database	X91302	Varchar2(35)			
				162		Swiss Prot ID	Unique identifier of carrier sequence in SWISS-PROT database	Q68840	Varchar2(35)			
				163		PDB ID	Unique PDB identifier of molecular chain representing carrier	1CWX	Varchar2(35)			
						In-Vitro Immunization	This sub section capture fields related to immunization that is performed on cells that are not in living organism, as in a test tube. In-Vitro in latin means glass.					
						Cells at the time of Immunization	This sub section captures the details of cells at the time of immunization.					
				164		Responder Cells	Name of the tissue or cell type that responds to immunization	CTL	Varchar2(85)	▼		
				165		Stimulator Cells	Name of the cells that stimulate responders to induce immune response	PBMC	Varchar2(85)	▼		

				166		Restimulation Comments	Comments about the in vitro immunization / restimulation process		Varchar2(2000)			
						In-Vivo Immunization	This sub section captures fields related to immunization that is performed on living organism.					
						Formulation	The mixture of chemicals and/or biological substances that are not covalently linked with the immunogen, but are co-administered with it.					
				167		Formulation	Physical form of the mixture containing the immunogen	Liquid / Powder / Oil / Aerosol / Other	Varchar2(35)			
				168		Adjuvant(s)	Adjuvants are substances that are administered with the immunogen to enhance the immune response and are not covalently linked (opposed to a carrier) to the immunogen.	incomplete Freund's adjuvant	Varchar2(400)	▼		
						Administration	Process of immunizing the source species					
				169		Route	Route of administration	Direct Addition / Intravenous / Intraperitoneal / Subcutaneous / etc	Varchar2(35)	▼		
				170		Number of Immunization	Captures the administration schedule.	4	Varchar2(250)			
		171				**Comments**	Comments entered by Curator related to Immunization		Varchar2(2000)			
						ASSAY	Assay is a quantitative or qualitative evaluation or test of substance used to describe and or measure biological response. This sub section specifically captures T-cell immune responses and has categories that capture information about effector cells, antigen presenting cells, antigen, culture conditions and assay information.					
						Effector Cells	This sub section captures information about effector cells. In general these cells were stimulated by immunization and have acquired measurable functions as a result. In certain cases, effector function can be assayed from naive (not previously immunized) cells.					
			172			Tissue or Cell Type	Name of the tissue or cell type of effector cells	CTL / Splenocytes	Varchar2(85)	▼		
			173			Origin	Origin of the cells (ex vivo, in vivo, in vitro, cell lines, clones)			▼		
			174			TCR Name	Name of T-cell receptor as reported in the reference	T17T-22	Varchar2(200)			
			175			TCR Source Species	Source species of T-cell receptor, selected from a hierarchical list of species from NCBI taxonomy database		Varchar2(150)	▼		
			176			Species Strain	Strain of the species either as specified in NCBI Taxonomy database or recorded by the curator.		Varchar2(85)			
						TCR Chain #1	TCR consists of two chains, alpha and beta, closely associated with the CD3 protein complex. This latter complex is a family of non-polymorphic chains. This sub section captures TCR alpha chain details					
				177		TCR Chain type	Name of TCR Chain Type.	T-cell rececptor alpha chain	Varchar2(35)	▼		
				178		Gen Bank ID	GenBank ID of TCR. It's the unique identifier of gene sequence in GenBank database	AJ416332	Varchar2(35)			
				179		Swiss Prot ID	Swiss-Prot ID of TCR. It's the unique identifier of protein sequence in SWISS-PROT database	Q65ZL6	Varchar2(35)			
				180		PDB ID	Unique PDB identifier of molecular chain representing antibody	1NFD	Varchar2(35)			

						TCR Chain #2	This sub section captures TCR beta chain details					
				181		TCR Chain type	Name of TCR Chain Type.	T-cell receptor beta chain	Varchar2(35)	▼		
				182		Gen Bank ID	GenBank ID of TCR. It's the unique identifier of gene sequence in GenBank database	AJ416332	Varchar2(35)			
				183		Swiss Prot ID	Swiss-Prot ID of TCR. It's the unique identifier of protein sequence in SWISS-PROT database	P11364	Varchar2(35)			
				184		PDB ID	Unique PDB identifier of molecular chain representing antibody	1NFD	Varchar2(35)			
						Antigen Presentation	This sub section captures information about the antigen presenting cells. These are cells that serve as triggers for effector cells to express effector functions.					
