



Accessing the Data: Query, Reporting, and Examples

www.iedb.org

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Home Page Query

Check out our new IEDB updates! (1) Learn how to [customize your database exports](#) and (2) test out the new [Next-generation Tools site](#) for all your analysis and prediction needs.

Welcome

The Immune Epitope Database (IEDB) is a freely available resource funded by NIAID. It catalogs experimental data on antibody and T cell epitopes studied in humans and other animal species in the context of infectious disease, allergy, autoimmunity and transplantation. The IEDB also hosts epitope prediction and analysis tools, and has a companion site, [CEDAR](#) (funded by NCI), which houses cancer epitopes.

[Learn More](#)

Upcoming Events & News

[Virtual User Workshop](#) Nov 1-3, 2023
* register [here](#)

AACR 2024 Apr 5-10, 2024
Festival of Biologics Apr 15-17, 2024
AAI 2024 May 3-7, 2024

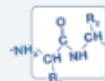
Summary Metrics

Peptidic Epitopes	1,597,860
Non-Peptidic Epitopes	3,188
T Cell Assays	508,022
B Cell Assays	1,392,156
MHC Ligand Assays	4,777,872
Epitope Source Organisms	4,403
Restricting MHC Alleles	991
References	24,204

START YOUR SEARCH HERE

Epitope [?] ①

- Any
 Linear peptide
Exact M
 Discontinuous
 Non-peptidic



Assay [?] ⑤

- T Cell
 B Cell
 MHC Ligand
Ex: neutralization
Outcome: Positive Negative



Epitope Source [?]

- Organism [?] ②
Ex: influenza, peanut
Antigen [?] ③
Ex: core, capsid, myosin

MHC Restriction [?] ⑥

- Any
 Class I
 Class II
 Non-classical
Ex: HLA-A*02:01



Host [?] ④

- Any
 Human
 Mouse
 Non-human primate
Ex: dog, camel



Disease [?] ⑦

- Any
 Infectious
 Allergic
 Autoimmune
Ex: asthma



Epitope Analysis Resource

T Cell Epitope Prediction [?]

Scan an antigen sequence for amino acid patterns indicative of:

- MHC I Binding
- MHC II Binding
- MHC I Processing (Proteasome, TAP)
- MHC I Immunogenicity

B Cell Epitope Prediction [?]

Predict linear B cell epitopes using:

[Antigen Sequence Properties](#)

Predict discontinuous B cell epitopes using antigen structure via:

- [Discotope](#)
- [ElliPro](#)

Epitope Analysis Tools [?]

Analyze epitope sets of:

- [Population Coverage](#)
- [Conservation Across Antigens](#)
- [Clusters with Similar Sequences](#)

Epitope Search Pane

Search by epitope sequence

START YOUR SEARCH HERE ?

Epitope ?

Any

Linear peptide

Exact Match

Discontinuous

Non-peptidic

Assay ?

T Cell

B Cell

MHC Ligand

Ex: neutralization

Outcome: Positive

Epitope Source ?

Organism

Antigen

MHC Restriction ?

Any

Class I

Class II

Non-classical

Ex: HLA-A*02:

START YOUR SEARCH HERE ?

Epitope ?

Any

Linear peptide

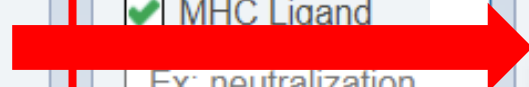
Exact Match

Exact Matches


- Substring
- Blast - 90%
- Blast - 80%
- Blast - 70%

Epitope Source ?


Organism




Antigen Search Pane: Organism


Epitope Source ? 

Organism


Ex: influenza, peanut 


Antigen

Ex: core, capsid, myosin  **Find**

Epitope Source ? 

Organism

cord  **Find**

MHC Restriction ? 

Any

Class I

Coronavirus (ID:11118)

Alphacoronavirus (ID:693996, **Coronavirus**)

Betacoronavirus (ID:694002, **Coronavirus**)

Bat **coronavirus** (ID:1508220)

Yak **coronavirus** (ID:2501420)

Human coronavirus 229E (Coronavirus 229E) (ID:11137, **Coron...**)


Human coronavirus NL63 (Coronavirus NL63) (ID:277944, **Cor...**)

Middle East respiratory syndrome-related coronavirus (MERS c...


Severe acute respiratory syndrome-related coronavirus (Human...

Avian **coronavirus** (ID:694014)


Antigen Search Pane: Antigen


Epitope Source ? 

Organism

Ex: influenza, peanut 

Antigen

Ex: core, capsid, myosin 


Antigen ? 

Organism

Ex: influenza, peanut

Antigen Name

capsid


MHC Restriction ? 

Any MHC Restriction

MHC Class I

MHC Class II


MHC Nonclassical


Ex: HLA-A*02:01 


- Nucleocapsid [Q91MK3] (Menangle pararubulavirus)
- Nucleocapsid [A0A0F6N4C5] (Bovine respirovirus 3 (Bovine pa...)
- Nucleocapsid [T1UFE7] (Human respirovirus 3 (Human parainf...)
- Nucleocapsid [Q83138] (Small ruminant morbillivirus (Pseudori...)
- Nucleocapsid [A0A0H5BN46] (Rinderpest morbillivirus (Rinder...)
- Capsid protein [Q91PS7] (Torque teno virus 8)
- Capsid protein [Q9JH33] (Torque teno virus 15)
- Capsid protein [Q9DUB7] (Torque teno douroucouli virus)
- Capsid protein [Q8QVL3] (Torque teno felis virus)
- Capsid protein [Q8QVL9] (Torque teno sus virus 1a (Torque ten...)



Host Search Pane

Host ? 

Any
 Human
 Mouse
 Non-human primate
 

HOST ORGANISM FINDER ? 


Current Selection(s) Reset Apply

Search By

Name:


Organism ID:

Search


Browse by Tree (Click to Select) 

- Vertebrate
 - Ave (bird)
 - Fish
 - Mammal

Assay Search Pane

Assay ? 

T Cell
 B Cell
 MHC Ligand

Ex: neutralization 

Outcome: Positive Negative

ASSAY FINDER ?

Current Selection(s)

Search By

Name:

Method/Technique:

Measurement Of:

Units:

Search

Browse by Tree (Click to Select)

- immune epitope assay
 - T cell assay
 - B cell assay
 - 3D structure
 - binding constant
 - biological activity
 - qualitative binding
 - MHC ligand assay

MHC Restriction Search Pane

MHC Restriction ?

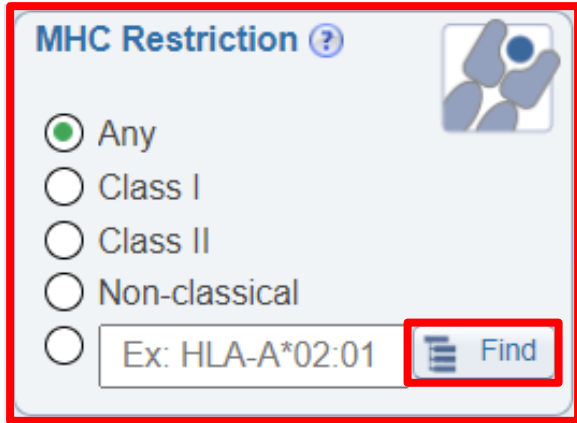
Any

Class I

Class II

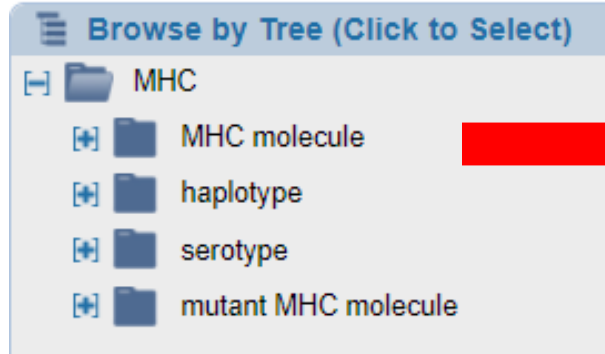
Non-classical

Ex: HLA-A*02:01

The MHC Restriction Search Pane is a light blue rectangular box. It contains a title "MHC Restriction" with a question mark icon. Below the title are four radio button options: "Any" (selected), "Class I", "Class II", and "Non-classical". At the bottom, there is a text input field containing "Ex: HLA-A*02:01" and a "Find" button with a magnifying glass icon. A red border highlights the entire pane, and a red arrow points from the "Find" button to the "Browse by Tree" pane below.

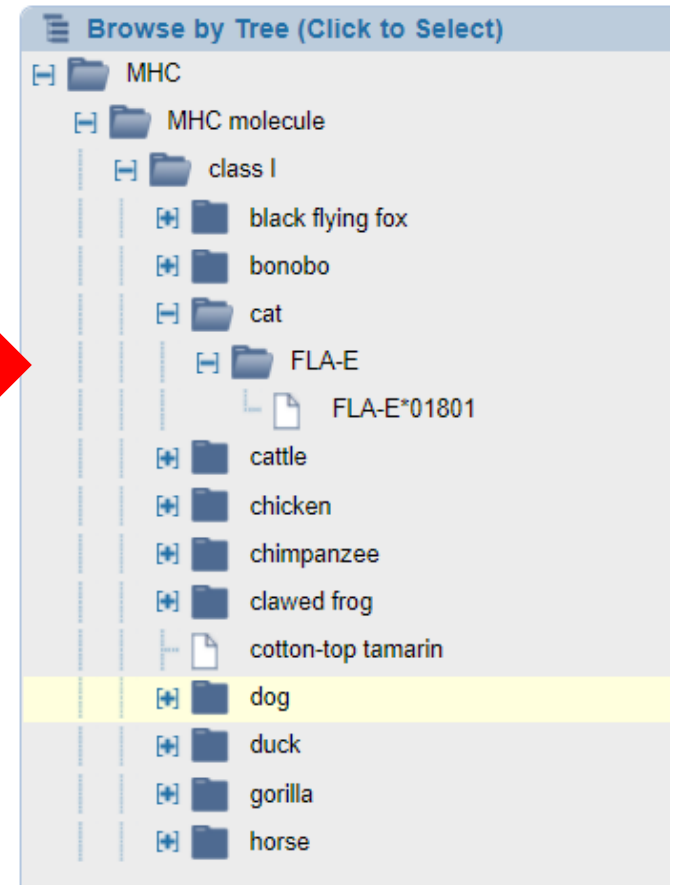
Browse by Tree (Click to Select)

- MHC
 - MHC molecule
 - haplotype
 - serotype
 - mutant MHC molecule

This is a tree view titled "Browse by Tree (Click to Select)". The root node is "MHC", which is expanded to show four sub-nodes: "MHC molecule", "haplotype", "serotype", and "mutant MHC molecule". A red arrow points from the "MHC molecule" node to the next pane.

