Accessing the Data: Query, Reporting and Examples

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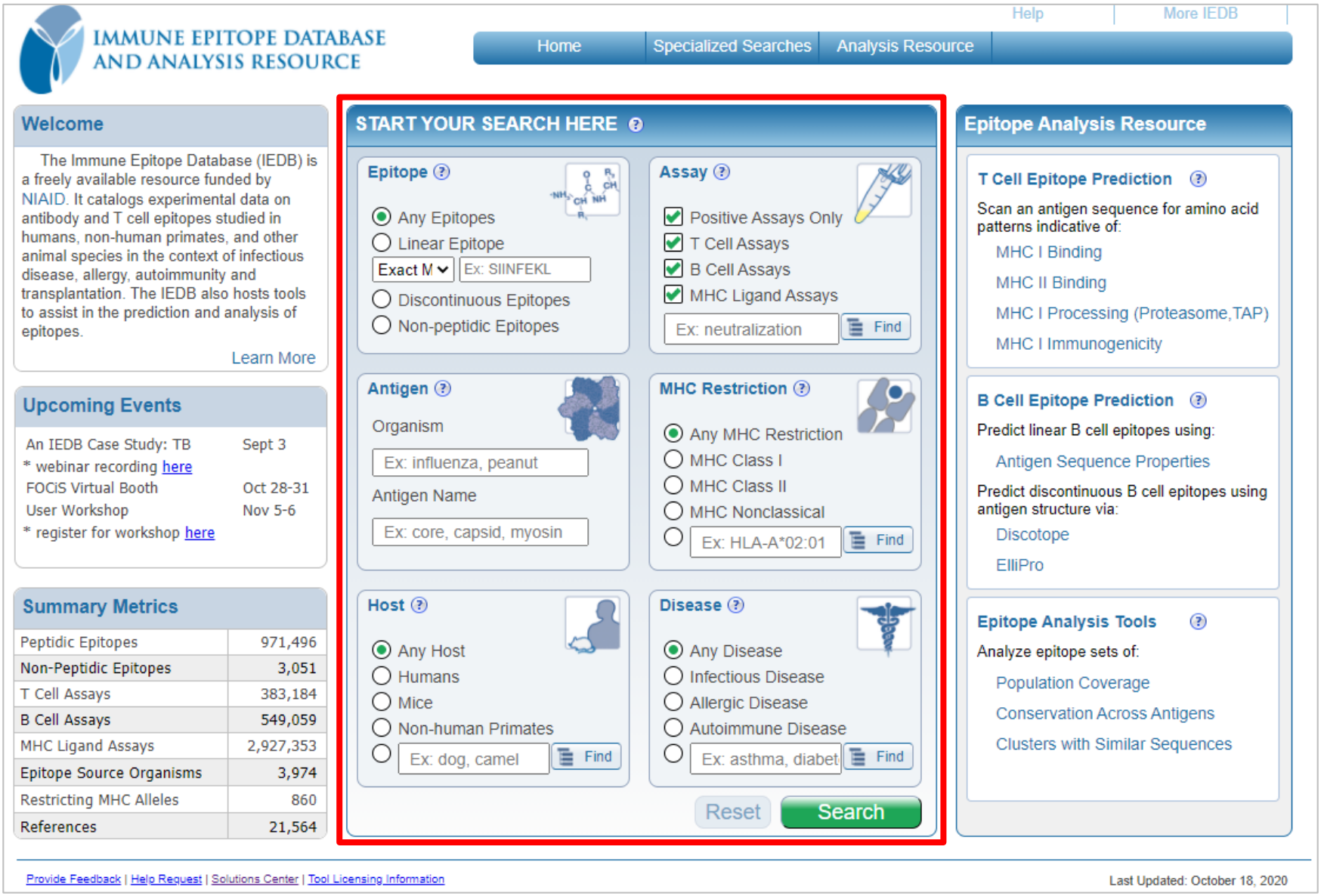
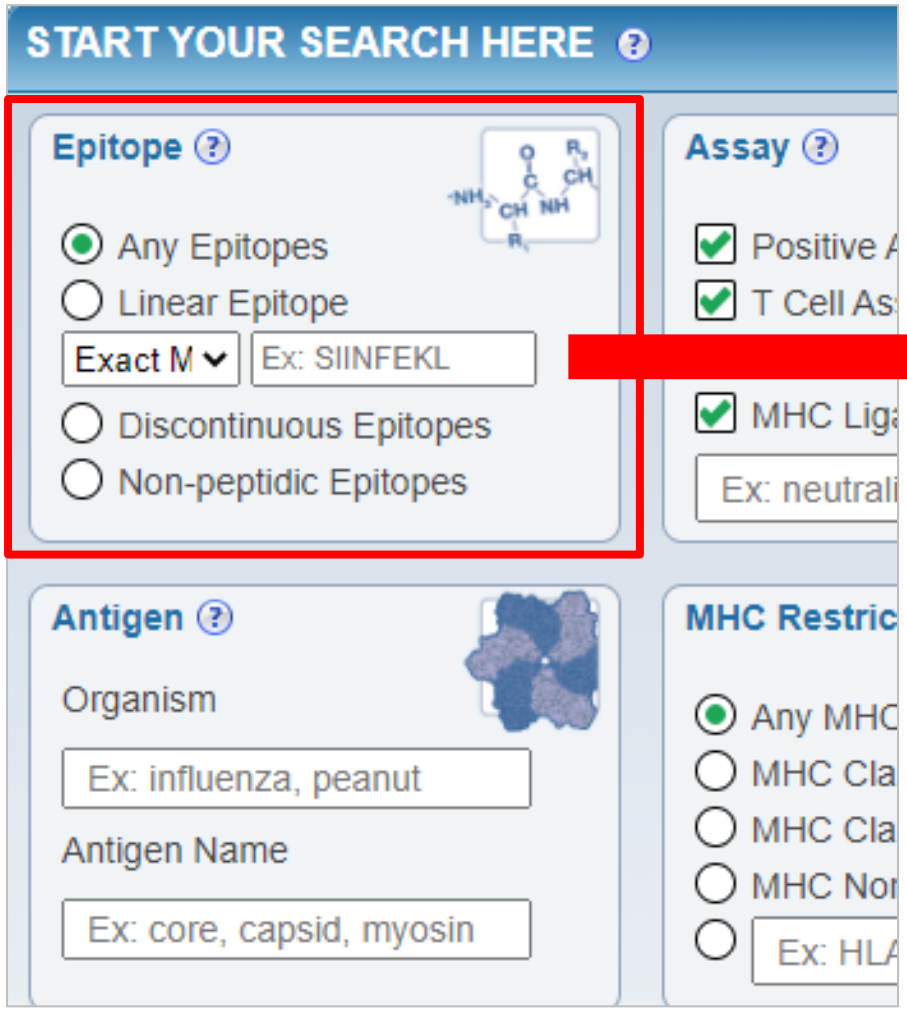
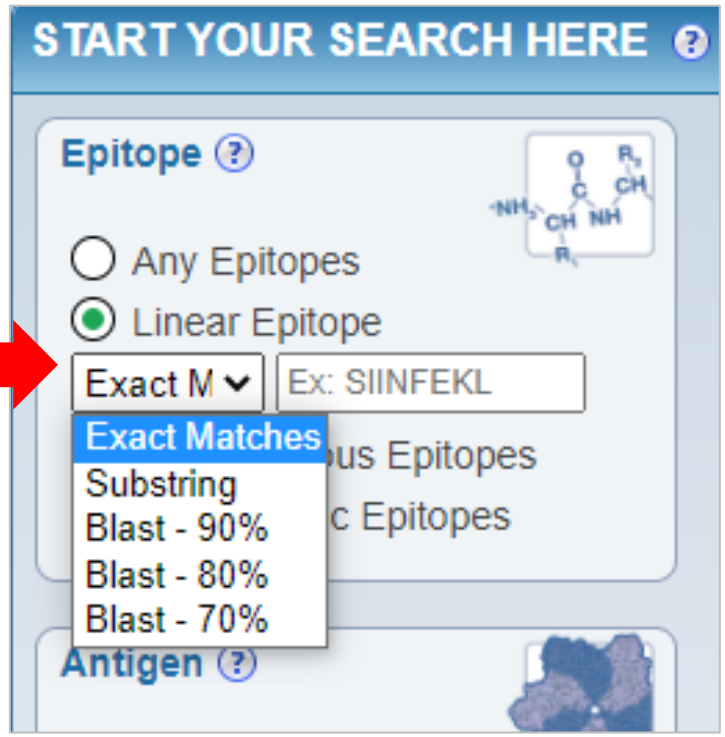
Presented by: Randi Vita, M.D. Lead Ontology and Quality Manager

Home Page Query

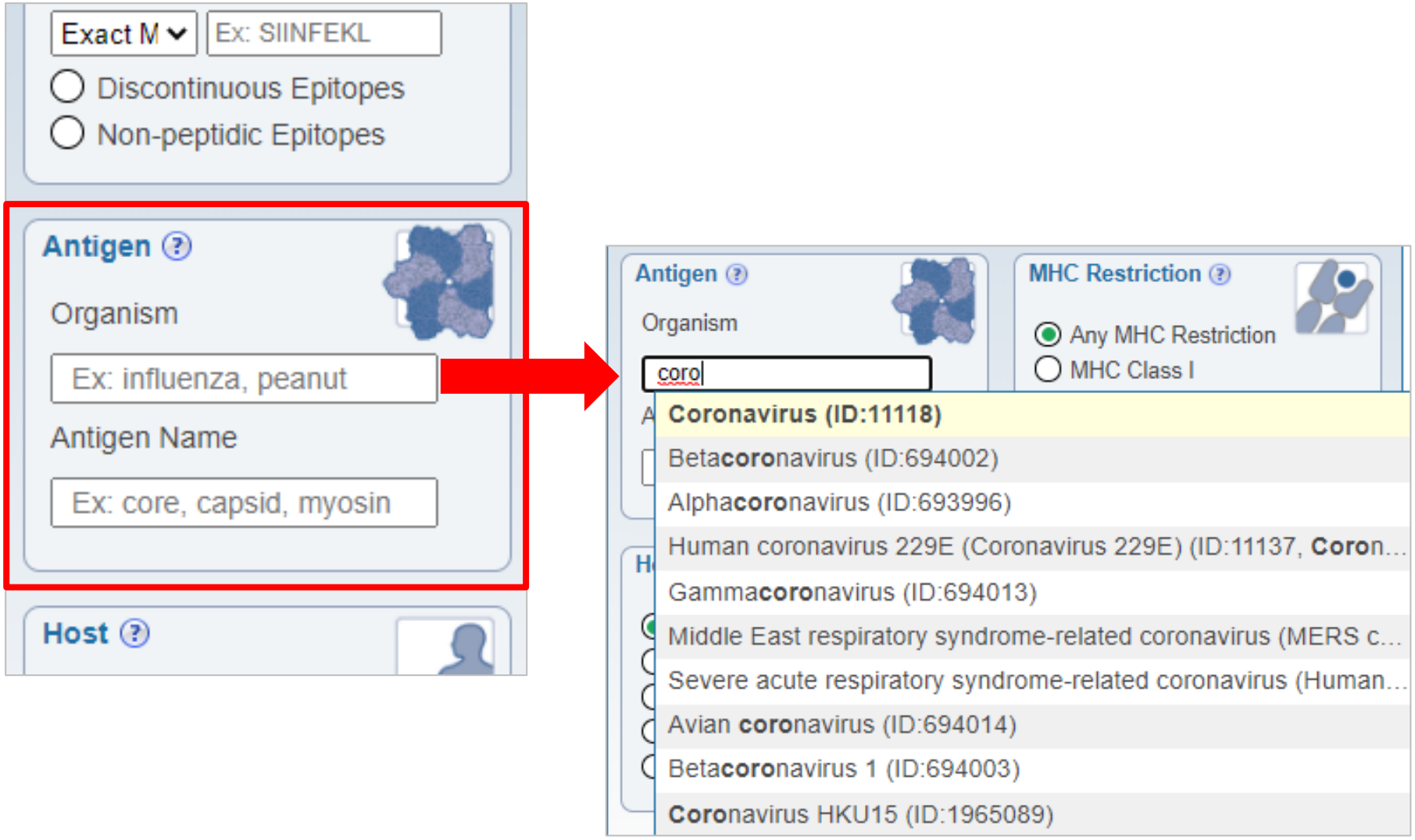


Epitope Search Pane

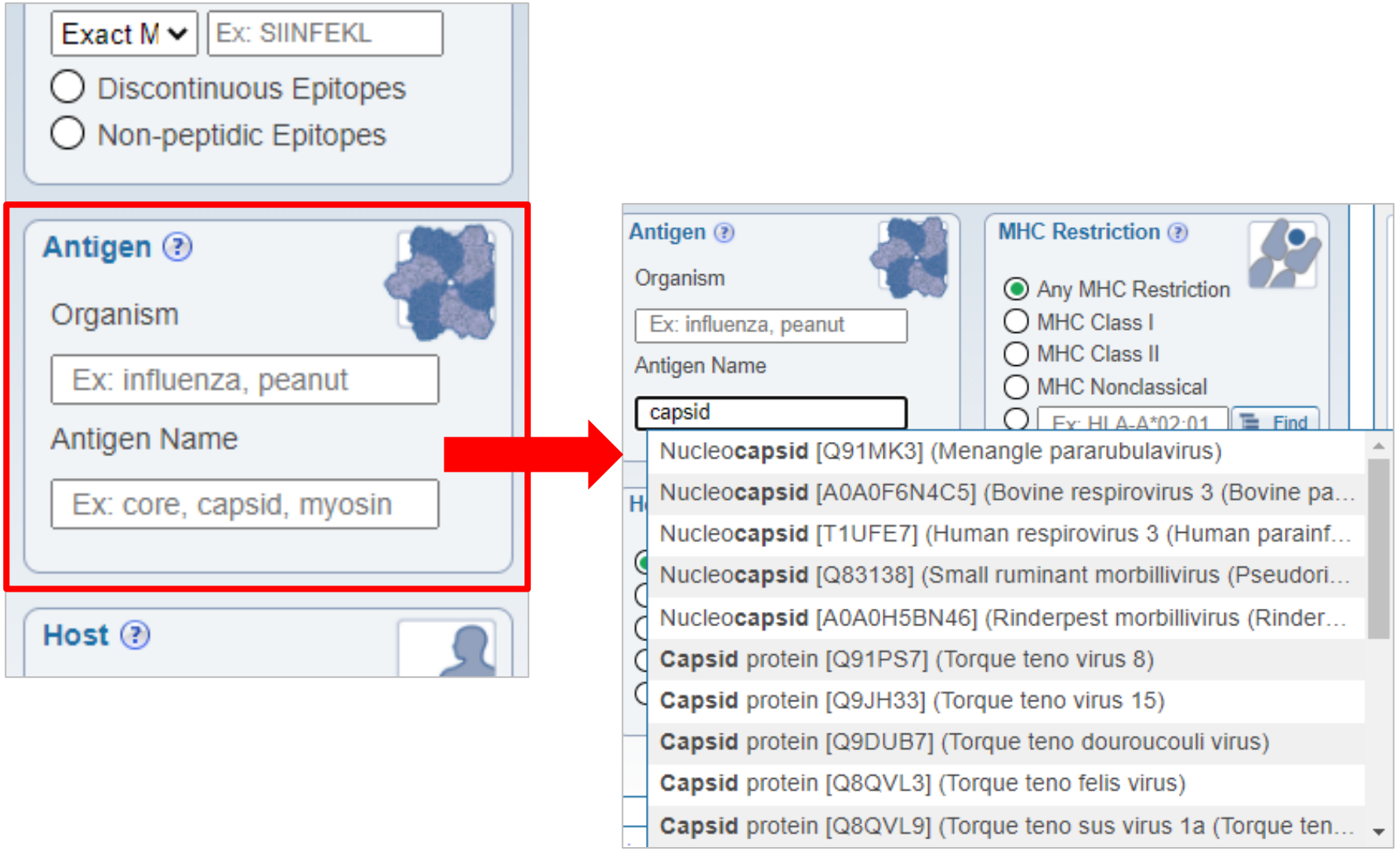




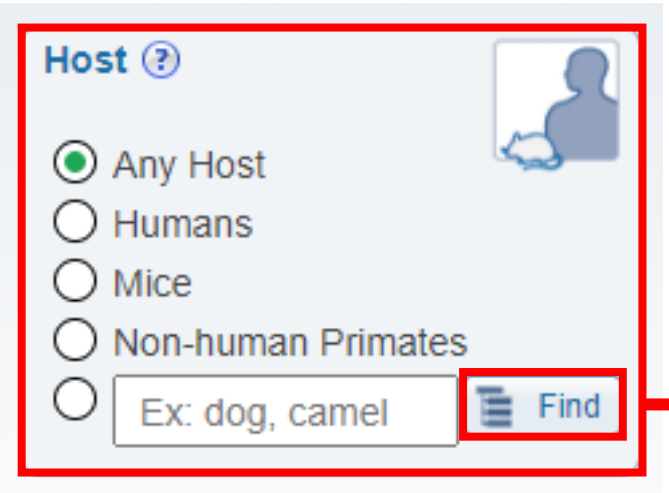
Antigen Search Pane: Organism

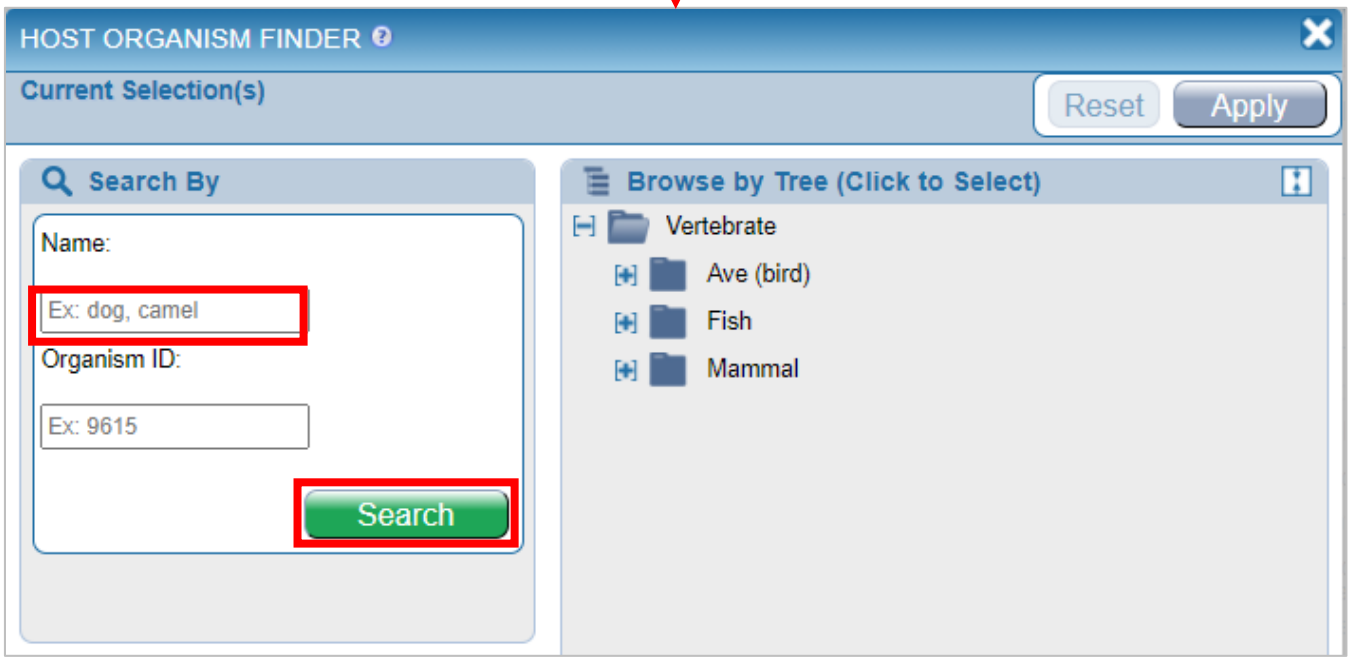


Antigen Search Pane: Antigen



Host Search Pane





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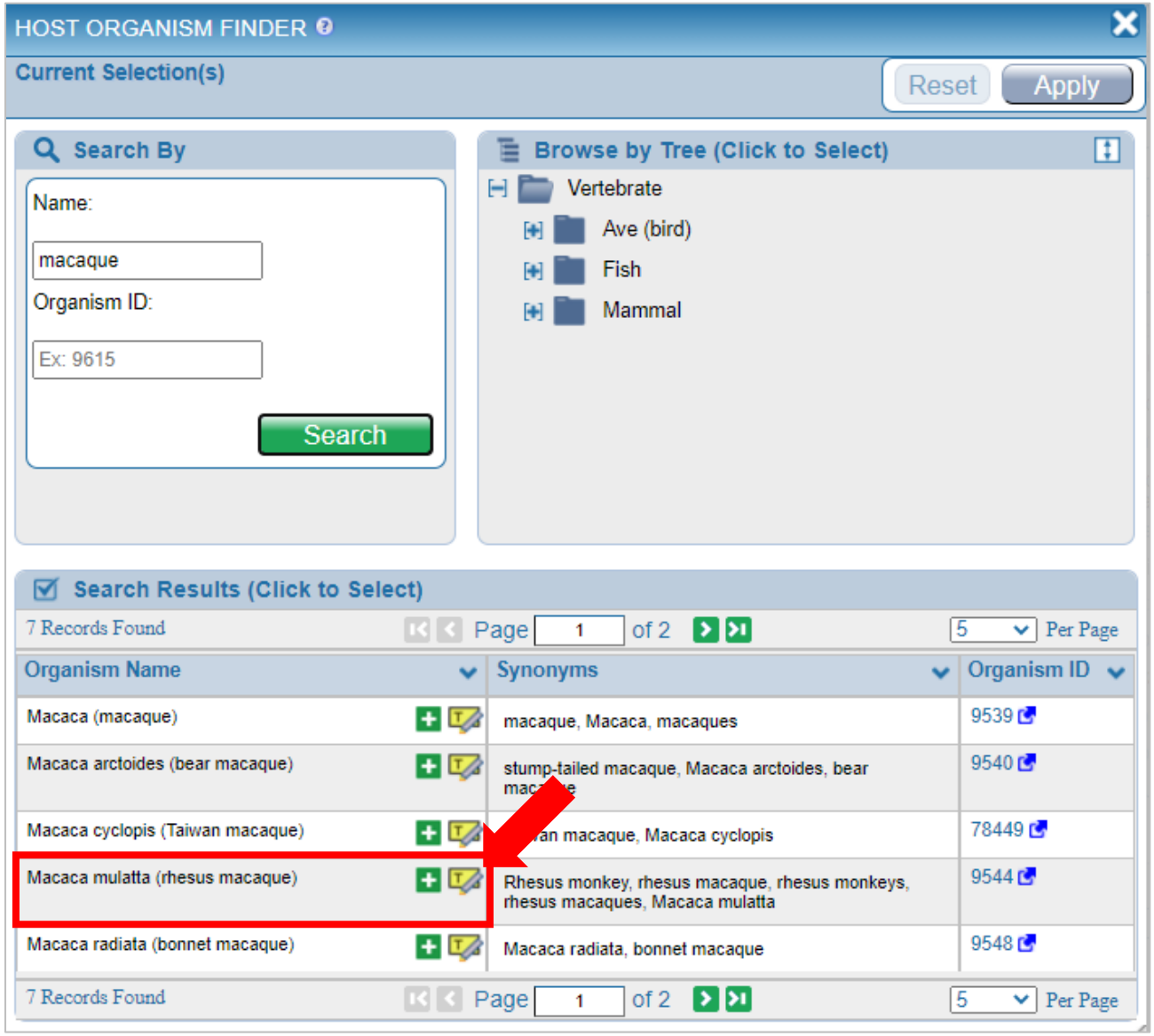

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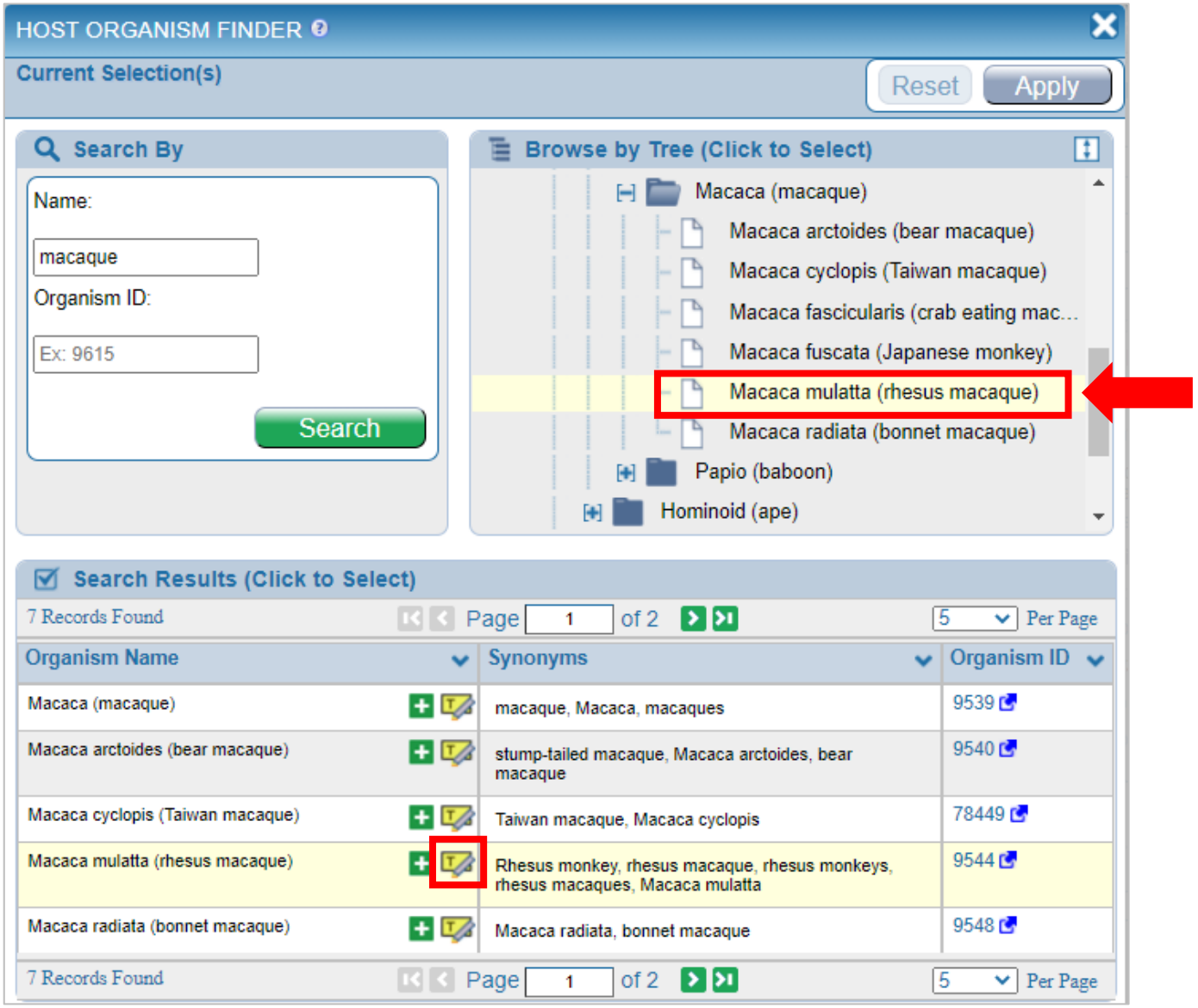
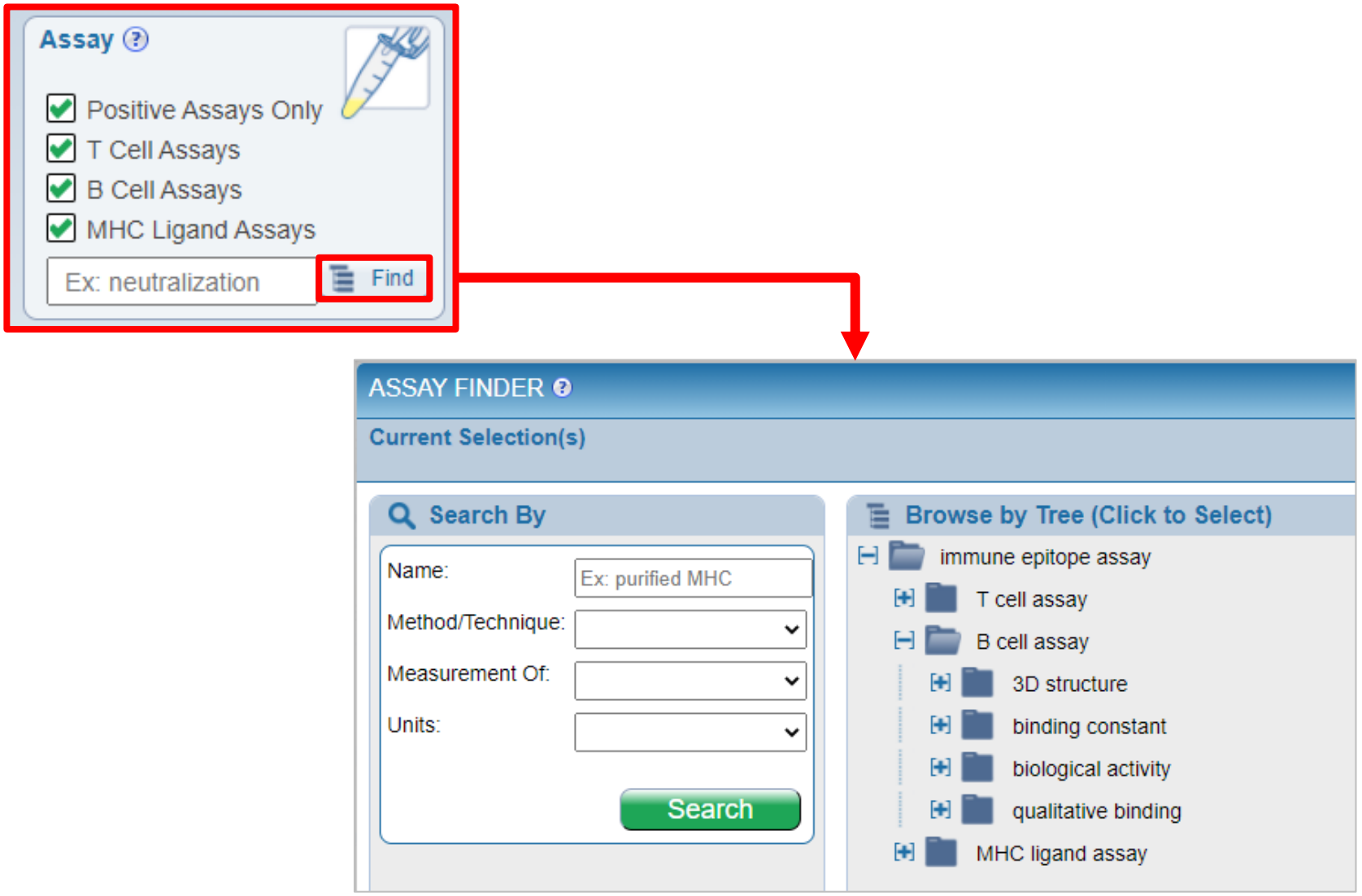


Assay Search Pane



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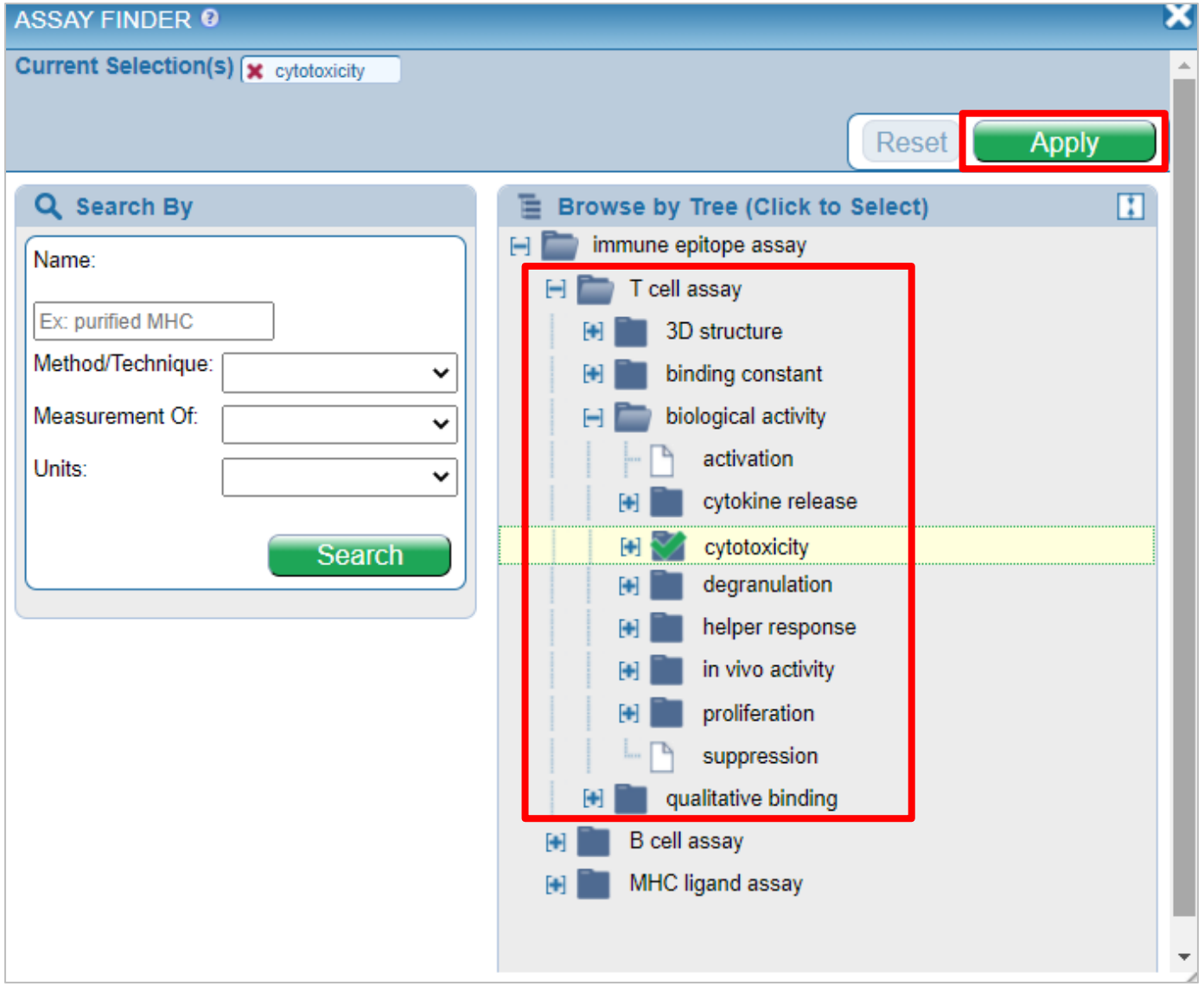
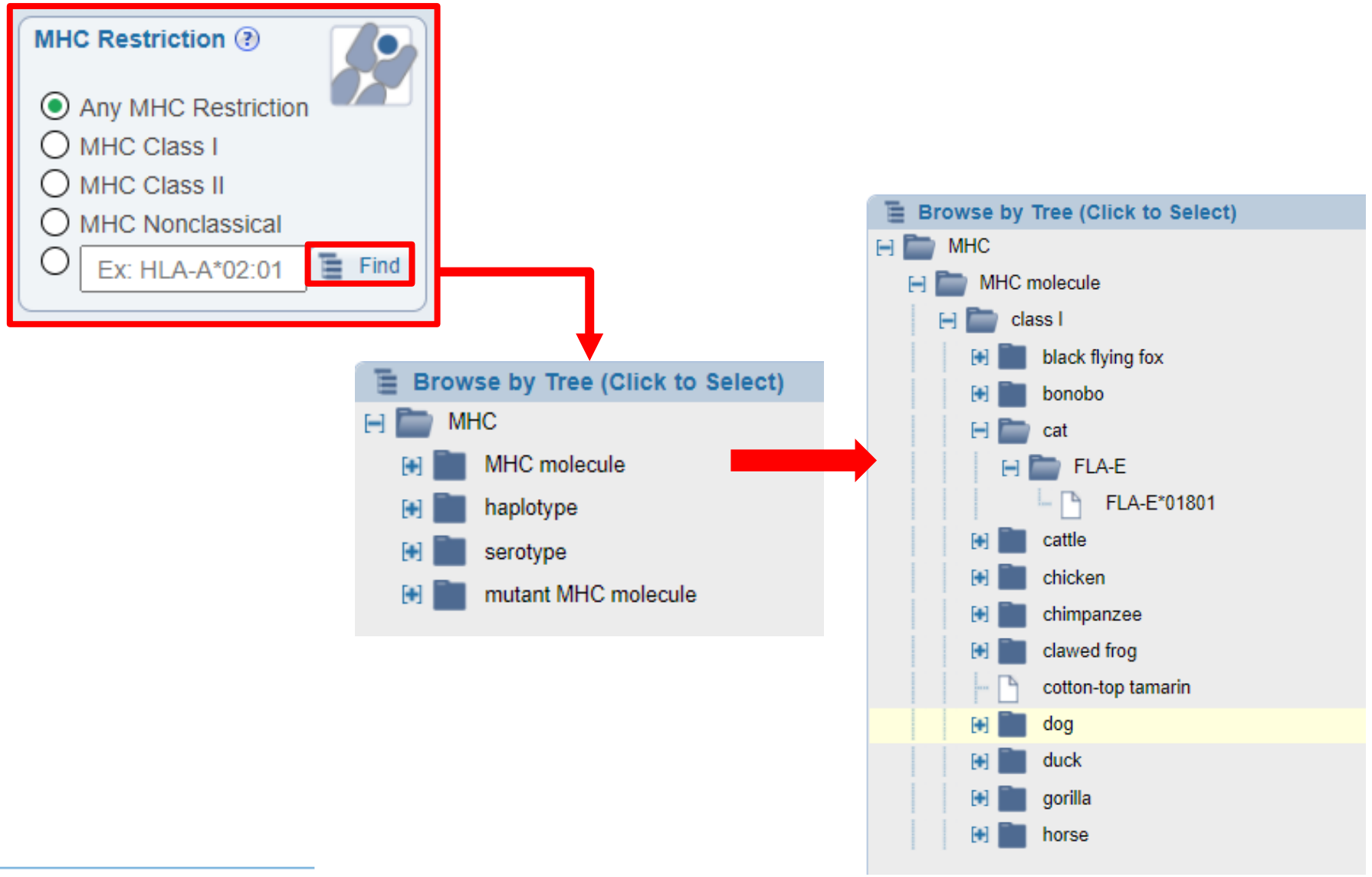
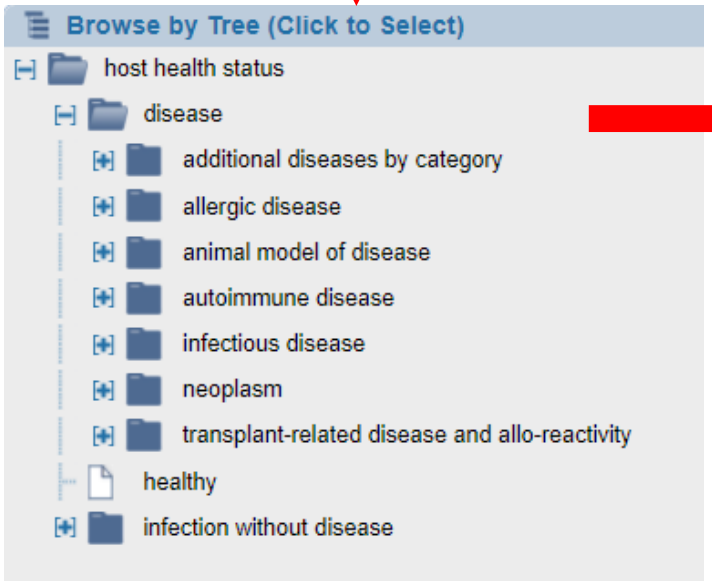
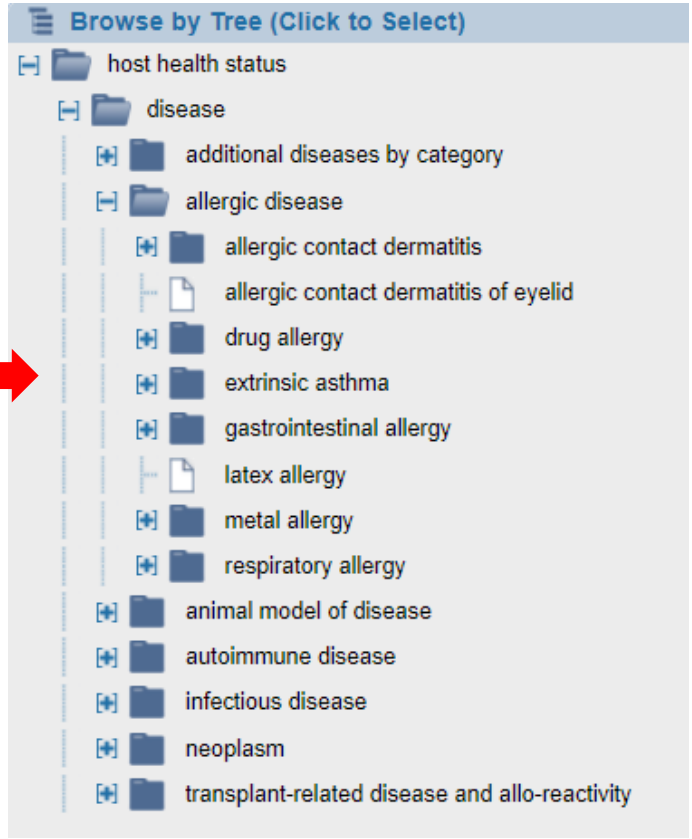