						MHC	This section captures the details of MHC molecules presenting the epitope.					
				185		MHC Class	Classification of Major Histocompatibility Complex (MHC). The MHC is a cluster of genes important in immune recognition and signaling between cells of the immune system.	I	Varchar2(35)	▼		
				186		MHC Allele	Alleles are mutually exclusive forms of the same gene, occupying the same locus on homologous chromosomes within a species, and governing the same biochemical and developmental process.IEDB conforms to HLA workshop nomeclature for the HLA alleles and Immuno Polymorphism Database (IPD) for other MHC alleles, where applicable. This field captures the MHC Allele that epitope is restricted to.	HLA A*0201	Varchar2(35)	▼		
						MHC Chain #1	MHC molecules are comprised of two polypeptide chains – alpha chain and beta chain or beta-2-microglobulin. This sub section captures fields related to alpha chain					
					187	Chain type	Name of MHC polypeptide chain	Class I Alpha	Varchar2(35)	▼		
					188	Gen Bank ID	GenBank ID of MHC Chain. It's the unique identifier of gene sequence in GenBank database	K02883	Varchar2(35)			
					189	Swiss Prot ID	Swiss-Prot ID of MHC Chain. It's the unique identifier of protein sequence in SWISS-PROT database	P01892	Varchar2(35)			
					190	PDB ID	It's a unique PDB identifier of molecular chain representing MHC chain.	1AKJ	Varchar2(35)			
						MHC Chain #2	This sub section captures fields related to beta chain or beta-2-microglobulin.					
					191	Chain type	Name of MHC polypeptide chain	Beta-2-microglobulin	Varchar2(35)	▼		
					192	Gen Bank ID	GenBank ID of MHC Chain. It's the unique identifier of gene sequence in GenBank database	M17987	Varchar2(35)			
					193	Swiss Prot ID	Swiss-Prot ID of MHC Chain. It's the unique identifier of protein sequence in SWISS-PROT database	P61769	Varchar2(35)			
					194	PDB ID	It's a unique PDB identifier of molecular chain representing MHC chain.	1BOR	Varchar2(35)			
						Source Species	This sub section captures the species information of the antigen presenting cells					
				195		Autologous or Syngeneic Antigen Presenting Cells?	This field indicates if the antigen presenting cells are autologous (from the same individual) or syngeneic (from genetically identical individuals like inbred strain of laboratory animals) with the effector cells, which are obtained from the immunization process. If entered yes, other source species fields are not entered.	Yes / No	Varchar2(1)			
				196		Species	Source species of the antigen presenting cells, selected from a hierarchical list of species from NCBI taxonomy database	Human	Varchar2(150)	▼		

				197		Strain / Ethnicity	Genetic variant or an inbred line of a higher organism. The values for strain are either as specified in NCBI Taxonomy database or recorded by the curator. In case of human this field store information relating to the ethnicity individuals studied, conforming to HLA workshop conventions, if applicable. Ethnicity relates to large groups of people classed according to common racial, national, tribal, religious, linguistic, or cultural origin or background.	Caucasian	Varchar2(85)			
				198		Sex	Sex of the individuals tested	Male	Varchar2(10)	▼		
				199		Age	Age of the individuals tested	20	Varchar2(35)			
				200		MHC types present	List of MHC Alleles expressed by the antigen presenting cells	A*0201, B*1801	Varchar2(85)	▼		
				201		Disease Name	Disease state of the individual(s) as a result of immunization or the disease the individual(s) are associated with. IEDB conforms to International Classification of Diseases (ICD-10), if available	HCV infection	Varchar2(85)	▼		
				202		Disease Stage	Disease stage of the individual(s) at the stage when effector cells are assayed for response.	Chronic	Varchar2(85)	▼		
						Antigen Presenting Cells	This sub section stores the name of antigen presenting cells and its origin					
				203		Tissue or Cell Type	Name of the tissue or cell type of the antigen presenting cells	PBMC / Spleen / etc	Varchar2(85)	▼		
				204		Origin	Origin of the cells (ex vivo, in vivo, in vitro, cell lines, clones)	ex vivo / Cell line / clone / etc	Varchar2(85)	▼		
						Antigen Presentation Context	This sub section indicates the type of process whereby a cell expresses antigen on its surface in a form capable of being recognized by T lymphocyte.					