Browse by Tree (Click to Select)

- MHC
 - MHC molecule
 - class I
 - black flying fox
 - bonobo
 - cat
 - FLA-E
 - FLA-E*01801
 - cattle
 - chicken
 - chimpanzee
 - clawed frog
 - cotton-top tamarin
 - dog**
 - duck
 - gorilla
 - horse

This is a tree view titled "Browse by Tree (Click to Select)". The root node is "MHC", which is expanded to show "MHC molecule", which is further expanded to show "class I". "class I" is expanded to show a list of species: "black flying fox", "bonobo", "cat", "FLA-E", "cattle", "chicken", "chimpanzee", "clawed frog", "cotton-top tamarin", "dog", "duck", "gorilla", and "horse". The "dog" node is highlighted in yellow. A red arrow points from the "dog" node to the next pane.

Disease Search Pane

Disease ?

Any

Infectious

Allergic

Autoimmune

Ex: asthma

Browse by Tree (Click to Select)

- host health status
 - disease
 - additional diseases by category
 - allergic disease
 - animal model of disease
 - autoimmune disease
 - infectious disease
 - neoplasm
 - transplant-related disease and allo-reactivity
 - healthy
 - infection without disease

Browse by Tree (Click to Select)

- host health status
 - disease
 - additional diseases by category
 - allergic disease
 - allergic contact dermatitis
 - allergic contact dermatitis of eyelid
 - drug allergy
 - extrinsic asthma
 - gastrointestinal allergy
 - latex allergy
 - metal allergy
 - respiratory allergy
 - animal model of disease
 - autoimmune disease
 - infectious disease
 - neoplasm
 - transplant-related disease and allo-reactivity

User Queries: How to see the differences between B and T cell responses for any pathogen?

Start typing the organism name and autocomplete will provide options for which the IEDB has data



The screenshot shows the IEDB search interface. The 'Organism' field contains the text 'infl'. A dropdown menu is open, displaying a list of search results. The first result, 'Influenza virus (ID:10002045)', is highlighted in yellow. Other results include 'Influenza A virus (ID:11320)', 'Haemophilus influenzae (ID:727, Influenza-bacillus)', 'Influenza C virus (Influenza C viruses) (ID:11552, Influenza C vi...', 'Influenza A virus H3N2 (influenza virus A/H3N2) (ID:41857, infl...', 'Influenza B virus (Influenza virus type B) (ID:11520, Influenza vi...', 'Haemophilus influenzae 6U (ID:10001055)', 'Haemophilus influenzae Rd KW20 (Haemophilus influenzae K...', and 'Human orthorubulavirus 2 (Human parainfluenza 2 virus) (ID:25...'. The interface also includes sections for 'Epitope Source' and 'MHC Restriction'.

User Queries: How to see the differences between B and T cell responses for any pathogen?

Select Influenza A virus

This is a multi-select field

The number displays how many selections you have made

Once your query is built, click "Search"

**You can select from all search panes or from none



The screenshot shows the IEDB query builder interface with the following panels:

- Epitope**: Radio buttons for Any (selected), Linear peptide, Discontinuous, and Non-peptidic. Includes a chemical structure icon and an 'Exact N' dropdown with 'Ex: SIINFEKL'.
- Assay**: Checkboxes for T Cell, B Cell, and MHC Ligand (all checked). Includes an 'Ex: neutralization' field and 'Find' button. Outcome: Positive Negative.
- Epitope Source**: 'Organism' field with 'Influenza A virus (H1N1)' selected and a '1' in a red box. Includes an 'Antigen' field with 'Ex: core, capsid, myosin' and 'Find' button.
- MHC Restriction**: Radio buttons for Any (selected), Class I, Class II, Non-classical, and a field with 'Ex: HLA-A*02:01' and 'Find' button.
- Host**: Radio buttons for Any (selected), Human, Mouse, Non-human primate, and a field with 'Ex: dog, camel' and 'Find' button.
- Disease**: Radio buttons for Any (selected), Infectious, Allergic, Autoimmune, and a field with 'Ex: asthma' and 'Find' button.

At the bottom, there are 'Reset' and 'Search' buttons, with the 'Search' button highlighted in a red box.

Results Page: Pending Filters/Current Filters

Pending Filters

Reset Search

Filter Options

Default

Epitope

- Any
- Linear peptide
 - Length
 - Sequence
- Discontinuous
- Non-peptidic

- 3D structure assays
- Amino acid modification

Epitope Source

Organism

Influenza A virus (ID:11320) 1

Antigen

Ex: core, capsid, myosin

Include related structure

Select multiple options

Receptor

Has sequence

Type Any Type

Paired chains only

Current Filters: Organism: Influenza A virus (ID:11320) Include Positive Assays

Epitopes
(5224)

Antigens
(17)

Assays
(21854)

Receptors
(17332)

References
(1616)

Go To Records Starting At 1200 GO

Export Results

5224 Records Found

Page 1 of 209

25 Per Page

IEDB ID	Epitope	Antigen	Organism	# References	# Assays
20354	GILGFVFTL	Matrix protein 1	Influenza A virus	266	700
4602	ASNENMETM	Nucleoprotein	Influenza A virus	156	449
48237	PKYVKQNTLKLAT	Hemagglutinin	Influenza A virus	127	424
61151	SLENFRAYV	Polymerase acidic protein	Influenza A virus	94	273
67436	TYQRTRALV	Nucleoprotein	Influenza A virus	85	182
60867	SRYWAIRTR	Nucleoprotein	Influenza A virus	46	101
7136	CTELKLSDY	Nucleoprotein	Influenza A virus	36	63
59318	SLLTEVETPIRNEWGCRNDSSD	Matrix protein 2	Influenza A virus	34	136
57751	SFERFEIFPKE	Hemagglutinin	Influenza A virus	33	115
4578	ASNENMDAM	Nucleoprotein	Influenza A virus	31	75
61497	SSYRRPVGI	RNA-directed RNA polymerase catalytic subunit	Influenza A virus	29	69
27283	ILRGSVAHK	Nucleoprotein	Influenza A virus	28	59
29690	IYSTVASSL	Hemagglutinin	Influenza A virus	28	95
70898	VSDGGPNLY	RNA-directed RNA polymerase catalytic subunit	Influenza A virus	28	40
13263	ELRSRYWAI	Nucleoprotein	Influenza A virus	27	50
56055	RTFSFQLI	Nuclear export protein	Influenza A virus	25	52
17119	FMYSDFHFI	Polymerase acidic protein	Influenza A virus	22	59
39494	LSLRNPILV	Protein PB1-F2	Influenza A virus	21	45
2014	AIMDKNIL	Non-structural protein 1	Influenza A virus	19	74
57322	SDYEGRLI	Nucleoprotein	Influenza A virus	17	34
45001	NMLSTVLGV	RNA-directed RNA polymerase catalytic subunit	Influenza A virus	16	48

Results Page: Pending Filters/Filter Options

Pending Filters

Reset Search

Filter Options ?

Default

Default

T Cell

B Cell

MHC

Any

Linear peptide

Length

Sequence

Discontinuous

Non-peptidic

3D structure assays

Amino acid modification

Epitope Source ?



Organism

Influenza A virus (ID:11320) 1

Antigen

Ex: core, capsid, myosin

Include related structure

Select multiple options

Current Filters: Organism: Influenza A virus (ID:11320) Include Positive Assays

Epitopes

(5224)

Antigens

(17)

Assays

(21854)

Receptors

(17332)

Refer

(16)

Go To Records Starting At 1200 GO

5224 Records Found

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IEDB ID	Epitope	Antigen	Organism	# References
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61151	SSLENFRAYV	Polymerase acidic protein	Influenza A virus	94
67436	TYQRTRALV	Nucleoprotein	Influenza A virus	85
60867	SRYWAIRTR	Nucleoprotein	Influenza A virus	46
7136	CTELKLSDY	Nucleoprotein	Influenza A virus	36
59318	LLLTVETPIRNEWGCRNDSSD	Matrix protein 2	Influenza A virus	34
57751	SFERFEIFPKE	Hemagglutinin	Influenza A virus	33
4578	ASNENMDAM	Nucleoprotein	Influenza A virus	31
61497	SSYRRPVGI	RNA-directed RNA polymerase catalytic subunit	Influenza A virus	29
27283	ILRGVAHK	Nucleoprotein	Influenza A virus	28
29690	IYSTVASSL	Hemagglutinin	Influenza A virus	28
70898	VSDGGPNLY	RNA-directed RNA polymerase catalytic subunit	Influenza A virus	28
13263	ELRSRYWAI	Nucleoprotein	Influenza A virus	27
56055	RTFSFQLI	Nuclear export protein	Influenza A virus	25
17119	FMYSDFHFI	Polymerase acidic protein	Influenza A virus	22

Results Page: Additional Filter Options

Default



Epitope Source [?](#)

Organism
Influenza A virus (ID:11320) Find

Antigen
Ex: core, capsid, myosin Find

Include related structure

Select multiple options

Select All Unselect All

- Analogs
- Mimotopes
- Neopepitopes
- Only neopepitopes



Results Page: Additional Filter Options

T Cell

TCR ⓘ

Has TCR sequence

Type Name

Paired chains only

Chain Region

Sequence

MHC Restriction ⓘ

Any

Class I

Class II

Non-classical

Resolution

Evidence

T Cell Assay ⓘ

Outcome: Positive Negative

Any

Cytokine production

MHC multimer

In vivo

Direct ex vivo detection

MHC Restriction ⓘ

Any

Class I

Class II

Non-classical

Resolution

Evidence

Host ⓘ

Any

Human

Mouse

Single allele present

T cell assay -MHC subset identification


T cell assay -Mismatched MHC molecules

MHC binding assay

MHC binding prediction

Results Page: Additional Filter Options

B Cell

Antibody/BCR ? 

Has BCR sequence


Type Name

Paired chains only

Chain Region

Sequence

Note: A red box highlights the 'Chain' dropdown menu, which is currently open to show 'Any Type', 'heavy', and 'light' options.

B Cell Assay ? 

Outcome: Positive Negative

Any

Antibody binding

Neutralization


In vivo


Antibody isotype


Note: A red box highlights the radio button options, and another red box highlights the 'Antibody isotype' dropdown menu.