MHC Restriction Search Pane



Disease Search Pane





User Query:

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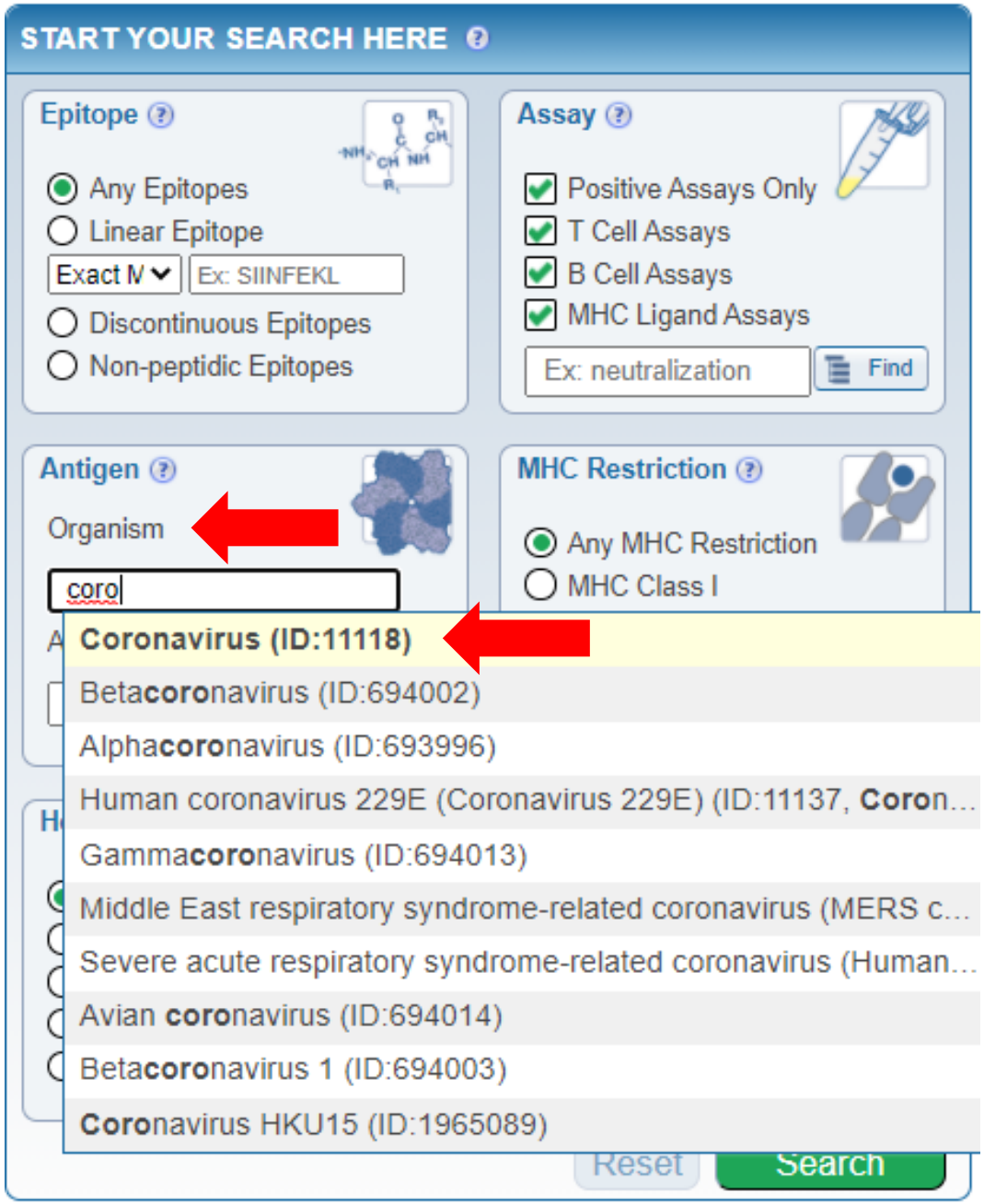

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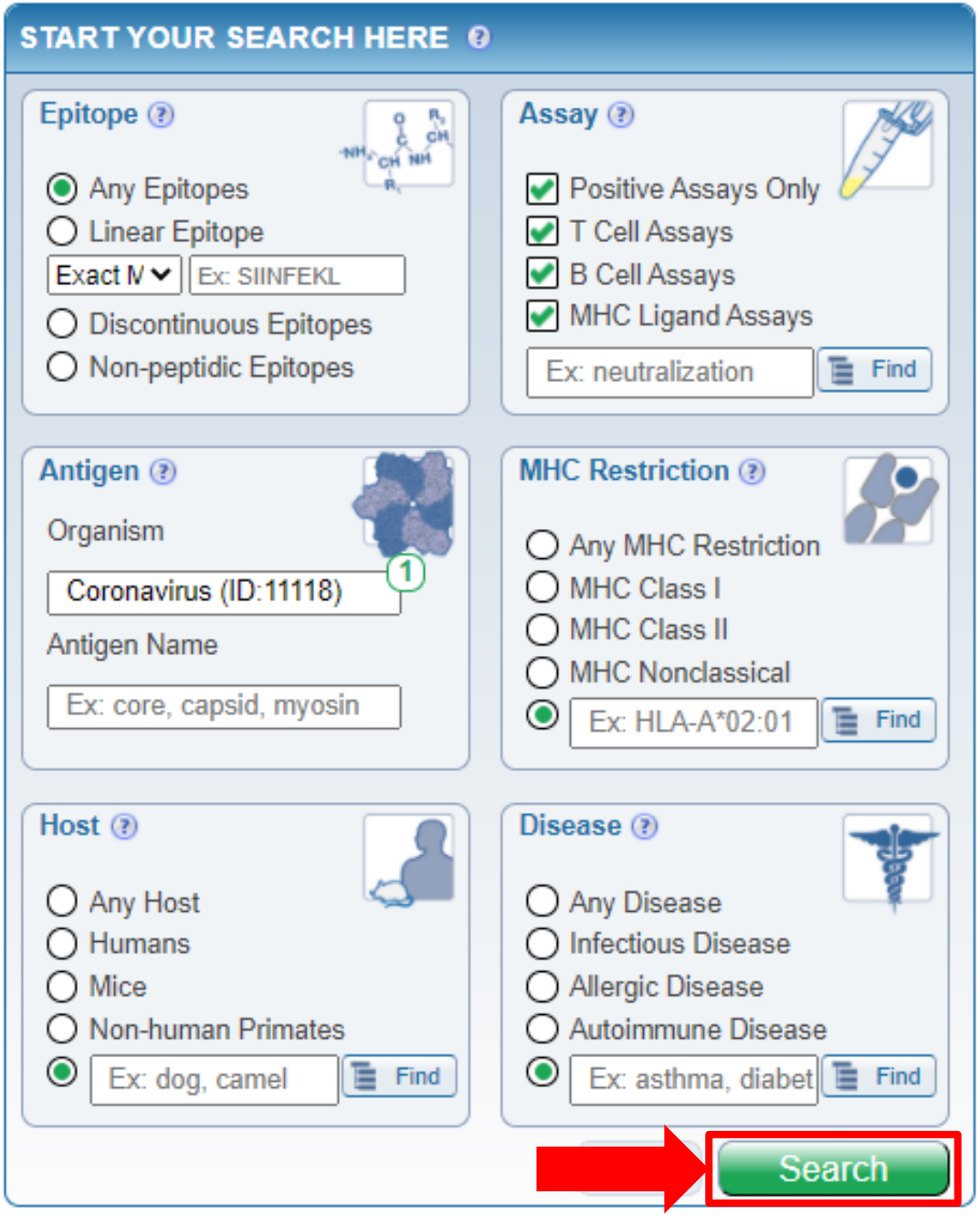

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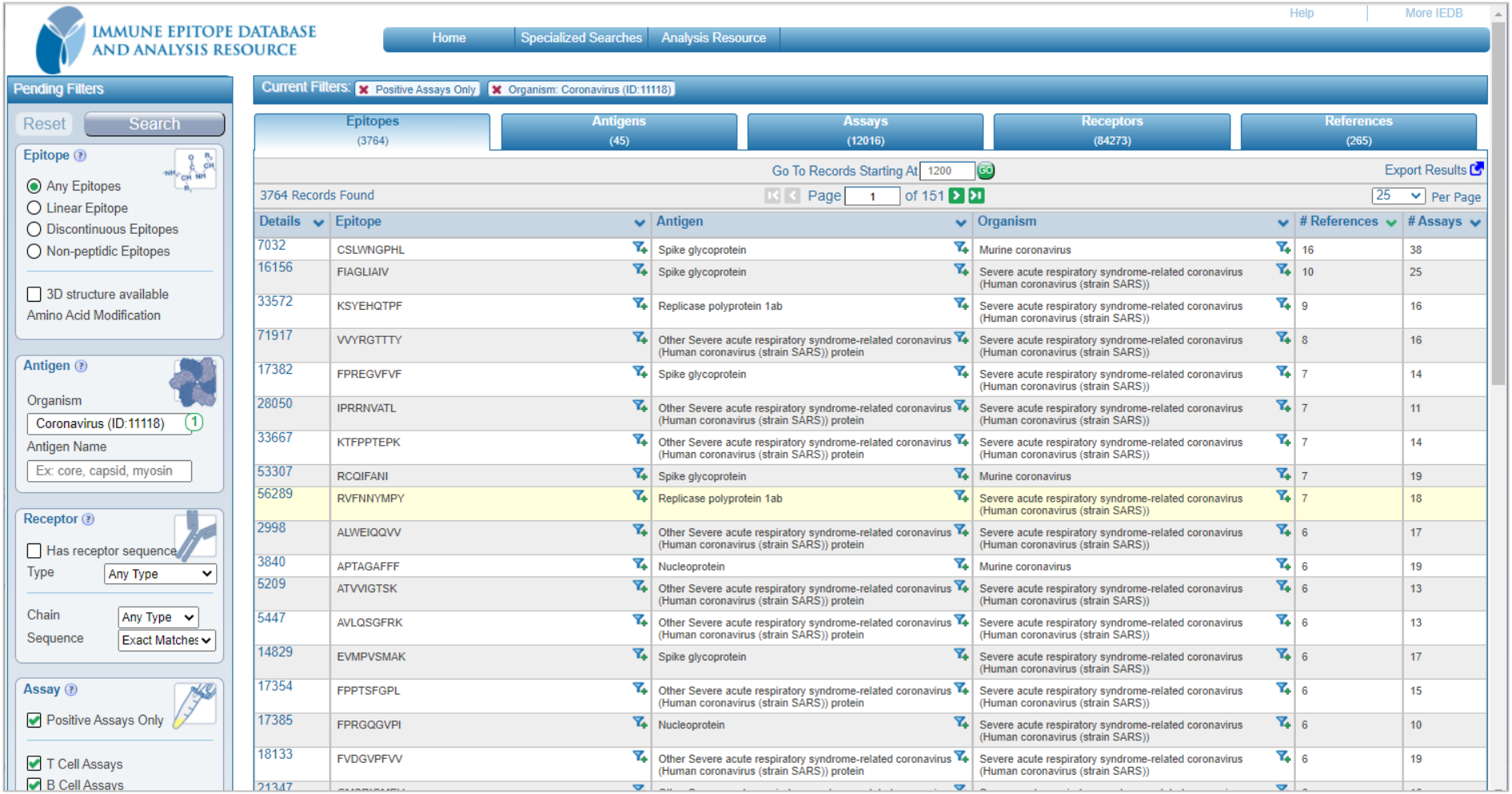

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17354	FPPTSFGPL	Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	6	15
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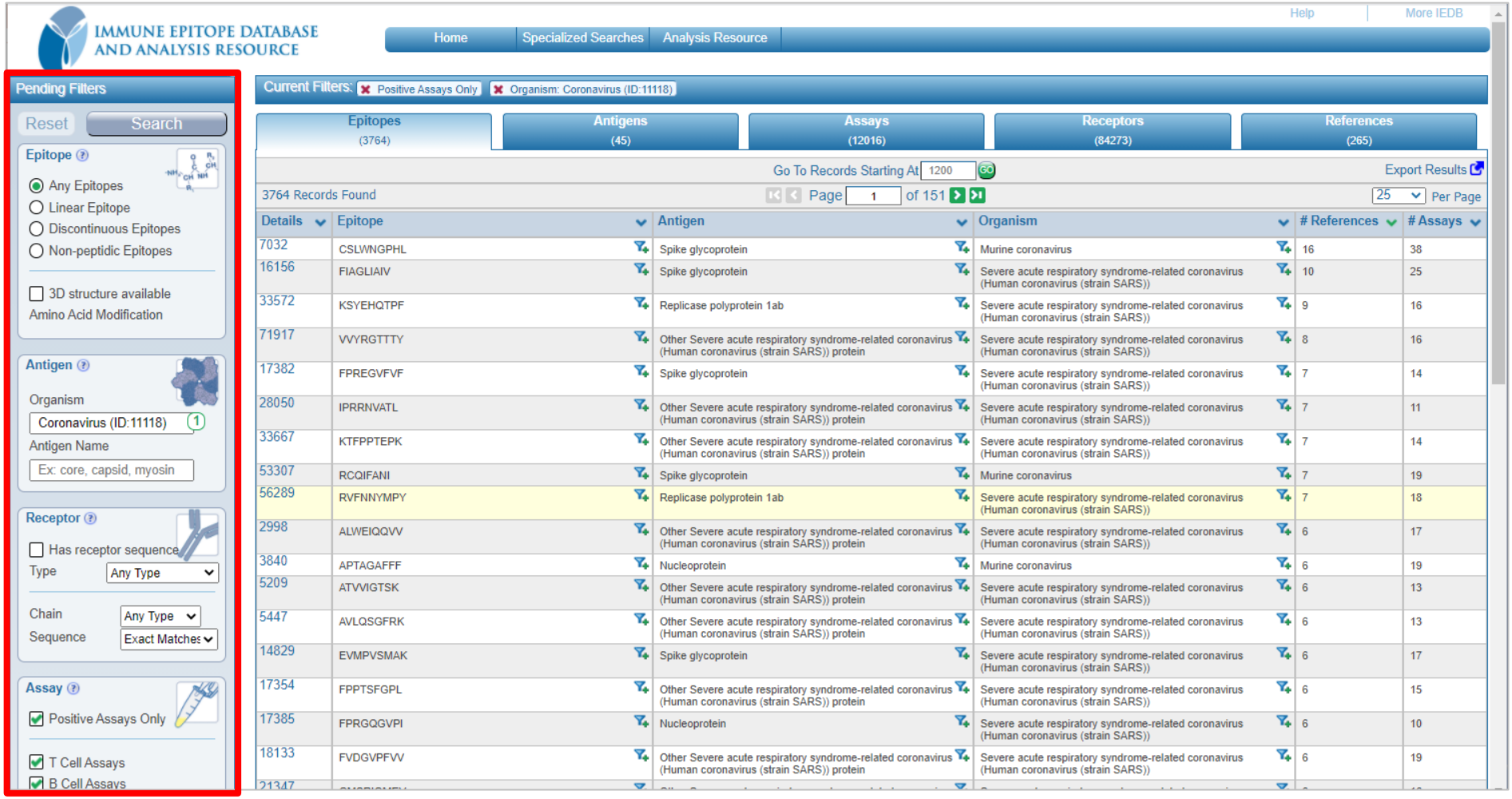
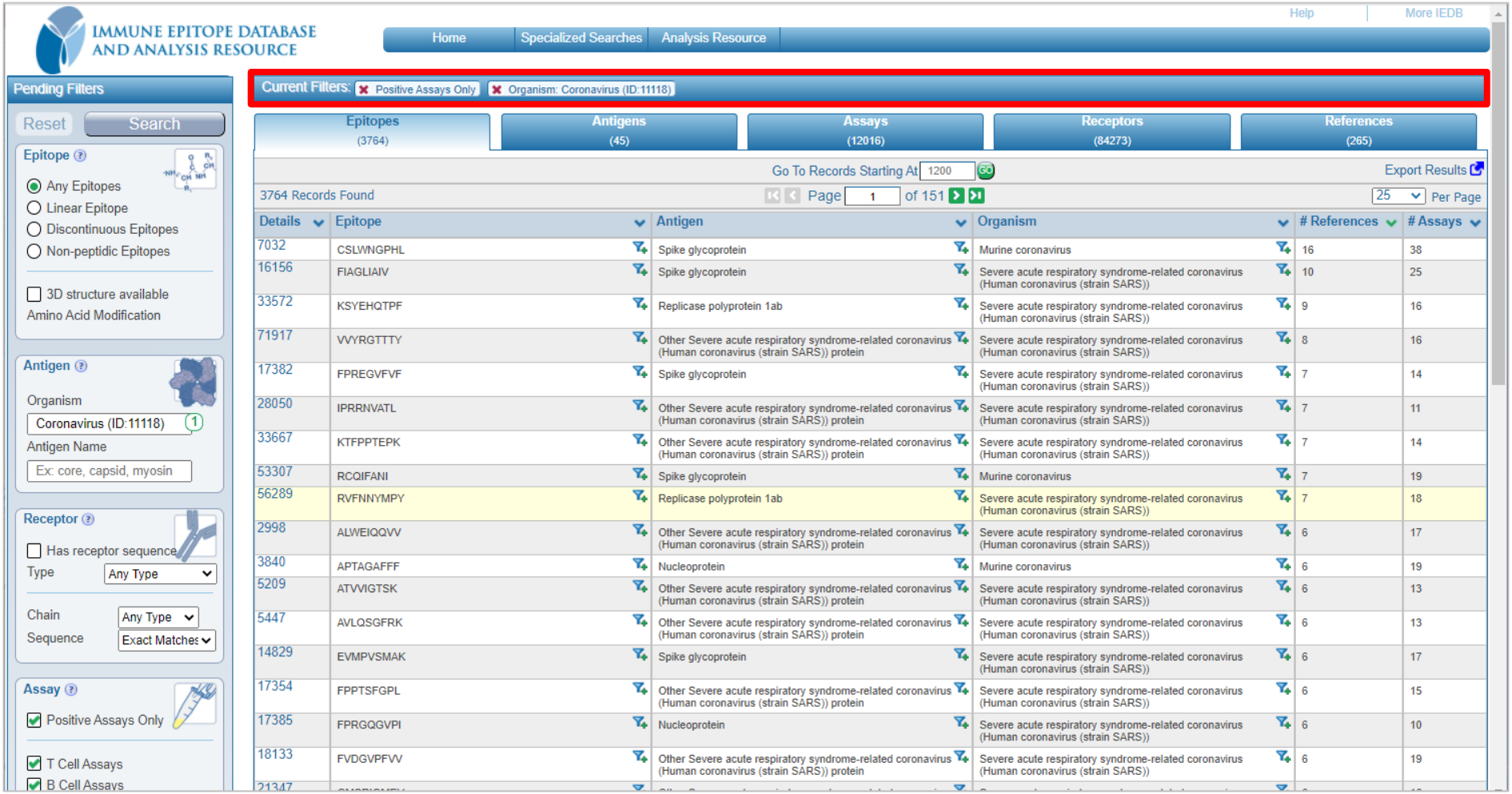
18133	FVDGVPFVV	Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	6	19

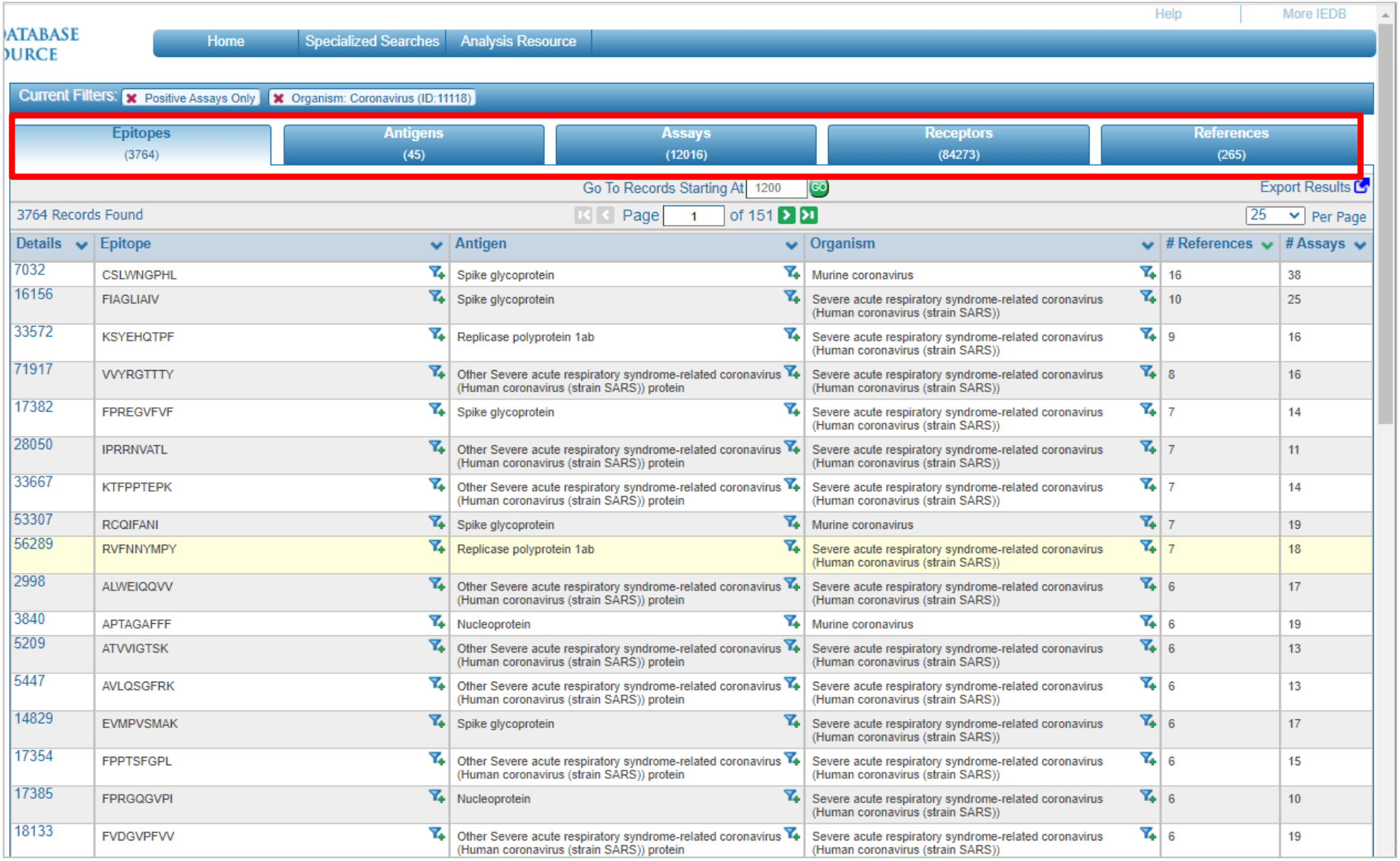
Results Page: Pending Filters



Results Page: Current Filters



Results Page: Epitope Tab



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Epitopes (3764) | Antigens (45) | Assays (12016) | Receptors (84273) | References (265)

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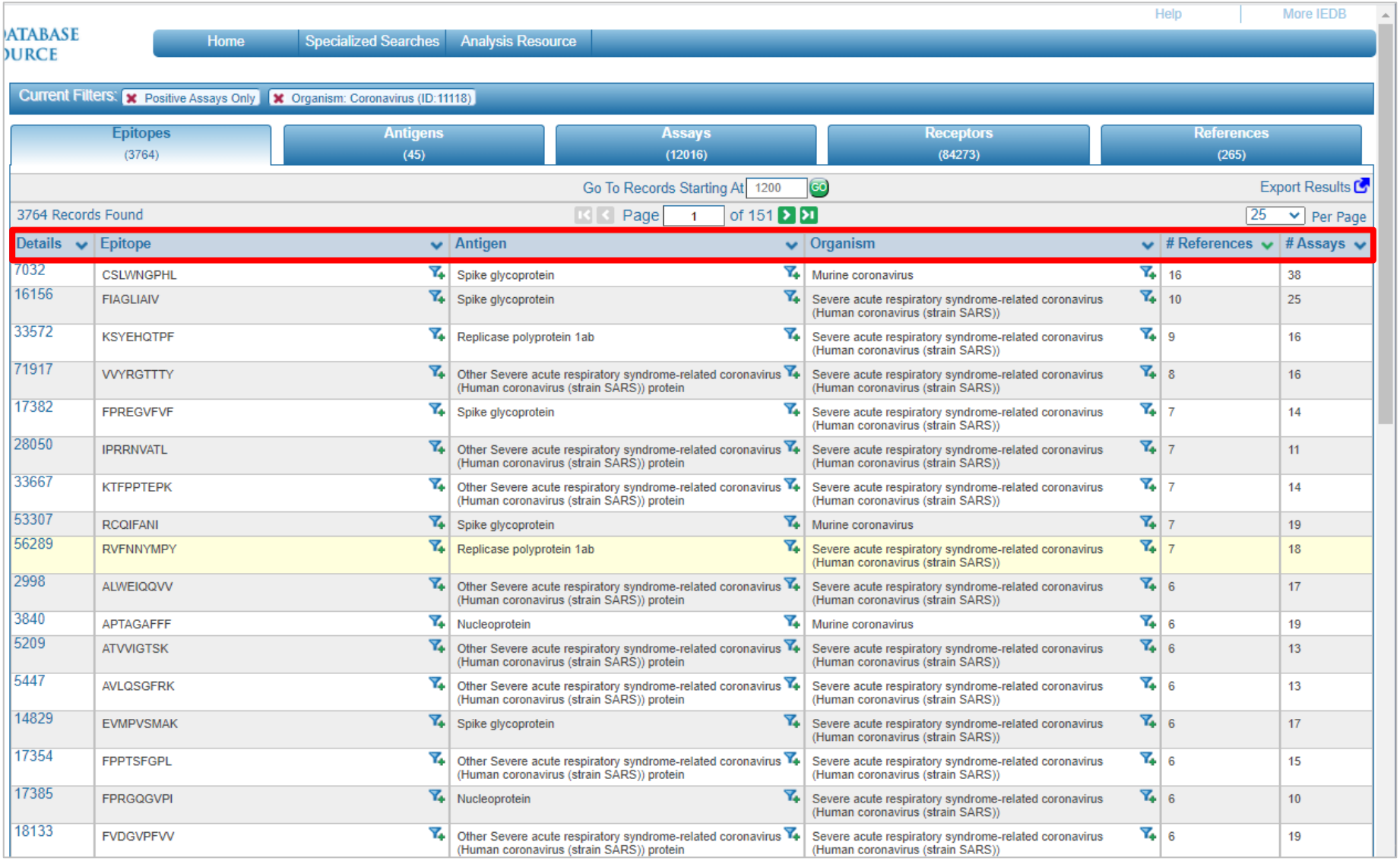
Results Page: Epitope Table Headers



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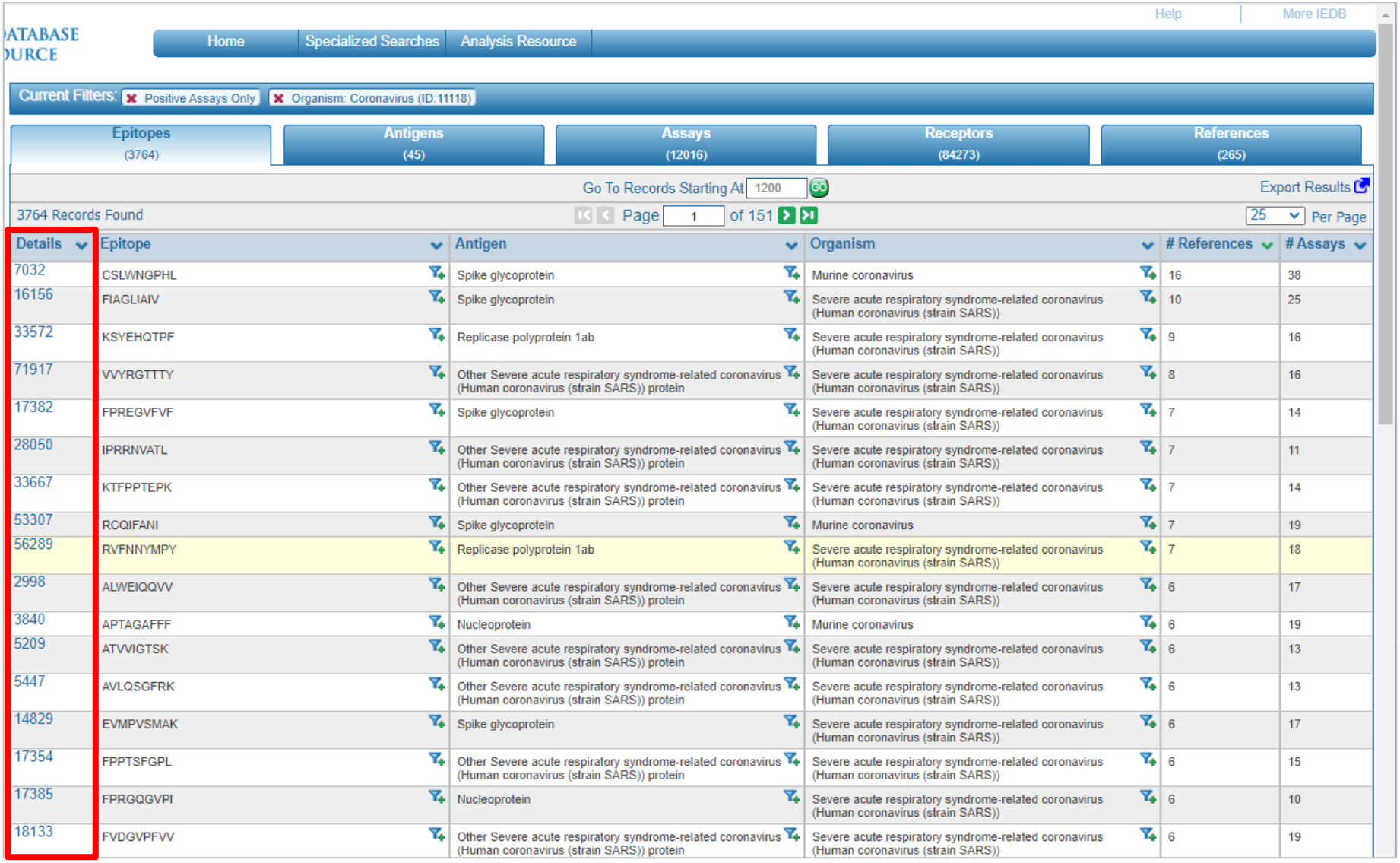
Results Page: Epitope Details



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Results Page: Epitope Details

EPITOPE SUMMARY

FIAGLIAIV is a linear peptidic epitope (epitope ID 16156) studied as part of Spike glycoprotein from Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) and Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein from Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)). This epitope has been studied for immune reactivity in 11 publication(s), tested in 16 T cell assays and 11 MHC ligand assays

COMPILED DATA

MHC Ligand Assay(s) 11

MHC molecule	Positive / All
HLA-A*02:01	2/2
HLA-A*02:02	2/2
HLA-A*02:03	2/2
HLA-A*02:06	2/2
HLA-A*68:02	2/2
HLA-A2	1/1

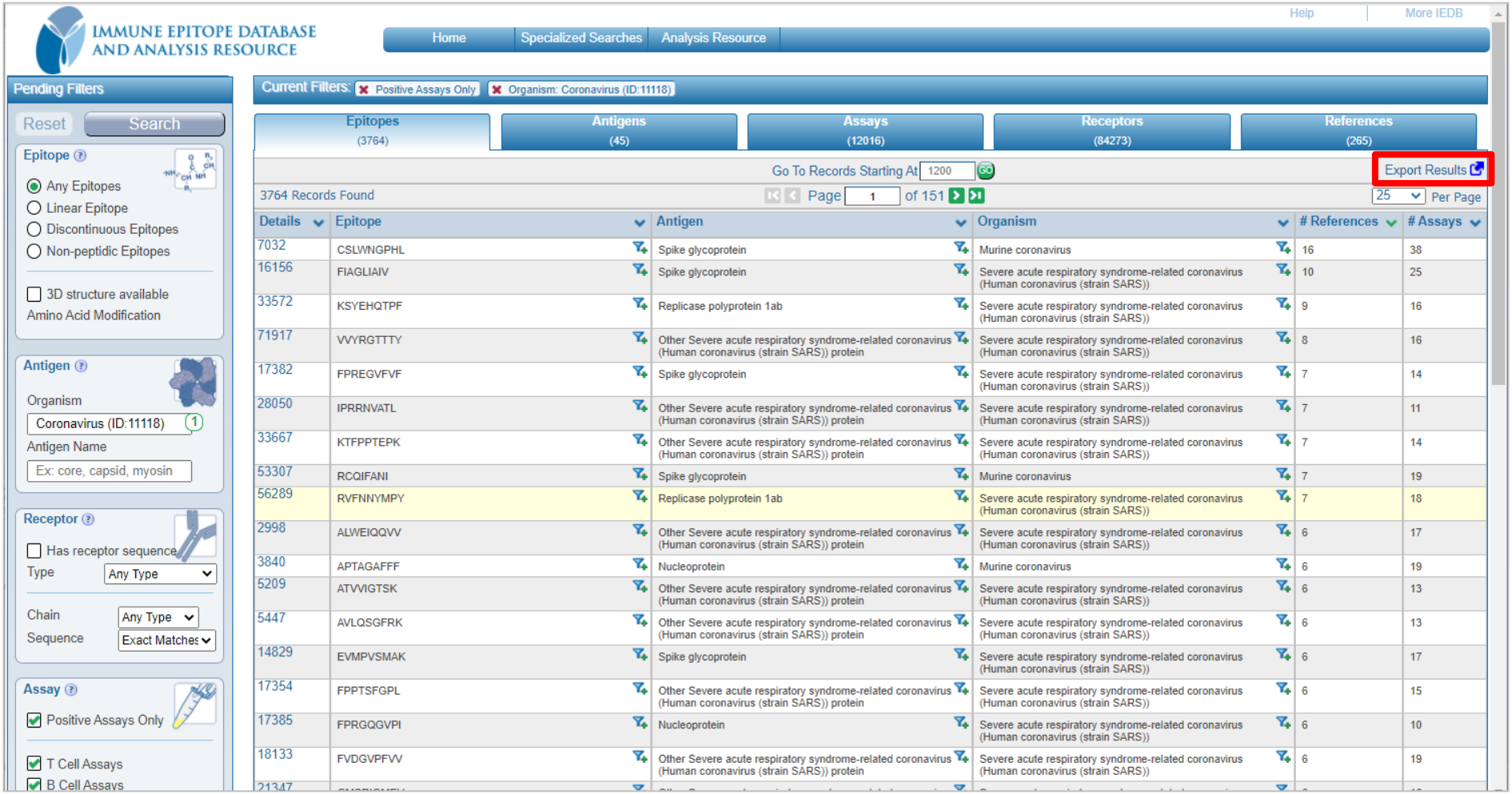
T Cell Assay(s) 16

Assay Type	Positive / All
IFNg release	7/8
activation	4/4
qualitative binding	2/3
cytotoxicity	1/1