				205		Antigen is naturally processed	This is a Boolean field that indicates whether antigen is naturally processed	Yes / No	Varchar2(1)			
						Antigen	Substance that is used to detect the immune response elicited by the immunization, and from which the epitope presented by the MHC molecule, is derived.					
			206			Antigen Type	This field indicates if Antigen is same as one of the following - epitope, source protein of the epitope, source species of the epitope, or peptide containing the epitope. If antigen is none of these choices, other antigen fields that are listed below are filled out.	Epitope / Source Protein / Source Species / Peptide containing Epitope	Varchar2(85)	▼		
			207			Antigen Name	Name of antigen as mentioned in the reference	NP 218-226	Varchar2(200)			
			208			Gene Name	Gene name coding for the antigen used in the assay	NP	Varchar2(200)			
			209			Chemical Type	Categorization of antigen compound as protein, lipid, carbohydrate, DNA, RNA, organic, inorganic, etc.	Peptide, Lipid	Varchar2(35)	▼		
			210			Source Species	Source Species that produced the antigen used in the assay, selected from a hierarchical list of species from NCBI taxonomy database	Influenza A Virus	Varchar2(150)	▼		
			211			Species Strain	Strain of the species either as specified in NCBI Taxonomy database or recorded by the curator.		Varchar2(85)			
			212			SMILES Structure	SMILES notation for 2-D structure. SMILES stand for Simplified Molecular Input Line Entry Specification. SMILES is widely used as a general-purpose chemical nomenclature and data exchange format		Varchar2(85)			
			213			Sequence	Linear sequence of antigen amino acids. Other chemical structures will be captured using SMILES structure.	AYERMCNIL	Varchar2(500)			
			214			GenBank ID	Unique identifier of antigen used in the assay in GenBank database	K02883	Varchar2(35)			
			215			Swiss Prot ID	Unique identifier of sequence of antigen used in the assay in Swiss-Prot database	P01892	Varchar2(35)			

			216			PDB ID	Unique PDB identifier of molecular chain representing antigen used in the assay	1AKJ	Varchar2(35)			
						Carrier	Carrier is a molecular structure that is not normally associated with the epitope. The epitope is covalently linked in vitro or in vivo, thereby in general modulating its immunogenicity, antigenicity or processing. A vector is an entity (virus, bacteria) in which the epitope is incorporated for the purpose of delivering to the cells or organism.					
				217		Carrier Name	Name of carrier as reported in the reference.	MUC1 Glycoprotein B cell Epitope	Varchar2(200)			
				218		Chemical Type	Categorization of carrier compound as protein, lipid, carbohydrate, DNA, RNA, organic, inorganic, etc.	Peptide	Varchar2(35)	▼		
				219		SMILES Structure	SMILES notation for 2-D structure. SMILES stand for Simplified Molecular Input Line Entry Specification. SMILES is widely used as a general-purpose chemical nomenclature and data exchange format		Varchar2(3500)			
				220		Source Species	Source species that produces the carrier, selected from a hierarchical list of species from NCBI taxonomy database and ICTV	Human	Varchar2(150)	▼		
				221		Species Strain	Strain of the species either as specified in NCBI Taxonomy database or recorded by the curator.		Varchar2(85)			
				222		Sequence	Linear sequence of carrier amino acids. Other chemical structures will be captured using SMILES structure.	YKQGGFLGL	Varchar2(500)			
				223		GenBank ID	Unique identifier of carrier in GenBank database	X91302	Varchar2(35)			
				224		Swiss Prot ID	Unique identifier of carrier sequence in SWISS-PROT database	Q68840	Varchar2(35)			
				225		PDB ID	Unique PDB identifier of molecular chain representing carrier	1CWX	Varchar2(35)			
		226				**Special Culture Conditions**	Free text capturing any special culture conditions used in the assay	antigen presenting cells pretreated with INF-Gamma	Varchar2(500)			
						Assay Information	This section captures information about the experiment used to detect the T Cell response.					