Results Page: Additional Filter Options


MHC


MHC Assay 


Outcome: Positive Negative 

Any
 Binding
 Ligand elution/Mass spectrometry
 Ex: crystallography  Find

MHC Restriction 

Any
 Class I
 Class II
 Non-classical
 Ex: HLA-A*02:01  Find

Resolution: Any 

Evidence: Select multiple options 

Results Page: Epitope Tab



Help

Home

Specialized Searches

Analysis Resource

Pending Filters

Reset

Search

Filter Options ?

Default

- Default
- T Cell
- B Cell
- MHC

- Any
- Linear peptide
- Length
- Sequence
- Discontinuous
- Non-peptidic

- 3D structure assays
- Amino acid modification

Epitope Source ?

Organism

Influenza A virus (ID:11320) ¹

Antigen

Ex: core, capsid, myosin

Include related structure

Select multiple options

Current Filters: ✕ Organism: Influenza A virus (ID:11320) ✕ Include Positive Assays

Epitopes

(5224)

Antigens

(17)

Assays

(21854)

Receptors

(17332)

Refer

(1

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29690	IYSTVASSL	Hemagglutinin	Influenza A virus	28
70898	VSDGGPNLY	RNA-directed RNA polymerase catalytic subunit	Influenza A virus	28
13263	ELRSRYWAI	Nucleoprotein	Influenza A virus	27
56055	RTFSFQLI	Nuclear export protein	Influenza A virus	25
17119	FMYSDFHFI	Polymerase acidic protein	Influenza A virus	22

Results Page: Epitope Table Headers

Current Filters: ✖ Organism: Influenza A virus (ID:11320) ✖ Include Positive Assays

Epitopes (5224)	Antigens (17)	Assays (21854)	Receptors (17332)	References (1616)	
Go To Records Starting At <input type="text" value="1200"/> GO Export Results 					
5224 Records Found 25 <input type="text" value="25"/> Per Page					
Page <input type="text" value="1"/> of 209 					
IEDB ID	Epitope	Antigen	Organism	# References	# Assays
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29690	IYSTVASSL	Hemagglutinin	Influenza A virus	28	95
70898	VSDGGPNLY	RNA-directed RNA polymerase catalytic subunit	Influenza A virus	28	40

Results Page: Epitope Details

EPITOPE SUMMARY

GILGFVFTL is a linear peptidic epitope (epitope ID 20354) studied as part of Matrix protein 1 from Influenza A virus. This epitope has been studied for immune reactivity in 273 publication(s), tested in 620 T cell assays, 5 B cell assays, 118 MHC ligand assays and has 3D structure(s) 1HHI, 5JHD, 5ISZ, 5EUO, 5TEZ, 5E6I, 1OGA, 2VLL, 2VLK, 2VLR, 4NT6 and 2VLJ.

COMPILED DATA

MHC Ligand Assay(s) 118

MHC molecule	Positive / All
HLA-A*02:01	78 / 78
HLA-A2	10 / 10
HLA-A*02:06	4 / 5
HLA-A*02:02	4 / 4
HLA-A*02:03	4 / 4
HLA-C*08:01	4 / 4
HLA-A*68:02	1 / 3
HLA-E	0 / 2
HLA-E*01:03	1 / 1
SLA-3*02:02	1 / 1
HLA-A*01:01	0 / 1
HLA-A*03:01	0 / 1
HLA-A*11:01	0 / 1
HLA-A*24:02	0 / 1
HLA-A3	0 / 1
HLA-DRA*01:01/DRB1*01:01	0 / 1

Results Page: Epitope Details

B Cell Assay(s) 5	
Assay Type	Positive / All
qualitative binding	4/4
complement-dependent cytotoxicity	1/1
T Cell Assay(s) 620	
Assay Type	Positive / All
IFN γ release	184/191
qualitative binding	168/172
cytotoxicity	81/85
dissociation constant KD	28/36
proliferation	18/19
TNF α release	15/16
off rate	14/14
on rate	14/14
activation	10/10
3D structure	9/9
IL-2 release	7/8
CCL4/MIP-1b release	7/7
pathogen burden after challenge	6/7
degranulation	5/6
survival from pathogen challenge	5/6
perforin release	5/5
granzyme B release	4/4
TNF release	3/4
binding constant	1/1
CXCL9/MIG release	1/1
decreased disease	1/1
IL-12 release	1/1
T cell- APC binding	1/1
IL-10 release	0/1
IL-4 release	0/1

Results Pages: All Have Inline Filters

Current Filters: ✕ Organism: Influenza A virus (ID:11320) ✕ Include Positive Assays

Epitopes (5224) Antigens (17) Assays (21854) Receptors (17332) Refer (16)

Go To Records Starting At

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29690	IYSTVASSL	Hemagglutinin	Influenza A virus	28
70898	VSDGGPNLY	RNA-directed RNA polymerase catalytic subunit	Influenza A virus	28

Results Pages: All Have Exports Options

Current Filters: ✖ Organism: Influenza A virus (ID:11320) ✖ Include Positive Assays

Epitopes
(5224)

Antigens
(17)

Assays
(21854)

Receptors
(17332)

References
(1616)

Go To Records Starting At

[Export Results](#) 

5224 Records Found

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IEDB ID	Epitope	Antigen	Organism	# References	# Assays
20354	GILGFVFTL	Matrix protein 1	Influenza A virus	266	700
4602	ASNENMETM	Nucleoprotein	Influenza A virus	156	449
48237	PKYVKQNTLKLAT	Hemagglutinin	Influenza A virus	127	424
61151	SSLENFRAYV	Polymerase acidic protein	Influenza A virus	94	273
67436	TYQRTRALV	Nucleoprotein	Influenza A virus	85	182
60867	SRYWAIRTR	Nucleoprotein	Influenza A virus	46	101
7136	CTELKLSDY	Nucleoprotein	Influenza A virus	36	63
59318	SLLTEVETPIRNEWGCRCNDSSD	Matrix protein 2	Influenza A virus	34	136
57751	SFERFEIFPKE	Hemagglutinin	Influenza A virus	33	115
4578	ASNENMDAM	Nucleoprotein	Influenza A virus	31	75
61497	SSYRRPVGI	RNA-directed RNA polymerase catalytic subunit	Influenza A virus	29	69
27283	ILRGSVAHK	Nucleoprotein	Influenza A virus	28	59
29690	IYSTVASSL	Hemagglutinin	Influenza A virus	28	95
70898	VSDGGPNLY	RNA-directed RNA polymerase catalytic subunit	Influenza A virus	28	40

Results Pages: All Have Export Options

The screenshot displays the IEDB search results interface. At the top, there are navigation tabs: Home, Specialized Searches, and Analysis Resource. Below this, a filter bar shows 'Current Filters: Organism: Influenza A virus (ID:11320) Include Positive Assays'. The main content area is divided into sections: Epitopes (5224), Receptors (17332), and References (1616). The Epitopes section is active, showing a table with 5224 records found. The table has columns for IEDB ID and Epitope. An 'EXPORT TO FILE' dialog box is overlaid on the table, providing options for file format, header rows, export type, and columns to export. The dialog also includes checkboxes for 'Epitope ID', 'Epitope', and 'Related Object', and an 'Export' button at the bottom.

IEDB ID	Epitope
20354	GILGFVFTL
4602	ASNENMETM
48237	PKYVKQNTLKLAT
61151	SSLENFRAYV
67436	TYQRTRALV
60867	SRYWAIRTR
7136	CTELKLSDY
59318	SLLTEVETPIRNEWGCRCNDSSD
57751	SFERFEIFPKE
4578	ASNENMDAM
61497	SSYRRPVGI
27283	ILRGVAHK
29690	IYSTVASSL
70898	VSDGGPNLY
13263	ELRSRYWAI
56055	RTFSFQLI
17119	FMYSDFHFI
39494	LSLRNPILV
2014	AIMDKNII

Results Page: Antigen Tab – Table Headers

Current Filters: ✕ Organism: Influenza A virus (ID:11320) ✕ Include Positive Assays

Epitopes (5224)
Antigens (17)
Assays (21854)
Receptors (17332)
References (1616)

Go To Records Starting At

17 Records Found Page 1 of 1 Per Page

Antigen	Organism	# Epitopes	# Assays	# References
Hemagglutinin	Influenza A virus	2157	8518	726
Nucleoprotein	Influenza A virus	663	3107	523
Matrix protein 1	Influenza A virus	424	1898	391
Polymerase acidic protein	Influenza A virus	243	932	155
RNA-directed RNA polymerase catalytic subunit	Influenza A virus	435	1434	143
Matrix protein 2	Influenza A virus	128	800	122
Neuraminidase	Influenza A virus	341	1216	114
Polymerase basic protein 2	Influenza A virus	340	821	99
Non-structural protein 1	Influenza A virus	125	372	77
Nuclear export protein	Influenza A virus	57	210	46
Two components:Hemagglutinin & Hemagglutinin	Influenza A virus	53	1191	44
Protein PB1-F2	Influenza A virus	34	82	26
Two components:Neuraminidase & Neuraminidase	Influenza A virus	2	13	3
PB2-S1	Influenza A virus	5	9	2
Protein PA-X	Influenza A virus	1	2	1
Two components:Matrix protein 2 & Matrix protein 2	Influenza A virus	1	4	1
Two components:Polymerase acidic protein & Polymerase basic protein 2	Influenza A virus	1	4	1

17 Records Found Page 1 of 1 Per Page

Go To Records Starting At

Results Page: Assays Tab – Subtabs

Current Filters: ✖ Organism: Influenza A virus (ID:11320) ✖ Include Positive Assays

Epitopes
(5224)

Antigens
(17)

Assays
(21854)

Receptors
(17332)

References
(1616)

T Cell Assays
(7779)

B Cell Assays
(8305)

MHC Ligand Assays
(5770)