EXTERNAL RESOURCES

Resource	Link
IEDB-AR: MHC-I Processing	Predict MHC class I processing
IEDB-AR: MHC-I	Predict MHC class I binding affinity
IEDB-AR: B cell scales	Predict B cell epitopes

Results Page: Export



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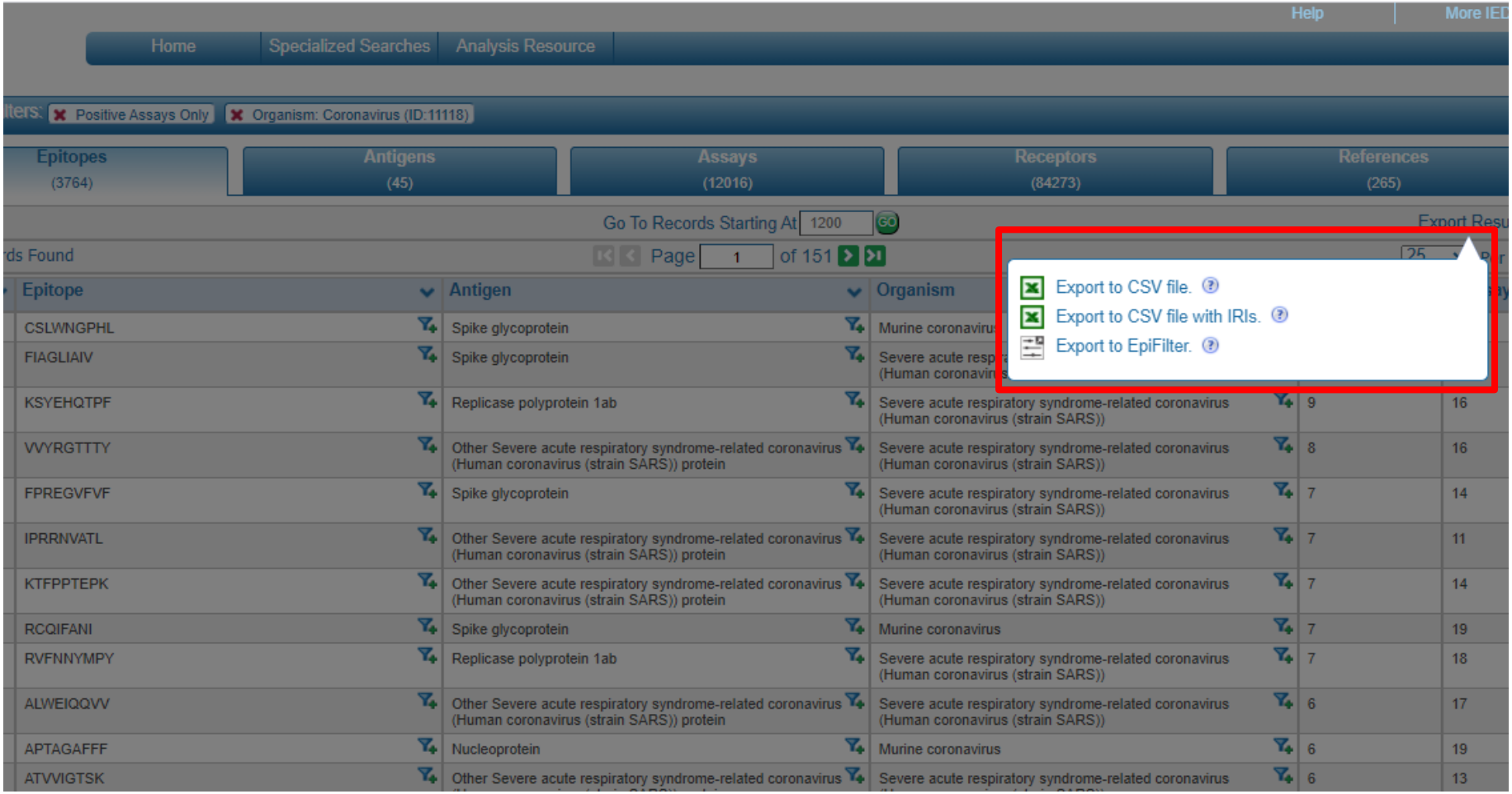

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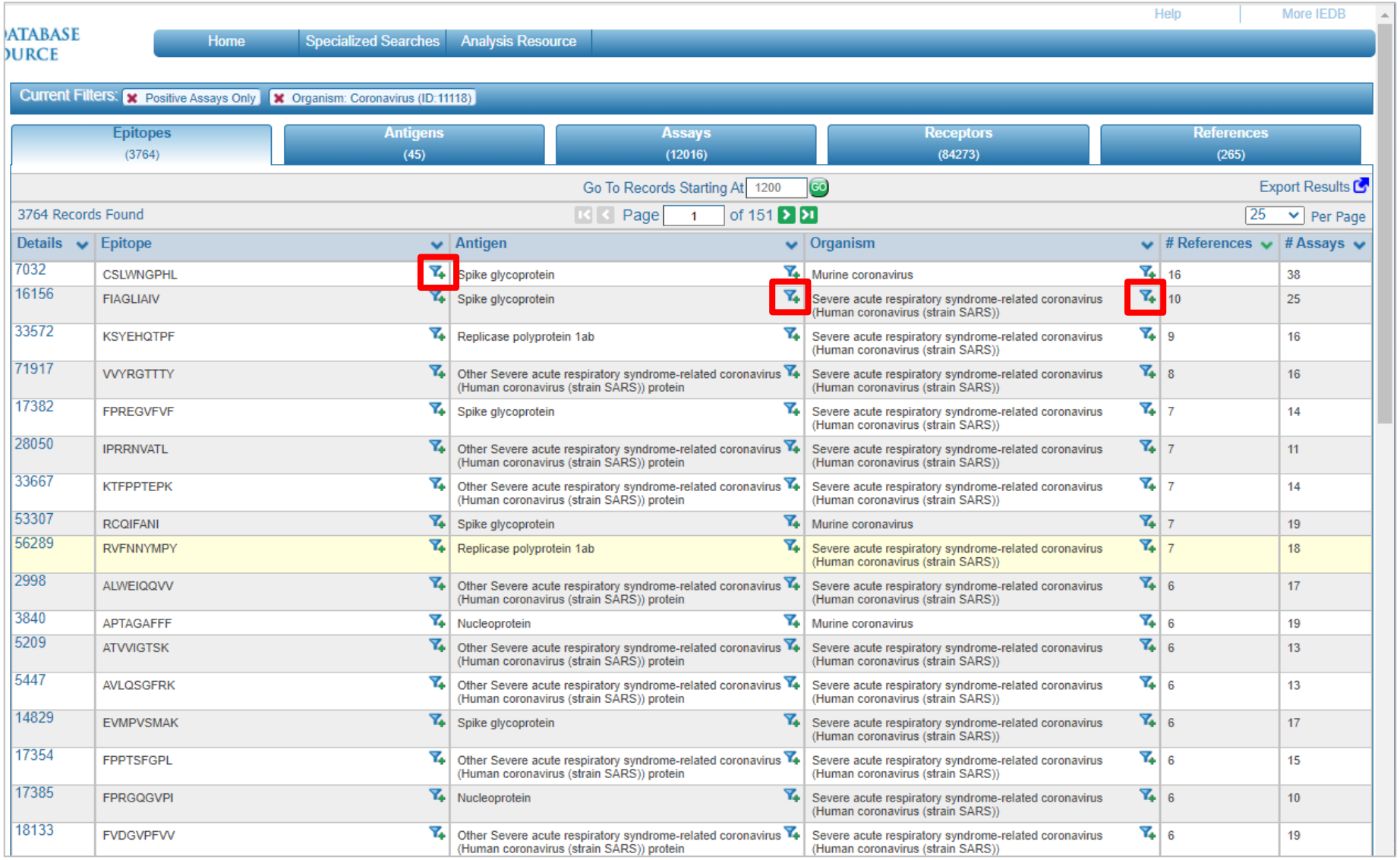
Results Page: Inline Filters



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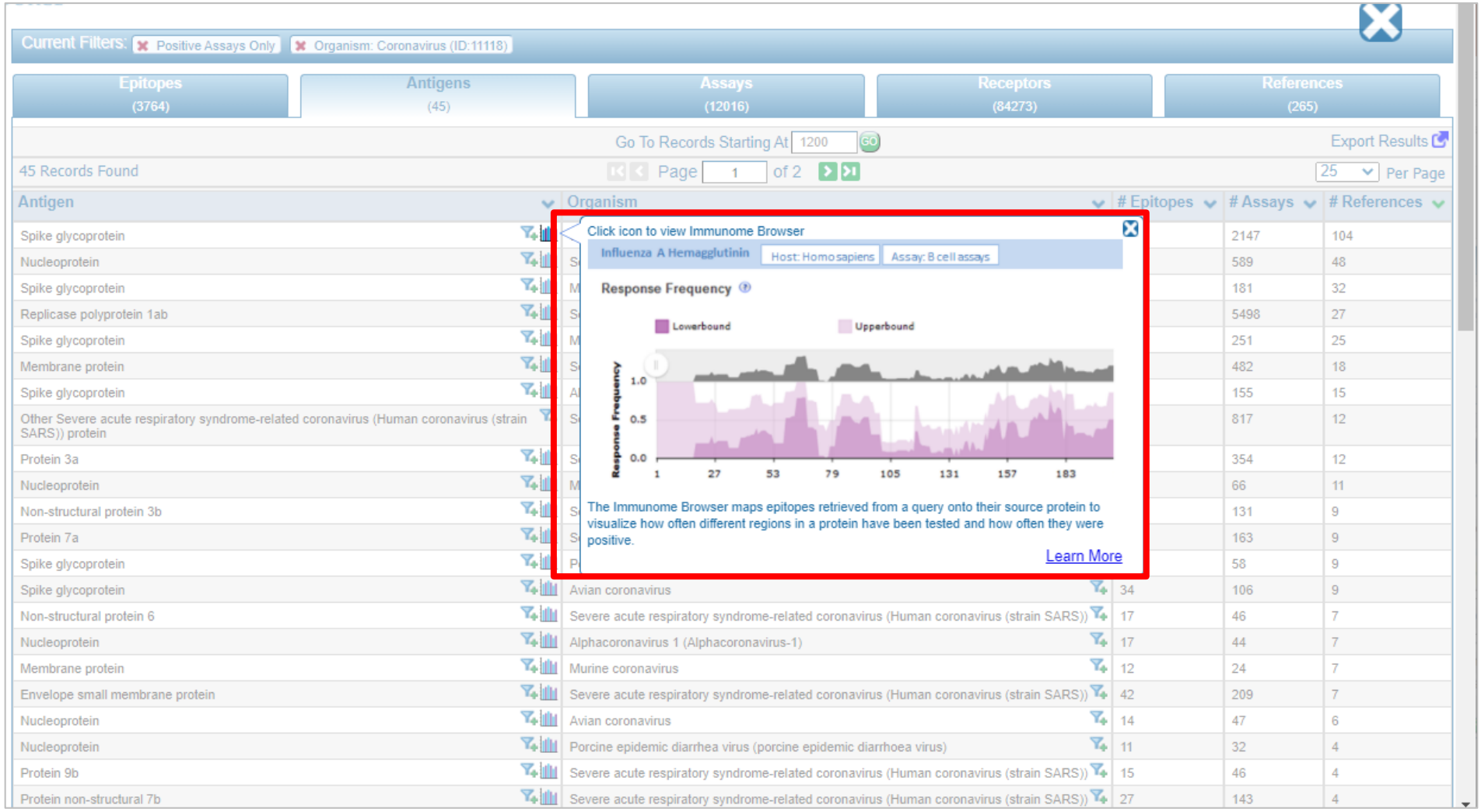
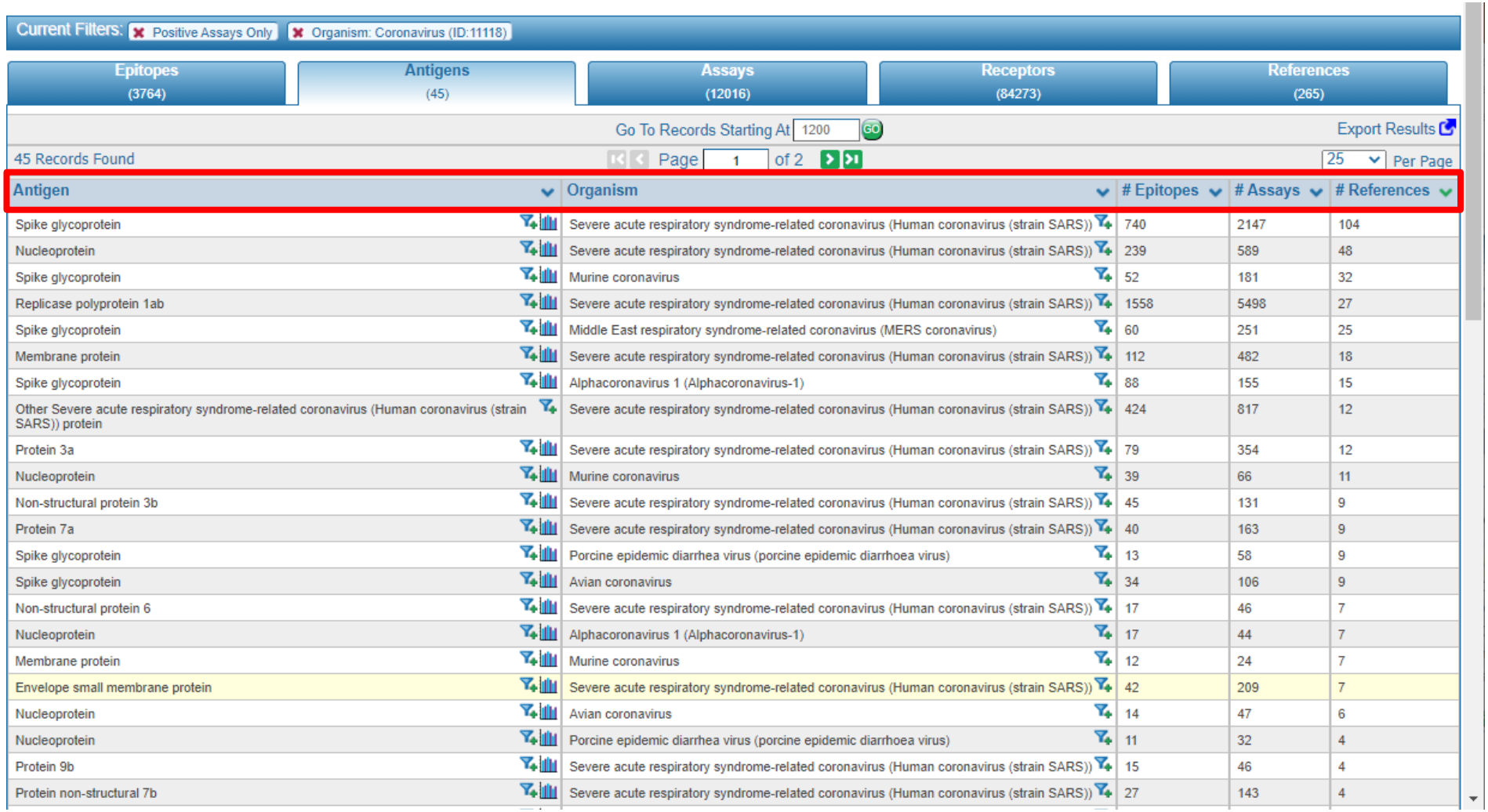
Results Page: Antigen Tab – Immunome Browser



Results Page: Antigen Tab – Table Headers



Current Filters: Positive Assays Only | Organism: Coronavirus (ID:11118)

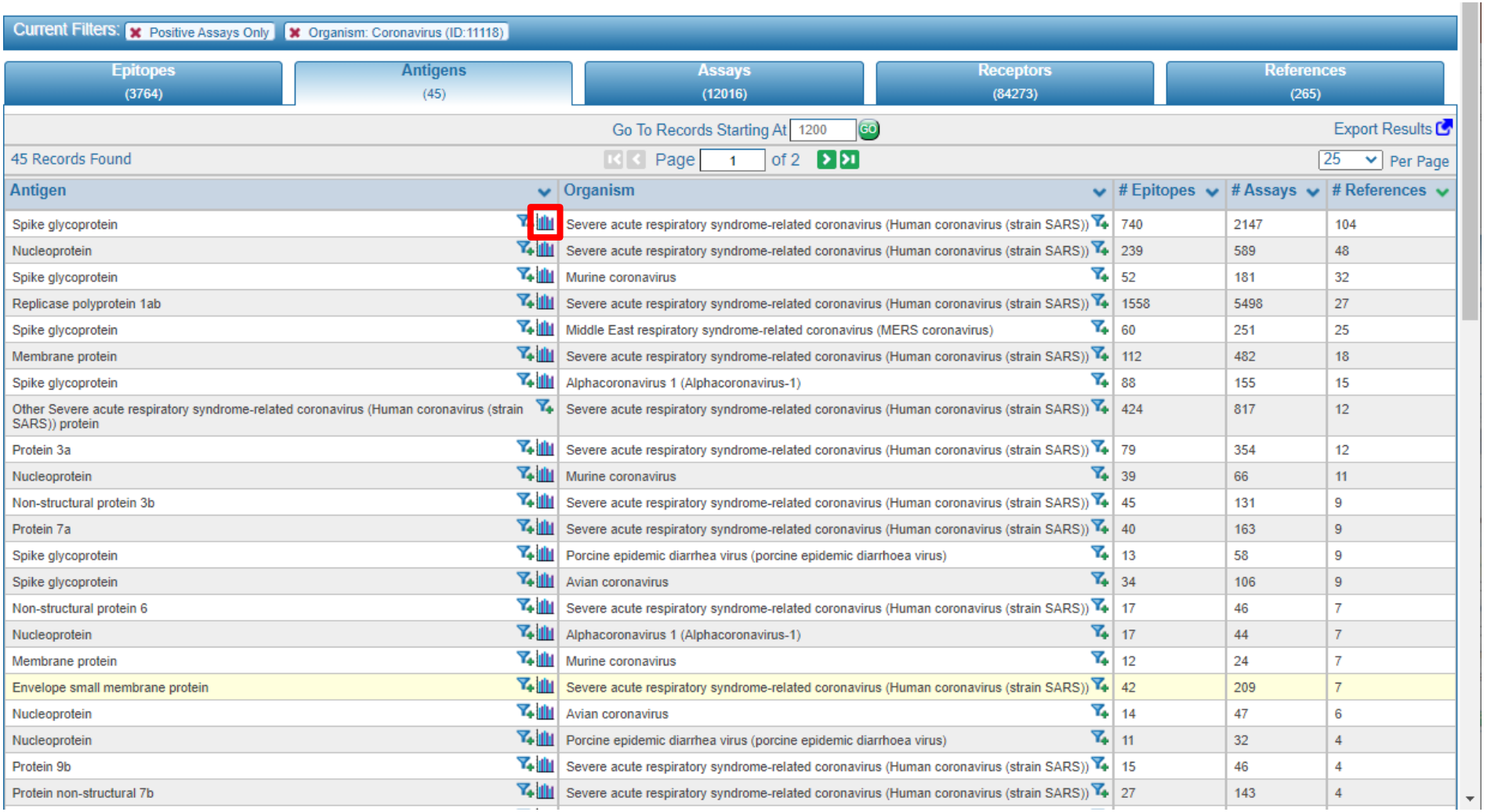
Epitopes (3764) | Antigens (45) | Assays (12016) | Receptors (84273) | References (265)

Go To Records Starting At 1200 GO | Export Results

45 Records Found | Page 1 of 2 | 25 Per Page

Antigen	Organism	# Epitopes	# Assays	# References
Spike glycoprotein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	740	2147	104
Nucleoprotein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	239	589	48
Spike glycoprotein	Murine coronavirus	52	181	32
Replicase polyprotein 1ab	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	1558	5498	27
Spike glycoprotein	Middle East respiratory syndrome-related coronavirus (MERS coronavirus)	60	251	25
Membrane protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	112	482	18
Spike glycoprotein	Alphacoronavirus 1 (Alphacoronavirus-1)	88	155	15
Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	424	817	12
Protein 3a	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	79	354	12
Nucleoprotein	Murine coronavirus	39	66	11
Non-structural protein 3b	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	45	131	9
Protein 7a	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	40	163	9
Spike glycoprotein	Porcine epidemic diarrhea virus (porcine epidemic diarrhoea virus)	13	58	9
Spike glycoprotein	Avian coronavirus	34	106	9
Non-structural protein 6	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	17	46	7
Nucleoprotein	Alphacoronavirus 1 (Alphacoronavirus-1)	17	44	7
Membrane protein	Murine coronavirus	12	24	7
Envelope small membrane protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	42	209	7
Nucleoprotein	Avian coronavirus	14	47	6
Nucleoprotein	Porcine epidemic diarrhea virus (porcine epidemic diarrhoea virus)	11	32	4
Protein 9b	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	15	46	4
Protein non-structural 7b	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	27	143	4

Results Page: Antigen Table – Immunome Browser



Current Filters: Positive Assays Only | Organism: Coronavirus (ID:11118)

Epitopes (3764) | Antigens (45) | Assays (12016) | Receptors (84273) | References (265)

Go To Records Starting At 1200 GO — Export Results

45 Records Found — Page 1 of 2 — 25 Per Page

Antigen	Organism	# Epitopes	# Assays	# References
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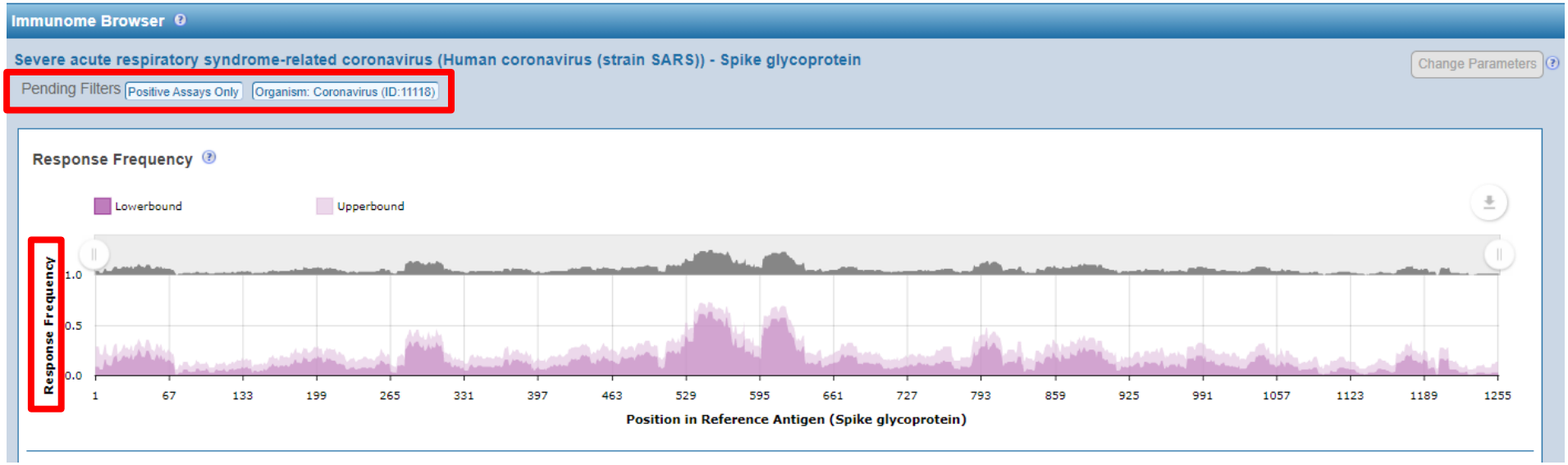
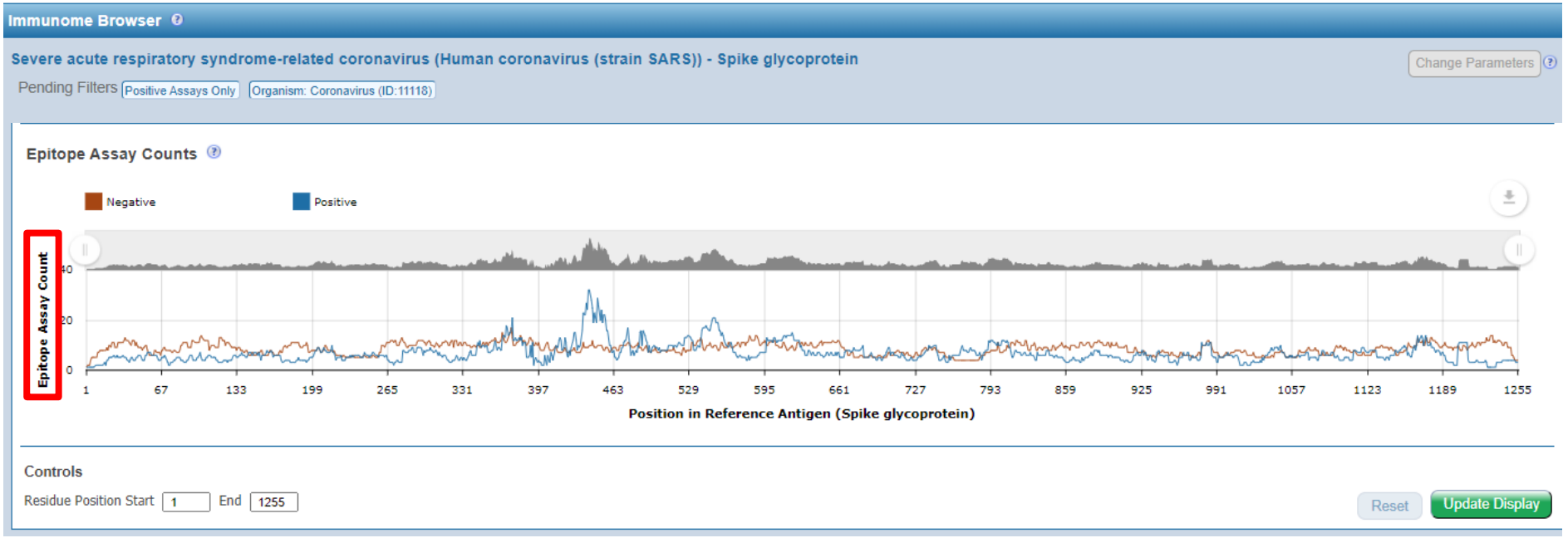
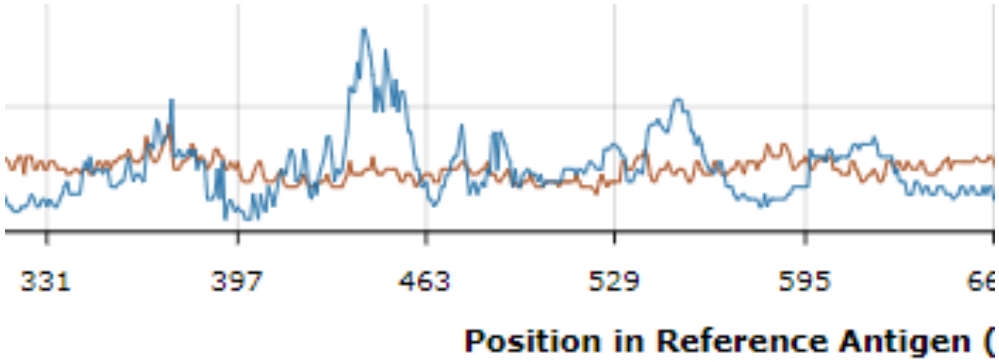
Nucleoprotein	Alphacoronavirus 1 (Alphacoronavirus-1)	17	44	7
Membrane protein	Murine coronavirus	12	24	7
Envelope small membrane protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	42	209	7
Nucleoprotein	Avian coronavirus	14	47	6
Nucleoprotein	Porcine epidemic diarrhea virus (porcine epidemic diarrhoea virus)	11	32	4
Protein 9b	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	15	46	4
Protein non-structural 7b	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	27	143	4

Results Page: Antigen Tab – Immunome Browser Response Frequency



Results Page: Antigen Tab – Immunome Browser Assay Count



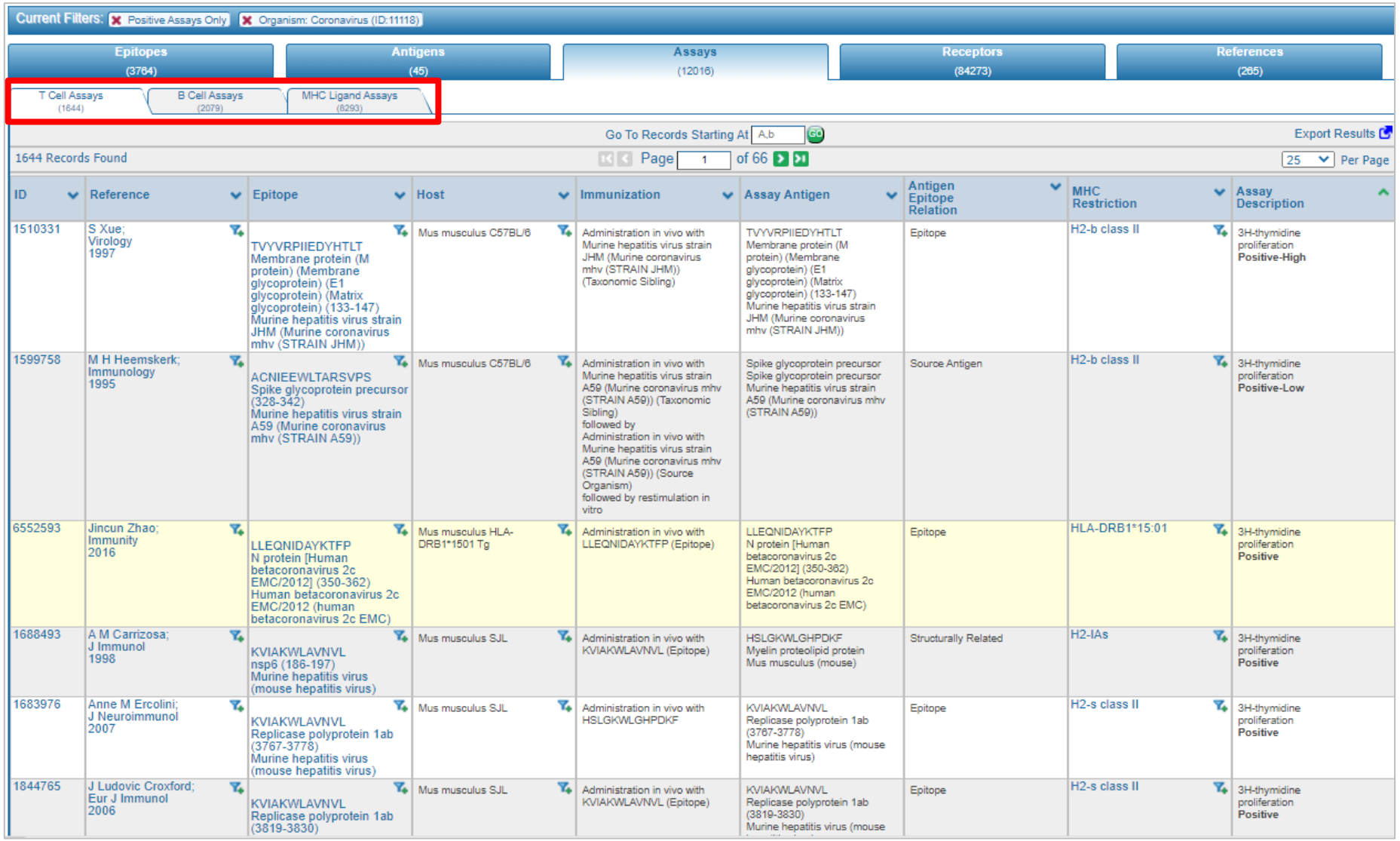


Results Page: Antigen Tab – Immunome Browser Table

Results Returned: 1068 | Displaying: 1068 ☐ Display Graphed Residue Positions Export Results

Epitope ID	Epitope Sequence	Mapped Position	Identity	Subjects Tested	Subjects Responded	Assays Positive	Assays Negative	Response Freq. (95% CI)
1087268	Y144, Y145, H146, K147, K150, W152, H245, R246, S247, Y248, L249	-99--99	0%	1	1	1	0	1.00 (0.04:1.00)
41503	MFIFLLFLTLTSGSD	1-15	100%	3	0	0	1	0.00 (0.00:0.61)
41504	MFIFLLFLTLTSGSDLD	1-17	100%	42	8	1	0	0.19 (0.10:0.31)
16194	FIFLLFLTL	2-10	100%	1	0	0	1	0.00 (0.00:0.94)
1087636	MFVFLVLLPLVSSQCVNL	5-22	5%	20	0	0	1	0.00 (0.00:0.13)
1071428	MFVFLVLLPLVSSQC	5-19	6%	1	0	0	1	0.00 (0.00:0.94)
532692	LFLTLTSGSDLDRCT	6-20	100%	3	0	0	1	0.00 (0.00:0.61)
65110	TLTSGSDLDRCTTFDDV	9-25	100%	42	17	1	0	0.40 (0.27:0.54)
66229	TSGSDLDRCTTFDDV	11-25	100%	48	0	0	2	0.00 (0.00:0.06)
1071273	LLPLVSSQCVNLTTR	11-25	6%	1	0	0	1	0.00 (0.00:0.94)
1087684	PLVSSQCVNLTTRTQLPP	13-30	5%	20	0	0	1	0.00 (0.00:0.13)
532676	LDRCTTFDDVQAPNY	16-30	100%	3	0	0	1	0.00 (0.00:0.61)
9956	DRCTTFDDVQAPNYTQH	17-33	100%	42	27	1	0	0.64 (0.50:0.76)
7217	CTTFDDVQAPNYTQHTSSMRGVYYPDEIFR	19-48	100%	42	12	1	0	0.29 (0.17:0.41)
7215	CTTFDDVQAPNYTQHTSS	19-36	100%	1	0	0	1	0.00 (0.00:0.94)
7216	CTTFDDVQAPNYTQHTSSMR	19-38	100%	1	1	1	0	1.00 (0.04:1.00)
63617	TFDDVQAPNYTQHTS	21-35	100%	48	0	0	2	0.00 (0.00:0.06)
1087661	NLTTRTQLPPAYTNSFTR	21-38	11%	20	0	0	1	0.00 (0.00:0.13)
1087385	NLTTRTQL	21-28	0%	36	1	1	0	0.03 (0.00:0.12)
10702	DVQAPNYTQHTSSMRG	24-39	100%	1	0	0	1	0.00 (0.00:0.94)
10703	DVQAPNYTQHTSSMRGVYYP	24-43	100%	1	0	0	1	0.00 (0.00:0.94)
70527	VQAPNYTQHTSSMRGVY	25-41	100%	42	24	1	0	0.57 (0.43:0.70)
533321	QAPNYTQHTSSMRGV	26-40	100%	3	0	0	1	0.00 (0.00:0.61)
1074980	LPPAYTNSF	28-36	11%	36	1	1	0	0.03 (0.00:0.12)
1071788	PPAYTNSFTRGVYYP	29-43	46%	1	0	0	1	0.00 (0.00:0.94)
1087685	PPAYTNSFTRGVYYPDKV	29-46	44%	20	0	0	1	0.00 (0.00:0.13)
65869	TQHTSSMRGVYYPDE	31-45	100%	48	0	0	2	0.00 (0.00:0.06)

Results Page: Assays Tab – Subtabs



Current Filters: Positive Assays Only | Organism: Coronavirus (ID:11118)

Epitopes (3764) | Antigens (45) | Assays (12016) | Receptors (84273) | References (265)

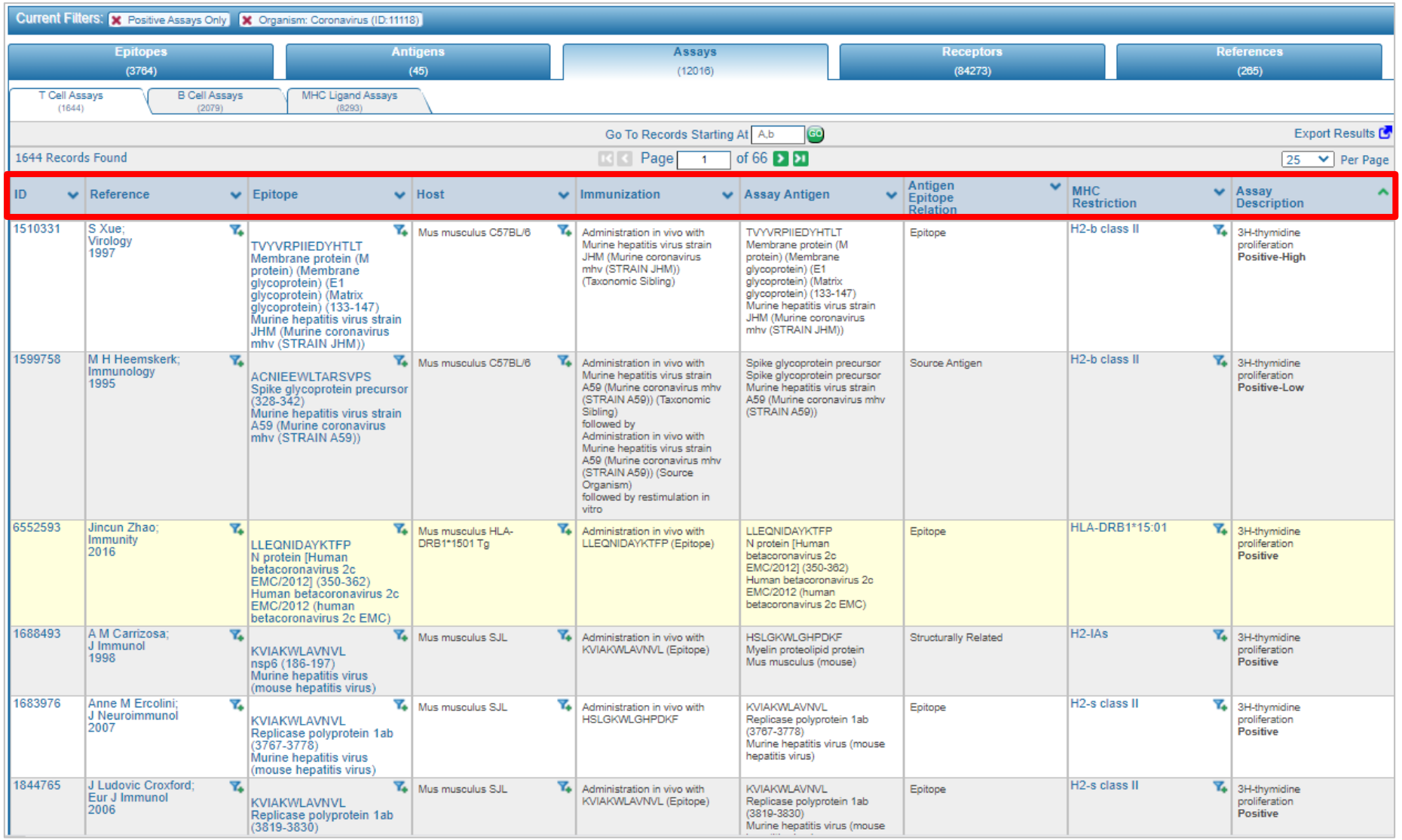
T Cell Assays (1644) | B Cell Assays (2079) | MHC Ligand Assays (8293)