			227			Assay Type	Name of the experimental setup used to measure the immune response	ELISPOT / ICS / Cytotoxicity / etc	Varchar2(35)	▼		
			228			Response Measured	Type of response measured using the assay.	INF-Gamma / Chromium Release / etc	Varchar2(100)	▼		
			229			Number of Subjects Tested	Captures number of subjects that were tested	5	Number			
			230			Number of Subjects Responded	Indicates the responded subjects from the number of the subjects that were tested	3	Number			
			231			Qualitative Measurement	Qualitative assessment of the value measured using the assay as reported in the reference.	Positive / Negative	Varchar2(35)	▼		
			232			Measurement Inequality	Inequality of the quantitative measurement captured. By default, measurement inequality is "=".	> / < / >= / <= / =	Varchar2(5)	▼		
			233			Quantitative Measurement	Actual numerical value measured using the assay as reported in the reference.	Positive / Negative / Unknown	Number			
			234			Units	Standard quantities of measurement which are specific to a type of measurement.	SFC / % SL / OD / etc	Varchar2(15)	▼		
			235			Location of Data	Free text mentioning the location of Assay related data in the reference.	Figure 7 / Table 2	Varchar2(35)			

						Epitope-MHC-TCR Complex	This section captures all related structure fields if structure information for Epitope-MHC-TCR complex is available					
			236			Complex PDB ID	Unique four-letter PDB identifier of molecular structure representing epitope-MHC-TCR complex	1ABC	Varchar2(35)			
			237			Epitope-MHC residues interacting TCR	List of epitope residues interacting with TCR	H 103, E 120	Varchar2(200)			
			238			TCR residues interacting Epitope-MHC	List of TCR residues interacting with epitope-MHC	F 111, S 222	Varchar2(200)			
			239			Contact area for Epitope-MHC	Contact area of epitope-MHC interacting with TCR	800	Number			
			240			Contact area for TCR	Contact area of TCR interacting with epitope-MHC	760	Number			
			241			Interacting atom pairs	Pairs of atoms involved in the interaction between epitope and TCR	A 103 OG1, B 111 N3	Varchar2(2000)			
			242			Allosteric effect	This Boolean field indicates whether an allosteric effect has taken place. Allosteric effect is of or involving a change in the shape and activity of a molecule's structure that results from molecular binding with a regulatory substance at a site other than the active one where changes take place.	No / Yes	Varchar2(1)			
			243			Cofactor/Effector	The name of cofactor changing the epitope-TCR interaction activity if such a change has place.	Human Membrane cofactor protein	Varchar2(200)			
		244				Comments	Comments entered by Curator related to Assay		Varchar2(2000)			

Data Field #						**B-CELL RESPONSE**	**B Cell Response captures all the antibody responses and it's divided into two broad sub sections – Immunization and Assay.**	**Sample Values**	**Data Type**	**Drop down**	**Data Availability**	**Comments**
						IMMUNIZATION	Immunization describes how the immune system is exposed to an immunogen. This sub section has categories that capture information about the immunized species, immunogen and in vivo immunization.					
						Immunized Species	Information about the source species that is being immunized					
			245			Species	Species that received immunization by immunogen, selected from a hierarchical list of species from NCBI taxonomy database	Mouse	Varchar2(150)	▼		
			246			Strain / Ethnicity	Genetic variant or an inbred line of a higher organism. The values for strain are either as specified in NCBI Taxonomy database or recorded by the curator. In case of human this field store information relating to the ethnicity individuals studied, conforming to HLA workshop conventions, if applicable. Ethnicity relates to large groups of people classed according to common racial, national, tribal, religious, linguistic, or cultural origin or background.	C57BL/6 and BALB/c	Varchar2(85)			

			247			Sex	Sex of the individuals tested	Male	Varchar2(10)	▼		
			248			Age	Age of the individuals tested	6-15 wk age	Varchar2(35)			
			249			Disease Name	Disease state of the individual(s) as a result of immunization or the disease the individual(s) are associated with. IEDB conforms to International Classification of Diseases (ICD-10), if available	HCV infection	Varchar2(85)	▼		
			250			Disease Stage	Disease stage of the individual(s) at the stage when effector cells are assayed for response.	Chronic	Varchar2(85)	▼		
			251			Immunization Category	This field captures how the species was immunized.	Natural Infection, Inoculation, etc	Varchar2(85)	▼		
						Immunogen	Substance that is capable of inducing an immune response (antibody response or cell mediated immunity) and contains the epitope.					