Go To Records Starting At

Export Results

7779 Records Found

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IEDB ID	Reference	Epitope	Host	Immunization	Assay Antigen	Antigen Epitope Relation	MHC Restriction	Assay Description
1737052	S Ghosh; Int Immunol 1999	ALNNRFQIKGVELK S hemagglutinin (511-525) Influenza A virus	Mus musculus BALB/c	Administration in vivo with ALNNRFQIKGVELK S (Epitope)	ALNNRFQIKGVELK S hemagglutinin (511-525) Influenza A virus	Epitope	H2-d class II	3H-thymidine proliferation Positive-High
1583867	M Z Atassi; Immunol Commun 1984	HHPSTNQEQTSLYV QAS Hemagglutinin (183-199) Influenza A virus	Mus musculus BALB/c	Administration in vivo with Influenza A virus (A/X-31(H3N2)) (Influenza A virus (A/X31(H3N2))) (Taxonomic Child)	HHPSTNQEQTSLYV QAS Hemagglutinin (183-199) Influenza A virus	Epitope	H2-d class II	3H-thymidine proliferation Positive-High
1583872	M Z Atassi; Immunol Commun 1984	IEKTNEKFHQIEK hemagglutinin HA2 (56-68) Influenza A virus	Mus musculus BALB/c	Administration in vivo with Influenza A virus (A/X-31(H3N2)) (Influenza A virus (A/X31(H3N2))) (Taxonomic Child)	IEKTNEKFHQIEK hemagglutinin HA2 (56-68) Influenza A virus	Epitope	H2-d class II	3H-thymidine proliferation Positive-High
1583862	M Z Atassi; Immunol Commun 1984	GTLVKITITDDQIEV Hemagglutinin precursor (23-36) Influenza A virus	Mus musculus BALB/c	Administration in vivo with Influenza A virus (A/X-31(H3N2)) (Influenza A virus (A/X31(H3N2))) (Taxonomic Child)	GTLVKITITDDQIEV Hemagglutinin precursor (23-36) Influenza A virus	Epitope	H2-d class II	3H-thymidine proliferation Positive-High
1809221	Isamu Z Hartman; Nat Med 2010	PKYVKQNTLKLAT Hemagglutinin (306-318) Influenza A virus (A/Texas/1/1977(H3	Mus musculus HLA-DR1 Tg	Administration in vivo with PKYVKQNTLKLAT (Epitope)	PKYVKQNTLKLAT Hemagglutinin (306-318) Influenza A virus (A/Texas/1/1977(H3 N2)) (Influenza A	Epitope	HLA-DRB1*01:01	3H-thymidine proliferation Positive-High

Results Page: Assays Tab – Table Headers

Current Filters: ✖ Organism: Influenza A virus (ID:11320) ✖ Include Positive Assays

Epitopes (5224)
Antigens (17)
Assays (21854)
Receptors (17332)
References (1616)

T Cell Assays (7779)
B Cell Assays (8305)
MHC Ligand Assays (5770)

Go To Records Starting At GO

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IEDB ID	Reference	Epitope	Host	Immunization	Assay Antigen	Antigen Epitope Relation	MHC Restriction	Assay Description
1737052	S Ghosh; Int Immunol 1999	ALNNRFQIKGVELK S hemagglutinin (511-525) Influenza A virus	Mus musculus BALB/c	Administration in vivo with ALNNRFQIKGVELK S (Epitope)	ALNNRFQIKGVELK S hemagglutinin (511-525) Influenza A virus	Epitope	H2-d class II	3H-thymidine proliferation Positive-High
1583867	M Z Atassi; Immunol Commun 1984	HHPSTNQEQTSLYV QAS Hemagglutinin (183-199) Influenza A virus	Mus musculus BALB/c	Administration in vivo with Influenza A virus (A/X-31(H3N2)) (Influenza A virus (A/X31(H3N2))) (Taxonomic Child)	HHPSTNQEQTSLYV QAS Hemagglutinin (183-199) Influenza A virus	Epitope	H2-d class II	3H-thymidine proliferation Positive-High
1583872	M Z Atassi; Immunol Commun 1984	IEKTNEKFHQIEK hemagglutinin HA2 (56-68) Influenza A virus	Mus musculus BALB/c	Administration in vivo with Influenza A virus (A/X-31(H3N2)) (Influenza A virus (A/X31(H3N2))) (Taxonomic Child)	IEKTNEKFHQIEK hemagglutinin HA2 (56-68) Influenza A virus	Epitope	H2-d class II	3H-thymidine proliferation Positive-High
1583862	M Z Atassi; Immunol Commun 1984	GTLVKITDDQIEV Hemagglutinin precursor (23-36) Influenza A virus	Mus musculus BALB/c	Administration in vivo with Influenza A virus (A/X-31(H3N2)) (Influenza A virus (A/X31(H3N2))) (Taxonomic Child)	GTLVKITDDQIEV Hemagglutinin precursor (23-36) Influenza A virus	Epitope	H2-d class II	3H-thymidine proliferation Positive-High
1809221	Isamu Z Hartman; Nat Med 2010	PKYVKQNTLKLAT Hemagglutinin (306-318) Influenza A virus (A/Texas/1/1977(H3	Mus musculus HLA-DR1 Tg	Administration in vivo with PKYVKQNTLKLAT (Epitope)	PKYVKQNTLKLAT Hemagglutinin (306-318) Influenza A virus (A/Texas/1/1977(H3 N2)) (Influenza A	Epitope	HLA-DRB1*01:01	3H-thymidine proliferation Positive-High

Results Page: Assays Tab – Assay Details

Current Filters: ✖ Organism: Influenza A virus (ID:11320) ✖ Include Positive Assays

Epitopes (5224)		Antigens (17)		Assays (21854)		Receptors (17332)		References (1616)	
T Cell Assays (7779)		B Cell Assays (8305)		MHC Ligand Assays (5770)					
Go To Records Starting At <input type="text" value="A,b"/> <input type="button" value="GO"/>									
7779 Records Found Export Results 									
Page <input type="text" value="1"/> of 312 25 Per Page									
IEDB ID	Reference	Epitope	Host	Immunization	Assay Antigen	Antigen Epitope Relation	MHC Restriction	Assay Description	
1737052	S Ghosh; Int Immunol 1999	ALNNRFQIKGVELK S hemagglutinin (511-525) Influenza A virus	Mus musculus BALB/c	Administration in vivo with ALNNRFQIKGVELK S (Epitope)	ALNNRFQIKGVELK S hemagglutinin (511-525) Influenza A virus	Epitope	H2-d class II	3H-thymidine proliferation Positive-High	
1583867	M Z Atassi; Immunol Commun 1984	HHPSTNQEQTSLYV QAS Hemagglutinin (183-199) Influenza A virus	Mus musculus BALB/c	Administration in vivo with Influenza A virus (A/X-31(H3N2)) (Influenza A virus (A/X31(H3N2))) (Taxonomic Child)	HHPSTNQEQTSLYV QAS Hemagglutinin (183-199) Influenza A virus	Epitope	H2-d class II	3H-thymidine proliferation Positive-High	
1583872	M Z Atassi; Immunol Commun 1984	IEKTNEKFHQIEK hemagglutinin HA2 (56-68) Influenza A virus	Mus musculus BALB/c	Administration in vivo with Influenza A virus (A/X-31(H3N2)) (Influenza A virus (A/X31(H3N2))) (Taxonomic Child)	IEKTNEKFHQIEK hemagglutinin HA2 (56-68) Influenza A virus	Epitope	H2-d class II	3H-thymidine proliferation Positive-High	
1583862	M Z Atassi; Immunol Commun 1984	GTLVKITITDDQIEV Hemagglutinin precursor (23-36) Influenza A virus	Mus musculus BALB/c	Administration in vivo with Influenza A virus (A/X-31(H3N2)) (Influenza A virus (A/X31(H3N2))) (Taxonomic Child)	GTLVKITITDDQIEV Hemagglutinin precursor (23-36) Influenza A virus	Epitope	H2-d class II	3H-thymidine proliferation Positive-High	
1809221	Isamu Z Hartman; Nat Med 2010	PKYVKQNTLKLAT Hemagglutinin (306-318) Influenza A virus (A/Texas/1/1977(H3	Mus musculus HLA-DR1 Tg	Administration in vivo with PKYVKQNTLKLAT (Epitope)	PKYVKQNTLKLAT Hemagglutinin (306-318) Influenza A virus (A/Texas/1/1977(H3 N2)) (Influenza A	Epitope	HLA-DRB1*01:01	3H-thymidine proliferation Positive-High	

Results Page: Assays Tab – Assay Details Reference

Reference		
Reference Type	Literature	IEDB_Reference:1017061
Title	Antigenic and immunogenic properties of totally synthetic peptide-based anti-fertility vaccines.	
Authors	S Ghosh; D C Jackson	
Affiliations	Co-Operative Research Centre for Vaccine Technology, Department of Microbiology and Immunology, University of Melbourne, Parkville 3052, Victoria, Australia.	
Journal	Int Immunol	PMID:10383943 
Year	1999	
Abstract	In this study we describe the results of experiments in which a variety of totally synthetic luteinizing hormone releasing hormone (LHRH) vaccines were assembled and examined for their abilities to elicit antibody responses and induce sterility in mice. It is shown that totally synthetic vaccines consisting of a 15 residue-defined T cell epitope and the 10 residue LHRH epitope not only induced high titers of antibody but also induced sterility. This effect did not appear to correlate with antibody titer, antibody isotype or comparative antibody affinity, but may be related to the length of time for which antibodies are present to exert their influence.	
Curation Last Updated	2023-08-18 20:47:10	

Results Page: Assays Tab – Assay Details

Epitope

Epitope		
Epitope ID	2790	IEDB_epitope:2790
Chemical Type	Linear peptide	
Linear Sequence	ALNNRFQIKGVELKS	
Source Molecule Name	hemagglutinin	GenPept:AAA87553.1 🔗
Source Organism	Influenza A virus	NCBITaxon:11320 🔗
Starting Position	511	
Ending Position	525	

Epitope Reference Details		
Epitope Structure Defines	Epitope containing region/antigenic site	
Epitope Name	T4	
Location of Data in Reference	Materials and Methods	

Results Page: Assays Tab – Assay Details

In Vivo Immunization

Immunization		
Host Organism	Mus musculus BALB/c	ONTIE:0000001 🔗

Host Details		
Sex	F	

1st In Vivo Process		
In Vivo Process Type	Administration in vivo	OBI:0600007 🔗

Administration Details		
Adjuvants	Freund's complete;	
Route	subcutaneous	
Dose Schedule	1 doses of 20 nmol.	

1st Immunogen		
Epitope Relation	Epitope	
Chemical Type	Linear peptide	
Linear Sequence	ALNNRFQIKGVELKS	
Source Molecule Name	hemagglutinin	GenPept:AAA87553.1 🔗
Source Organism	Influenza A virus	NCBITaxon:11320 🔗
Starting Position	511	
Ending Position	525	

Immunization Comments		
Immunization Comments	T cells were enriched from popliteal and inguinal lymph nodes.	