Go To Records Starting At A,b GO | Export Results

1644 Records Found | Page 1 of 66 | 25 Per Page

ID	Reference	Epitope	Host	Immunization	Assay Antigen	Antigen Epitope Relation	MHC Restriction	Assay Description
1510331	S Xue; Virology 1997	TVYVRPIIEDYHTLT Membrane protein (M protein) (Membrane glycoprotein) (E1 glycoprotein) (Matrix glycoprotein) (133-147) Murine hepatitis virus strain JHM (Murine coronavirus mhv (STRAIN JHM))	Mus musculus C57BL/6	Administration in vivo with Murine hepatitis virus strain JHM (Murine coronavirus mhv (STRAIN JHM)) (Taxonomic Sibling)	TVYVRPIIEDYHTLT Membrane protein (M protein) (Membrane glycoprotein) (E1 glycoprotein) (Matrix glycoprotein) (133-147) Murine hepatitis virus strain JHM (Murine coronavirus mhv (STRAIN JHM))	Epitope	H2-b class II	3H-thymidine proliferation **Positive-High**
1599758	M H Heemskerk; Immunology 1995	ACNIEEWLTARSVPS Spike glycoprotein precursor (328-342) Murine hepatitis virus strain A59 (Murine coronavirus mhv (STRAIN A59))	Mus musculus C57BL/6	Administration in vivo with Murine hepatitis virus strain A59 (Murine coronavirus mhv (STRAIN A59)) (Taxonomic Sibling) followed by Administration in vivo with Murine hepatitis virus strain A59 (Murine coronavirus mhv (STRAIN A59)) (Source Organism) followed by restimulation in vitro	Spike glycoprotein precursor Spike glycoprotein precursor Murine hepatitis virus strain A59 (Murine coronavirus mhv (STRAIN A59))	Source Antigen	H2-b class II	3H-thymidine proliferation **Positive-Low**
6552593	Jincun Zhao; Immunity 2016	LLEQNIDAYKTFP N protein [Human betacoronavirus 2c EMC/2012] (350-362) Human betacoronavirus 2c EMC/2012 (human betacoronavirus 2c EMC)	Mus musculus HLA-DRB1*1501 Tg	Administration in vivo with LLEQNIDAYKTFP (Epitope)	LLEQNIDAYKTFP N protein [Human betacoronavirus 2c EMC/2012] (350-362) Human betacoronavirus 2c EMC/2012 (human betacoronavirus 2c EMC)	Epitope	HLA-DRB1*15:01	3H-thymidine proliferation **Positive**
1688493	A M Carrizosa; J Immunol 1998	KVIAKWLAVNVL nsp6 (186-197) Murine hepatitis virus (mouse hepatitis virus)	Mus musculus SJL	Administration in vivo with KVIAKWLAVNVL (Epitope)	HSLGKWLGHPDKF Myelin proteolipid protein Mus musculus (mouse)	Structurally Related	H2-IAs	3H-thymidine proliferation **Positive**
1683976	Anne M Ercolini; J Neuroimmunol 2007	KVIAKWLAVNVL Replicase polyprotein 1ab (3767-3778) Murine hepatitis virus (mouse hepatitis virus)	Mus musculus SJL	Administration in vivo with HSLGKWLGHPDKF	KVIAKWLAVNVL Replicase polyprotein 1ab (3767-3778) Murine hepatitis virus (mouse hepatitis virus)	Epitope	H2-s class II	3H-thymidine proliferation **Positive**
1844765	J Ludovic Croxford; Eur J Immunol 2006	KVIAKWLAVNVL Replicase polyprotein 1ab (3819-3830)	Mus musculus SJL	Administration in vivo with KVIAKWLAVNVL (Epitope)	KVIAKWLAVNVL Replicase polyprotein 1ab (3819-3830) Murine hepatitis virus (mouse	Epitope	H2-s class II	3H-thymidine proliferation **Positive**

Results Page: Assays Tab – Table Headers



Current Filters: Positive Assays Only | Organism: Coronavirus (ID:11118)

Epitopes (3764) | Antigens (45) | Assays (12016) | Receptors (84273) | References (265)

T Cell Assays (1644) | B Cell Assays (2079) | MHC Ligand Assays (8293)

Go To Records Starting At A,b GO | Export Results

1644 Records Found | Page 1 of 66 | 25 Per Page

ID	Reference	Epitope	Host	Immunization	Assay Antigen	Antigen Epitope Relation	MHC Restriction	Assay Description
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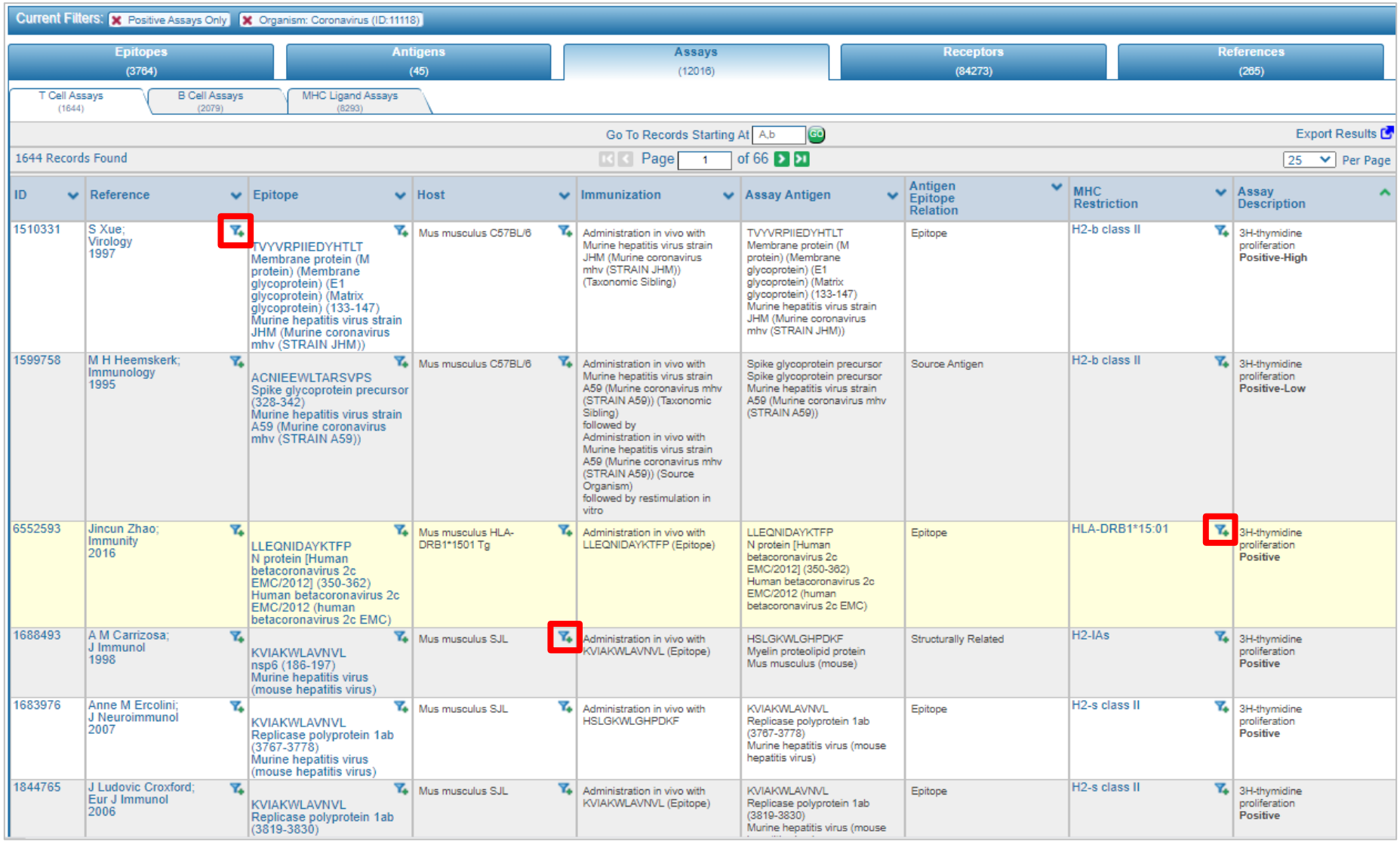
1599758	M H Heemskerk; Immunology 1995	ACNIEEWLTARSVPS Spike glycoprotein precursor (328-342) Murine hepatitis virus strain A59 (Murine coronavirus mhv (STRAIN A59))	Mus musculus C57BL/6	Administration in vivo with Murine hepatitis virus strain A59 (Murine coronavirus mhv (STRAIN A59)) (Taxonomic Sibling) followed by Administration in vivo with Murine hepatitis virus strain A59 (Murine coronavirus mhv (STRAIN A59)) (Source Organism) followed by restimulation in vitro	Spike glycoprotein precursor Spike glycoprotein precursor Murine hepatitis virus strain A59 (Murine coronavirus mhv (STRAIN A59))	Source Antigen	H2-b class II	3H-thymidine proliferation **Positive-Low**
6552593	Jincun Zhao; Immunity 2016	LLEQNIDAYKTFP N protein [Human betacoronavirus 2c EMC/2012] (350-362) Human betacoronavirus 2c EMC/2012 (human betacoronavirus 2c EMC)	Mus musculus HLA-DRB1*1501 Tg	Administration in vivo with LLEQNIDAYKTFP (Epitope)	LLEQNIDAYKTFP N protein [Human betacoronavirus 2c EMC/2012] (350-362) Human betacoronavirus 2c EMC/2012 (human betacoronavirus 2c EMC)	Epitope	HLA-DRB1*15:01	3H-thymidine proliferation **Positive**
1688493	A M Carrizosa; J Immunol 1998	KVIAKWLAVNVL nsp6 (186-197) Murine hepatitis virus (mouse hepatitis virus)	Mus musculus SJL	Administration in vivo with KVIAKWLAVNVL (Epitope)	HSLGKWLGHPDKF Myelin proteolipid protein Mus musculus (mouse)	Structurally Related	H2-IAs	3H-thymidine proliferation **Positive**
1683976	Anne M Ercolini; J Neuroimmunol 2007	KVIAKWLAVNVL Replicase polyprotein 1ab (3767-3778) Murine hepatitis virus (mouse hepatitis virus)	Mus musculus SJL	Administration in vivo with HSLGKWLGHPDKF	KVIAKWLAVNVL Replicase polyprotein 1ab (3767-3778) Murine hepatitis virus (mouse hepatitis virus)	Epitope	H2-s class II	3H-thymidine proliferation **Positive**
1844765	J Ludovic Croxford; Eur J Immunol 2006	KVIAKWLAVNVL Replicase polyprotein 1ab (3819-3830)	Mus musculus SJL	Administration in vivo with KVIAKWLAVNVL (Epitope)	KVIAKWLAVNVL Replicase polyprotein 1ab (3819-3830) Murine hepatitis virus (mouse	Epitope	H2-s class II	3H-thymidine proliferation **Positive**

Results Page: Assays Tab – Inline Filters



ID	Reference	Epitope	Host	Immunization	Assay Antigen	Antigen Epitope Relation	MHC Restriction	Assay Description
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1599758	M H Heemskerk; Immunology 1995	ACNIEEWLTARSVPS Spike glycoprotein precursor (328-342) Murine hepatitis virus strain A59 (Murine coronavirus mhv (STRAIN A59))	Mus musculus C57BL/6	Administration in vivo with Murine hepatitis virus strain A59 (Murine coronavirus mhv (STRAIN A59)) (Taxonomic Sibling) followed by Administration in vivo with Murine hepatitis virus strain A59 (Murine coronavirus mhv (STRAIN A59)) (Source Organism) followed by restimulation in vitro	Spike glycoprotein precursor Spike glycoprotein precursor Murine hepatitis virus strain A59 (Murine coronavirus mhv (STRAIN A59))	Source Antigen	H2-b class II	3H-thymidine proliferation **Positive-Low**
6552593	Jincun Zhao; Immunity 2016	LLEQNIDAYKTFP N protein [Human betacoronavirus 2c EMC/2012] (350-362) Human betacoronavirus 2c EMC/2012 (human betacoronavirus 2c EMC)	Mus musculus HLA-DRB1*1501 Tg	Administration in vivo with LLEQNIDAYKTFP (Epitope)	LLEQNIDAYKTFP N protein [Human betacoronavirus 2c EMC/2012] (350-362) Human betacoronavirus 2c EMC/2012 (human betacoronavirus 2c EMC)	Epitope	HLA-DRB1*15:01	3H-thymidine proliferation **Positive**
1688493	A M Carrizosa; J Immunol 1998	KVIAKWLAVNVL nsp6 (186-197) Murine hepatitis virus (mouse hepatitis virus)	Mus musculus SJL	Administration in vivo with KVIAKWLAVNVL (Epitope)	HSLGKWLGHPDKF Myelin proteolipid protein Mus musculus (mouse)	Structurally Related	H2-IAs	3H-thymidine proliferation **Positive**
1683976	Anne M Ercolini; J Neuroimmunol 2007	KVIAKWLAVNVL Replicase polyprotein 1ab (3767-3778) Murine hepatitis virus (mouse hepatitis virus)	Mus musculus SJL	Administration in vivo with HSLGKWLGHPDKF	KVIAKWLAVNVL Replicase polyprotein 1ab (3767-3778) Murine hepatitis virus (mouse hepatitis virus)	Epitope	H2-s class II	3H-thymidine proliferation **Positive**
1844765	J Ludovic Croxford; Eur J Immunol 2006	KVIAKWLAVNVL Replicase polyprotein 1ab (3819-3830)	Mus musculus SJL	Administration in vivo with KVIAKWLAVNVL (Epitope)	KVIAKWLAVNVL Replicase polyprotein 1ab (3819-3830) Murine hepatitis virus (mouse	Epitope	H2-s class II	3H-thymidine proliferation **Positive**

Results Page: Assays Tab – Assay Details

Current Filters: Positive Assays Only | Organism: Coronavirus (ID:11118)

Epitopes (3764) | Antigens (45) | Assays (12016) | Receptors (84273) | References (265)

T Cell Assays (1644) | B Cell Assays (2079) | MHC Ligand Assays (8293)

Go To Records Starting At A,b GO | Export Results

1644 Records Found | Page 1 of 66 | 25 Per Page

ID	Reference	Epitope	Host	Immunization	Assay Antigen	Antigen Epitope Relation	MHC Restriction	Assay Description
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1599758	M H Heemskerk; Immunology 1995	ACNIEEWLTARSVPS Spike glycoprotein precursor (328-342) Murine hepatitis virus strain A59 (Murine coronavirus mhv (STRAIN A59))	Mus musculus C57BL/6	Administration in vivo with Murine hepatitis virus strain A59 (Murine coronavirus mhv (STRAIN A59)) (Taxonomic Sibling) followed by Administration in vivo with Murine hepatitis virus strain A59 (Murine coronavirus mhv (STRAIN A59)) (Source Organism) followed by restimulation in vitro	Spike glycoprotein precursor Spike glycoprotein precursor Murine hepatitis virus strain A59 (Murine coronavirus mhv (STRAIN A59))	Source Antigen	H2-b class II	3H-thymidine proliferation **Positive-Low**
6552593	Jincun Zhao; Immunity 2016	LLEQNIDAYKTFP N protein [Human betacoronavirus 2c EMC/2012] (350-362) Human betacoronavirus 2c EMC/2012 (human betacoronavirus 2c EMC)	Mus musculus HLA-DRB1*1501 Tg	Administration in vivo with LLEQNIDAYKTFP (Epitope)	LLEQNIDAYKTFP N protein [Human betacoronavirus 2c EMC/2012] (350-362) Human betacoronavirus 2c EMC/2012 (human betacoronavirus 2c EMC)	Epitope	HLA-DRB1*15:01	3H-thymidine proliferation **Positive**
1688493	A M Carrizosa; J Immunol 1998	KVIAKWLAVNVL nsp6 (186-197) Murine hepatitis virus (mouse hepatitis virus)	Mus musculus SJL	Administration in vivo with KVIAKWLAVNVL (Epitope)	HSLGKWLGHPDKF Myelin proteolipid protein Mus musculus (mouse)	Structurally Related	H2-IAs	3H-thymidine proliferation **Positive**
1683976	Anne M Ercolini; J Neuroimmunol 2007	KVIAKWLAVNVL Replicase polyprotein 1ab (3767-3778) Murine hepatitis virus (mouse hepatitis virus)	Mus musculus SJL	Administration in vivo with HSLGKWLGHPDKF	KVIAKWLAVNVL Replicase polyprotein 1ab (3767-3778) Murine hepatitis virus (mouse hepatitis virus)	Epitope	H2-s class II	3H-thymidine proliferation **Positive**
1844765	J Ludovic Croxford; Eur J Immunol 2006	KVIAKWLAVNVL Replicase polyprotein 1ab (3819-3830)	Mus musculus SJL	Administration in vivo with KVIAKWLAVNVL (Epitope)	KVIAKWLAVNVL Replicase polyprotein 1ab (3819-3830) Murine hepatitis virus (mouse	Epitope	H2-s class II	3H-thymidine proliferation **Positive**

Results Page: Assays Tab – Assay Details Reference

Reference		
Reference Type	Literature	IEDB_Reference:1036475
Title	Airway Memory CD4(+) T Cells Mediate Protective Immunity against Emergin g Respiratory Coronaviruses.	
Authors	Jincun Zhao; Jingxian Zhao; Ashutosh K Mangalam; Rudragouda Channappan avar; Craig Fett; David K Meyerholz; Sudhakar Agnihothram; Ralph S Baric; C hella S David; Stanley Perlman	
Affiliations	State Key Laboratory of Respiratory Diseases, Guangzhou Institute of Respira tory Disease, The First Affiliated Hospital of Guangzhou Medical University, G uangzhou 510120, China; Department of Microbiology, University of Iowa, Io wa City, IA 52242, USA. Electronic address: zhaojincun@gird.cn; Department of Pathology, University of Iowa, Iowa City, IA 52242, USA; Department of Mi crobiology and Immunology and Department of Epidemiology, University of N orth Carolina, Chapel Hill, NC 27599, USA; Department of Immunology, Mayo Clinic, Rochester, MI 55905, USA; Department of Microbiology, University of I owa, Iowa City, IA 52242, USA. Electronic address: stanley-perlman@uiowa.e du.	
Journal	Immunity	PMID:27287409
Year	2016	
Abstract	Two zoonotic coronaviruses (CoVs)-SARS-CoV and MERS-CoV-have crossed s pecies to cause severe human respiratory disease. Here, we showed that ind uction of airway memory CD4(+) T cells specific for a conserved epitope shar ed by SARS-CoV and MERS-CoV is a potential strategy for developing pan-cor onavirus vaccines. Airway memory CD4(+) T cells differed phenotypically and functionally from lung-derived cells and were crucial for protection against bo th CoVs in mice. Protection was dependent on interferon- and required early i nduction of robust innate and virus-specific CD8(+) T cell responses. The con served epitope was also recognized in SARS-CoV- and MERS-CoV-infected hu man leukocyte antigen DR2 and DR3 transgenic mice, indicating potential rel evance in human populations. Additionally, this epitope was cross-protective between human and bat CoVs, the progenitors for many human CoVs. Vaccin e strategies that induce airway memory CD4(+) T cells targeting conserved e pitopes might have broad applicability in the context of new CoVs and other r espiratory virus outbreaks.	
Curation Last Updated	2020-09-11 03:30:29	

Results Page: Assays Tab – Assay Details Epitope

Epitope		
Epitope ID	985586	IEDB_epitope:985586
Chemical Type	Linear peptide	
Linear Sequence	LLEQNIDAYKTFP	
Source Molecule Name	N protein [Human betacoronavirus 2c EMC/2012]	GenPept:AFS88943.1
Source Organism	Human betacoronavirus 2c EMC/2012 (human betacoronavirus 2c EMC)	NCBITaxon:1235996
Starting Position	350	
Ending Position	362	

Epitope Reference Details		
Epitope Structure Defines	Exact Epitope	
Epitope Name	MERS N350 peptide	
Reference Starting Position	350	
Reference Ending Position	362	
Location of Data in Reference	Figure 6	

Results Page: Assays Tab – Assay Details Immunization

Immunization		
Host Organism	Mus musculus HLA-DRB1*1501 Tg	ONTIE:0001194

1st In Vivo Process		
In Vivo Process Type	Administration in vivo	

Administration Details		
Adjuvants	Freund's complete;	
Route	Subcutaneous (s.c.)	
Dose Schedule	1 dose of 100 µg	

1st Immunogen		
Epitope Relation	Epitope	
Chemical Type	Linear peptide	
Linear Sequence	LLEQNIDAYKTFP	
Source Molecule Name	N protein [Human betacoronavirus 2c EMC/2012]	GenPept:AFS88943.1
Source Organism	Human betacoronavirus 2c EMC/2012 (human betacoronavirus 2c EMC)	NCBITaxon:1235996
Starting Position	350	
Ending Position	362	

Immunization Comments		
Immunization Comments	Mice transgenic for human HLA class II DR2 (DRB1*1501) on a C57BL/10 (H-2b) background were immunized with the epitope. Draining lymph nodes were harvested 10 days later.	

Results Page: Assays Tab – Assay Details Effector Cells

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

Effector Cells		
Effector Cell Tissue Type	Lymph Node	UBERON:0000029
Effector Cell Type	Lymph node cells	http://purl.obolibrary.org/obo/OBI_1110041
Effector Cell Culture Conditions	Direct Ex Vivo	

Antigen Presenting Cells		
Cell Tissue Type	Lymph Node	UBERON:0000029
Cell Type	Lymph node cells	http://purl.obolibrary.org/obo/OBI_1110041
Cell Culture Conditions	Direct Ex Vivo	

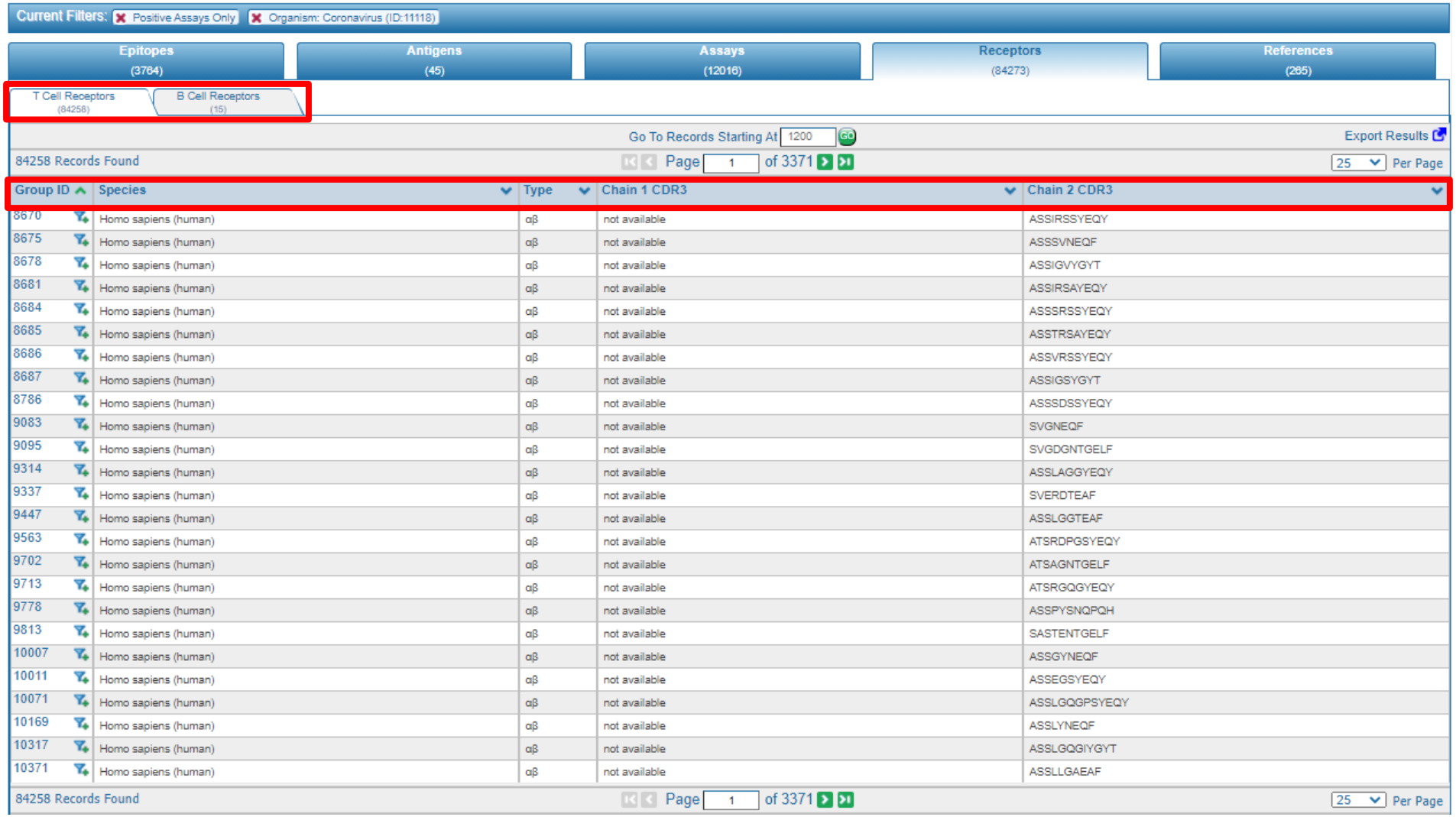
MHC Allele		
MHC Allele Name	HLA-DRB1*15:01	MRO:0001331
MHC Evidence Code	T cell assay -Single MHC type present	

Results Page: Assays Tab – Assay Details Antigen

Antigen		
Epitope Relation	Epitope	
Chemical Type	Linear peptide	
Linear Sequence	LLEQNIDAYKTFP	
Source Molecule Name	N protein [Human betacoronavirus 2c EMC/2012]	GenPept:AFS88943.1
Source Organism	Human betacoronavirus 2c EMC/2012 (human betacoronavirus 2c EMC)	NCBITaxon:1235996
Starting Position	350	
Ending Position	362	

Assay Reference Details		
Assay Comments by IEDB Curator	Mice expressing human HLA-DR2, but not HLA-DR3, responded to the epitope.	
Location of Assay Data in Reference	Figure 6	

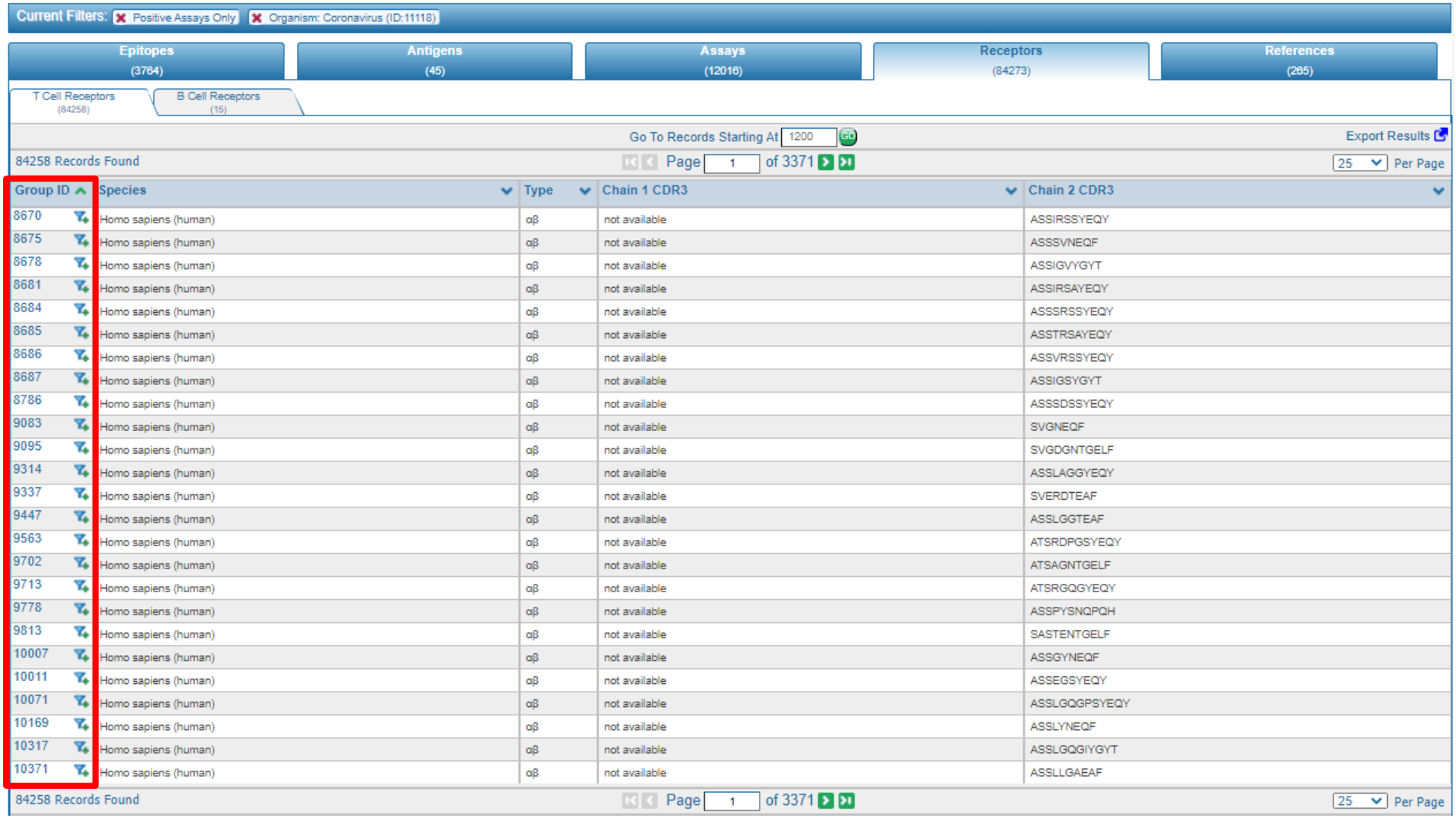
Results Page: Receptors Tab – Subtabs



Group ID	Species	Type	Chain 1 CDR3	Chain 2 CDR3
8670	Homo sapiens (human)	αβ	not available	ASSIRSSYEQY
8675	Homo sapiens (human)	αβ	not available	ASSSVNEQF
8678	Homo sapiens (human)	αβ	not available	ASSIGVYGYT
8681	Homo sapiens (human)	αβ	not available	ASSIRSAYEQY
8684	Homo sapiens (human)	αβ	not available	ASSSRSSYEQY
8685	Homo sapiens (human)	αβ	not available	ASSTRSAYEQY
8686	Homo sapiens (human)	αβ	not available	ASSVRSSYEQY
8687	Homo sapiens (human)	αβ	not available	ASSIGSYGYT
8786	Homo sapiens (human)	αβ	not available	ASSSDSSYEQY
9083	Homo sapiens (human)	αβ	not available	SVGNEQF
9095	Homo sapiens (human)	αβ	not available	SVGDGNTGELF
9314	Homo sapiens (human)	αβ	not available	ASSLAGGYEQY
9337	Homo sapiens (human)	αβ	not available	SVERDTEAF
9447	Homo sapiens (human)	αβ	not available	ASSLGGTEAF
9563	Homo sapiens (human)	αβ	not available	ATSRDPGSYEQY
9702	Homo sapiens (human)	αβ	not available	ATSAGNTGELF
9713	Homo sapiens (human)	αβ	not available	ATSRGQGYEQY
9778	Homo sapiens (human)	αβ	not available	ASSPYSNQPQH
9813	Homo sapiens (human)	αβ	not available	SASTENTGELF
10007	Homo sapiens (human)	αβ	not available	ASSGYNEQF
10011	Homo sapiens (human)	αβ	not available	ASSEGSYEQY
10071	Homo sapiens (human)	αβ	not available	ASSLGQGPSYEQY
10169	Homo sapiens (human)	αβ	not available	ASSLYNEQF
10317	Homo sapiens (human)	αβ	not available	ASSLGQGIYGYT
10371	Homo sapiens (human)	αβ	not available	ASSLLGAEAF

84258 Records Found
Page 1 of 3371
25 Per Page

Results Page: Receptors Tab – Group ID



Current Filters: Positive Assays Only | Organism: Coronavirus (ID:11118)

Epitopes (3764) | Antigens (45) | Assays (12016) | Receptors (84273) | References (265)

T Cell Receptors (84258) | B Cell Receptors (15)

Go To Records Starting At 1200 GO | Export Results

84258 Records Found | Page 1 of 3371 | 25 Per Page

Group ID	Species	Type	Chain 1 CDR3	Chain 2 CDR3
8670	Homo sapiens (human)	αβ	not available	ASSIRSSYEQY
8675	Homo sapiens (human)	αβ	not available	ASSSVNEQF
8678	Homo sapiens (human)	αβ	not available	ASSIGVYGYT
8681	Homo sapiens (human)	αβ	not available	ASSIRSAYEQY
8684	Homo sapiens (human)	αβ	not available	ASSSRSSYEQY
8685	Homo sapiens (human)	αβ	not available	ASSTRSAYEQY
8686	Homo sapiens (human)	αβ	not available	ASSVRSSYEQY
8687	Homo sapiens (human)	αβ	not available	ASSIGSYGYT
8786	Homo sapiens (human)	αβ	not available	ASSSDSSYEQY
9083	Homo sapiens (human)	αβ	not available	SVGNEQF
9095	Homo sapiens (human)	αβ	not available	SVGDGNTGELF
9314	Homo sapiens (human)	αβ	not available	ASSLAGGYEQY
9337	Homo sapiens (human)	αβ	not available	SVERDTEAF
9447	Homo sapiens (human)	αβ	not available	ASSLGGTEAF
9563	Homo sapiens (human)	αβ	not available	ATSRDPGSYEQY
9702	Homo sapiens (human)	αβ	not available	ATSAGNTGELF
9713	Homo sapiens (human)	αβ	not available	ATSRGQGYEQY
9778	Homo sapiens (human)	αβ	not available	ASSPYSNQPQH
9813	Homo sapiens (human)	αβ	not available	SASTENTGELF
10007	Homo sapiens (human)	αβ	not available	ASSGYNEQF
10011	Homo sapiens (human)	αβ	not available	ASSEGSYEQY
10071	Homo sapiens (human)	αβ	not available	ASSLGQGPSYEQY
10169	Homo sapiens (human)	αβ	not available	ASSLYNEQF
10317	Homo sapiens (human)	αβ	not available	ASSLGQGIYGYT
10371	Homo sapiens (human)	αβ	not available	ASSLLGAEAF

84258 Records Found | Page 1 of 3371 | 25 Per Page

Results Page: Receptors Tab – Receptor Group Details

T cell receptor (receptor group ID 9314)

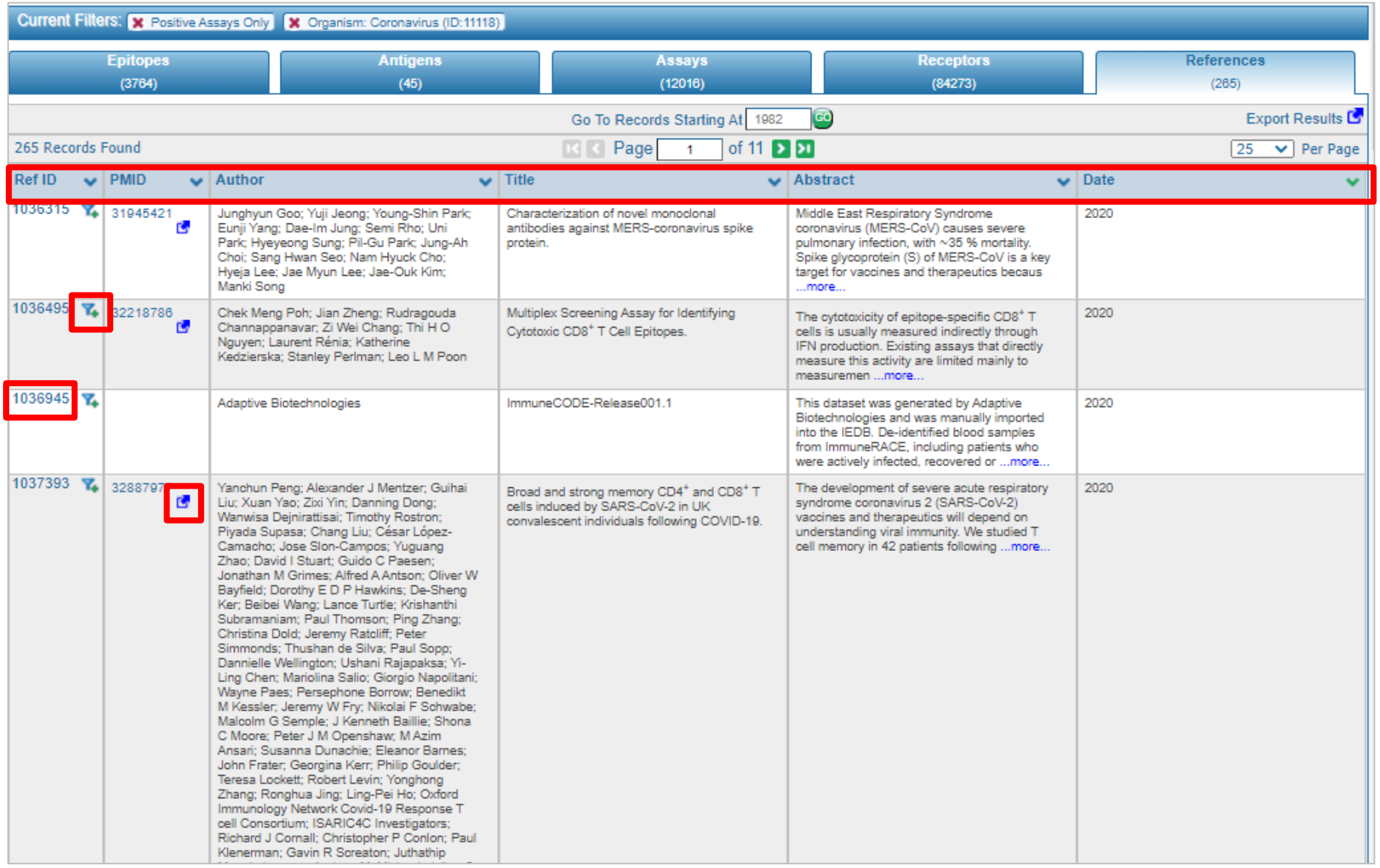
Beta TCR with beta chain CDR3 of ASSLAGGYEQY was reported in Homo sapiens (human).