			252			Immunogen Type	This field indicates if immunogen is same as one of the following - epitope, source protein of the epitope, source species of the epitope, or peptide containing the epitope. If immunogen is none of these choices, other imunogen fields that are listed below are filled out.	Epitope / Source Protein / Source Species / Peptide containing Epitope	Varchar2(85)	▼		
			253			Immunogen Name	Name of immunogen as reported in the reference.	HBsAg	Varchar2(200)			
			254			Chemical Type	Categorization of immunogen compound as protein, lipid, carbohydrate, DNA, RNA, organic, inorganic, etc.	Peptide	Varchar2(35)	▼		
			255			SMILES Structure	SMILES notation for 2-D structure. SMILES stand for Simplified Molecular Input Line Entry Specification. SMILES is widely used as a general-purpose chemical nomenclature and data exchange format		Varchar2(3500)			
			256			Source Species	Source species that produces the immunogen, selected from a hierarchical list of species from NCBI taxonomy database and ICTV	HBV	Varchar2(150)	▼		
			257			Species Strain	Strain of the species either as specified in NCBI Taxonomy database or recorded by the curator.		Varchar2(85)			
			258			Sequence	Linear sequence of immunogen amino acids. Other chemical structures will be captured using SMILES structure.		Varchar2(4000)			
			259			GenBank ID	Unique identifier of immunogen in GenBank database	X91302	Varchar2(35)			
			260			Swiss Prot ID	Unique identifier of immunogen sequence in SWISS-PROT database	Q68840	Varchar2(35)			
			261			PDB ID	Unique PDB identifier of molecular chain representing immunogen	1CWX	Varchar2(35)			
						Carrier	Carrier is a molecular structure that is not normally associated with the epitope. The epitope is covalently linked in vitro or in vivo, thereby in general modulating its immunogenicity, antigenicity or processing. A vector is an entity (virus, bacteria) in which the epitope is incorporated for the purpose of delivering to the cells or organism.					
				262		Carrier Name	Name of carrier as reported in the reference.	MUC1 Glycoprotein B cell Epitope	Varchar2(200)			
				263		Chemical Type	Categorization of carrier compound as protein, lipid, carbohydrate, DNA, RNA, organic, inorganic, etc.	Peptide	Varchar2(35)	▼		
				264		SMILES Structure	SMILES notation for 2-D structure. SMILES stand for Simplified Molecular Input Line Entry Specification. SMILES is widely used as a general-purpose chemical nomenclature and data exchange format		Varchar2(3500)			
				265		Source Species	Source species that produces the carrier, selected from a hierarchical list of species from NCBI taxonomy database and ICTV	Human	Varchar2(150)	▼		
				266		Species Strain	Strain of the species either as specified in NCBI Taxonomy database or recorded by the curator.		Varchar2(85)			
				267		Sequence	Linear sequence of carrier amino acids. Other chemical structures will be captured using SMILES structure.	YKQGGFLGL	Varchar2(4000)			
				268		GenBank ID	Unique identifier of carrier in GenBank database	X91302	Varchar2(35)			

				269		Swiss Prot ID	Unique identifier of carrier sequence in SWISS-PROT database	Q68840	Varchar2(35)			
				270		PDB ID	Unique PDB identifier of molecular chain representing carrier	1CWX	Varchar2(35)			
						In-Vivo Immunization	This sub section captures fields related to immunization that is administered on living organism.					
						Formulation	The mixture of chemicals and/or biological substances that are not covalently linked with the immunogen.					
				271		Formulation	Physical form of the mixture containing the immunogen	Liquid / Powder / Oil / Aerosol / Other	Varchar2(35)			
				272		Adjuvant(s)	Adjuvants are substances that are administered with the immunogen to enhance the immune response and are not covalently linked (opposed to a carrier) to the immunogen.	incomplete Freund's adjuvant	Varchar2(400)	▼		
						Administration	Process of immunizing the source species					
				273		Route	Route of administration	Direct Addition / Intravenous / Intraperitoneal / Subcutaneous / etc	Varchar2(35)	▼		
				274		Dose Schedule	Captures the administration schedule including number of immunization.	4	Varchar2(250)			
		275				Comments	Comments entered by Curator that are related to Immunization		Varchar2(2000)			
						ASSAY	Assay is a quantitative or qualitative evaluation or test of substance used to describe and or measure biological response. This sub section captures fields related to B cell immune response assay.					
						Antibody	This section captures the details of Antibody molecule and antigen binding information to the antibody along with Antigen-Antibody complex details, if available.					