Results Page: Assays Tab – Assay Details

T Cell Assay		
Qualitative Measurement	Positive-High	
Method/Technique	3H-thymidine	OBI:1110180
Measurement of	proliferation	

Effector Cells		
Effector Cell Tissue Type	Lymph Node	UBERON:0000029
Effector Cell Type	T cell	CL:0000084
Effector Cell Culture Conditions	Direct Ex Vivo	

Antigen Presenting Cells		
Cell Tissue Type	Lymph Node	UBERON:0000029
Cell Type	Lymph node cells	OBI:1110041
Cell Culture Conditions	Direct Ex Vivo	

Results Page: Assays Tab – Assay Details

MHC Allele		
MHC Allele Name	H2-d class II	MRO:0001774
MHC Evidence Code	Cited reference	

Antigen		
Epitope Relation	Epitope	
Chemical Type	Linear peptide	
Linear Sequence	ALNNRFQIKGVELKS	
Source Molecule Name	hemagglutinin	GenPept:AAA87553.1
Source Organism	Influenza A virus	NCBITaxon:11320
Starting Position	511	
Ending Position	525	

Assay Reference Details		
Location of Assay Data in Reference	Figure 2	

Results Page: Receptors Tab – Subtabs & Groups

Current Filters: Organism: Influenza A virus (ID:11320) Include Positive Assays

Epitopes (5224)
Antigens (17)
Assays (21854)
Receptors (17332)
References (1616)

T Cell Receptors (17101)
B Cell Receptors (231)

Go To Records Starting At [Export Results](#)

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Group ID	Species	Type	Chain 1 CDR3	Chain 2 CDR3
819	Homo sapiens (human)	αβ	AGAGSQGNLI	ASSSRSSYEQY
820	Homo sapiens (human)	αβ	AGAGSQGNLI	ASSIRSSYEQY
1239	Mus musculus C57BL/6	αβ	VLGDRQGGRALI	ASSSRTGGHAEQF
1250	Mus musculus C57BL/6	αβ	ILSGGSNYKLT	ASSFGREQY
1410	Mus musculus B10.D2	αβ	ASNSGGSNAKLT	ASGETGTNERL
1513	Homo sapiens (human)	αβ	AGAIGSSNTGKLI	ASSIRSSYEQY
1514	Homo sapiens (human)	αβ	AGPGGSSNTGKLI	ASSLIYPGELF
1515	Homo sapiens (human)	αβ	AAQGSQGNLI	ASSIRSSYEQY
1516	Homo sapiens (human)	αβ	AAQGSQGNLI	ASSIGVYGYT
1517	Homo sapiens (human)	αβ	AAQGSQGNLI	ASSIRAAETQY
1518	Homo sapiens (human)	αβ	AAQGSQGNLI	ASSTFGANVLT
1519	Homo sapiens (human)	αβ	AVGGSQGNLI	ASSIRSSYEQY
1520	Homo sapiens (human)	αβ	AASFIIQGAQKLV	ASSLLGGWSEAF
1524	Homo sapiens (human)	αβ	AVTGGGSQGNLI	ASSIRSSYEQY
1525	Homo sapiens (human)	αβ	AVQGSQGNLI	ASSIRAAETQY
1526	Homo sapiens (human)	αβ	AGAFGSSNTGKLI	ASSIRSAYEQY
1527	Homo sapiens (human)	αβ	AGAGGGSQGNLI	ASSIRSSTEAF
1528	Homo sapiens (human)	αβ	AGAGGGSQGNLI	ASSRRSSDEQY

Results Page: Receptors Tab – Receptor Group

T cell receptor (receptor group ID 819)

Alpha beta TCR with alpha chain CDR3 of AGAGSQGNLI and beta chain CDR3 of ASSSRSSYEYQ was reported in Homo sapiens (human). This TCR has accessions for alpha chain [5HHM_D](#), [1OGA_D](#), [2VLJ_D](#) and beta chain [5HHM_E](#), [1OGA_E](#), [2VLJ_E](#) and was shown in 3D Structures [5HHM](#), [1OGA](#), [2VLR](#), [2VLJ](#) and [2VLK](#).

alpha		beta		Epitopes (# assays)
Gene usage	CDR sequences	Gene usage	CDR sequences	
V:TRAV27*01 D: J:TRAJ42*01	CDR1:SVFSS CDR2:VVTGGEV CDR3:AGAGSQGNLI	V:TRBV19*01 D: J:TRBJ2-7*01	CDR1:LNHDA CDR2:SQIVND CDR3:ASSSRSSYEYQ	GILGFVFTL (1), GILEFVFTL (1), GILGLVFTL (2), GIWGFVFTL (1)
V Domain: LEQSPQFLSIQEGENLTVYCNSSSVFSSL Q...		V Domain: GITQSPKYLFRKEGQNVTLSCQEQLNHDA M...		
V:TRAV27*01 D: J:TRAJ42*01	CDR1:SVFSS CDR2:VVTGGEV CDR3:AGAGSQGNLI	V:TRBV19*01 D: J:TRBJ2-7*01	CDR1:LNHDA CDR2:SQIVND CDR3:ASSSRSSYEYQ	GILGFVFTL (5)
V Domain: LLEQSPQFLSIQEGENLTVYCNSSSVFSS L...		V Domain: GGITQSPKYLFRKEGQNVTLSCQEQLNHDA A...		
V:TRAV27 D: J:TRAJ42	CDR1: CDR2: CDR3:AGAGSQGNLI	V:TRBV19 D: J:TRBJ2-7	CDR1: CDR2: CDR3:ASSSRSSYEYQ	GILGFVFTL (1)
V Domain:		V Domain:		

Epitope summary

This TCR was studied for the following epitopes GILGFVFTL studied as part of Matrix protein 1 from Influenza A virus (epitope ID [20354](#), 4 publications, 7 assays), GILEFVFTL studied as part of Matrix protein 1 from Influenza A virus (epitope ID [538549](#), 1 publication, 1 assay), GILGLVFTL studied as part of Matrix protein 1 from Influenza A virus (epitope ID [538552](#), 1 publication, 2 assays) and GIWGFVFTL studied as part of Matrix protein 1 from Influenza A virus (epitope ID [538554](#), 1 publication, 1 assay).

Results Page: References Tab – Table Headers

Current Filters: ✕ Organism: Influenza A virus (ID:11320) ✕ Include Positive Assays

Epitopes
(5224)

Antigens
(17)

Assays
(21854)

Receptors
(17332)

References
(1616)

Go To Records Starting At

Export Results

1616 Records Found

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IEDB ID	PMID	Author	Title	Journal	Date
1042927	37280206	Julien Schmidt; Johanna Chiffelle; Marta A S Perez; Morgane Magnin; Sara Bobisse; Marion Arnaud; Raphael Genolet; Julien Cesbron; David Barras; Blanca Navarro Rodrigo; Fabrizio Benedetti; Alexandra Michel; Lise Queiroz; Petra Baumgaertner; Philippe Guillaume; Michael Hebeisen; Olivier Michielin; Tu Nguyen-Ngoc; Florian Huber; Melita Irving; Stéphanie Tissot-Renaud; Brian J Stevenson; Sylvie Rusakiewicz; Denarda Dangaj Laniti; Michal Bassani-Sternberg; Nathalie Rufer; David Gfeller; Lana E Kandalaff; Daniel E Speiser; Vincent Zoete; George Coukos; Alexandre Harari	Neoantigen-specific CD8 T cells with high structural avidity preferentially reside in and eliminate tumors.	Nat Commun	2023
1042920	3758676	Siri Amanda Tvingsholm; Marcus Svensson Frej; Vibeke Mindahl Rafa; Ulla Kring Hansen; Maria Ormhøj; Alexander Tyron; Agnete W P Jensen; Mohammad Kadivar; Amalie Kai Bentzen; Kamilla K Munk; Gitte N Aasbjerg; Jeppe S H Temander; Christina Heeke; Tripti Tamhane; Christian Schmess; Samuel A Funt; Julie Westerlin Kjeldsen; Anders Handrup Kvemeland; Özcan Met; Arianna Draghi; Søren Nyboe Jakobsen; Marco Donia; Inge Marie Svane; Sine Reker Hadrup	TCR-engaging scaffolds selectively expand antigen-specific T-cells with a favorable phenotype for adoptive cell therapy.	J Immunother Cancer	2023
1042874	37491224	Ujjwal Kumar; Priya Goyal; Zaid K Madni; Kajal Kamble; Vineet Gaur; Maitreyi S Rajala; Dinakar M Salunke	A structure and knowledge-based combinatorial approach to engineering universal scFv antibodies against influenza M2 protein.	J Biomed Sci	2023
1042307	37074450	Jing-Ying Sun; Chun-Yan Guo; Guo-Rong Wang; Li-Ting Yan; Qing Feng; Yan Li; Xue-Ping Huo; Xin Xie; Jun Hu; Li-Jun Sun	Identification of Heterophilic Epitopes of H1N1 Influenza Virus Hemagglutinin.	Curr Microbiol	2023
1042647	37344603	Wen Tzuen Heng; Hui Xuan Lim; Kuan Onn Tan; Chit Laa Poh	Validation of Multi-epitope Peptides Encapsulated in PLGA Nanoparticles Against Influenza A Virus.	Pharm Res	2023

User Queries: How to see the differences between B and T cell responses for any pathogen?