Gene usage	CDR sequences	beta Gene usage	beta CDR sequences	Epitopes (# assays)
V: D: J:	CDR1: CDR2: CDR3:	V:TRBV5-1 D: J:TRBJ2-7	CDR1: CDR2: CDR3:ASSLAGGYEQY	NLVPMVATV (1), GNYTVSCLPFTI (1), LSPRWYFYYL (2)
V Domain:		V Domain:		

Epitope summary

This TCR was studied for the following epitopes NLVPMVATV studied as part of 65 kDa phosphoprotein from Human herpesvirus 5 (Human cytomegalovirus) (epitope ID 44920, 1 publication, 1 assay), GNYTVSCLPFTI studied as part of Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein from Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) (epitope ID 1074912, 1 publication, 1 assay) and LSPRWYFYYL studied as part of Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein from Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) (epitope ID 1074988, 1 publication, 2 assays).

Results Page: References Tab – Table Headers



Current Filters: Positive Assays Only | Organism: Coronavirus (ID:11118)

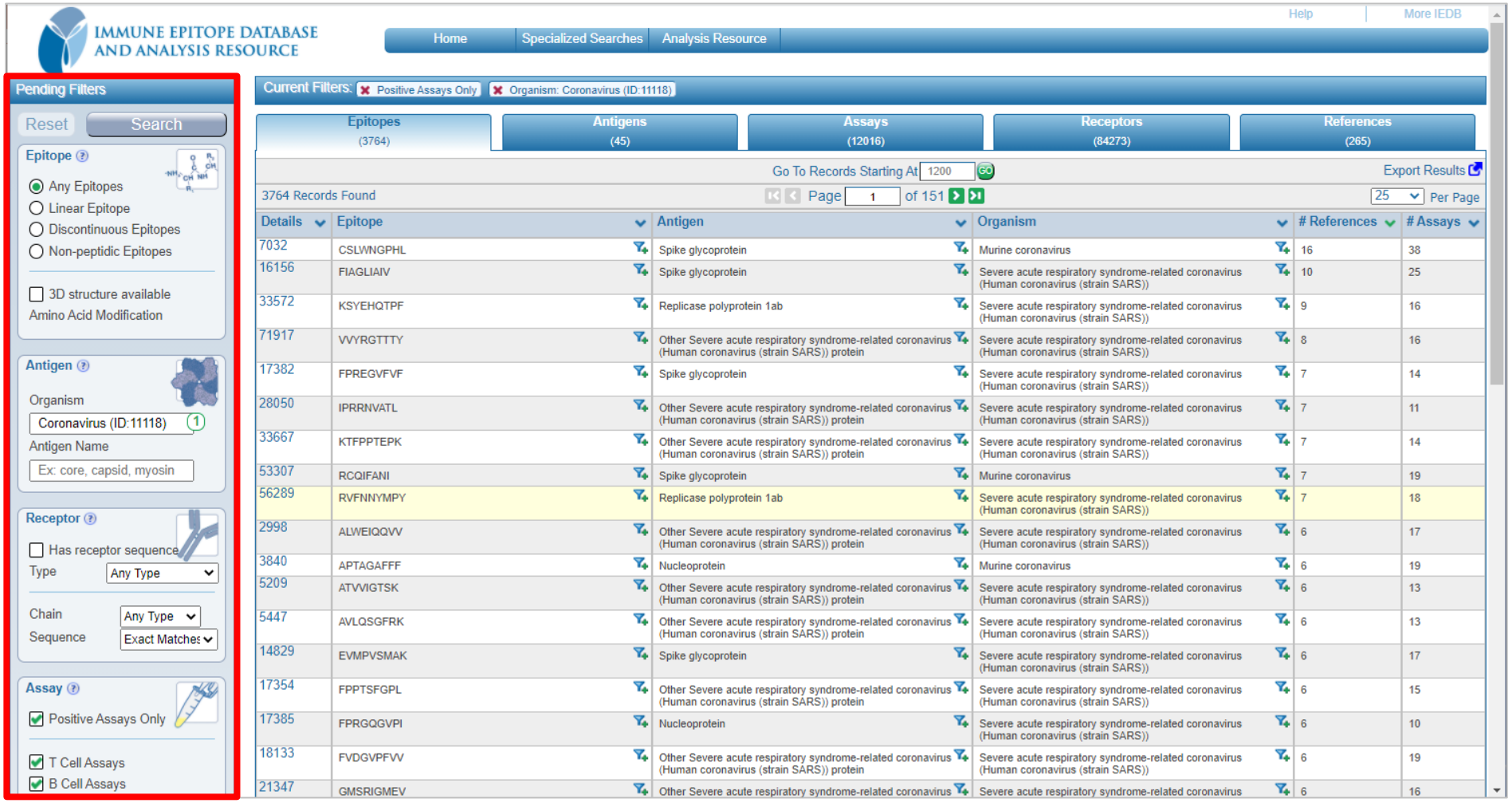
Epitopes (3764) | Antigens (45) | Assays (12016) | Receptors (84273) | References (265)

Go To Records Starting At 1982 GO | Export Results

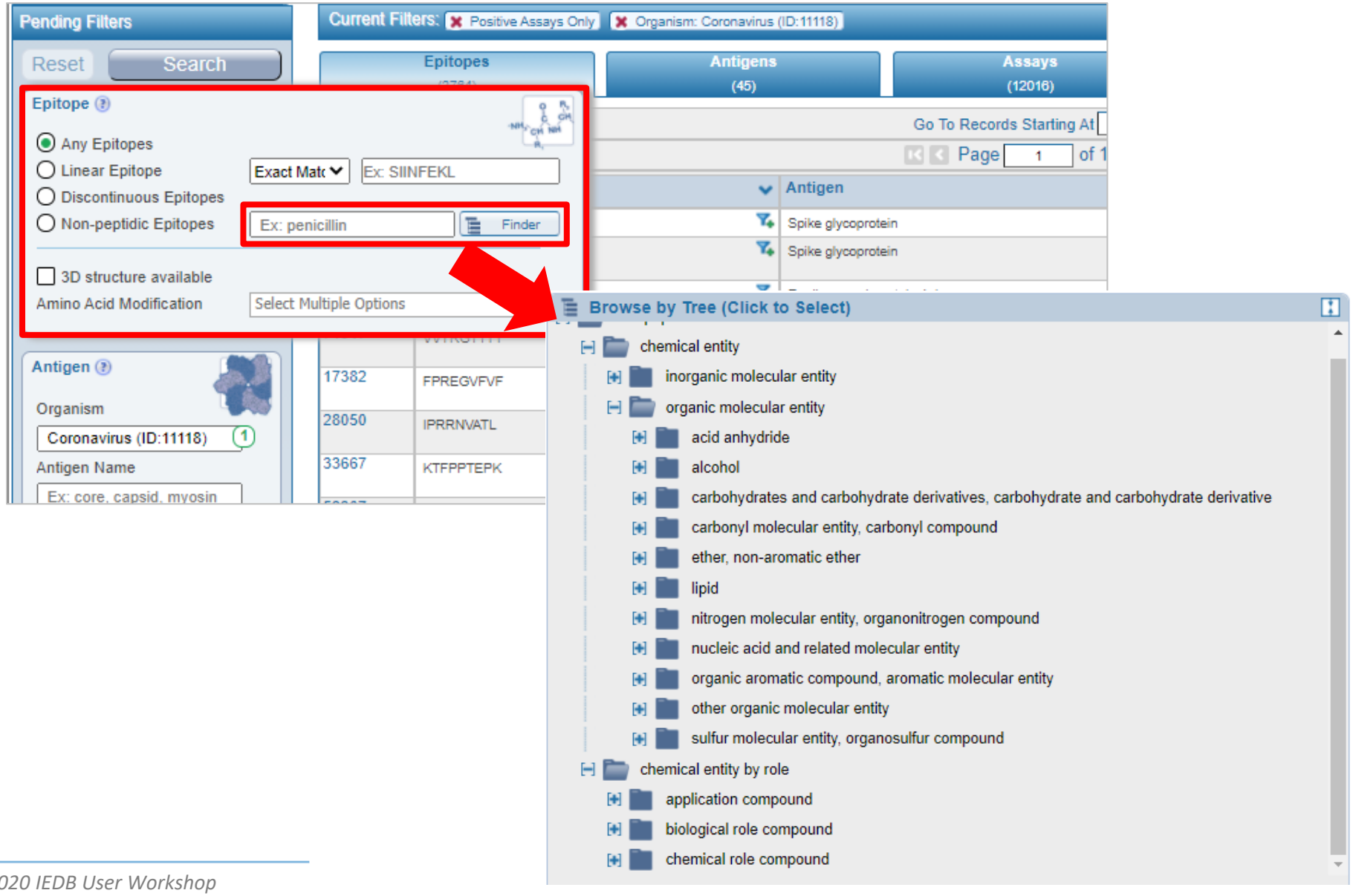
265 Records Found | Page 1 of 11 | 25 Per Page

Ref ID	PMID	Author	Title	Abstract	Date
1036315	31945421	Junghyun Goo; Yuji Jeong; Young-Shin Park; Eunji Yang; Dae-Im Jung; Semi Rho; Uni Park; Hyeyeong Sung; Pil-Gu Park; Jung-Ah Choi; Sang Hwan Seo; Nam Hyuck Cho; Hyeja Lee; Jae Myun Lee; Jae-Ouk Kim; Manki Song	Characterization of novel monoclonal antibodies against MERS-coronavirus spike protein.	Middle East Respiratory Syndrome coronavirus (MERS-CoV) causes severe pulmonary infection, with ~35 % mortality. Spike glycoprotein (S) of MERS-CoV is a key target for vaccines and therapeutics becaus ...more...	2020
1036495	32218786	Chek Meng Poh; Jian Zheng; Rudragouda Channappanavar; Zi Wei Chang; Thi H O Nguyen; Laurent Rénia; Katherine Kedzierska; Stanley Perlman; Leo L M Poon	Multiplex Screening Assay for Identifying Cytotoxic CD8+ T Cell Epitopes.	The cytotoxicity of epitope-specific CD8+ T cells is usually measured indirectly through IFN production. Existing assays that directly measure this activity are limited mainly to measuremen ...more...	2020
1036945		Adaptive Biotechnologies	ImmuneCODE-Release001.1	This dataset was generated by Adaptive Biotechnologies and was manually imported into the IEDB. De-identified blood samples from ImmuneRACE, including patients who were actively infected, recovered or ...more...	2020
1037393	3288797	Yanchun Peng; Alexander J Mentzer; Guihai Liu; Xuan Yao; Zixi Yin; Danning Dong; Wanwisa Dejnirattisai; Timothy Rostron; Piyada Supasa; Chang Liu; César López-Camacho; Jose Slon-Campos; Yuguang Zhao; David I Stuart; Guido C Paesen; Jonathan M Grimes; Alfred A Antson; Oliver W Bayfield; Dorothy E D P Hawkins; De-Sheng Ker; Beibei Wang; Lance Turtle; Krishanthi Subramaniam; Paul Thomson; Ping Zhang; Christina Dold; Jeremy Ratcliff; Peter Simmonds; Thushan de Silva; Paul Sopp; Dannielle Wellington; Ushani Rajapaksa; Yi-Ling Chen; Mariolina Salio; Giorgio Napolitani; Wayne Paes; Persephone Borrow; Benedikt M Kessler; Jeremy W Fry; Nikolai F Schwabe; Malcolm G Semple; J Kenneth Baillie; Shona C Moore; Peter J M Openshaw; M Azim Ansari; Susanna Dunachie; Eleanor Barnes; John Frater; Georgina Kerr; Philip Goulder; Teresa Lockett; Robert Levin; Yonghong Zhang; Ronghua Jing; Ling-Pei Ho; Oxford Immunology Network Covid-19 Response T cell Consortium; ISARIC4C Investigators; Richard J Cornall; Christopher P Conlon; Paul Klenerman; Gavin R Screaton; Juthathip	Broad and strong memory CD4+ and CD8+ T cells induced by SARS-CoV-2 in UK convalescent individuals following COVID-19.	The development of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) vaccines and therapeutics will depend on understanding viral immunity. We studied T cell memory in 42 patients following ...more...	2020

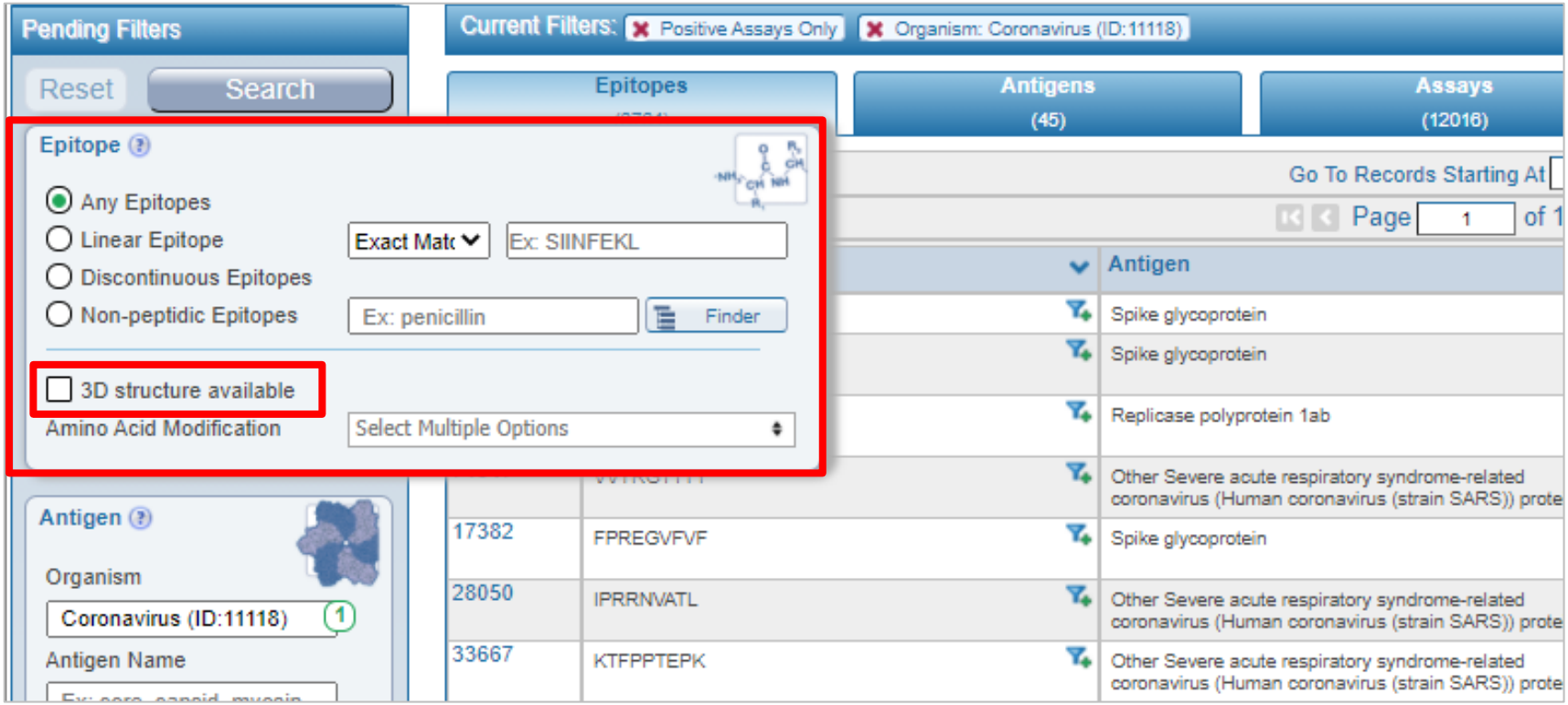
Results Page: Pending Filters – New Search Options



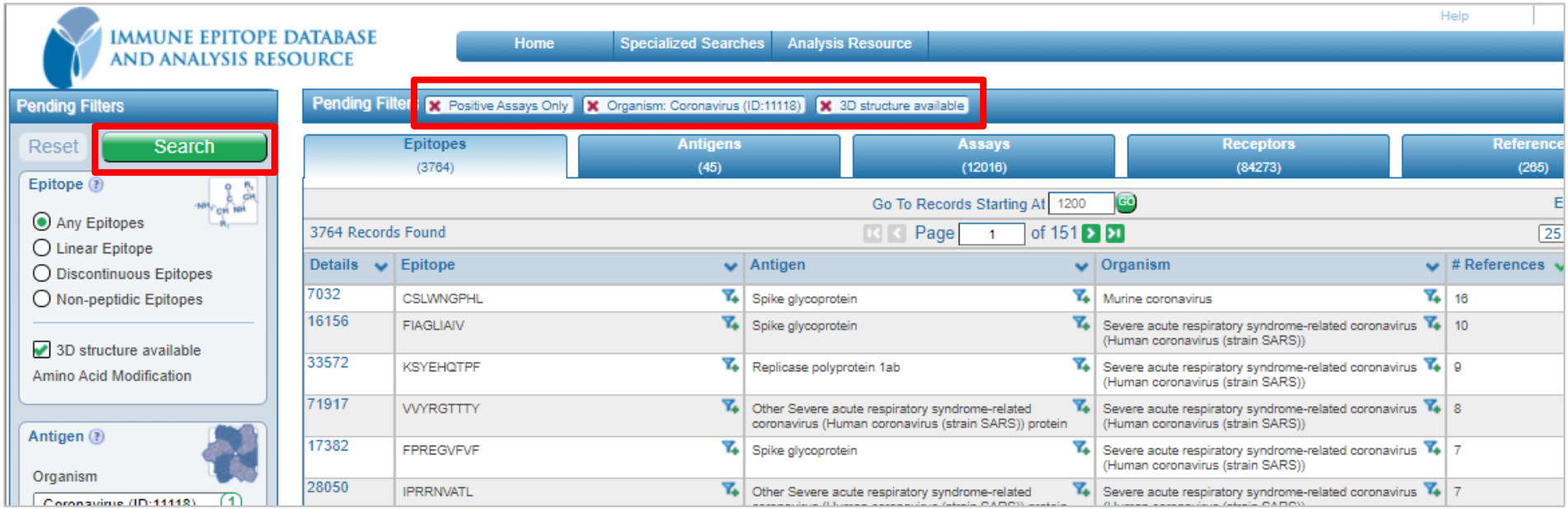
Results Page: Epitope Filters – Non-peptidics



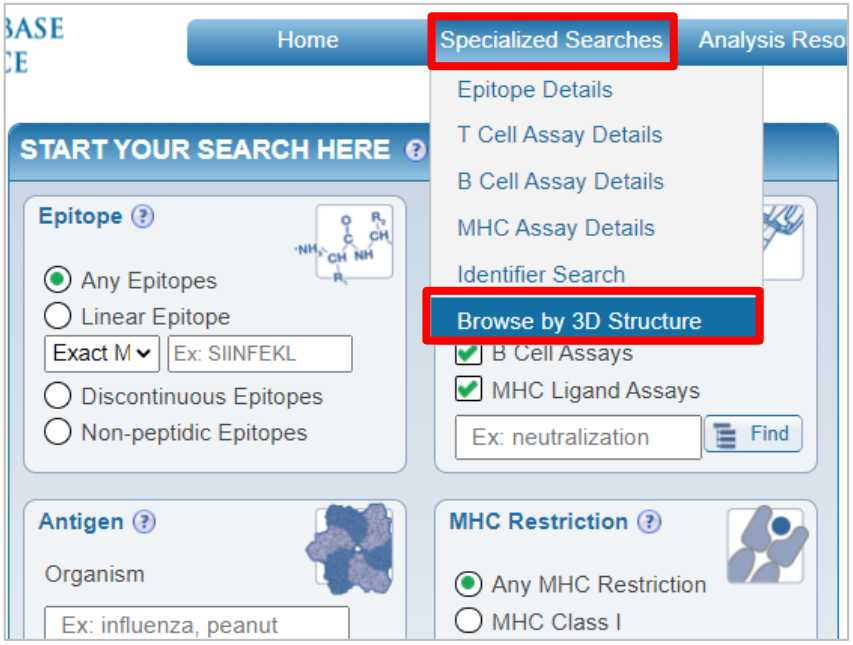
Results Page: Epitope Filters – 3D Structures



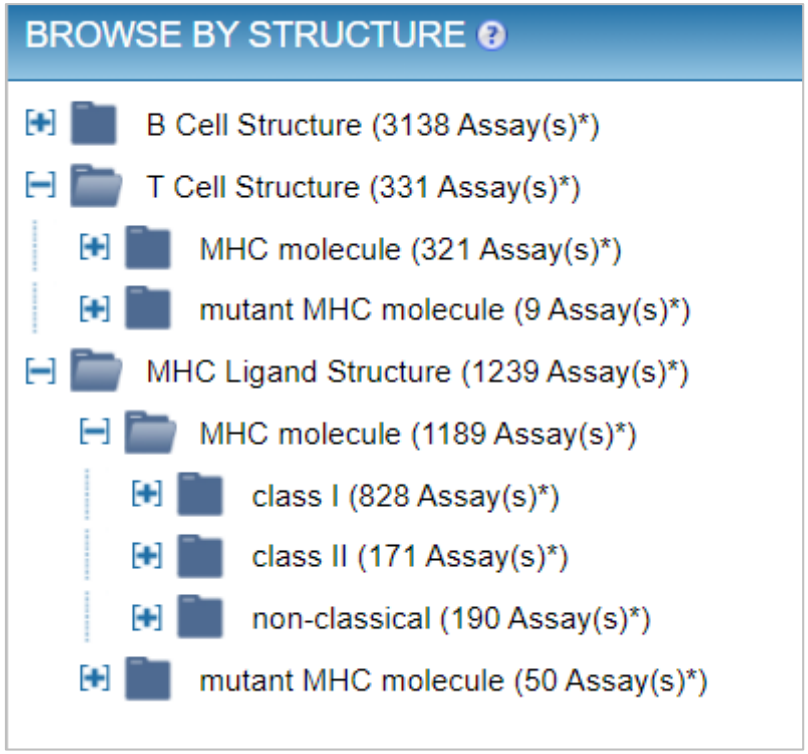
Results Page: Epitope Filters – 3D Structures



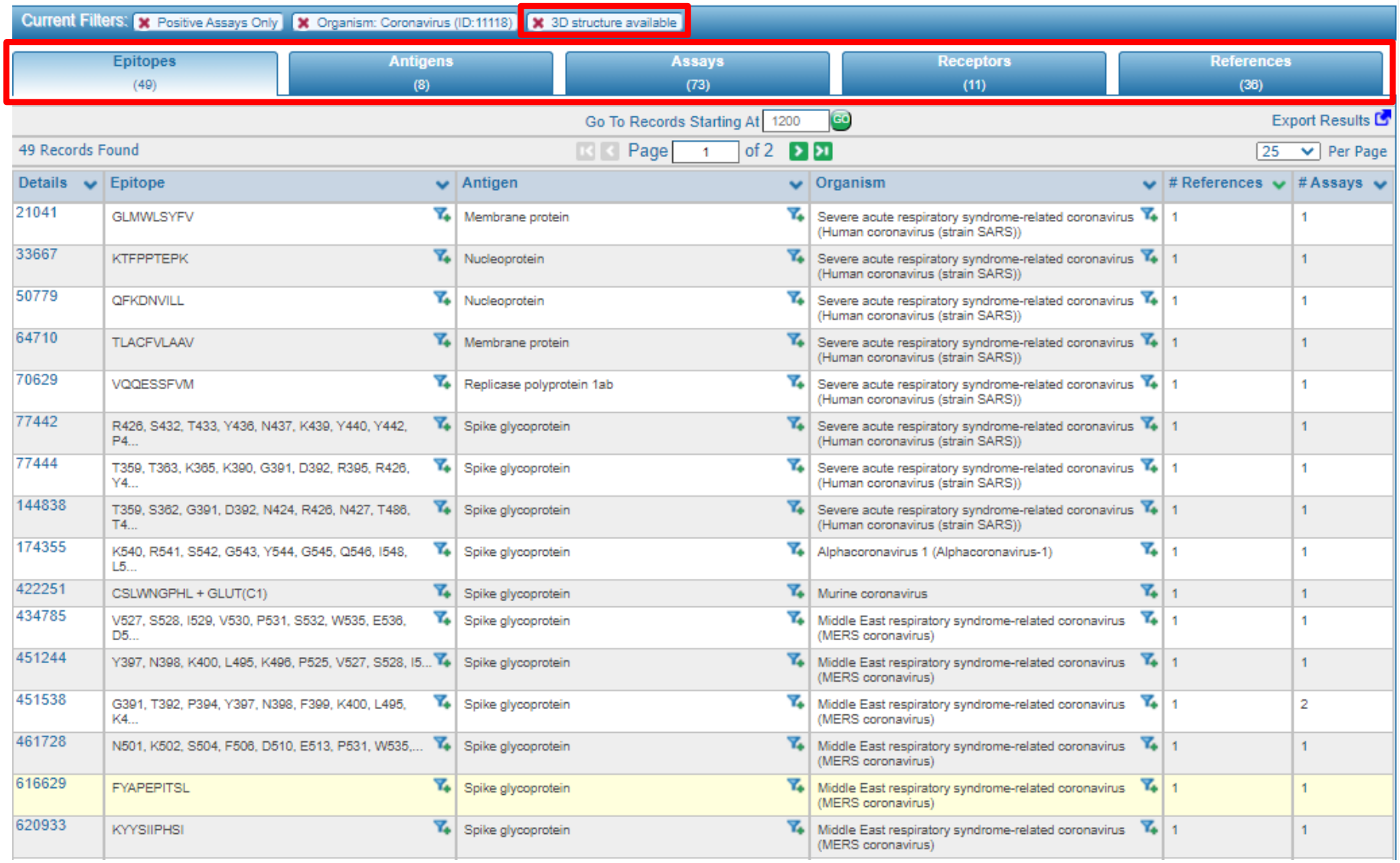
Any Page: Browse by 3D Structures



Branches of tree organized by organism that is source of antibody, T Cell, and MHC molecule, respectively.



Results Page: Epitope Filters – 3D Structures



Current Filters: Positive Assays Only | Organism: Coronavirus (ID:11118) | 3D structure available

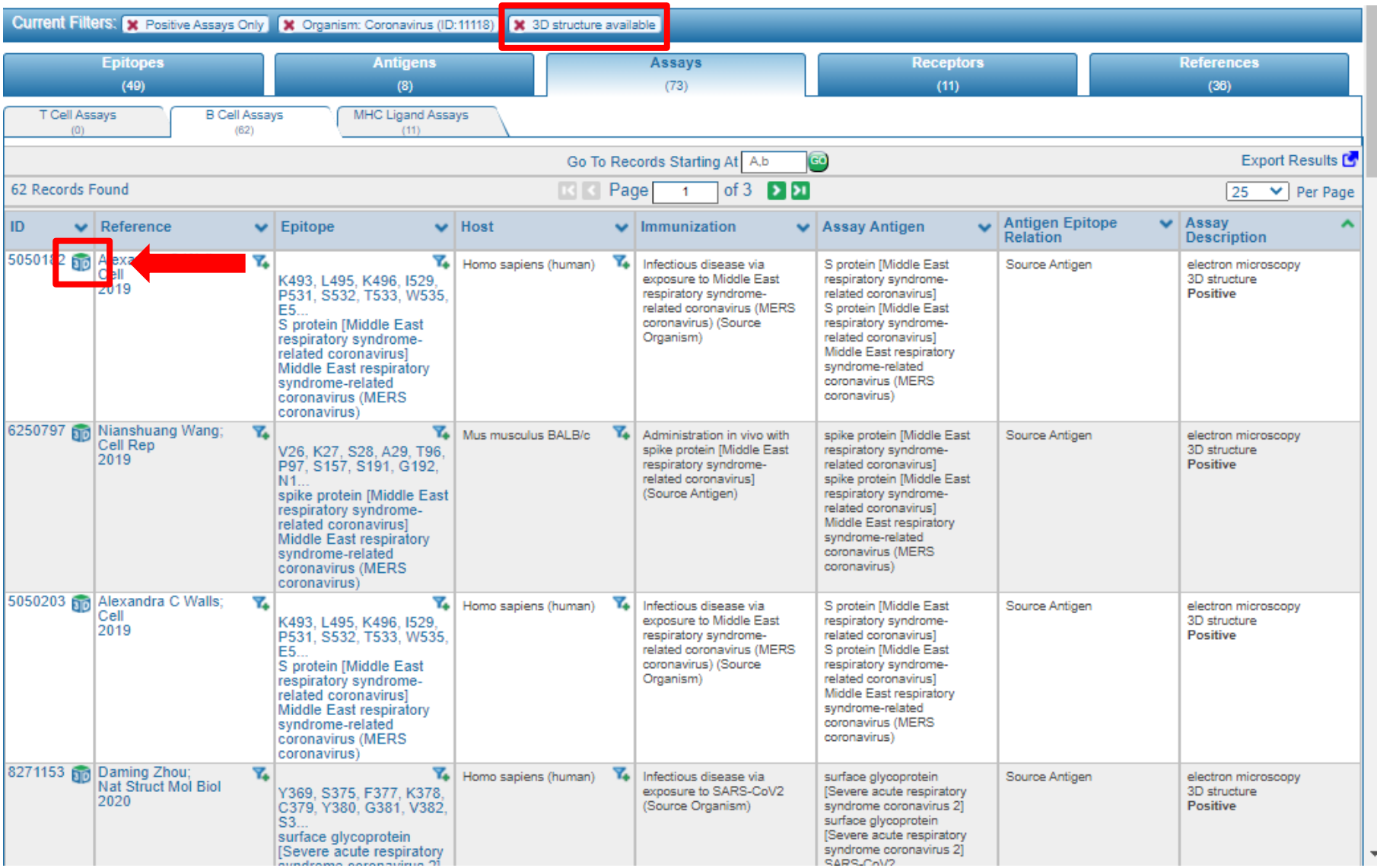
Epitopes (49) | Antigens (8) | Assays (73) | Receptors (11) | References (36)

Go To Records Starting At 1200 GO | Export Results

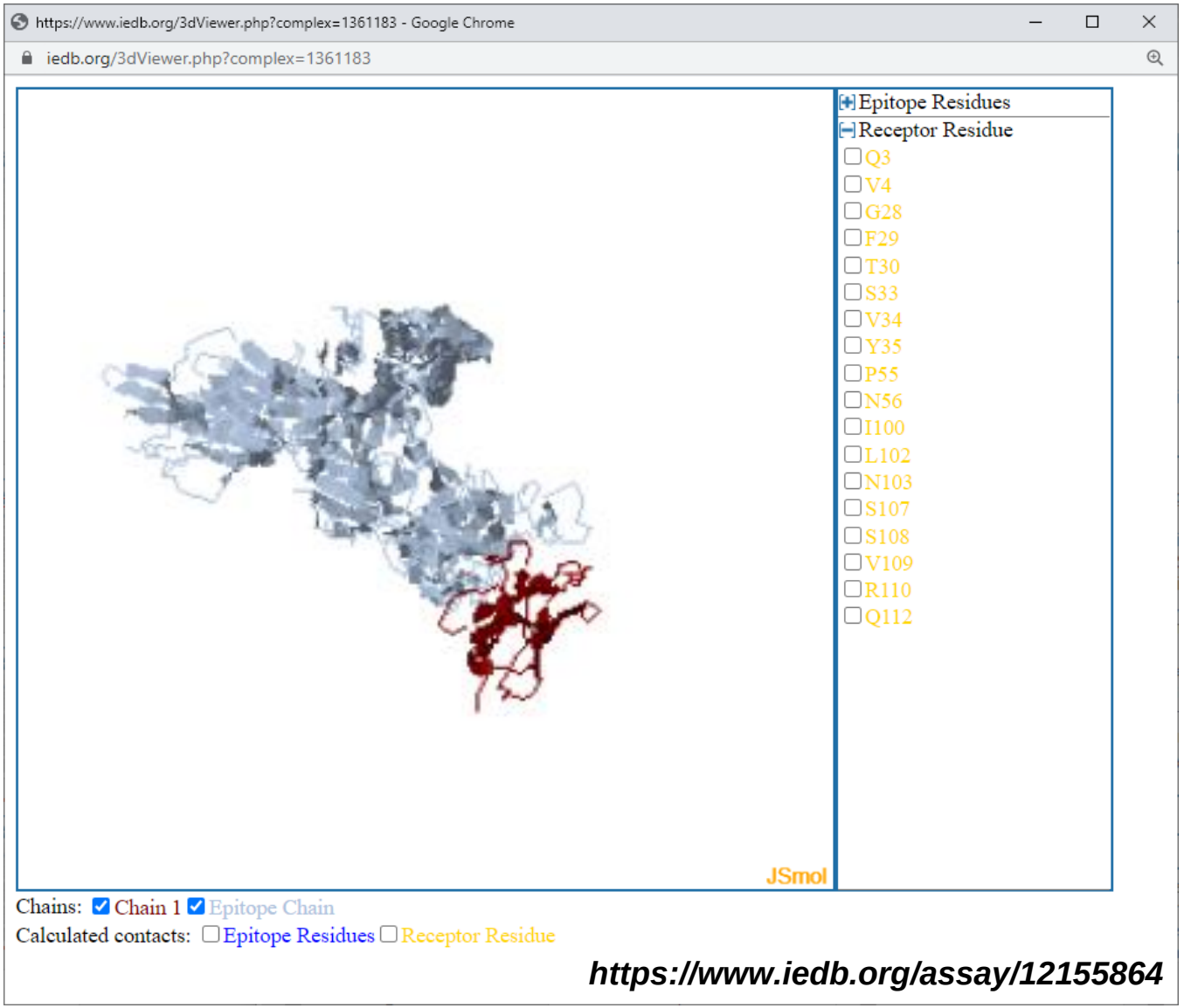
49 Records Found | Page 1 of 2 | 25 Per Page

Details	Epitope	Antigen	Organism	# References	# Assays
21041	GLMWLSYFV	Membrane protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	1	1
33667	KTFPPTEPK	Nucleoprotein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	1	1
50779	QFKDNVILL	Nucleoprotein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	1	1
64710	TLACFVLAAV	Membrane protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	1	1
70629	VQQESSFVM	Replicase polyprotein 1ab	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	1	1
77442	R426, S432, T433, Y436, N437, K439, Y440, Y442, P4...	Spike glycoprotein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	1	1
77444	T359, T363, K365, K390, G391, D392, R395, R426, Y4...	Spike glycoprotein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	1	1
144838	T359, S362, G391, D392, N424, R426, N427, T486, T4...	Spike glycoprotein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	1	1
174355	K540, R541, S542, G543, Y544, G545, Q546, I548, L5...	Spike glycoprotein	Alphacoronavirus 1 (Alphacoronavirus-1)	1	1
422251	CSLWNGPHL + GLUT(C1)	Spike glycoprotein	Murine coronavirus	1	1
434785	V527, S528, I529, V530, P531, S532, W535, E536, D5...	Spike glycoprotein	Middle East respiratory syndrome-related coronavirus (MERS coronavirus)	1	1
451244	Y397, N398, K400, L495, K496, P525, V527, S528, I5...	Spike glycoprotein	Middle East respiratory syndrome-related coronavirus (MERS coronavirus)	1	1
451538	G391, T392, P394, Y397, N398, F399, K400, L495, K4...	Spike glycoprotein	Middle East respiratory syndrome-related coronavirus (MERS coronavirus)	1	2
461728	N501, K502, S504, F506, D510, E513, P531, W535,...	Spike glycoprotein	Middle East respiratory syndrome-related coronavirus (MERS coronavirus)	1	1
616629	FYAPEPITSL	Spike glycoprotein	Middle East respiratory syndrome-related coronavirus (MERS coronavirus)	1	1
620933	KYYSIIPHSI	Spike glycoprotein	Middle East respiratory syndrome-related coronavirus (MERS coronavirus)	1	1

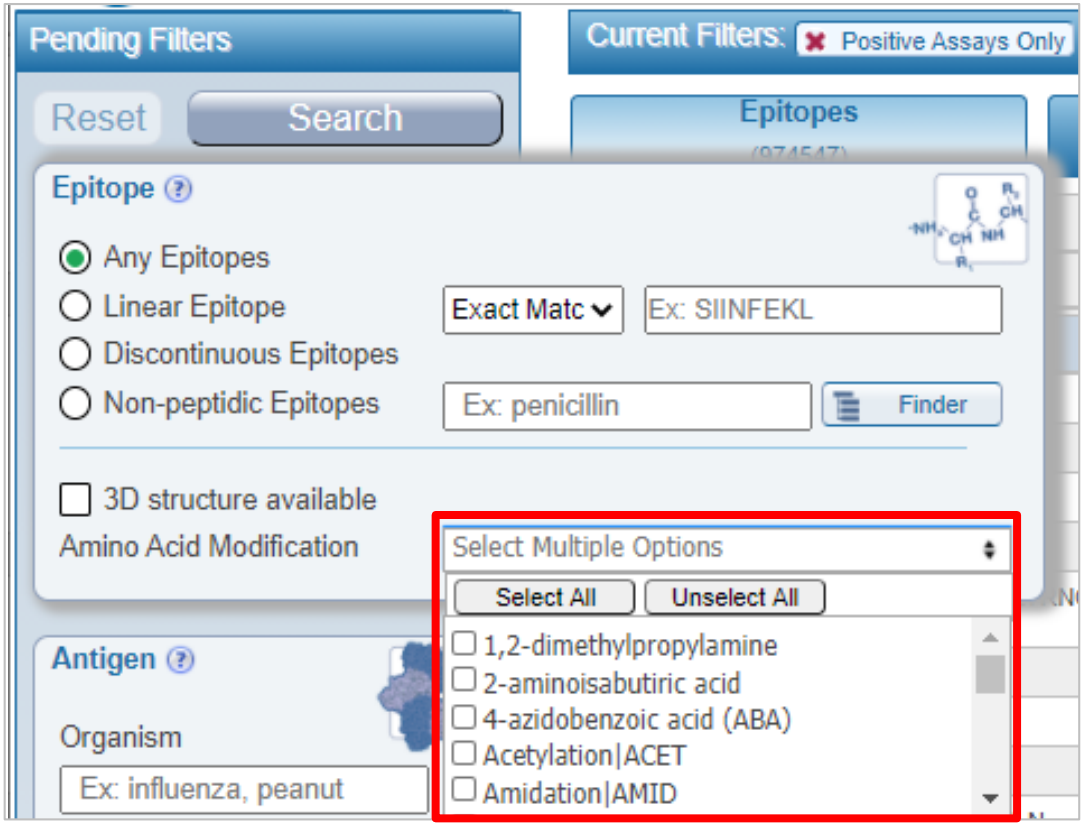
Results Page: Epitope Filters – 3D Structures