			276			Antibody Name	Name of the Antibody as reported in the reference.	MAb 3120	Varchar2(200)			
			277			Antibody Type	Type refers to either monoclonal or polyclonal antibody	Monoclonal	Varchar2(35)	▼		
			278			Source Species	Source species of Antibody, selected from a hierarchical list of species from NCBI taxonomy database	Mouse	Varchar2(150)	▼		
			279			Strain / Ethnicity	Genetic variant or an inbred line of a higher organism. The values for strain are either as specified in NCBI Taxonomy database or recorded by the curator. In case of human this field store information relating to the ethnicity individuals studied, conforming to HLA workshop conventions, if applicable. Ethnicity relates to large groups of people classed according to common racial, national, tribal, religious, linguistic, or cultural origin or background.		Varchar2(85)			
			280			Immunoglobulin Domain	Fragment of Antibody that is being studied	Fab / Fc / Fd, etc	Varchar2(85)	▼		
						Chain #1	Each antibody is distinguished by certain effector functions and structural features including a unique heavy chain isotype associated with a light chain isotype. This sub section refers to heavy chain or in rare cases, a second light chain.					
				281		Isotype	Name of Isotype. Isotype describes the class, subclass, chain type and subtype of an immunoglobulin.	IgG	Varchar2(35)	▼		
				282		Gen Bank ID	GenBank ID of Isotype Chain. It's the unique identifier of gene sequence in GenBank database	AJ416332	Varchar2(35)			
				283		Swiss Prot ID	Swiss-Prot ID of Isotype Chain. It's the unique identifier of protein sequence in SWISS-PROT database	Q8VDC9	Varchar2(35)			

				284		PDB ID	Unique PDB identifier of molecular chain representing antibody	1E4W	Varchar2(35)				
						Chain #2	This sub section refers to light chain of antibody or in rare cases, a second heavy chain						
				285		Isotype	Name of Isotype. Isotype describes the class, subclass, chain type and subtype of an immunoglobulin.	IgG2a-kappa	Varchar2(35)	▼			
				286		Gen Bank ID	GenBank ID of Isotype Chain. It's the unique identifier of gene sequence in GenBank database	AJ416332	Varchar2(35)				
				287		Swiss Prot ID	Swiss-Prot ID of Isotype Chain. It's the unique identifier of protein sequence in SWISS-PROT database	Q8VDC9	Varchar2(35)				
				288		PDB ID	Unique PDB identifier of molecular chain representing antibody	1CFN	Varchar2(35)				
						Antigen	Antigen is the substance that is used to detect the immune response elicited by the immunization.						
			289			Antigen Type	This field indicates if Antigen is same as one of the following - epitope, source protein of the epitope, source species of the epitope, or peptide containing the epitope. If antigen is none of these choices, other antigen fields that are listed below are filled out.	Epitope / Source Protein / Source Species / Peptide containing Epitope	Varchar2(85)	▼			
			290			Antigen Name	Name of antigen used to perform the assay	ROPV L2.1	Varchar2(200)				
			291			Gene Name	Gene name coding for the antigen used in the assay	NP	Varchar2(200)				
			292			Chemical Type	Categorization of antigen compound as protein, lipid, carbohydrate, DNA, RNA, organic, inorganic, etc.	Peptide	Varchar2(35)	▼			
			293			Source Species	Source Species that produced the antigen used in the assay, selected from a hierarchical list of species from NCBI taxonomy database	Papillomavirus	Varchar2(150)	▼			
			294			Species Strain	Strain of the species either as specified in NCBI Taxonomy database or recorded by the curator.		Varchar2(85)				
			295			SMILES Structure	SMILES notation for 2-D structure of epitope. SMILES stand for Simplified Molecular Input Line Entry Specification. SMILES is widely used as a general-purpose chemical nomenclature and data exchange format		Varchar2(85)				
			296			Sequence	Linear sequence of antigen amino acids. Other chemical structures will be captured using SMILES structure.	VGPLEVIPEAVDPAG SSIV	Varchar2(500)				
			297			GenBank ID	Unique identifier of antigen used in the assay in GenBank database	AF227240	Varchar2(35)				
			298			Swiss Prot ID	Unique identifier of sequence of antigen used in the assay in Swiss-Prot database	Q9J028	Varchar2(35)				
			299			PDB ID	Unique PDB identifier of molecular chain representing antigen used in the assay	1JJ4	Varchar2(35)				
						Carrier	Carrier is a molecular structure that is not normally associated with the epitope. The epitope is covalently linked in vitro or in vivo, thereby in general modulating its immunogenicity, antigenicity or processing. A vector is an entity (virus, bacteria) in which the epitope is incorporated for the purpose of delivering to the cells or organism.						