Results Page: Assays Tab – Subtabs

Current Filters: ✖ Organism: Influenza A virus (ID:11320) ✖ Include Positive Assays

Epitopes

(5224)

Antigens

(17)

Assays

(21854)

Receptors

(17332)

References

(1616)

T Cell Assays
(7779)

B Cell Assays
(8305)

MHC Ligand Assays
(5770)

Go To Records Starting At GO

Export Results

7779 Records Found

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Per Page

IEDB ID	Reference	Epitope	Host	Immunization	Assay Antigen	Antigen Epitope Relation	MHC Restriction	Assay Description
1737052	S Ghosh; Int Immunol 1999	ALNNRFQIKGVELK S hemagglutinin (511-525) Influenza A virus	Mus musculus BALB/c	Administration in vivo with ALNNRFQIKGVELK S (Epitope)	ALNNRFQIKGVELK S hemagglutinin (511-525) Influenza A virus	Epitope	H2-d class II	3H-thymidine proliferation Positive-High
1583867	M Z Atassi; Immunol Commun 1984	HHPSTNQEQTSLYV QAS Hemagglutinin (183-199) Influenza A virus	Mus musculus BALB/c	Administration in vivo with Influenza A virus (A/X-31(H3N2)) (Influenza A virus (A/X31(H3N2))) (Taxonomic Child)	HHPSTNQEQTSLYV QAS Hemagglutinin (183-199) Influenza A virus	Epitope	H2-d class II	3H-thymidine proliferation Positive-High
1583872	M Z Atassi; Immunol Commun 1984	IEKTNEKFHQIEK hemagglutinin HA2 (56-68) Influenza A virus	Mus musculus BALB/c	Administration in vivo with Influenza A virus (A/X-31(H3N2)) (Influenza A virus (A/X31(H3N2))) (Taxonomic Child)	IEKTNEKFHQIEK hemagglutinin HA2 (56-68) Influenza A virus	Epitope	H2-d class II	3H-thymidine proliferation Positive-High
1583862	M Z Atassi; Immunol Commun 1984	GTLVKITDDQIEV Hemagglutinin precursor (23-36) Influenza A virus	Mus musculus BALB/c	Administration in vivo with Influenza A virus (A/X-31(H3N2)) (Influenza A virus (A/X31(H3N2))) (Taxonomic Child)	GTLVKITDDQIEV Hemagglutinin precursor (23-36) Influenza A virus	Epitope	H2-d class II	3H-thymidine proliferation Positive-High
1809221	Isamu Z Hartman; Nat Med 2010	PKYVKQNTLKLAT Hemagglutinin (306-318) Influenza A virus (A/Texas/1/1977(H3	Mus musculus HLA-DR1 Tg	Administration in vivo with PKYVKQNTLKLAT (Epitope)	PKYVKQNTLKLAT Hemagglutinin (306-318) Influenza A virus (A/Texas/1/1977(H3 N2)) (Influenza A	Epitope	HLA-DRB1*01:01	3H-thymidine proliferation Positive-High

Results Page: Additional Filters

Differences Between B and T Cell Responses

Any type
 Paired chains only

Chain: Any Type
Sequence: Exact Matches

18406	FYIQMCTEL		Nucleoprotein		Influenza A virus
41602	MGLIYNRM		Matrix protein 1		Influenza A virus
54593	RLIQNSLTI		Nucleoprotein		Influenza A virus
16681	FLKDVMESM		RNA-directed RNA polymerase catalytic subunit		Influenza A virus

5224 Records Found

Page 1 of 209

Go To Records Starting At 1200

Assay ?

Outcome: Positive Negative

T Cell Ex: IL-2 release

B Cell Ex: ELISA

MHC Ligand Ex: purified MHC binding

MHC Restriction ?

Any

Class I

Class II

Assay Type Filters

Differences Between B and T Cell Responses

T cell assays only = T cell epitopes (2,268 epitopes)

Current Filters: Organism: Influenza A virus (ID:11320) Include Positive Assays No B cell assays No MHC assays

Epitopes (2268)	Antigens (11)	Assays (7779)	Receptors (17101)	References (906)	
Go To Records Starting At <input type="text" value="1200"/> <input type="button" value="GO"/> Export Results					
2268 Records Found <input type="button" value="⏪"/> <input type="button" value="⏩"/> Page <input type="text" value="1"/> of 91 <input type="button" value="▶"/> <input type="button" value="▶▶"/> <input type="text" value="25"/> Per Page					
IEDB ID	Epitope	Antigen	Organism	# References	# Assays
20354	GILGFVFTL	Matrix protein 1	Influenza A virus	211	588
4602	ASNENMETM	Nucleoprotein	Influenza A virus	132	394
61151	SLENFRAYV	Polymerase acidic protein	Influenza A virus	90	252
67436	TYQRTRALV	Nucleoprotein	Influenza A virus	76	160
48237	PKYVKQNTLKLAT	Hemagglutinin	Influenza A virus	60	154
57751	SFERFEIFPKE	Hemagglutinin	Influenza A virus	33	107
60867	SRYWAIRTR	Nucleoprotein	Influenza A virus	32	67
4578	ASNENMDAM	Nucleoprotein	Influenza A virus	28	66
7136	CTELKLSDY	Nucleoprotein	Influenza A virus	28	45
27283	ILRGSVAHK	Nucleoprotein	Influenza A virus	27	54
29690	IYSTVASSL	Hemagglutinin	Influenza A virus	26	86
61497	SSYRRPVGI	RNA-directed RNA polymerase catalytic subunit	Influenza A virus	26	60
56055	RTFSFQLI	Nuclear export protein	Influenza A virus	23	41
13263	ELRSRYWAI	Nucleoprotein	Influenza A virus	20	37

Assay Type Filters

Differences Between B and T Cell Responses

B cell assays only = B cell epitopes (1,356 epitopes)

Current Filters: Organism: Influenza A virus (ID:11320) Include Positive Assays No T cell assays No MHC assays

Epitopes (1356)	Antigens (15)	Assays (8305)	Receptors (231)	References (512)	
Go To Records Starting At <input type="text" value="1200"/> <input type="button" value="GO"/>					
1356 Records Found					
Page <input type="text" value="1"/> of 55					
25 Per Page					
IEDB ID	Epitope	Antigen	Organism	# References	# Assays
59318	SLLTEVETPIRNEWGCRCDSSD	Matrix protein 2	Influenza A virus	32	111
119645	SLLTEVETPTRNEWECRCDSSD	Matrix protein 2	Influenza A virus	11	31
42596	MSSLTEVETPIRNEWGCRCDSSD	Matrix protein 2	Influenza A virus	9	49
75441	YPYDVPDYA	Hemagglutinin	Influenza A virus	9	17
97505	MSSLTEVETPTRNEWECRCDSSD	Matrix protein 2	Influenza A virus	6	17
133698	SLLTEVETPIRNEWG	Matrix protein 2	Influenza A virus	6	50
164106	A: H45, S46, S306, T333; B: V362, D363, G364, W365...	Two components:Hemagglutinin & Hemagglutinin	Influenza A virus	6	74
36931	LKLAT	Hemagglutinin	Influenza A virus	5	13
46443	NVPEKQT	Hemagglutinin	Influenza A virus	5	13
72805	WLTEKEGSYP	Hemagglutinin	Influenza A virus	5	9
136883	SLLTEVETPIRNEWGCRGSSD	Matrix protein 2	Influenza A virus	5	14
2224249	A: H44, Q46, D47, I48, S304, M305, P306; B: V364, ...	Two components:Hemagglutinin & Hemagglutinin	Influenza A virus	5	103

User Queries: How to *see* the differences between B and T cell responses?

Immunome Browser

Epitopes (16175) **Antigens (18)** Assays (46781) Receptors (87269) References (443)

Go To Records Starting At [Export Results](#)

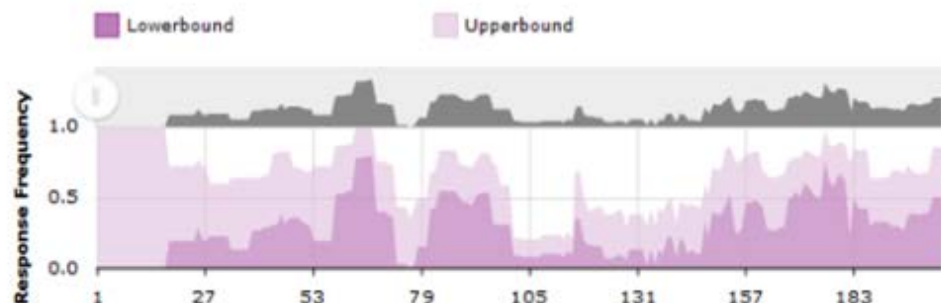
18 Records Found Per Page

Antigen	Organism	# Epitopes	# Assays	# References
Spike glycoprotein				
Nucleoprotein				
Membrane protein				
Replicase polyprotein 1ab				
ORF3a protein				
Envelope small membrane protein				
ORF8 protein				
ORF7a protein				
Two components:Spike glycoprotein & Spike glycoprotein				
ORF6 protein				
ORF10 protein				
ORF9b protein				

Click icon to view Immunome Browser

Influenza A Hemagglutinin Host: Homo sapiens Assay: B cell assays

Response Frequency



The Immunome Browser maps epitopes retrieved from a query onto their source protein to visualize how often different regions in a protein have been tested and how often they were positive.

[Learn More](#)

User Queries: How to *see* the differences between B and T cell responses?

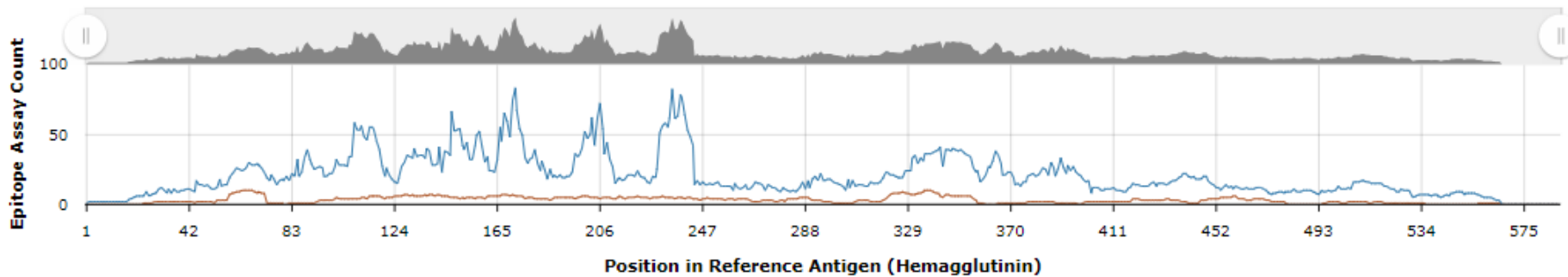
B cell

Influenza A virus - Hemagglutinin (UniProt:P03452)

Current Filters: Organism: Influenza A virus (ID:11320)

No T cell assays

No MHC assays



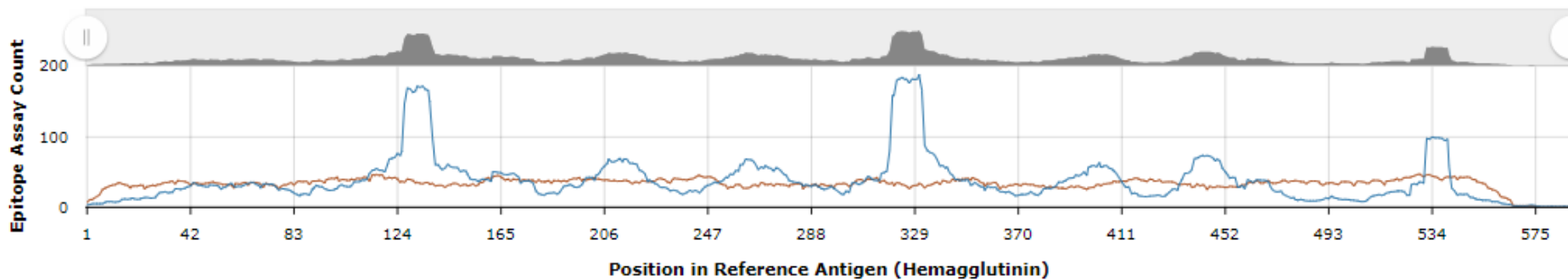
T cell

Influenza A virus - Hemagglutinin (UniProt:P03452)