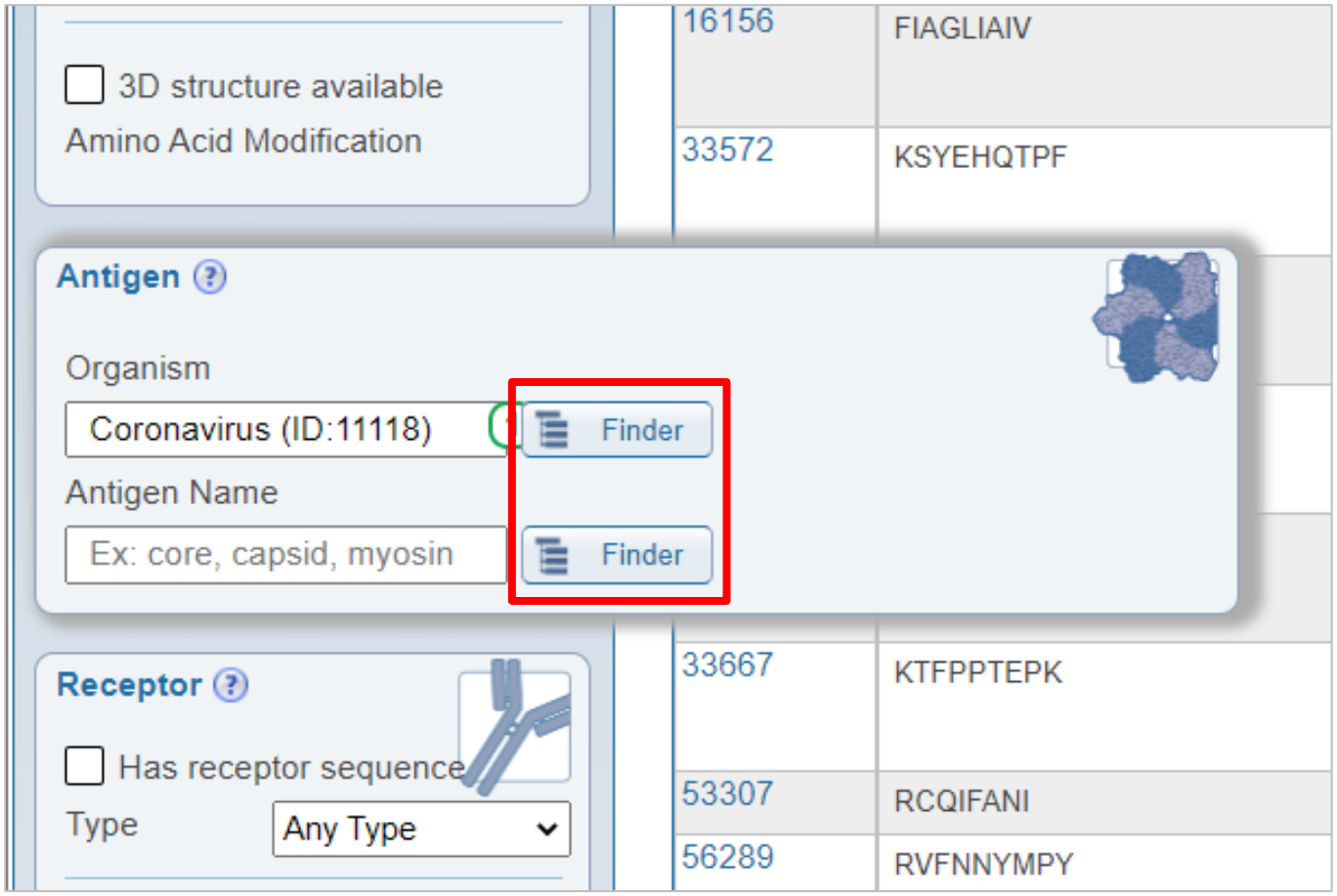
Results Page: Epitope Filters – 3D Structures



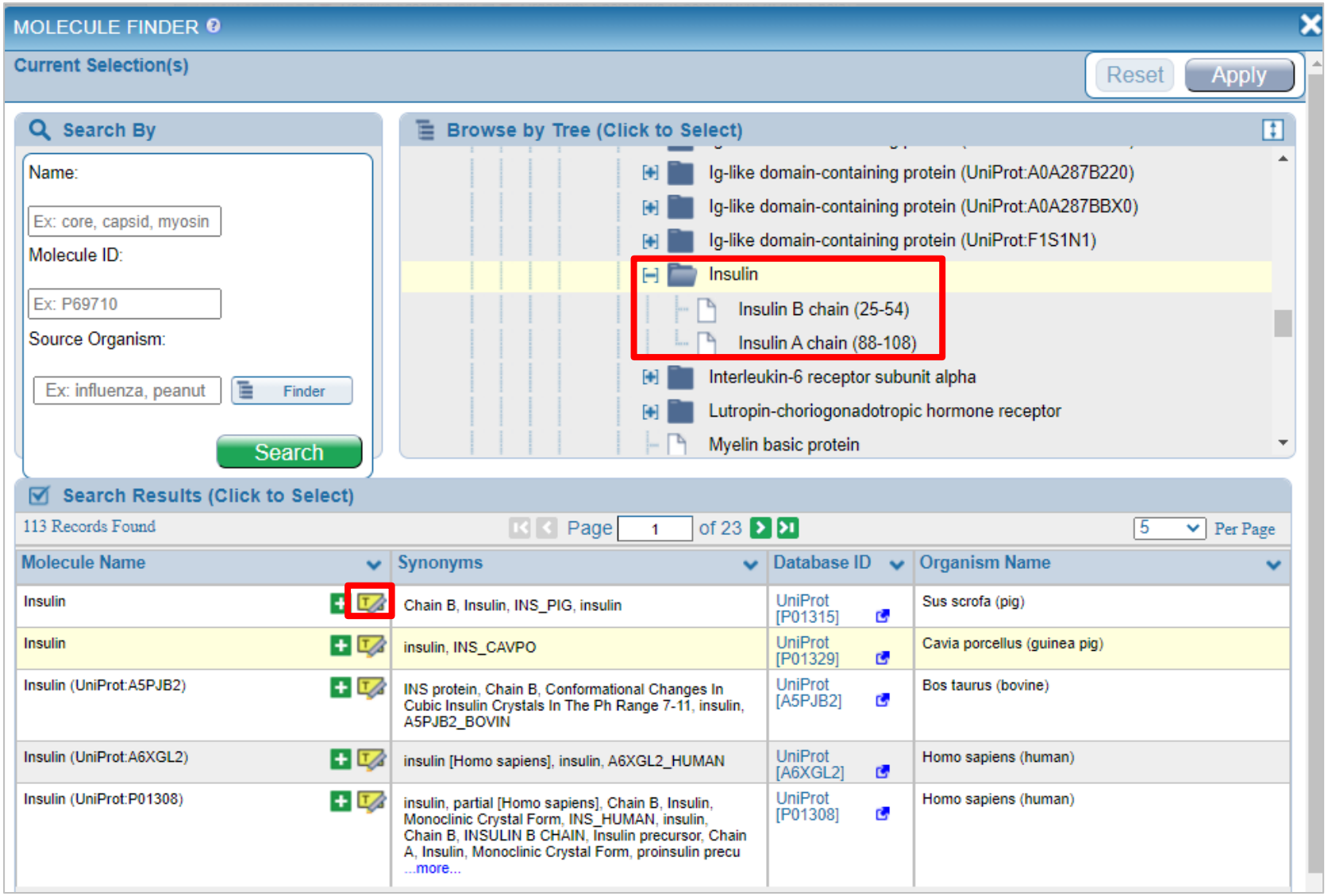
Results Page: Epitope Filters – Modifications



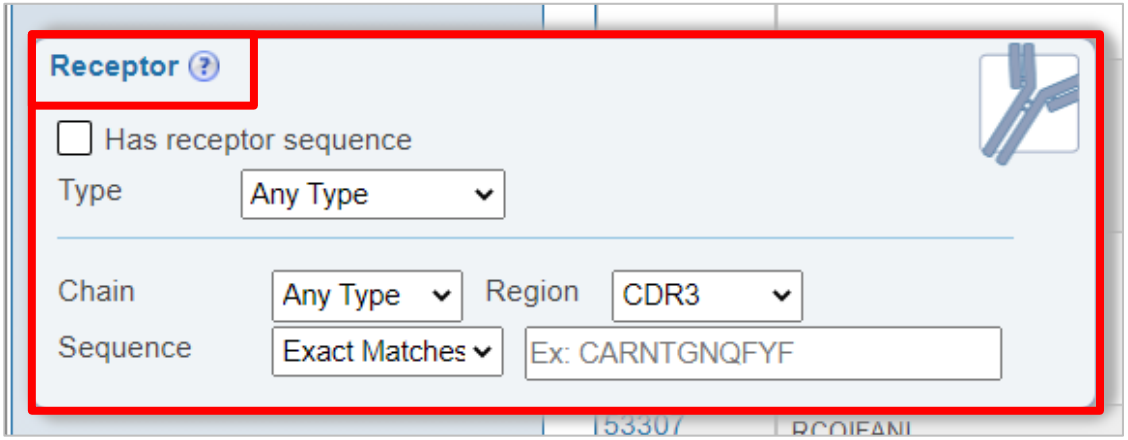
Results Page: Antigen Filters – Finders

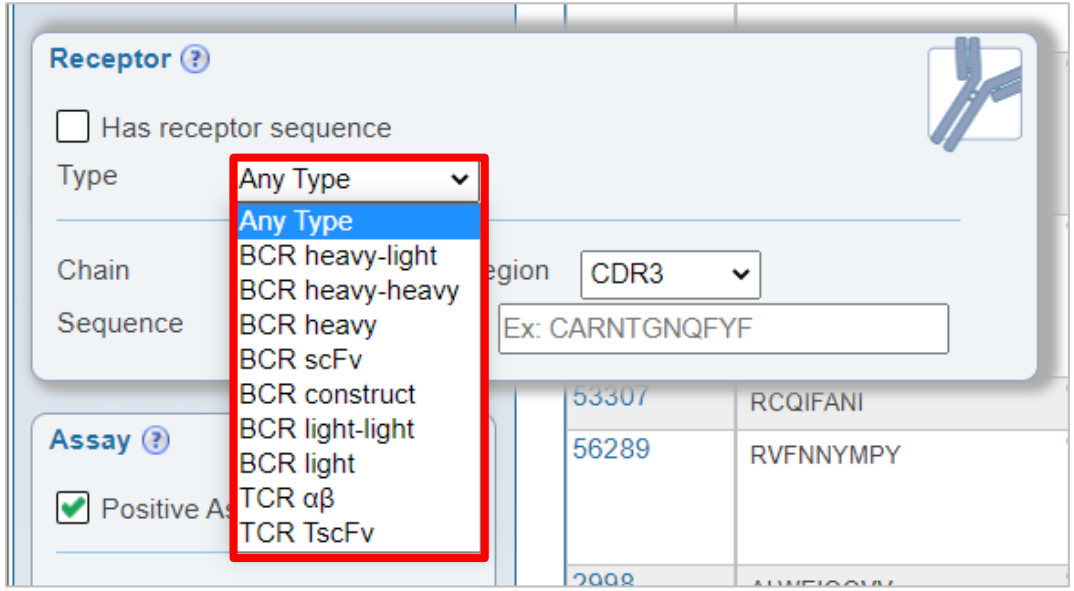


Results Page: Antigen Filters – Finders

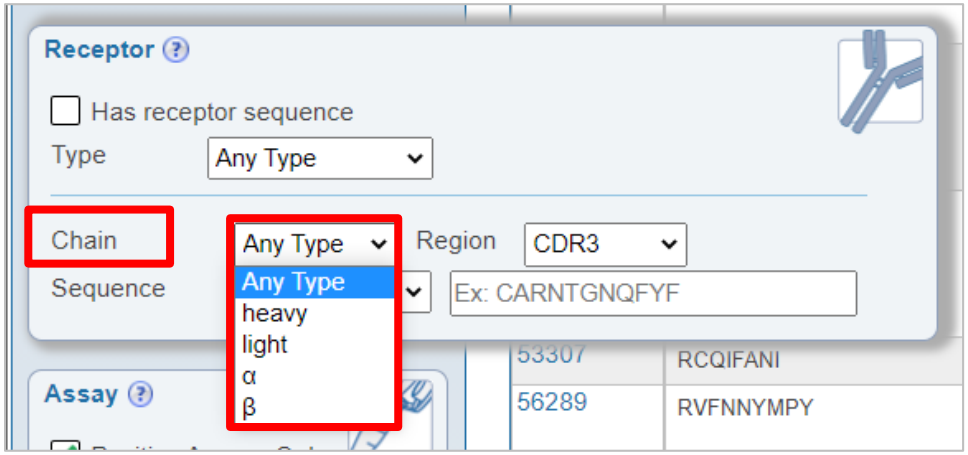


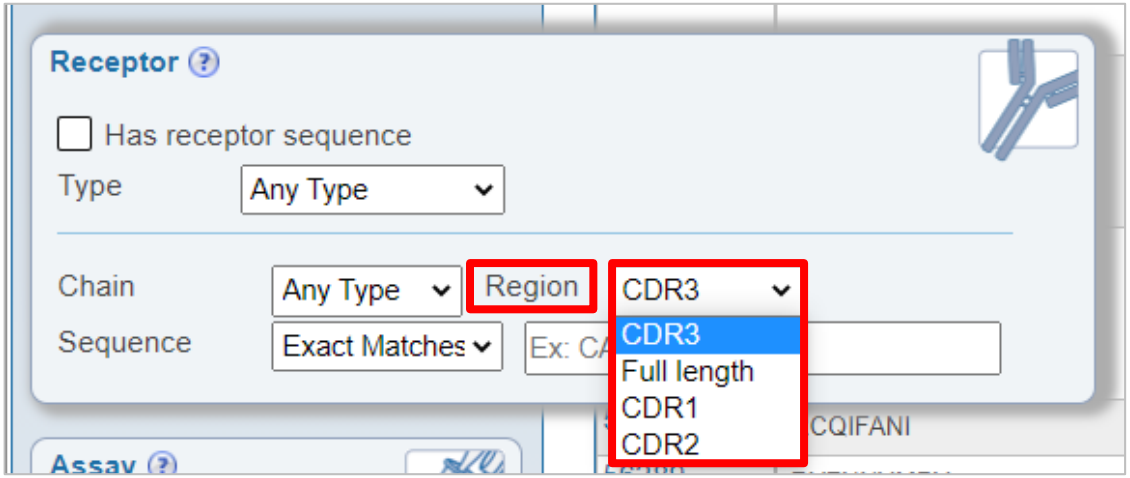
Results Page: Receptor Filters – Receptor Type



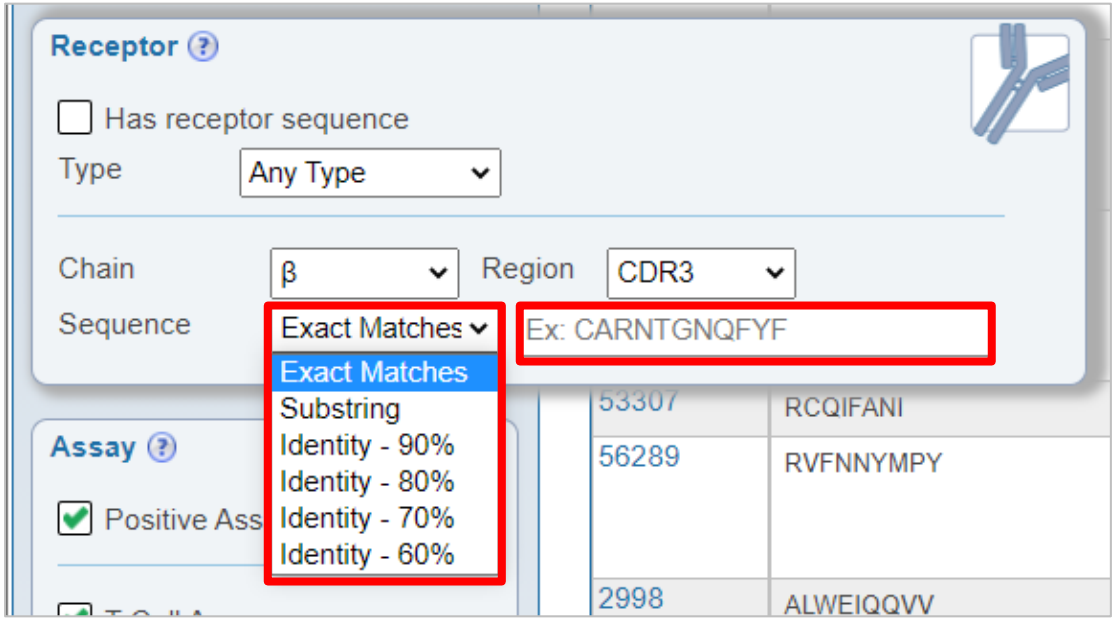


Results Page: Receptor Filters – Chain & Region

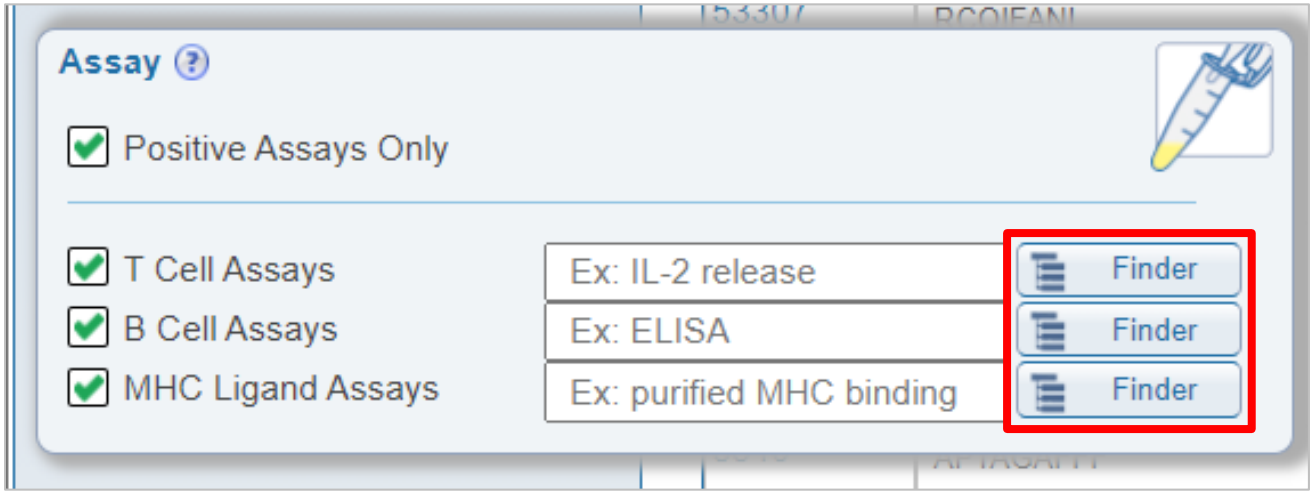




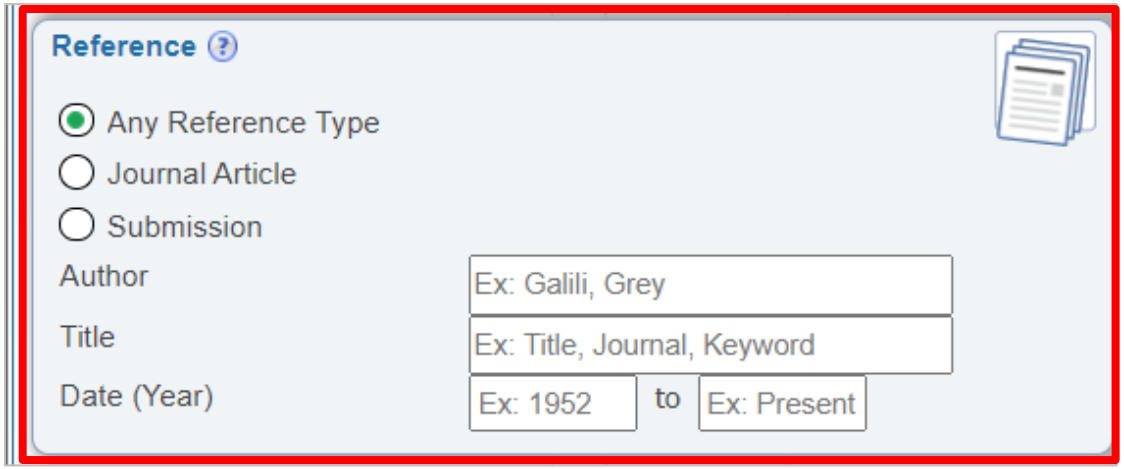
Results Page: Receptor Filters – Sequence

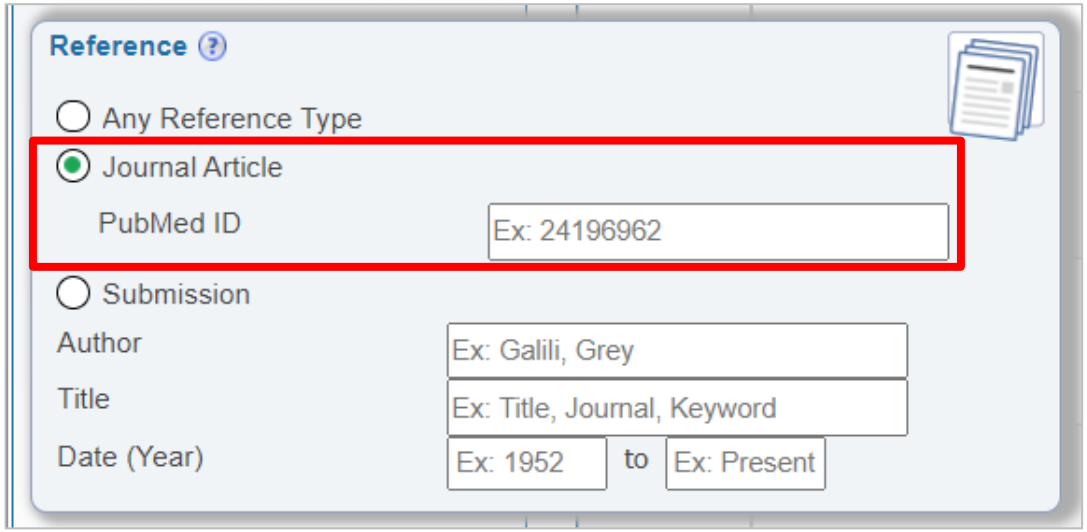


Results Page: Assay Filters – Finders



Results Page: Reference Filters





User Query: How can the IEDB be used in research on COVID-19 immune responses?

Current Filters: Positive Assays Only | Organism: Coronavirus (ID:11118)

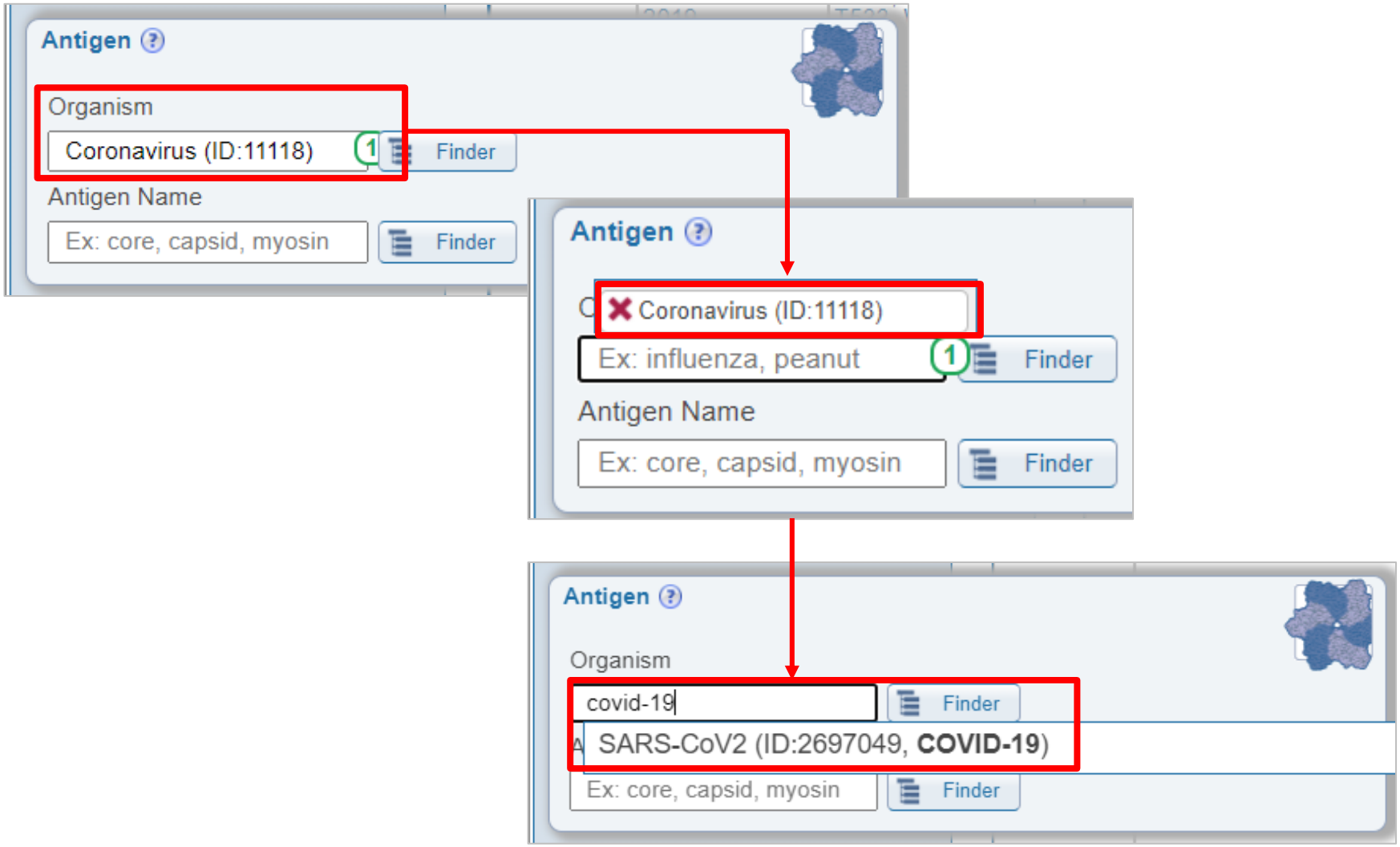
Epitopes (3764) | Antigens (45) | Assays (12016) | Receptors (84273) | References (265)

Go To Records Starting At 1200 GO — Export Results

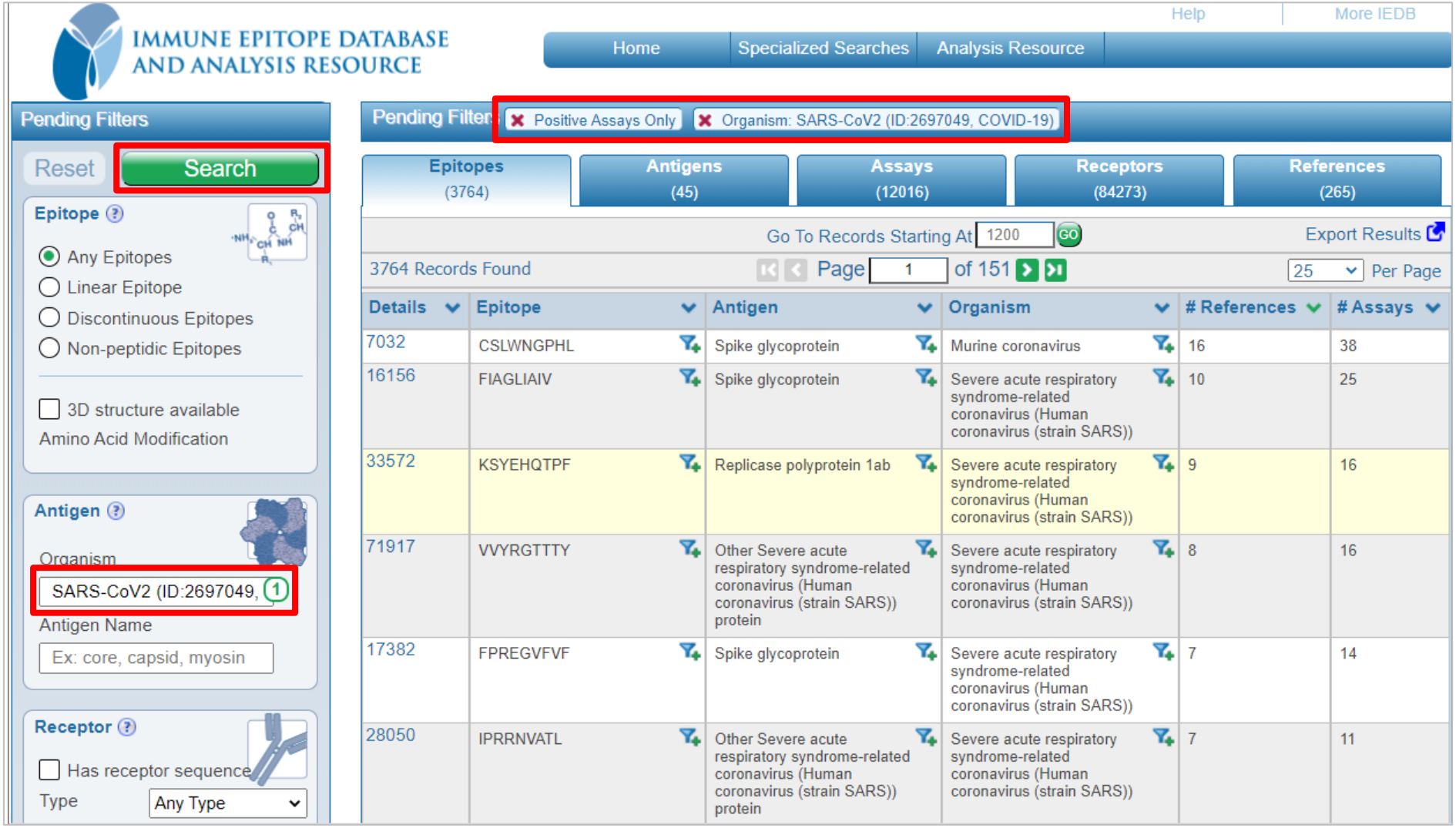
3764 Records Found — Page 1 of 151 — 25 Per Page

Details	Epitope	Antigen	Organism	# References	# Assays
7032	CSLWNGPHL	Spike glycoprotein	Murine coronavirus	16	38
16156	FIAGLIAIV	Spike glycoprotein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	10	25
33572	KSYEHQTPF	Replicase polyprotein 1ab	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	9	16
71917	VVYRGTTTY	Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	8	16
17382	FPREGVFVF	Spike glycoprotein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	7	14
28050	IPRRNVATL	Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	7	11
33667	KTFPPTEPK	Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	7	14
53307	RCQIFANI	Spike glycoprotein	Murine coronavirus	7	19
56289	RVFNNYMPY	Replicase polyprotein 1ab	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	7	18
2998	ALWEIQQVV	Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	6	17
3840	APTAGAFFF	Nucleoprotein	Murine coronavirus	6	19
5209	ATVVIGTSK	Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	6	13
5447	AVLQSGFRK	Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	6	13
14829	EVMPVSMAK	Spike glycoprotein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	6	17
17354	FPPTSFGPL	Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	6	15
17385	FPRGQGVPI	Nucleoprotein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	6	10
18133	FVDGVPFVV	Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	6	19

Results Page: Antigen Filters



User Query: How can the IEDB be used in research on COVID-19 immune responses?



Details	Epitope	Antigen	Organism	# References	# Assays
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16156	FIAGLIAIV	Spike glycoprotein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	10	25
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71917	VVYRGTTTY	Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	8	16
17382	FPREGVFVF	Spike glycoprotein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	7	14
28050	IPRRNVATL	Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	7	11

User Query: How can the IEDB be used in research on COVID-19 immune responses?

Current Filters: Positive Assays Only | Organism: SARS-CoV2 (ID:2697049, COVID-19)

Epitopes (519) | Antigens (2) | Assays (1109) | Receptors (84262) | References (25)

Go To Records Starting At 1200 GO | Export Results

519 Records Found | Page 1 of 21 | 25 Per Page

Details	Epitope	Antigen	Organism	# References	# Assays
16156	FIAGLIAIV	Spike glycoprotein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	2	5
16737	FLLNKEMYL	Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	2	7
1071808	PSKPSKRSFIEDLLFNKV	Spike glycoprotein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	2	3
1073281	TESNKKFLPFQQFGRDIA	Spike glycoprotein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	2	3
1073956	VVLSFELLHAPATVC	Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	2	2
1125059	FLFLTWICL	Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS)) protein	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	2	2
956	AEGSRGGSQA	Other Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain	Severe acute respiratory syndrome-related coronavirus (Human coronavirus (strain SARS))	1	3

User Query: How can the IEDB be used in research on COVID-19 immune responses?