				300		Carrier Name	Name of carrier as reported in the reference.	MUC1 Glycoprotein B cell Epitope	Varchar2(200)				
				301		Chemical Type	Categorization of carrier compound as protein, lipid, carbohydrate, DNA, RNA, organic, inorganic, etc.	Peptide	Varchar2(35)	▼			
				302		SMILES Structure	SMILES notation for 2-D structure. SMILES stand for Simplified Molecular Input Line Entry Specification. SMILES is widely used as a general-purpose chemical nomenclature and data exchange format		Varchar2(3500)				
				303		Source Species	Source species that produces the carrier, selected from a hierarchical list of species from NCBI taxonomy database and ICTV	Human	Varchar2(150)	▼			

				304		Species Strain	Strain of the species either as specified in NCBI Taxonomy database or recorded by the curator.		Varchar2(85)			
				305		Sequence	Linear sequence of carrier amino acids. Other chemical structures will be captured using SMILES structure.	YKQGGFLGL	Varchar2(4000)			
				306		GenBank ID	Unique identifier of carrier in GenBank database	X91302	Varchar2(35)			
				307		Swiss Prot ID	Unique identifier of carrier sequence in SWISS-PROT database	Q68840	Varchar2(35)			
				308		PDB ID	Unique PDB identifier of molecular chain representing carrier	1CWX	Varchar2(35)			
		309				**Special Culture Conditions**	Free text capturing any special culture conditions used in the assay		Varchar2(500)			
						Assay Information	This section captures information about the experiment used to measure the antibody response.					
			310			Materials Assayed	Materials that is being assayed in the experiment. Examples of materials assayed are serum, monoclonal antibody, purified immunoglobulin, etc	Serum	Varchar2(600)	▼		
			311			Assay Type	Name of the experimental setup used to measure the immune response.	ELISA	Varchar2(35)	▼		
			312			Response Measured	Type of response measured using the assay.	Antibody Production	Varchar2(100)	▼		
			313			Number of Subjects Tested	Captures number of subjects that were tested	5	Number			
			314			Number of Subjects Responded	Indicates the responded subjects from the number of the subjects that were tested	3	Number			
			315			Qualitative Measurement	Qualitative assessment of the value measured using the assay as reported in the reference.	Positive / Negative	Varchar2(35)	▼		
			316			Measurement Inequality	Inequality of the quantitative measurement captured. By default, measurement inequality is "=".	> / < / >= / <= / =	Varchar2(5)	▼		
			317			Quantitative Measurement	Actual numerical value measured using the assay as reported in the reference.	0.4353	Number			
			318			Units	Standard quantities of measurement which are specific to a type of measurement.	Titre	Varchar2(15)	▼		
			319			Location of Data	Free text mentioning the location of Assay related data in the reference.	Figure 2 / Table 1	Varchar2(35)			
						Antigen-Antibody Complex	This sub section captures all related structure fields if structure information for Antigen-Antibody complex is available					
			320			Complex PDB ID	Unique four-letter PDB identifier of molecular structure representing antigen-antibody complex	1ABC	Varchar2(35)			
			321			Antigen residues interacting with antibody	List of antigen residues interacting with antibody	H 103, E 120	Varchar2(200)			
			322			Antibody residues interacting with antigen	List of antibody residues interacting with antigen specified for complementarity-determining regions (CDRs)	F 111, S 222	Varchar2(200)			

			323			Contact area for Antigen	Contact area of antigen interacting with antibody	800	Number			
			324			Contact area for Antibody	Contact area of antibody interacting with antigen	760	Number			
			325			Interacting atom pairs	Pairs of atoms involved in the interaction between antigen and antibody	A 103 OG1, B 111 N3	Varchar2(2000)			
			326			Allosteric effect	This Boolean field indicates whether an allosteric effect has taken place. Allosteric effect is of or involving a change in the shape and activity of a molecule's structure that results from molecular binding with a regulatory substance at a site other than the active one where changes take place.	No / Yes	Varchar2(1)			
			327			Cofactor/effector	The name of cofactor changing the antigen-antibody interaction activity if such a change has taken place.	Human Membrane cofactor protein	Varchar2(200)			
		328				Comments	Comments entered by Curator related to Assay		Varchar2(2000)			