Current Filters: Organism: Influenza A virus (ID:11320)

No B cell assays

No MHC assays

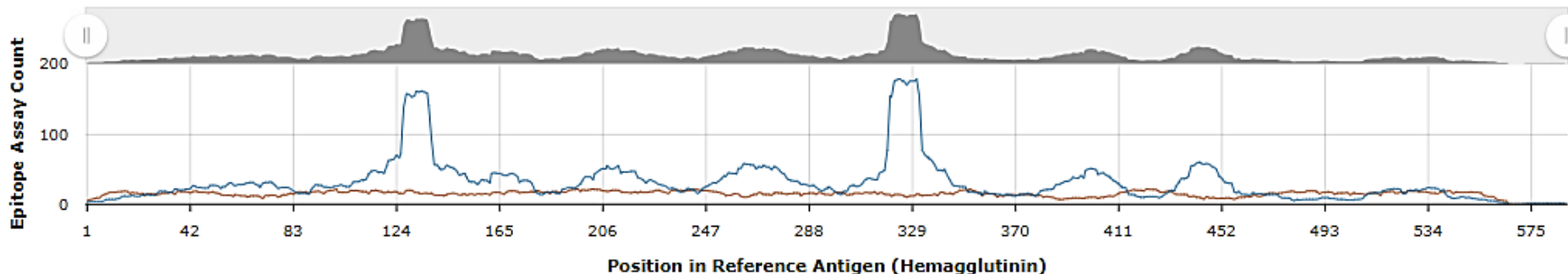


User Queries: How to *see* the differences between CD4 and CD8 T cell responses?

CD4 T cell

Influenza A virus - Hemagglutinin ([UniProt:P03452](#))

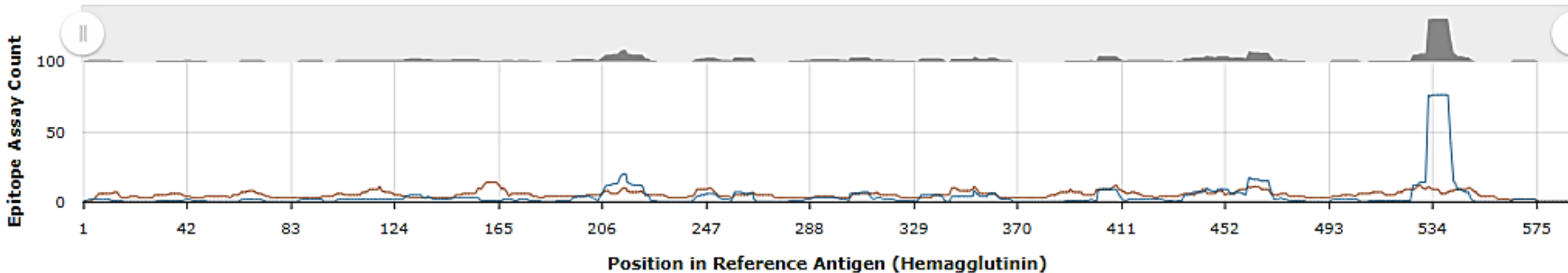
Current Filters:



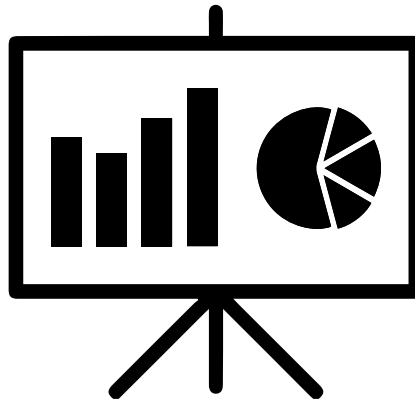
CD 8 T cell

Influenza A virus - Hemagglutinin ([UniProt:P03452](#))

Current Filters:



Additional Slides



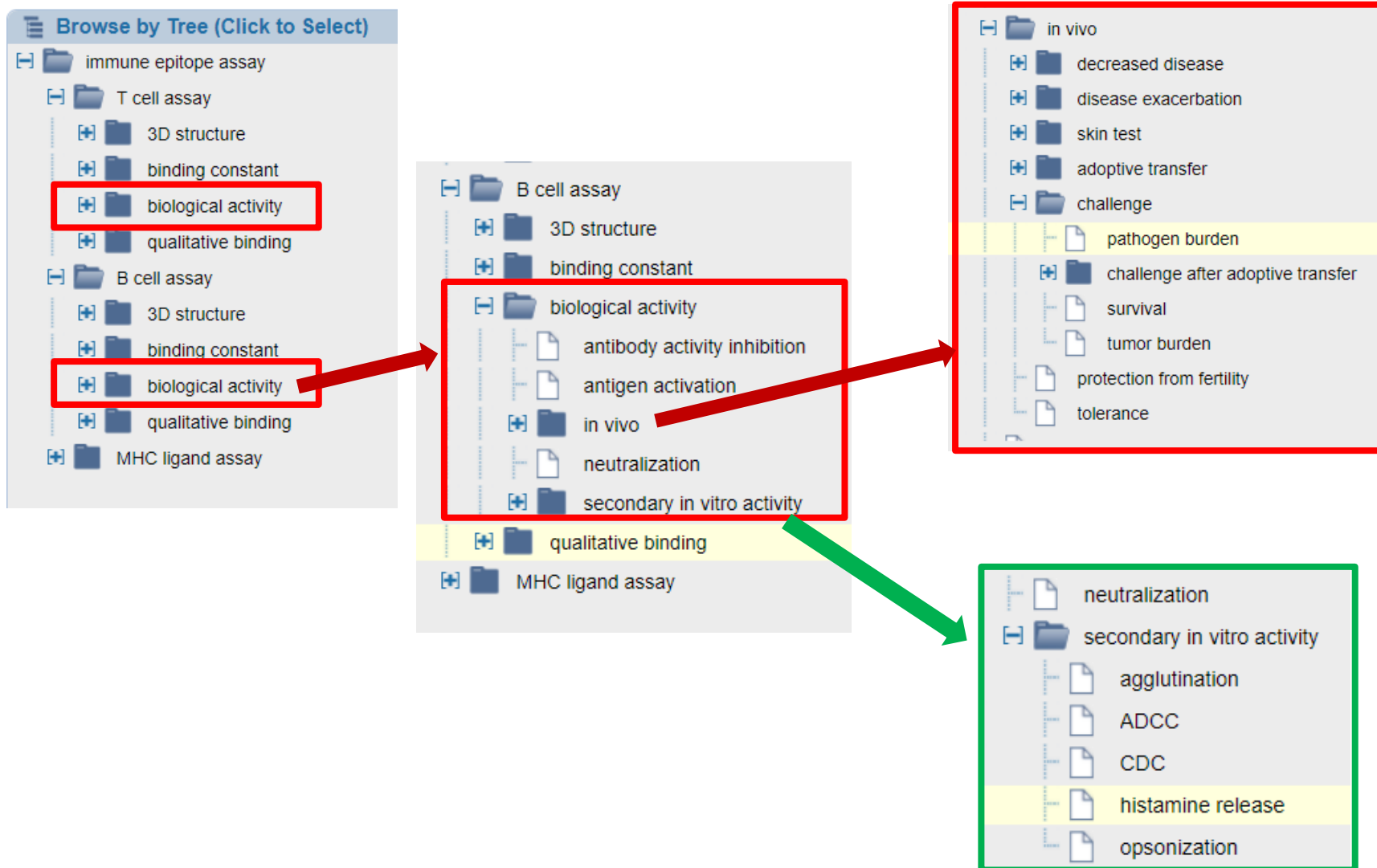
Exports – Epitope Source Antigen

Source protein isoform of epitope,
author specified, 100% identical

Reference proteome source protein of
epitope, groups all same proteins, not
100% identical

Epitope Antigen Name	Epitope Antigen IRI	Epitope Parent Protein	Epitope Parent Protein IRI
polyprotein	http://www.ncbi.nlm.nih.gov/protein/ABR25251.1	sp P27958 POLG_HCVH Genome polyprotein OS=Hepatitis C virus genotype 1a (isolate H)	http://www.uniprot.org/uniprot/P27958
polyprotein	http://www.ncbi.nlm.nih.gov/protein/ABR25251.1	sp P27958 POLG_HCVH Genome polyprotein OS=Hepatitis C virus genotype 1a (isolate H)	http://www.uniprot.org/uniprot/P27958
NP	http://www.ncbi.nlm.nih.gov/protein/Q91UL1	sp P03466 NCAP_I34A1 Nucleoprotein OS=Influenza A virus (strain A/Puerto Rico/8/1934 H1N1)	http://www.uniprot.org/uniprot/P03466
60S ribosomal protein L28 isoform 2	http://www.ncbi.nlm.nih.gov/protein/NP_000982.2	sp P46779 RL28_HUMAN 60S ribosomal protein L28 OS=Homo sapiens OX=9606 GN=RPL28 PE=1 SV=3	http://www.uniprot.org/uniprot/P46779
polyprotein	http://www.ncbi.nlm.nih.gov/protein/ABY67667.1	sp P27958 POLG_HCVH Genome polyprotein OS=Hepatitis C virus genotype 1a (isolate H)	http://www.uniprot.org/uniprot/P27958
60S ribosomal protein L8	http://www.ncbi.nlm.nih.gov/protein/NP_000964.1	sp P62917 RL8_HUMAN 60S ribosomal protein L8 OS=Homo sapiens OX=9606 GN=RPL8 PE=1 SV=2	http://www.uniprot.org/uniprot/P62917
K1 glycoprotein	http://www.ncbi.nlm.nih.gov/protein/AAT44989.1	sp Q2HRD5 K1_HHV8P Protein K1 OS=Human herpesvirus 8 type P (isolate GK18) OX=868565	http://www.uniprot.org/uniprot/Q2HRD5
K1 glycoprotein [Human herpesvirus 8]	http://www.ncbi.nlm.nih.gov/protein/AAT44977.1	sp Q2HRD5 K1_HHV8P Protein K1 OS=Human herpesvirus 8 type P (isolate GK18) OX=868565	http://www.uniprot.org/uniprot/Q2HRD5
alpha-actin	http://www.ncbi.nlm.nih.gov/protein/AAA51577.1	sp P62736 ACTA_HUMAN Actin, aortic smooth muscle OS=Homo sapiens OX=9606 GN=ACTA2 PE=1	http://www.uniprot.org/uniprot/P62736
cytochrome c oxidase I	https://ontology.iedb.org/ontology/ONTIE_0002983	sp P00395 COX1_HUMAN Cytochrome c oxidase subunit 1 OS=Homo sapiens OX=9606 GN=MT-CO1	http://www.uniprot.org/uniprot/P00395
gag protein	http://www.ncbi.nlm.nih.gov/protein/AAX81417.1	sp P03349 GAG_HV1A2 Gag polyprotein OS=Human immunodeficiency virus type 1 group M subtype B (isolate ARV2/SF2) OX=11685 GN=gag PE=1 SV=3	http://www.uniprot.org/uniprot/P03349

User Queries: How can we assess the protective capability of the epitopes of the database?