Current Filters: Positive Assays Only | Organism: SARS-CoV2 (ID:2697049, COVID-19)

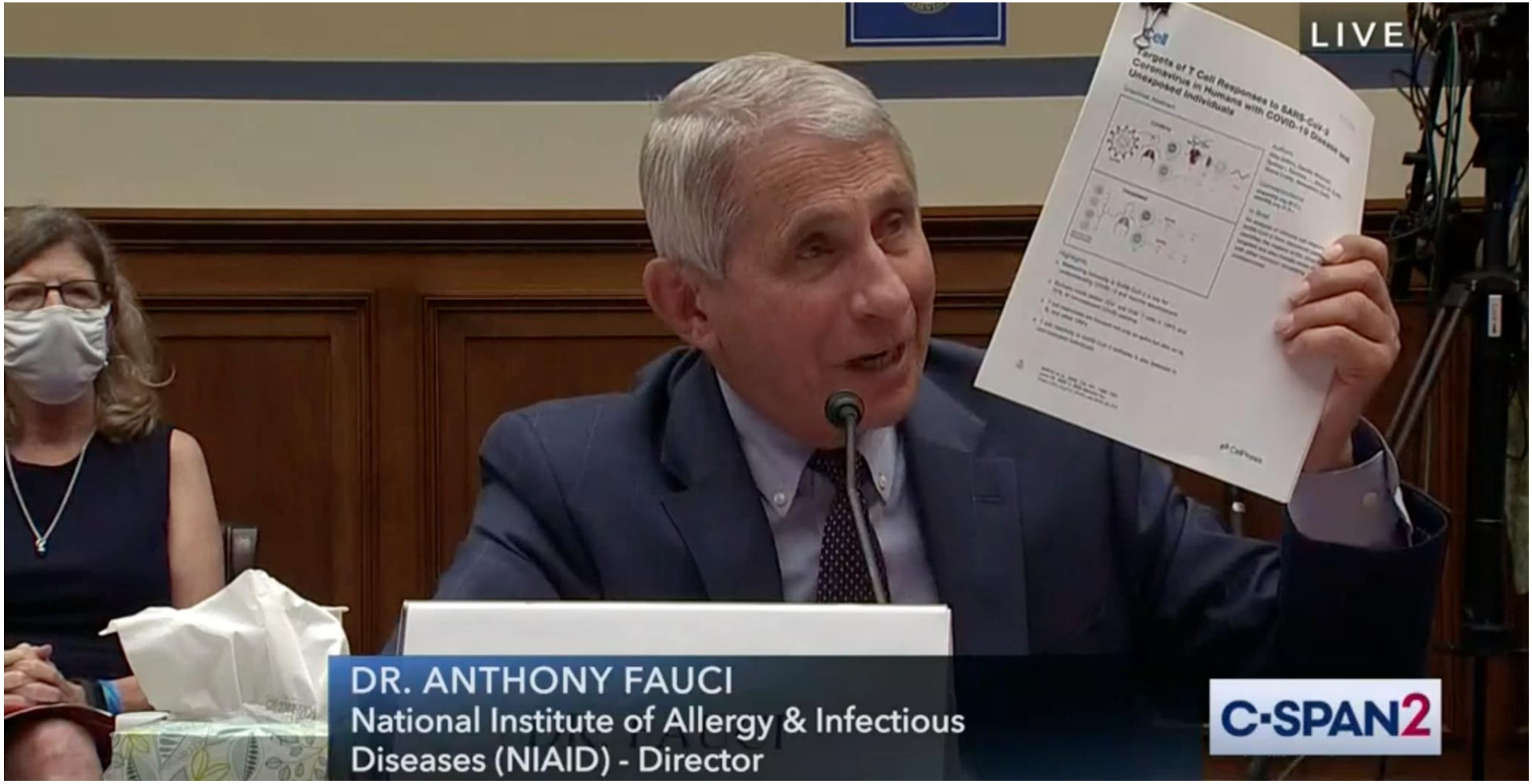
Epitopes (519) | Antigens (2) | Assays (1109) | Receptors (84282) | References (25)

Go To Records Starting At 1982 GO | Export Results

25 Records Found | Page 1 of 1 | 25 Per Page

Ref ID	PMID	Author	Title	Abstract	Date
1036945		Adaptive Biotechnologies	ImmuneCODE-Release001.1	This dataset was generated by Adaptive Biotechnologies and was manually imported into the IEDB. De-identified blood samples from ImmuneRACE, including patients who were actively infected, recovered or ...more...	2020
1037393	32887977	Yanchun Peng; Alexander J Mentzer; Guihai Liu; Xuan Yao; Zixi Yin; Danning Dong; Wanwisa Dejnirattisai; Timothy Rostron; Piyada Supasa; Chang Liu; César López-Camacho; Jose Slon-Campos; Yuguang Zhao; David I Stuart; Guido C Paesen; Jonathan M Grimes; Alfred A Antson; Oliver W Bayfield; Dorothy E D P Hawkins; De-Sheng Ker; Beibei Wang; Lance Turtle; Krishanthi Subramaniam; Paul Thomson; Ping Zhang; Christina Dold; Jeremy Ratcliff; Peter Simmonds; Thushan de Silva; Paul Sopp; Dannielle Wellington; Ushani Rajapaksa; Yi-Ling Chen; Mariolina Salio; Giorgio Napolitani; Wayne Paes; Persephone Borrow; Benedikt M Kessler; Jeremy W Fry; Nikolai F Schwabe; Malcolm G Semple; J Kenneth Baillie; Shona C Moore; Peter J M Openshaw; M Azim Ansari; Susanna Dunachie; Eleanor Barnes; John Frater; Georgina Kerr; Philip Goulder; Teresa Lockett; Robert Levin; Yonghong Zhang; Ronghua Jing; Ling-Pei Ho; Oxford Immunology Network Covid-19 Response T cell Consortium; ISARIC4C Investigators; Richard J Cornall; Christopher P Conlon; Paul Klenerman; Gavin R Screaton; Juthathip Mongkolsapaya; Andrew McMichael; Julian C Knight; Graham Ogg; Tao Dong	Broad and strong memory CD4+ and CD8+ T cells induced by SARS-CoV-2 in UK convalescent individuals following COVID-19.	The development of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) vaccines and therapeutics will depend on understanding viral immunity. We studied T cell memory in 42 patients following ...more...	2020
1037363	32913053	Jennifer R Habel; Thi H O Nguyen; Carolien E van de Sandt; Jennifer A Juno; Priyanka Chaurasia; Kathleen Wragg; Marios Koutsakos; Luca Hensen; Xiaoxiao Jia; Brendon Chua; Wuji Zhang; Hyon-Xhi Tan; Katie L Flanagan; Denise L Doolan; Joseph Torresi; Weisan Chen; Linda M Wakim; Allen C Cheng; Peter C Doherty; Jan Petersen; Jamie Rossjohn; Adam K Wheatley; Stephen J Kent; Louise C Rowntree; Katherine Kedzierska	Suboptimal SARS-CoV-2-specific CD8+ T cell response associated with the prominent HLA-A*02:01 phenotype.	An improved understanding of human T cell-mediated immunity in COVID-19 is important for optimizing therapeutic and vaccine strategies. Experience with influenza shows that infection primes CD8+c ...more...	2020
1037251	32791978	Asaf Poran; Dewi Harjanto; Matthew Malloy; Christina M Arieta; Daniel A Rothenberg; Divya Lenkala; Marit M van Buuren; Terri A Addona; Michael S Rooney; Lakshmi Srinivasan; Richard B Gaynor	Sequence-based prediction of SARS-CoV-2 vaccine targets using a mass spectrometry-based bioinformatics predictor identifies immunogenic T cell epitopes.	BACKGROUND: The ongoing COVID-19 pandemic has created an urgency to identify novel vaccine targets for protective immunity against SARS-CoV-2. Early reports identify protective roles for both humoral ...more...	2020
1036587	32245784	Meng Yuan; Nicholas C Wu; Xueyong Zhu; Chang-Chun D Lee; Ray T Y So; Huibin Lv; Chris K P Mok; Ian A Wilson	A highly conserved cryptic epitope in the receptor-binding domains of SARS-CoV-2 and SARS-CoV.	The outbreak of COVID-19 caused by SARS-CoV-2 virus has now become a pandemic, but there is currently very little understanding of the antigenicity of the virus. We therefore determined the crystal st ...more...	2020
1036855	32433465	Trevor R F Smith; Ami Patel; Stephanie Ramos; Dustin Elwood; Xizhou Zhu; Jian Yan; Ebony N Gary; Susanne N Walker; Katherine Schultheis; Mansi Purwar; Ziyang Xu; Jewell Walters; Pratik Bhojnagarwala; Maria Yang; Neethu Chokkalingam; Patrick Pezzoli; Elizabeth Parzych; Emma L Reuschel; Arthur Doan; Nicholas Tursi; Miguel Vasquez; Jihae Choi; Edgar Tello-Ruiz; Igor Maricic; Mamadou A Bah; Yuanhan Wu; Dinah Amante; Daniel H Park; Yaya Dia; Ali Raza Ali; Faraz I Zaidi; Alison Generotti; Kevin Y Kim; Timothy A Herring; Sophia Reeder; Viviane M Andrade; Karen Buttigieg; Gan Zhao; Jiun-Ming Wu; Dan Li; Linlin Bao; Jiangning Liu; Wei Deng; Chuan Qin; Ami Shah Brown; Makan Khoshnejad; Nianshuang Wang; Jacqueline Chu; Daniel Wrapp; Jason S McLellan; Kar Muthumani; Bin Wang; Miles W Carroll; J Joseph Kim; Jean Boyer; Daniel W Kulp; Laurent M	Immunogenicity of a DNA vaccine candidate for COVID-19.	The coronavirus family member, SARS-CoV-2 has been identified as the causal agent for the pandemic viral pneumonia disease, COVID-19. At this time, no vaccine is available to control further dissemina ...more...	2020

User Query: How can we best use the IEDB database so that the data can be publishable in high impact factor journals?



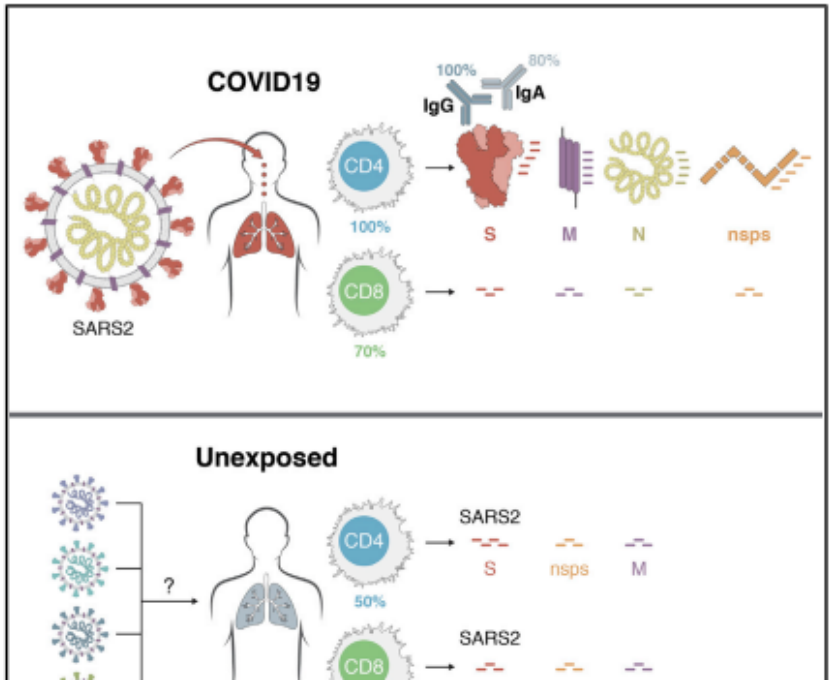
User Query: How can the IEDB be used in research on COVID-19 immune responses?

Cell

Article

Targets of T Cell Responses to SARS-CoV-2 Coronavirus in Humans with COVID-19 Disease and Unexposed Individuals

Graphical Abstract



Authors

Alba Grifoni, Daniela Weiskopf, Sydney I. Ramirez, ..., Davey M. Smith, Shane Crotty, Alessandro Sette

Correspondence

shane@lji.org (S.C.), alex@lji.org (A.S.)

In Brief

An analysis of immune cell responses to SARS-CoV-2 from recovered patients identifies the regions of the virus that is targeted and also reveals cross-reactivity with other common circulating coronaviruses

PMID: 32473127

User Query: How can the IEDB be used in research on COVID-19 immune responses?

PMID: 32473127

Abstract

Understanding adaptive immunity to SARS-CoV-2 is important for vaccine development, interpreting coronavirus disease 2019 (COVID-19) pathogenesis, and calibration of pandemic control measures. Using HLA class I and II predicted peptide "megapools," circulating SARS-CoV-2-specific $CD8^+$ and $CD4^+$ T cells were identified in ~70% and 100% of COVID-19 convalescent patients, respectively. $CD4^+$ T cell responses to spike, the main target of most vaccine efforts, were robust and correlated with the magnitude of the anti-SARS-CoV-2 IgG and IgA titers. The M, spike, and N proteins each accounted for 11%-27% of the total $CD4^+$ response, with additional responses commonly targeting nsp3, nsp4, ORF3a, and ORF8, among others. For $CD8^+$ T cells, spike and M were recognized, with at least eight SARS-CoV-2 ORFs targeted. Importantly, we detected SARS-CoV-2-reactive $CD4^+$ T cells in ~40%-60% of unexposed individuals, suggesting cross-reactive T cell recognition between circulating "common cold" coronaviruses and SARS-CoV-2.

Keywords: CD4; CD8; COVID-19; SARS-CoV-2; T cells; coronavirus; cross-reactivity; epitopes.

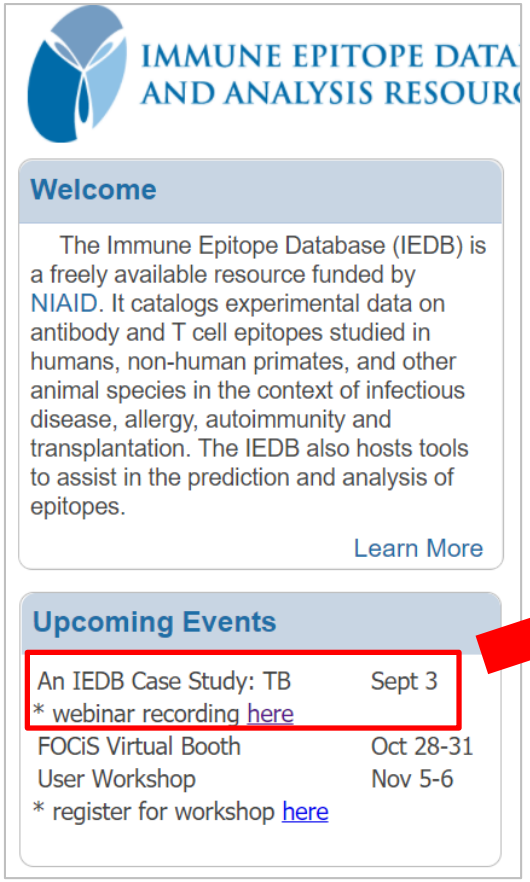
Identification of coronavirus epitopes and associated literature references

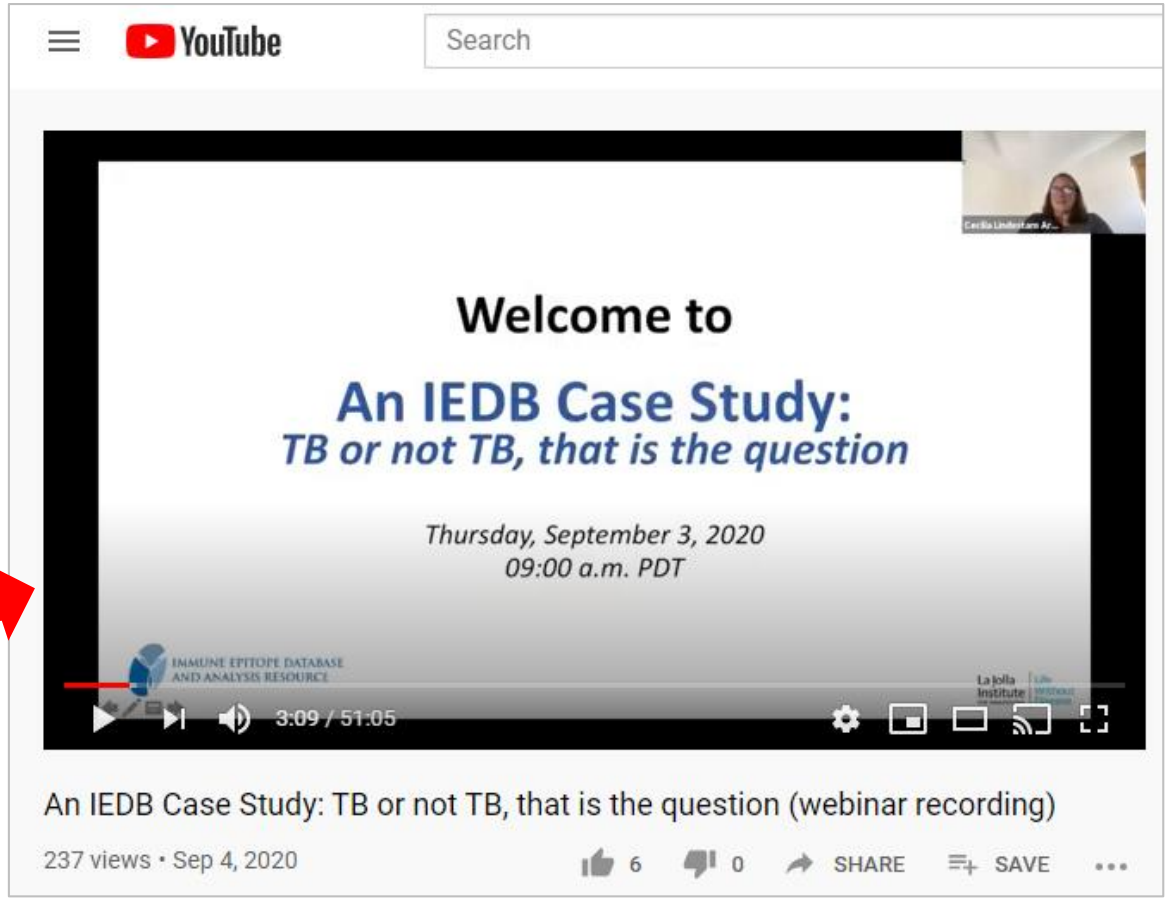
To identify coronavirus epitopes and associated references, the IEDB was searched (on April 16, 2020) utilizing the following queries. A first query was run to identify references associated with class I restricted CD8 epitopes, which utilized the criteria settings "Antigen": Organism = Coronavirus (taxonomy ID 11118); "Assay": Positive assays only; "Assay": T cell assay; "MHC restriction" = MHC Class II; no parameters were defined for "Host" or "Disease." This query identified 57 references, which are listed and displayed under the "References" tab on the results page.

A second query was run to identify references associated with class II restricted CD4 epitopes which utilized the criteria settings "Antigen": Organism = Coronavirus (taxonomy ID 11118); "Assay": Positive assays only; "Assay": T cell assay; "MHC restriction" = MHC Class II; no parameters were defined for "Host" or "Disease." This query identified 27 references, which are listed and displayed under the "References" tab on the results page.

A third query was run to specifically capture epitopes and map them back to the antigen of origin using the setting; "Antigen": Organism = Coronavirus (taxonomy ID 11118); "Assay": Positive assays only; "Assay": T cell assay; no parameters were defined for "MHC restriction," "Host" or "Disease." Results were exported as csv files, and then examined in Excel to tabulate the number of CD4 and CD8 epitopes recognized in humans, mice, transgenic mice and other hosts associated with each respective antigen.

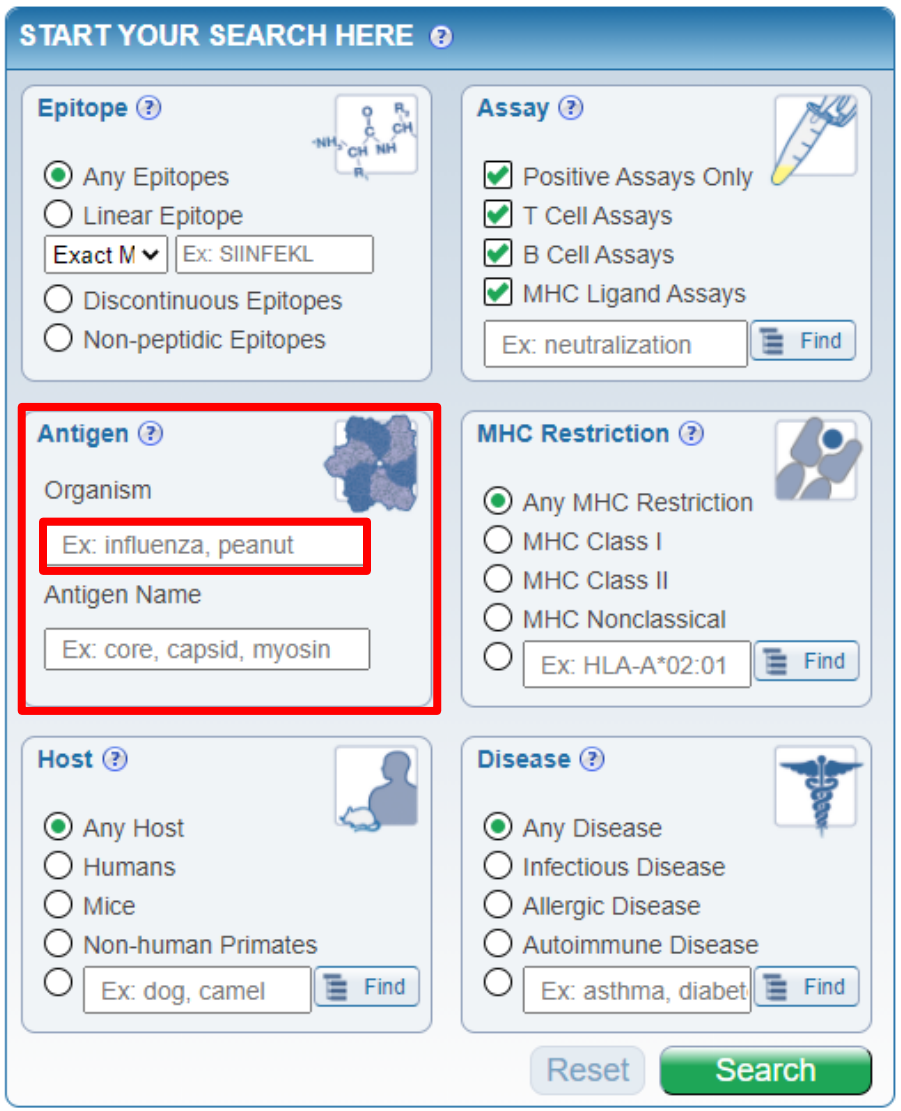
User Query: How can we best use the IEDB database so that the data can be publishable in high impact factor journals?

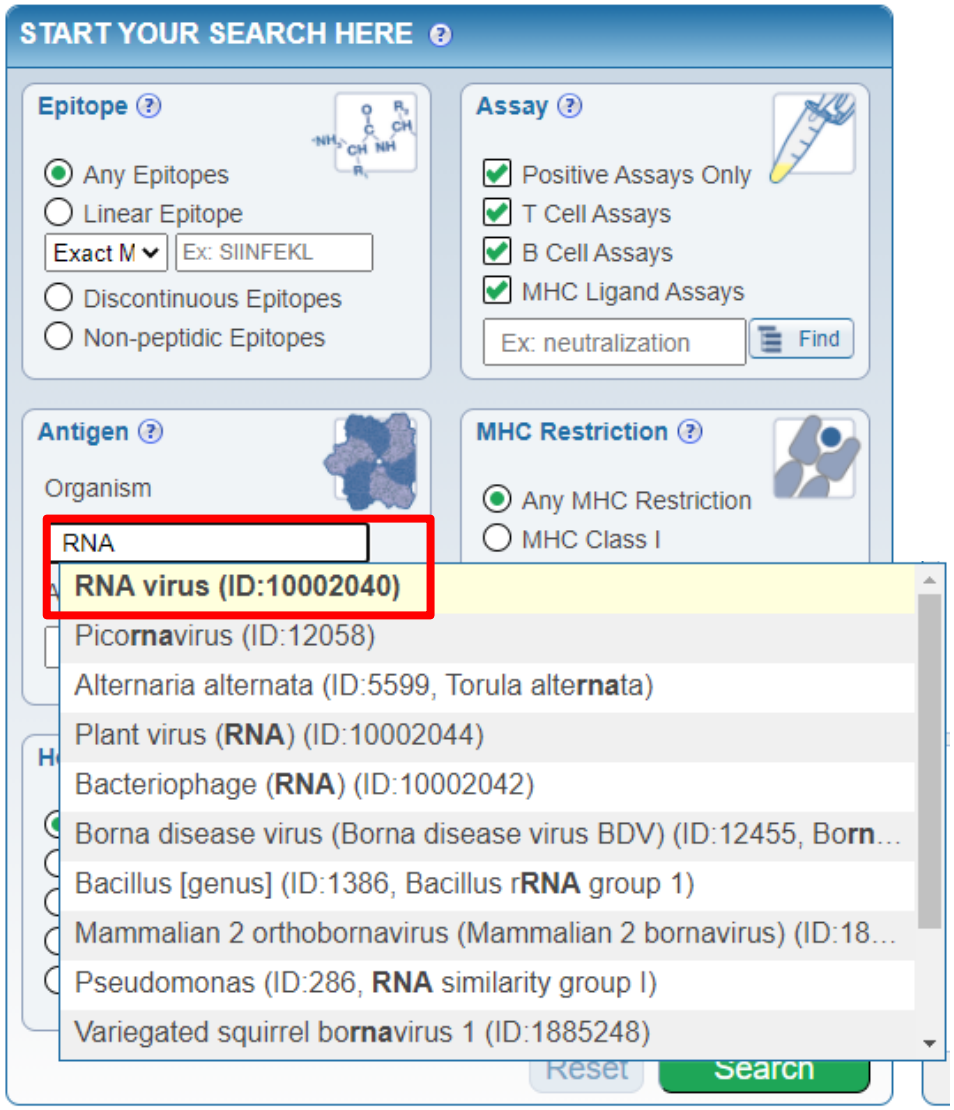




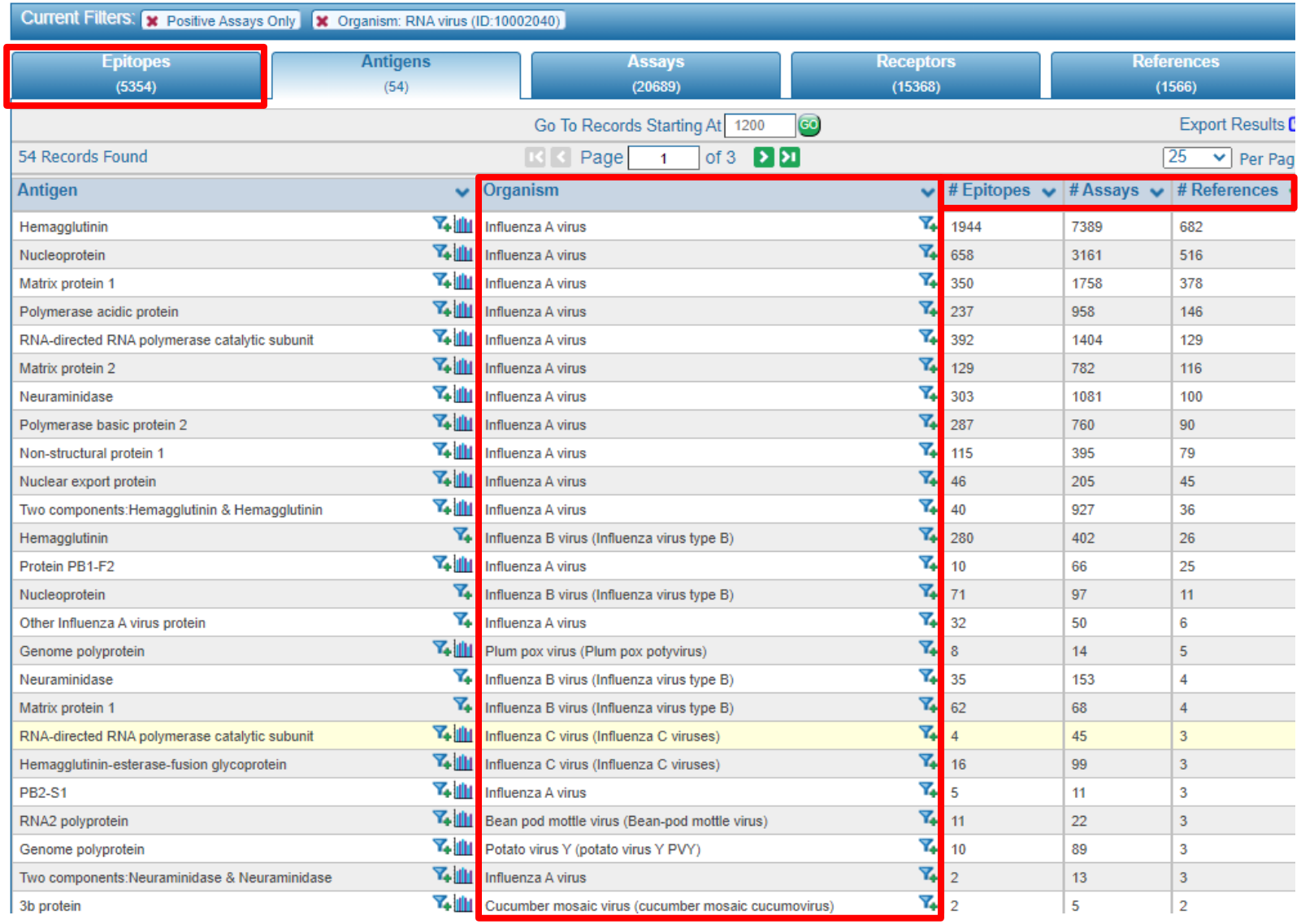
The IEDB has been cited more than 2,500 times (excluding self-citations)

User Query: Prediction and filtering of epitopes applied to RNA virus





User Query: Prediction and filtering of epitopes applied to RNA virus



Current Filters: Positive Assays Only | Organism: RNA virus (ID:10002040)

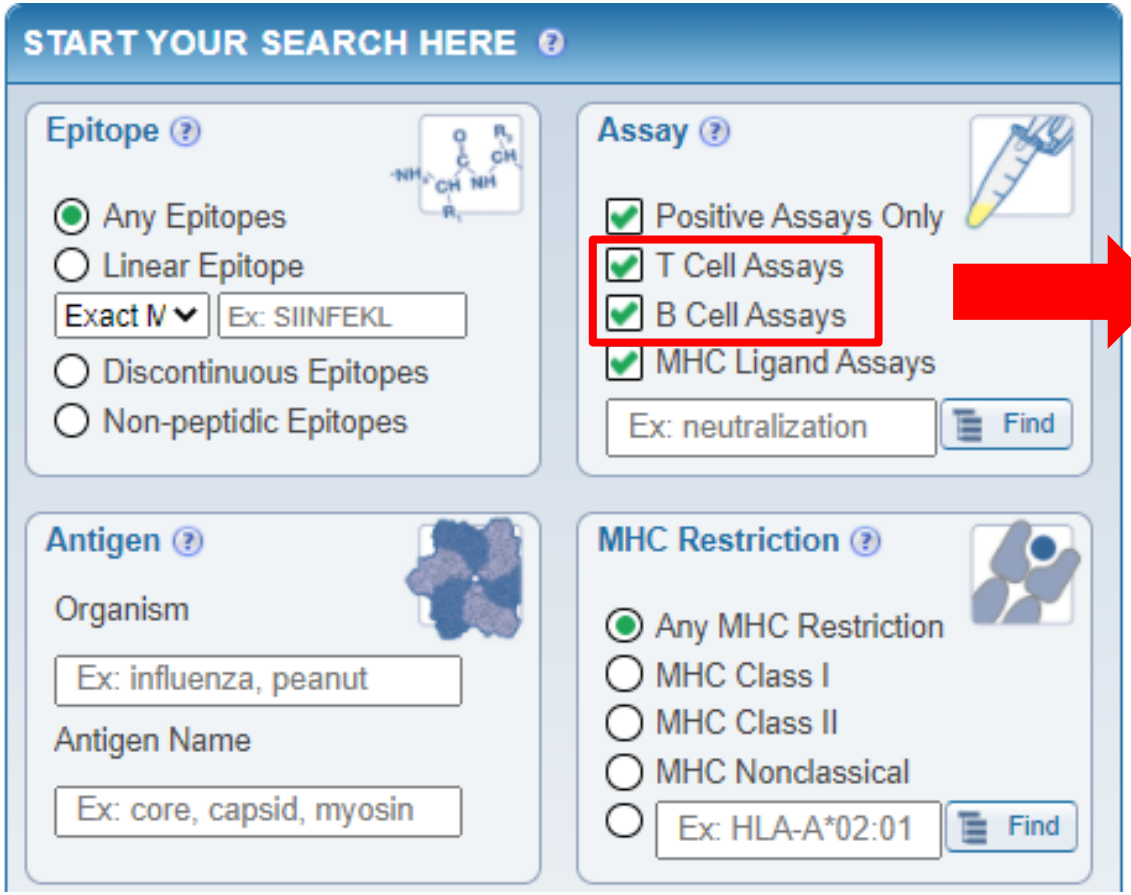
Epitopes (5354) | Antigens (54) | Assays (20689) | Receptors (15368) | References (1566)

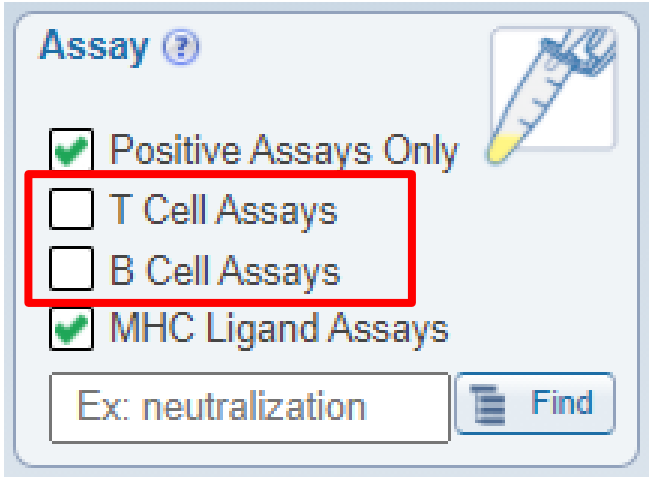
Go To Records Starting At 1200 GO — Export Results

54 Records Found — Page 1 of 3 — 25 Per Pag

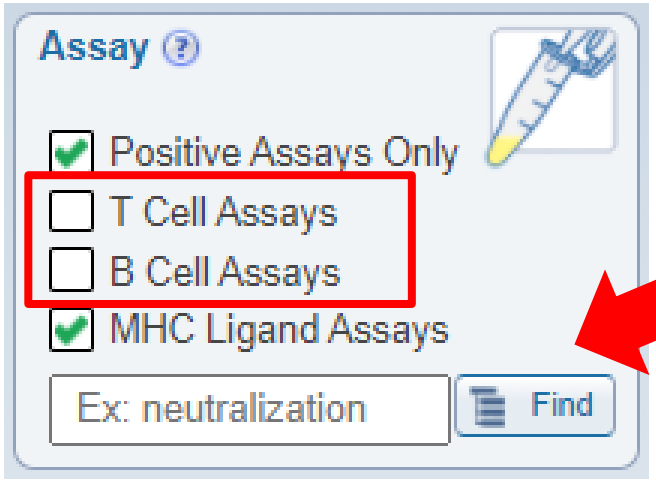
Antigen	Organism	# Epitopes	# Assays	# References
Hemagglutinin	Influenza A virus	1944	7389	682
Nucleoprotein	Influenza A virus	658	3161	516
Matrix protein 1	Influenza A virus	350	1758	378
Polymerase acidic protein	Influenza A virus	237	958	146
RNA-directed RNA polymerase catalytic subunit	Influenza A virus	392	1404	129
Matrix protein 2	Influenza A virus	129	782	116
Neuraminidase	Influenza A virus	303	1081	100
Polymerase basic protein 2	Influenza A virus	287	760	90
Non-structural protein 1	Influenza A virus	115	395	79
Nuclear export protein	Influenza A virus	46	205	45
Two components:Hemagglutinin & Hemagglutinin	Influenza A virus	40	927	36
Hemagglutinin	Influenza B virus (Influenza virus type B)	280	402	26
Protein PB1-F2	Influenza A virus	10	66	25
Nucleoprotein	Influenza B virus (Influenza virus type B)	71	97	11
Other Influenza A virus protein	Influenza A virus	32	50	6
Genome polyprotein	Plum pox virus (Plum pox potyvirus)	8	14	5
Neuraminidase	Influenza B virus (Influenza virus type B)	35	153	4
Matrix protein 1	Influenza B virus (Influenza virus type B)	62	68	4
RNA-directed RNA polymerase catalytic subunit	Influenza C virus (Influenza C viruses)	4	45	3
Hemagglutinin-esterase-fusion glycoprotein	Influenza C virus (Influenza C viruses)	16	99	3
PB2-S1	Influenza A virus	5	11	3
RNA2 polyprotein	Bean pod mottle virus (Bean-pod mottle virus)	11	22	3
Genome polyprotein	Potato virus Y (potato virus Y PVY)	10	89	3
Two components:Neuraminidase & Neuraminidase	Influenza A virus	2	13	3
3b protein	Cucumber mosaic virus (cucumber mosaic cucumovirus)	2	5	2

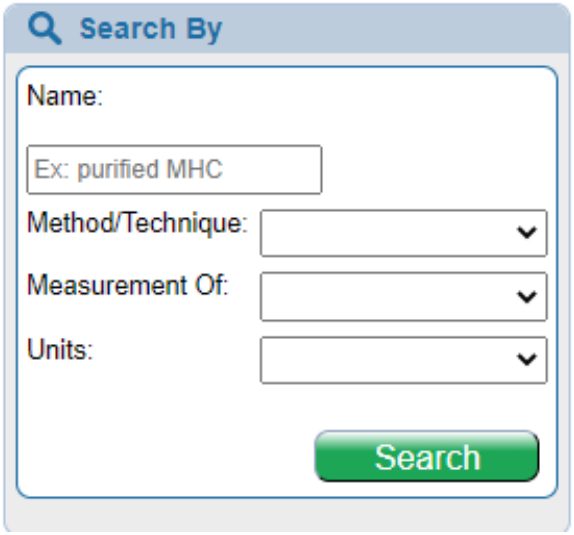
User Query: MHC Binding Data

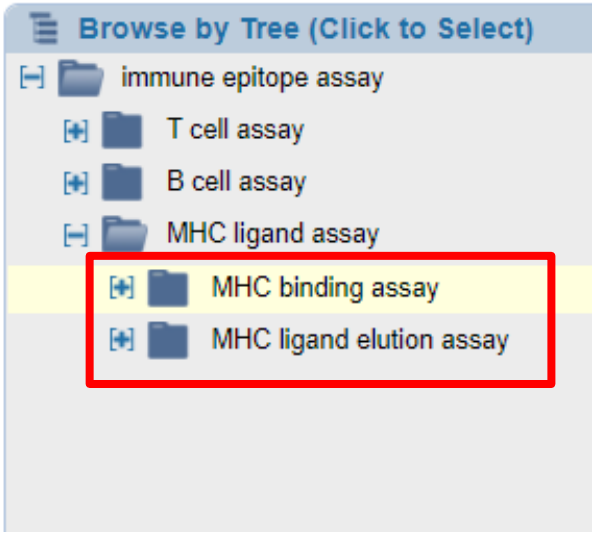




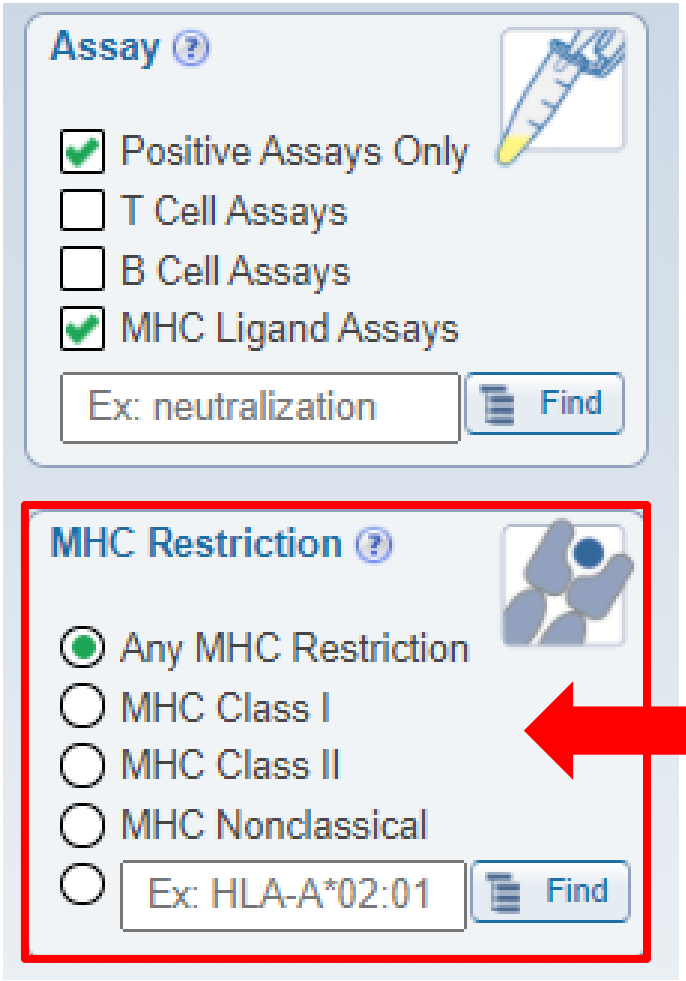
User Query: MHC Binding Data





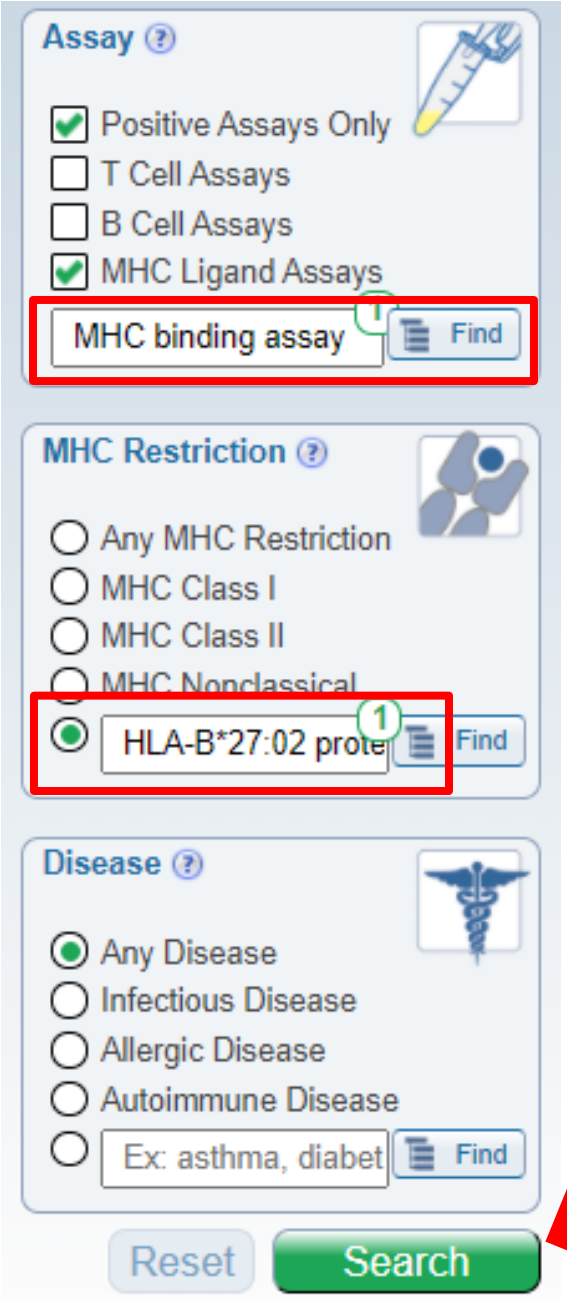


User Query: MHC Binding Data



MHC Ligand Assays: 2,927,353

User Query: MHC Binding Data



User Query: MHC Binding Data – Exports

Current Filters: Positive Assays Only | No T cell assays | No B cell assays | MHC Ligand Assays: MHC binding assay | MHC Restriction Type: HLA-B*27:02 protein complex (ID:MRO_0001083, HLA-B27.2)