Exports – Epitope Source Organism

Source organism of epitope, author specified

Reference proteome species of epitope, groups all same

Epitope Organism Name	Epitope Organism IRI	Epitope Parent Organism	Epitope Parent Organism IRI
Hepacivirus C	http://purl.obolibrary.org/obo/NCBITaxon_11103	Hepacivirus C	http://purl.obolibrary.org/obo/NCBITaxon_11103
Hepacivirus C	http://purl.obolibrary.org/obo/NCBITaxon_11103	Hepacivirus C	http://purl.obolibrary.org/obo/NCBITaxon_11103
Influenza A virus (A/X-31(H3N2))	http://purl.obolibrary.org/obo/NCBITaxon_132504	Influenza A virus	http://purl.obolibrary.org/obo/NCBITaxon_11320
Homo sapiens	http://purl.obolibrary.org/obo/NCBITaxon_9606	Homo sapiens	http://purl.obolibrary.org/obo/NCBITaxon_9606
Hepacivirus C	http://purl.obolibrary.org/obo/NCBITaxon_11103	Hepacivirus C	http://purl.obolibrary.org/obo/NCBITaxon_11103
Homo sapiens	http://purl.obolibrary.org/obo/NCBITaxon_9606	Homo sapiens	http://purl.obolibrary.org/obo/NCBITaxon_9606
Human gammaherpesvirus 8	http://purl.obolibrary.org/obo/NCBITaxon_37296	Human gammaherpesvirus 8	http://purl.obolibrary.org/obo/NCBITaxon_37296
Human gammaherpesvirus 8	http://purl.obolibrary.org/obo/NCBITaxon_37296	Human gammaherpesvirus 8	http://purl.obolibrary.org/obo/NCBITaxon_37296
Homo sapiens	http://purl.obolibrary.org/obo/NCBITaxon_9606	Homo sapiens	http://purl.obolibrary.org/obo/NCBITaxon_9606
Homo sapiens	http://purl.obolibrary.org/obo/NCBITaxon_9606	Homo sapiens	http://purl.obolibrary.org/obo/NCBITaxon_9606
Human immunodeficiency virus 1	http://purl.obolibrary.org/obo/NCBITaxon_11676	Human immunodeficiency virus 1	http://purl.obolibrary.org/obo/NCBITaxon_11676

Exports – Assay Types

Top Header row = Field Group (Reference, Epitope, etc.)

2nd Header Row = Field (terms may repeat)

Separate method and assay group columns allow sorting

IRI is linked to ontology term for assay (OBI ontology)



Assay	Assay	Assay	Assay	Assay	Assay	Assay	Assay	Assay
Location of assay data in the manuscript	Method/Technique	Assay Group	Units	Assay Type IRI	Qualitative Measure	Measurement Inequality	Quantitative measurement	
Fig. 4A	lysate MHC/direct/radioactivity	qualitative binding		http://purl.obolibrary.org/obo/OBI_0001556	Positive			
Figure 4	cellular MHC/direct/fluorescence	qualitative binding		http://purl.obolibrary.org/obo/OBI_0001606	Positive			
Figure 4	cellular MHC/direct/fluorescence	qualitative binding		http://purl.obolibrary.org/obo/OBI_0001606	Positive			
Figures 2 and 5, table III	cellular MHC/direct/fluorescence	half life	min	http://purl.obolibrary.org/obo/OBI_0001559	Positive		2520	
Figures 2 and 5, table III	cellular MHC/direct/fluorescence	half life	min	http://purl.obolibrary.org/obo/OBI_0001559	Positive		2220	
	purified MHC/direct/fluorescence	dissociation constant KD (~EC50)	nM	http://purl.obolibrary.org/obo/OBI_0001543	Positive-Low	>	5000	
Figure 4 and table II	cellular MHC/direct/fluorescence	half maximal effective concentration (EC50)	nM	http://purl.obolibrary.org/obo/OBI_0001561	Positive		5000	
Figure 4 and table II	cellular MHC/direct/fluorescence	half maximal effective concentration (EC50)	nM	http://purl.obolibrary.org/obo/OBI_0001561	Positive		7000	
Figure 4	cellular MHC/direct/fluorescence	half maximal effective concentration (EC50)	nM	http://purl.obolibrary.org/obo/OBI_0001561	Positive-High	=	4000	
Figure 4	cellular MHC/direct/fluorescence	half maximal effective concentration (EC50)	nM	http://purl.obolibrary.org/obo/OBI_0001561	Positive-High	=	3000	
Figures 2 and 4	cellular MHC/direct/fluorescence	qualitative binding		http://purl.obolibrary.org/obo/OBI_0001606	Positive-High			
Figure 2	cellular MHC/direct/fluorescence	qualitative binding		http://purl.obolibrary.org/obo/OBI_0001606	Positive-High			
Figure 2	cellular MHC/direct/fluorescence	qualitative binding		http://purl.obolibrary.org/obo/OBI_0001606	Positive-High			
Figure 2	cellular MHC/direct/fluorescence	qualitative binding		http://purl.obolibrary.org/obo/OBI_0001606	Positive-Low			
Figure 2	cellular MHC/direct/fluorescence	qualitative binding		http://purl.obolibrary.org/obo/OBI_0001606	Positive-High			
Figure 7 and Tables 1, 2, and 3	cellular MHC/direct/fluorescence	half maximal effective concentration (EC50)	nM	http://purl.obolibrary.org/obo/OBI_0001561	Positive-Low	=	94000	
Figure 7 and Tables 1, 2, and 3	cellular MHC/direct/fluorescence	half maximal effective concentration (EC50)	nM	http://purl.obolibrary.org/obo/OBI_0001561	Positive-Low	=	136000	
Figure 7 and Tables 1, 2, and 3	cellular MHC/direct/fluorescence	half maximal effective concentration (EC50)	nM	http://purl.obolibrary.org/obo/OBI_0001561	Positive-Low	=	132000	
Figure 7 and Tables 1, 2, 3, and 4	cellular MHC/direct/fluorescence	half maximal effective concentration (EC50)	nM	http://purl.obolibrary.org/obo/OBI_0001561	Positive-Intermediate	=	43000	
Figure 7 and Tables 1, 2, 3, and 4	cellular MHC/direct/fluorescence	half maximal effective concentration (EC50)	nM	http://purl.obolibrary.org/obo/OBI_0001561	Positive-High	=	9000	
Figure 7 and Tables 1, 2, and 3	cellular MHC/direct/fluorescence	half maximal effective concentration (EC50)	nM	http://purl.obolibrary.org/obo/OBI_0001561	Positive-Low	=	77000	
Table 2	cellular MHC/direct/fluorescence	half maximal effective concentration (EC50)	nM	http://purl.obolibrary.org/obo/OBI_0001561	Positive-High	=	16000	

Results Page: Discontinuous Epitopes

B cell assays only = B cell epitopes

Epitopes (4347)		Antigens (13)		Assays (9492)		Receptors (27)		References (149)	
Go To Records Starting At <input type="text" value="1200"/> <input type="button" value="GO"/>						Export Results			
4347 Records Found						Page <input type="text" value="1"/> of 174		25 Per Page	
Details	Epitope	Antigen	Organism	# References	# Assays				
1336251	E484	Spike glycoprotein	SARS-CoV2	4	12				
1338787	N501	Spike glycoprotein	SARS-CoV2	4	11				
1069378	ECDIPIGAGICASYQ	Spike glycoprotein	SARS-CoV2	3	4				
1070803	KPSKRSFIEDLLFNK	Spike glycoprotein	SARS-CoV2	3	5				
1073281	TESNKKFLPFQQFGRDIA	Spike glycoprotein	SARS-CoV2	3	4				
1310239	R346, N440, L441, K444, V445, G446, N448, Y449, Q4...	Spike glycoprotein	SARS-CoV2	3	19				
1310265	AIVLQLPQGTTLPKG	Nucleoprotein	SARS-CoV2	3	6				
1310304	CASYQTQTNSPRRAR	Spike glycoprotein	SARS-CoV2	3	6				
1313381	QRVAGDSGFAAYSRY	Membrane protein	SARS-CoV2	3	4				
1314086	F486, N487	Spike glycoprotein	SARS-CoV2	3	13				
1316945	FSQILPDPSKPSKRSFIE	Spike glycoprotein	SARS-CoV2	3	5				
1335914	E484	Spike glycoprotein	SARS-CoV2	3	9				
1338780	K417	Spike glycoprotein	SARS-CoV2	3	6				
1340666	EPIYDEPTTTTSVPL	ORF3a protein	SARS-CoV2	3	6				
5406	AVKLQNNELSPVALR	Replicase polyprotein 1ab	SARS-CoV2	2	4				

User Query: What protein are B cell epitope residues in reference to?

Epitope		
Epitope ID	1314086	IEDB_epitope:1314086
Chemical Type	Discontinuous peptide	
Source Name	surface glycoprotein [Severe acute respiratory syndrome coronavirus 2]	GenPept:QHD43416.1 
Source Organism	SARS-CoV2	NCBITaxon:2697049 
Discontinuous Residues	F486, N487	

Epitope Reference Details		
Epitope Structure Defines	Partial Epitope	
Epitope Name	Epitope of COV2-2196 on SARS-CoV-2	
Reference Region	F486, N487	
Location of Data in Reference	Figure 3	