Epitopes (68) | Antigens (41) | Assays (72) | Receptors (0) | References (-)

Go To Records Starting At 1200 GO

Export Results

68 Records Found

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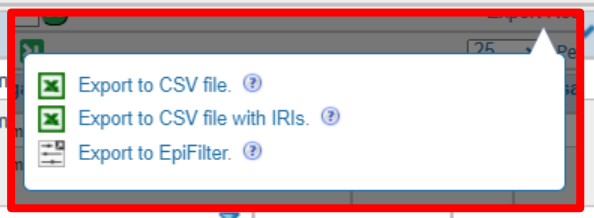
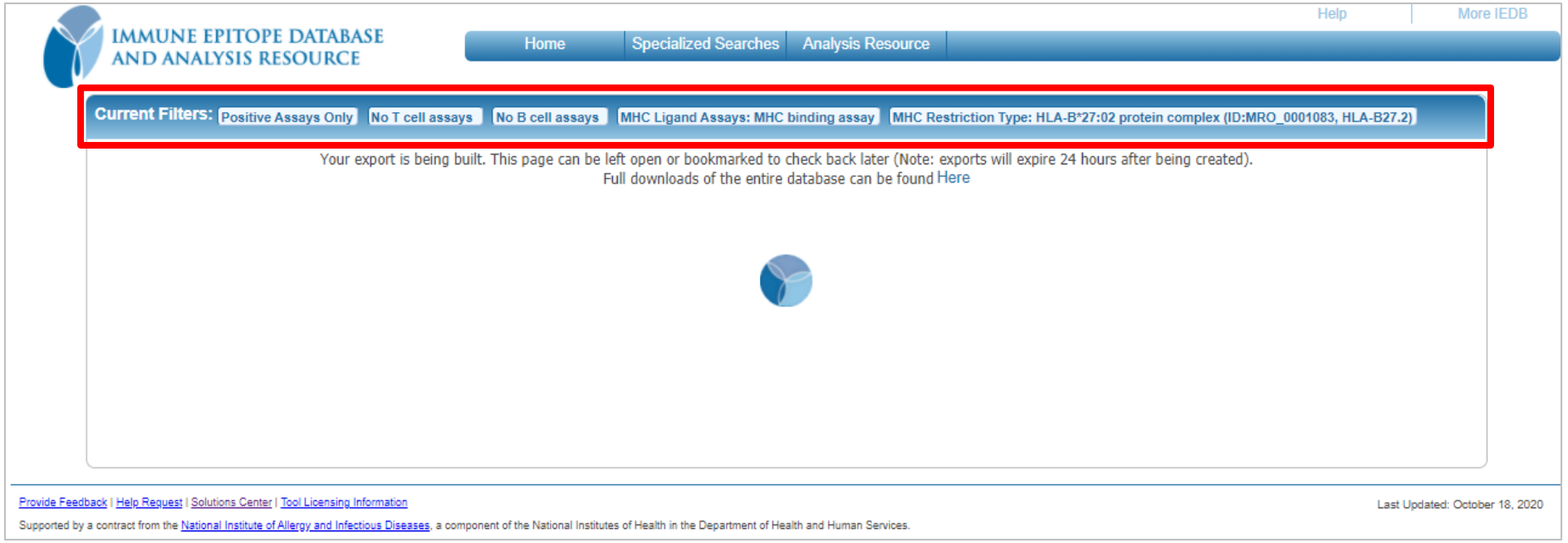


Details	Epitope	Antigen	Organism		
33140	KRGILTLKY	Actin, aortic smooth muscle	Homo sapiens (human		
33260	KRYKSIVKY	Farnesyl diphosphate synthase (Farnesyl pyrophosphate synthetase, dimethylallyltranstransferase, geranyltranstransferase), isoform CRA_a	Homo sapiens (human		
55565	RRFVNVVPTF	40S ribosomal protein S30 (Fragment)	Homo sapiens (human)	2	2
138773	GRLTKHTKF	60S ribosomal protein L36 (UniProt:Q9Y3U8)	Homo sapiens (human)	2	2
4156	ARHTPVNSW	Genome polyprotein	Hepatitis C virus	1	1
4197	ARMILMTHF	Genome polyprotein	Hepatitis C virus	1	1
13263	ELRSRYWAI	Nucleoprotein	Influenza A virus	1	1
17661	FRYNGLIHR	60S ribosomal protein L28 (UniProt:P46779)	Homo sapiens (human)	1	1
21982	GRAAICGKY	Genome polyprotein	Hepatitis C virus	1	1
22072	GRIDKPILK	60S ribosomal protein L8 (UniProt:P62917)	Homo sapiens (human)	1	1
24701	HRQSIWITW	Protein K1	Human gammaherpesvirus 8 (Human herpesvirus 8)	1	1
24702	HRQSIWITWH	Protein K1	Human gammaherpesvirus 8 (Human herpesvirus 8)	1	1
33170	KRKKAYADF	Cytochrome c oxidase subunit 1	Homo sapiens (human)	1	1
33250	KRWIILGLNK	Gag polyprotein	Human immunodeficiency virus 1 (human immunodeficiency virus 1 HIV-1)	1	1
55529	RRARSLSAERY	Epstein-Barr nuclear antigen 4	Human herpesvirus 4 (Epstein Barr virus)	1	1
55556	RRFFPYYVY	Proteasome subunit beta type-1	Homo sapiens (human)	1	1
55620	RRIYDLIEL	Epstein-Barr nuclear antigen 6	Human herpesvirus 4 (Epstein Barr virus)	1	1

User Query: MHC Binding Data – Exports



User Query: MHC Binding Data – Epitope Exports

Top Header Row = Field Group
2nd Header Row = Field

Stable URL for every epitope

Amino acid modifications

Position in protein

Non-peptidic epitopes

Epitope	Epitope	Epitope	Epitope	Epitope	Epitope	Epitope	Epitope	Epitope
Epitope IRI	Object Type	Description	Epitope Modified Residue(s)	Epitope Modification (s)	Epitope Starting Position	Epitope Ending Position	Epitope Non-peptidic epitope IRI	Epitope Synonyms
http://www.iedb.org/epitope/4156	Linear peptide	ARHTPVNSW			2820	2828		
http://www.iedb.org/epitope/4197	Linear peptide	ARMILMTHF			2841	2849		
http://www.iedb.org/epitope/13263	Linear peptide	ELRSRYWAI			380	388		
http://www.iedb.org/epitope/17661	Linear peptide	FRYNGLIHR			38	46		
http://www.iedb.org/epitope/21982	Linear peptide	GRAAICGKY			2936	2944		
http://www.iedb.org/epitope/22072	Linear peptide	GRIDKPILK			173	181		
http://www.iedb.org/epitope/24701	Linear peptide	HRQSIWITW			82	90		
http://www.iedb.org/epitope/24702	Linear peptide	HRQSIWITWH			82	91		
http://www.iedb.org/epitope/33140	Linear peptide	KRGILTLKY			63	71		
http://www.iedb.org/epitope/33170	Linear peptide	KRKKAYADF						
http://www.iedb.org/epitope/33250	Linear peptide	KRWIILGLNK			262	271		
http://www.iedb.org/epitope/33260	Linear peptide	KRYKSIVKY			86	94		
http://www.iedb.org/epitope/55529	Linear peptide	RRARSLSAERY			243	253		
http://www.iedb.org/epitope/55556	Linear peptide	RRFFPYYVY			127	135		
http://www.iedb.org/epitope/55565	Linear peptide	RRFVNVVPTF			114	123		
http://www.iedb.org/epitope/55620	Linear peptide	RRIYDLIEL			258	266		
http://www.iedb.org/epitope/55763	Linear peptide	RRVKEVVKK			175	183		
http://www.iedb.org/epitope/55779	Linear peptide	RRYPDAVYL			438	446		
http://www.iedb.org/epitope/55785	Linear peptide	RRYQKSTEL			53	61		
http://www.iedb.org/epitope/60777	Linear peptide	SRQRQAIPY			2145	2153		

User Query: MHC Binding Data – Epitope Exports

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 Query: MHC Binding Data – Epitope Exports

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

User Query: MHC Binding Data – Assay Exports

Top Header row = Field Group (Reference, Epitope, etc.)
2nd Header Row = Field (terms may repeat)

Stable URL for every assay and reference

Same epitope information as in epitope export

Reference	Reference	Reference	Reference	Reference	Reference	Referen	Reference	Reference	Epitope	Epitope	Epitope	Epitope
Assay IRI	Reference IR	Type	PubMed	Authors	Journal	Date	Title	Submission I	Epitope IRI	Object Type	Description	Starting
http://www.iec	http://www.iec	Literature	7542549	L G Tussey; S Ro	Immunity	1995	Different MHC class I alleles con		http://www.iec	Linear peptide	ELRSRYWAI	380
http://www.iec	http://www.iec	Literature	12634388	Justin Stebbing;	J Virol	2003	Kaposi's sarcoma-associated he		http://www.iec	Linear peptide	HRQSIWITWH	82
http://www.iec	http://www.iec	Literature	12634388	Justin Stebbing;	J Virol	2003	Kaposi's sarcoma-associated he		http://www.iec	Linear peptide	HRQSIWITW	82
http://www.iec	http://www.iec	Literature	9820497	J M Brooks; R A	J Immunol	1998	HLA-B27 subtype polymorphism		http://www.iec	Linear peptide	RRARSLSAERY	243
http://www.iec	http://www.iec	Literature	9820497	J M Brooks; R A	J Immunol	1998	HLA-B27 subtype polymorphism		http://www.iec	Linear peptide	RRIYDLIEL	258
http://www.iec	http://www.iec	Submission		Mikkel Harndahl; Kasper Lambe		2009	Large scale anal	1000422	http://www.iec	Linear peptide	SRQRQAIPY	2145
http://www.iec	http://www.iec	Literature	12122005	Manuel Ramos;	J Biol Chem	2002	Molecular mimicry of an HLA-B2		http://www.iec	Linear peptide	RRKSSGGKGGSY	333
http://www.iec	http://www.iec	Literature	12122005	Manuel Ramos;	J Biol Chem	2002	Molecular mimicry of an HLA-B2		http://www.iec	Linear peptide	RRFKEGGRGGKY	211
http://www.iec	http://www.iec	Literature	9820524	A Paradela; M G	J Immunol	1998	The same natural ligand is invol		http://www.iec	Linear peptide	RRFFPYYV	127
http://www.iec	http://www.iec	Literature	9820524	A Paradela; M G	J Immunol	1998	The same natural ligand is invol		http://www.iec	Linear peptide	RRFFPYYVY	127
http://www.iec	http://www.iec	Literature	23978718	Katja Nitschke;	J Hepatol	2014	HLA-B*27 subtype specificity de		http://www.iec	Linear peptide	ARHTPVNSW	2820
http://www.iec	http://www.iec	Literature	23978718	Katja Nitschke;	J Hepatol	2014	HLA-B*27 subtype specificity de		http://www.iec	Linear peptide	ARMILMTHF	2841
http://www.iec	http://www.iec	Literature	23978718	Katja Nitschke;	J Hepatol	2014	HLA-B*27 subtype specificity de		http://www.iec	Linear peptide	GRAAICGKY	2936
http://www.iec	http://www.iec	Literature	23978718	Katja Nitschke;	J Hepatol	2014	HLA-B*27 subtype specificity de		http://www.iec	Linear peptide	SRYWAIRTR	383
http://www.iec	http://www.iec	Literature	23978718	Katja Nitschke;	J Hepatol	2014	HLA-B*27 subtype specificity de		http://www.iec	Linear peptide	KRWIILGLNK	262
http://www.iec	http://www.iec	Literature	25268942	Alejandro Barrig	PLoS One	2014	A common minimal motif for th		http://www.iec	Linear peptide	VRNKDLNTL	169
http://www.iec	http://www.iec	Literature	25268942	Alejandro Barrig	PLoS One	2014	A common minimal motif for th		http://www.iec	Linear peptide	KRLPADVLKK	150
http://www.iec	http://www.iec	Literature	25268942	Alejandro Barrig	PLoS One	2014	A common minimal motif for th		http://www.iec	Linear peptide	HRQDINGKEM	100

User Query: MHC Binding Data – Assay Exports

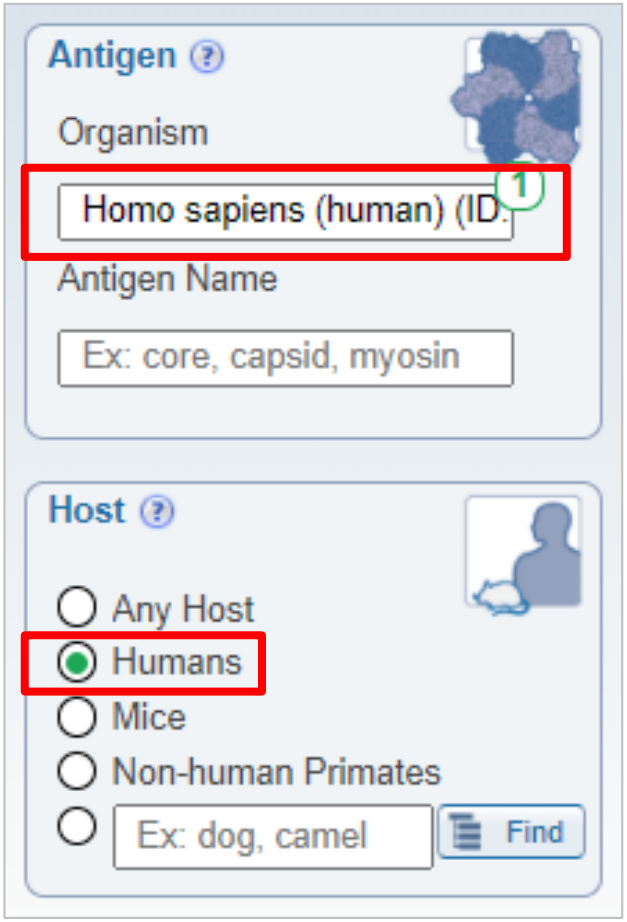
Top Header row = Field Group (Reference, Epitope, etc.)
2nd Header Row = Field (terms may repeat)

Separate method and assay group columns allow sorting

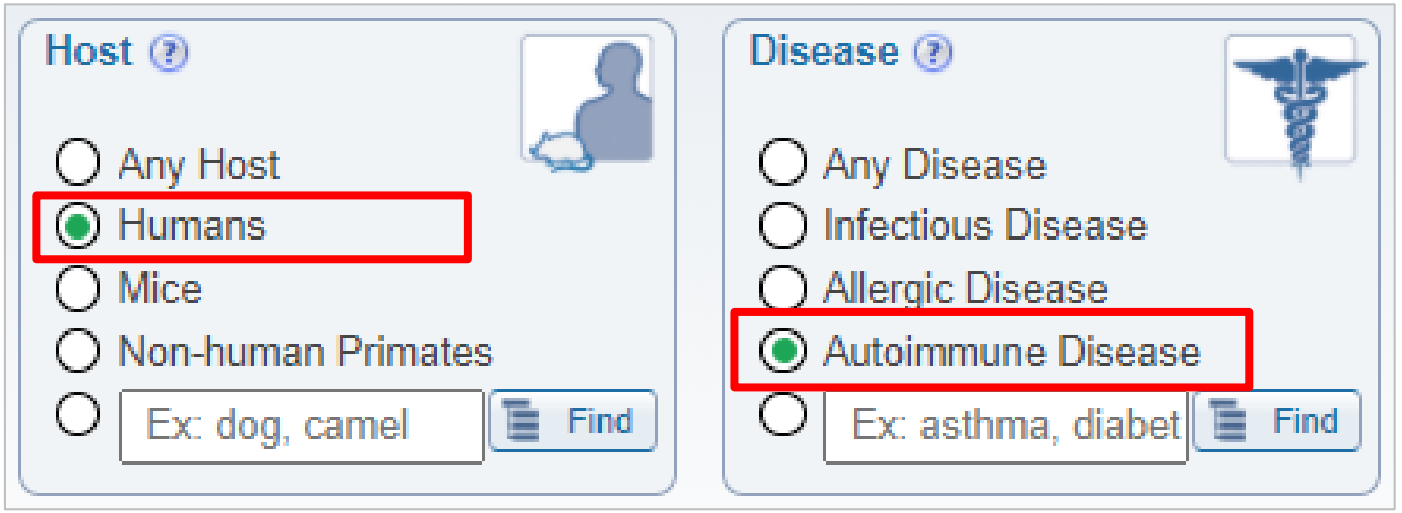
IRI is linked to ontology term for assay (OBI ontology)

Assay	Assay	Assay	Assay	Assay	Assay	Assay	Assay
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, ar	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, ar	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, ar	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,	cellular MHC/direct/fluorescence	half maximal effective concentration (EC50)	nM	http://purl.obolibrary.org/obo/OBI_0001561	Positive-Interm	=	43000
Figure 7 and Tables 1, 2, 3,	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, ar	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

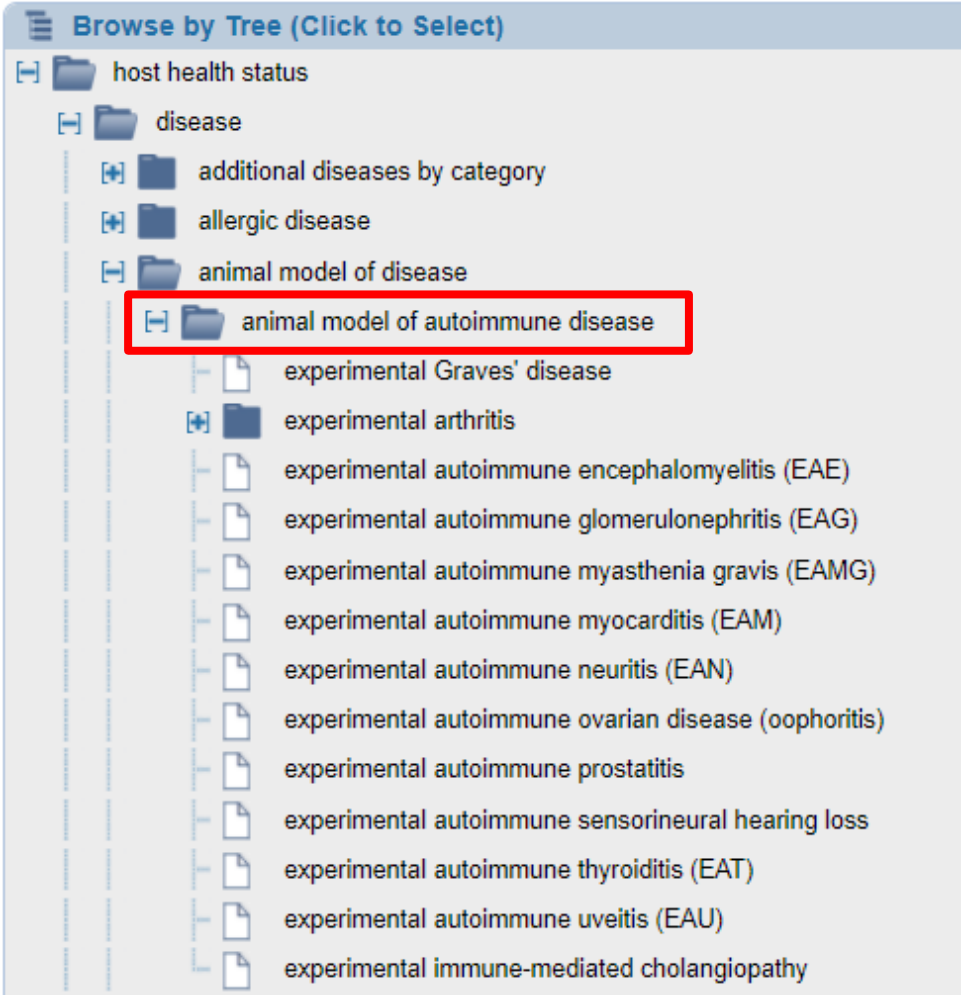
User Query: Is there a way to derive autoantigens using the IEDB database?



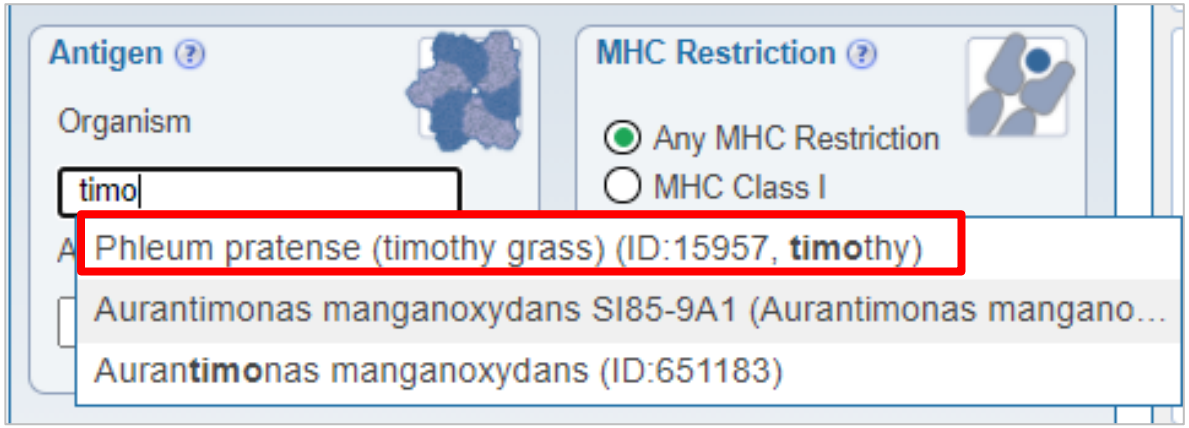
User Query: Is there a way to derive autoantigens using the IEDB database?

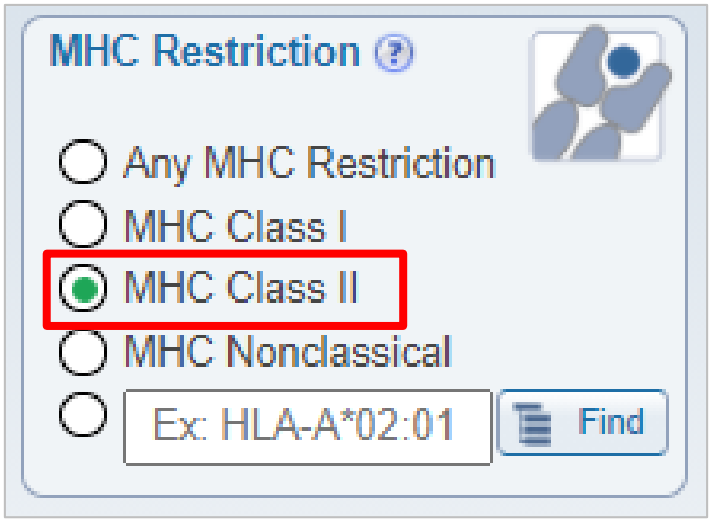


User Query: Is there a way to derive autoantigens using the IEDB database?

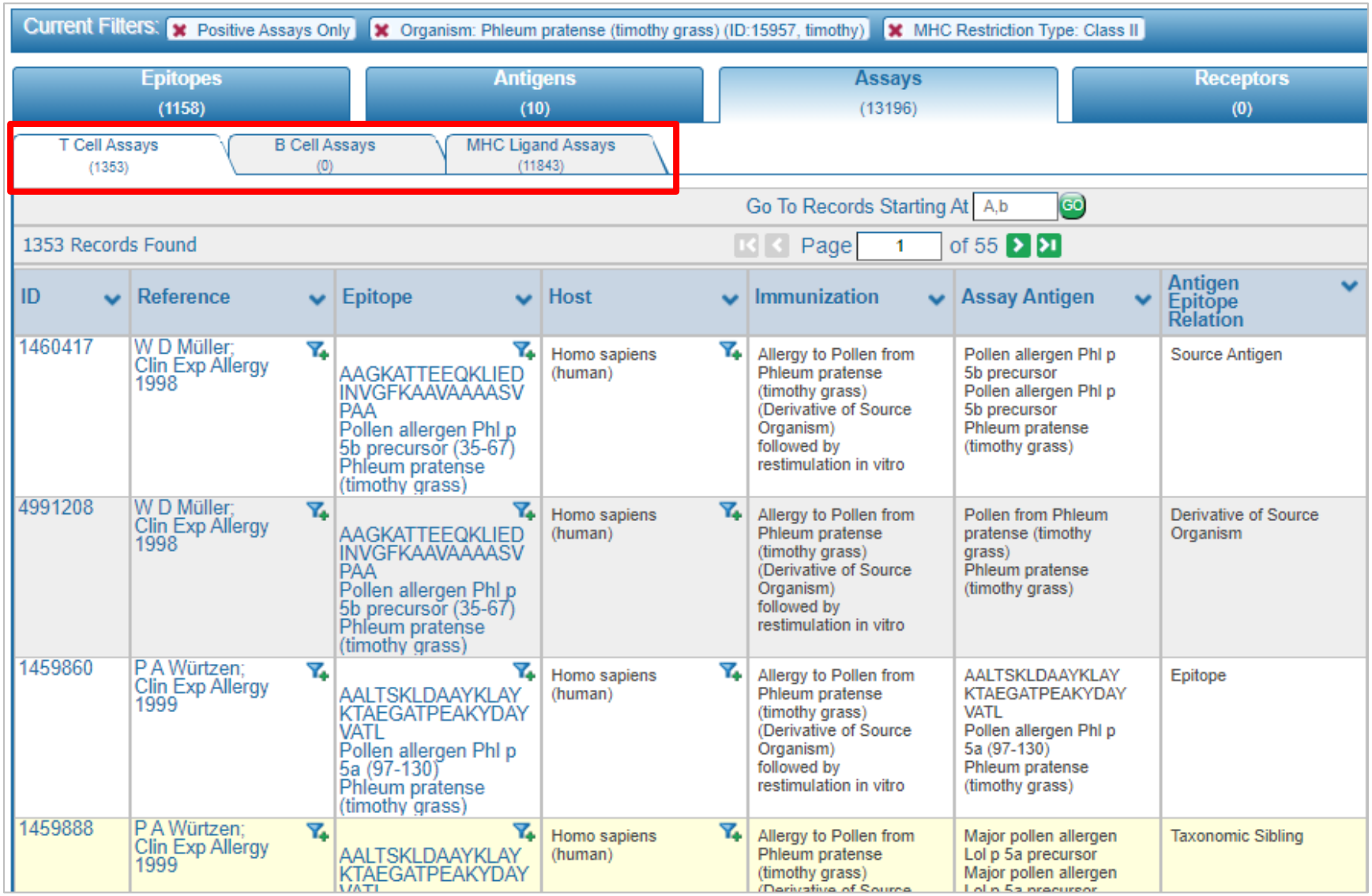


User Query: How can we search or analyze the allergen peptides binding to MHC class I or class II molecules?





User Query: How can we search or analyze the allergen peptides binding to MHC class I or class II molecules?



Current Filters: Positive Assays Only | Organism: Phleum pratense (timothy grass) (ID:15957, timothy) | MHC Restriction Type: Class II

Epitopes (1158) | Antigens (10) | Assays (13196) | Receptors (0)

T Cell Assays (1353) | B Cell Assays (0) | MHC Ligand Assays (11843)

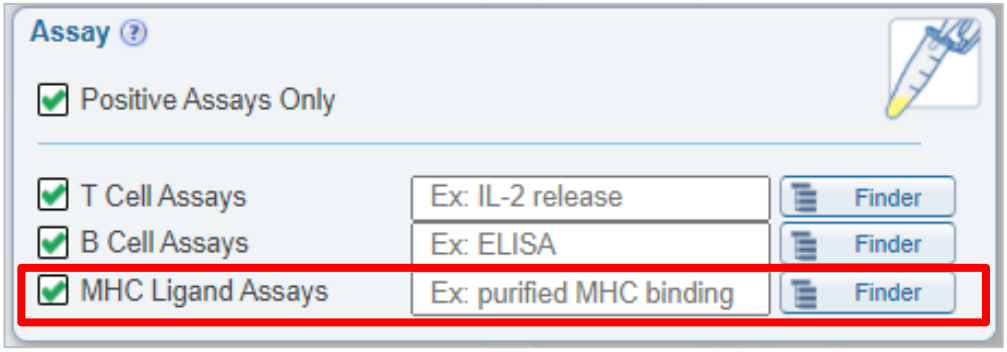
Go To Records Starting At A,b GO

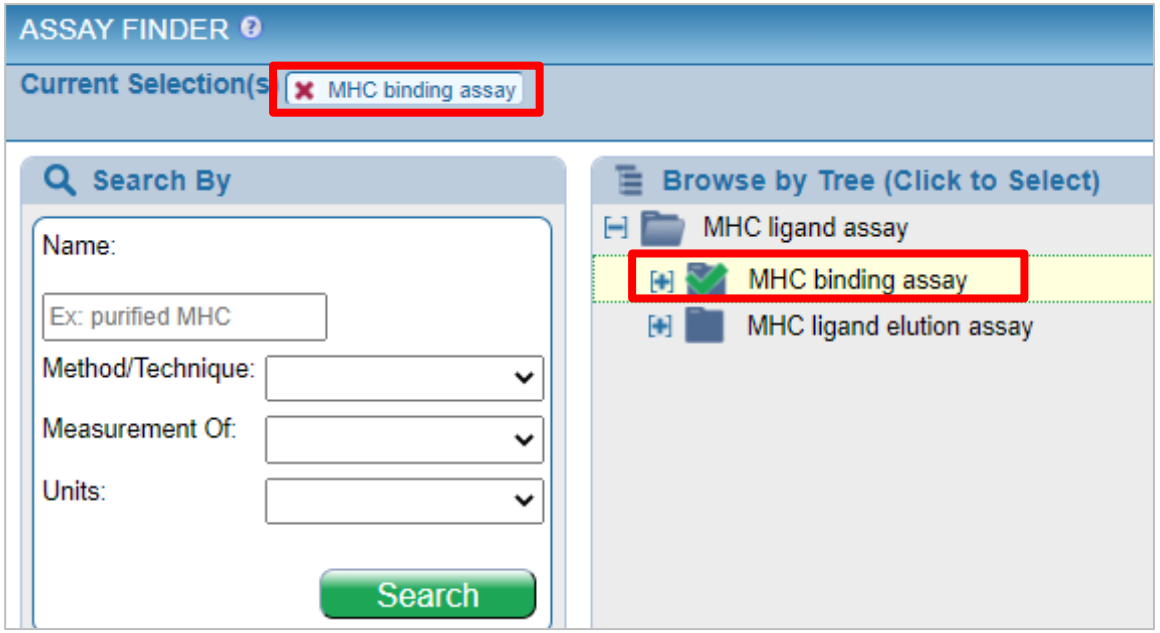
1353 Records Found

Page 1 of 55

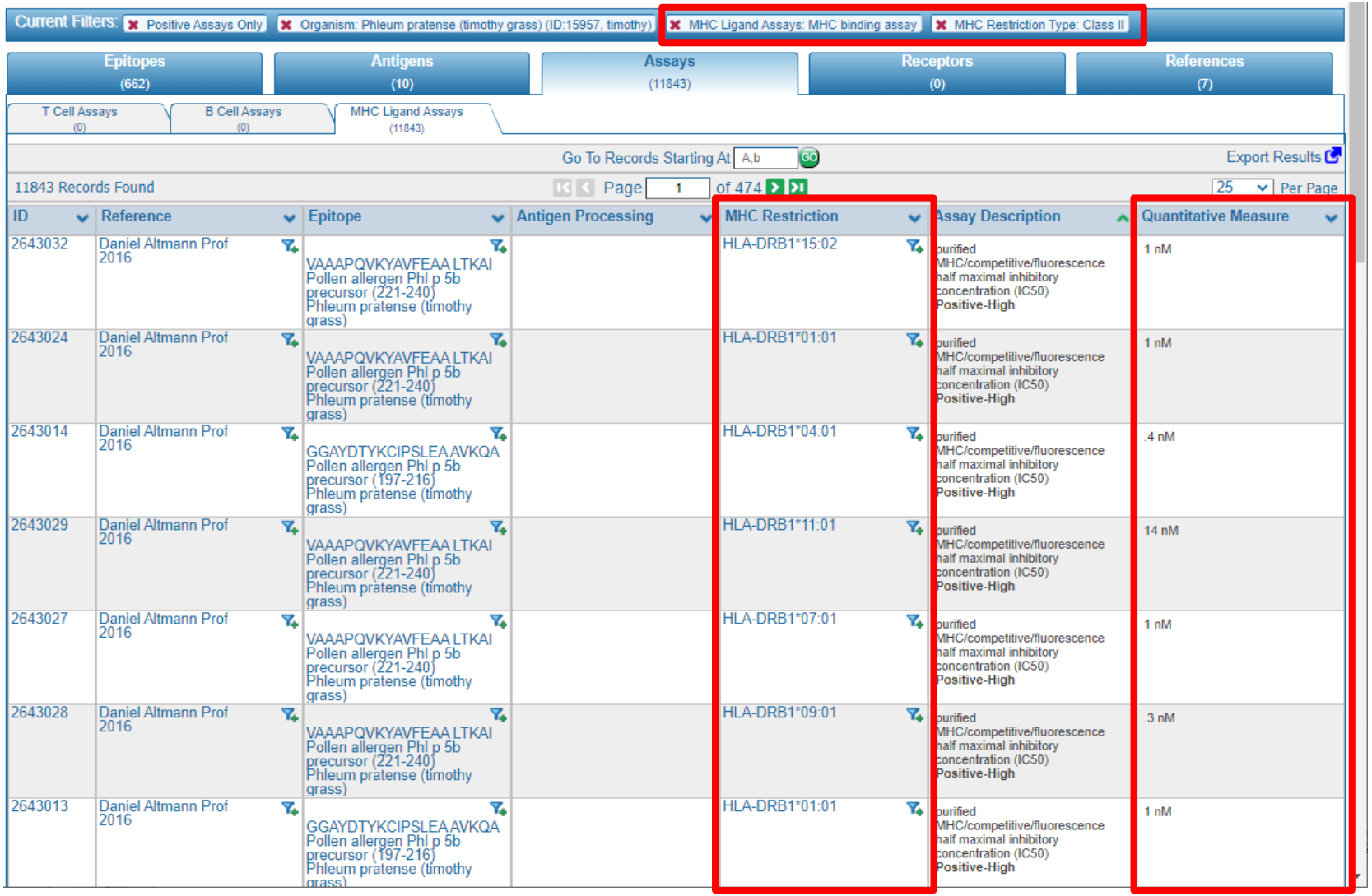
ID	Reference	Epitope	Host	Immunization	Assay Antigen	Antigen Epitope Relation
1460417	W D Müller; Clin Exp Allergy 1998	AAGKATTEEQKLIED INVGFKAAVAAAASV PAA Pollen allergen Phl p 5b precursor (35-67) Phleum pratense (timothy grass)	Homo sapiens (human)	Allergy to Pollen from Phleum pratense (timothy grass) (Derivative of Source Organism) followed by restimulation in vitro	Pollen allergen Phl p 5b precursor Pollen allergen Phl p 5b precursor Phleum pratense (timothy grass)	Source Antigen
4991208	W D Müller; Clin Exp Allergy 1998	AAGKATTEEQKLIED INVGFKAAVAAAASV PAA Pollen allergen Phl p 5b precursor (35-67) Phleum pratense (timothy grass)	Homo sapiens (human)	Allergy to Pollen from Phleum pratense (timothy grass) (Derivative of Source Organism) followed by restimulation in vitro	Pollen from Phleum pratense (timothy grass) Phleum pratense (timothy grass)	Derivative of Source Organism
1459860	P A Würtzen; Clin Exp Allergy 1999	AALTSKLDAAYKLAY KTAEGATPEAKYDAY VATL Pollen allergen Phl p 5a (97-130) Phleum pratense (timothy grass)	Homo sapiens (human)	Allergy to Pollen from Phleum pratense (timothy grass) (Derivative of Source Organism) followed by restimulation in vitro	AALTSKLDAAYKLAY KTAEGATPEAKYDAY VATL Pollen allergen Phl p 5a (97-130) Phleum pratense (timothy grass)	Epitope
1459888	P A Würtzen; Clin Exp Allergy 1999	AALTSKLDAAYKLAY KTAEGATPEAKYDAY VATL	Homo sapiens (human)	Allergy to Pollen from Phleum pratense (timothy grass) (Derivative of Source	Major pollen allergen Lol p 5a precursor Major pollen allergen Lol p 5a precursor	Taxonomic Sibling

User Query: How can we search or analyze the allergen peptides binding to MHC class I or class II molecules?





User Query: How can we search or analyze the allergen peptides binding to MHC class I or class II molecules?



Current Filters: Positive Assays Only | Organism: Phleum pratense (timothy grass) (ID:15957, timothy) | MHC Ligand Assays: MHC binding assay | MHC Restriction Type: Class II

Epitopes (662) | Antigens (10) | Assays (11843) | Receptors (0) | References (7)

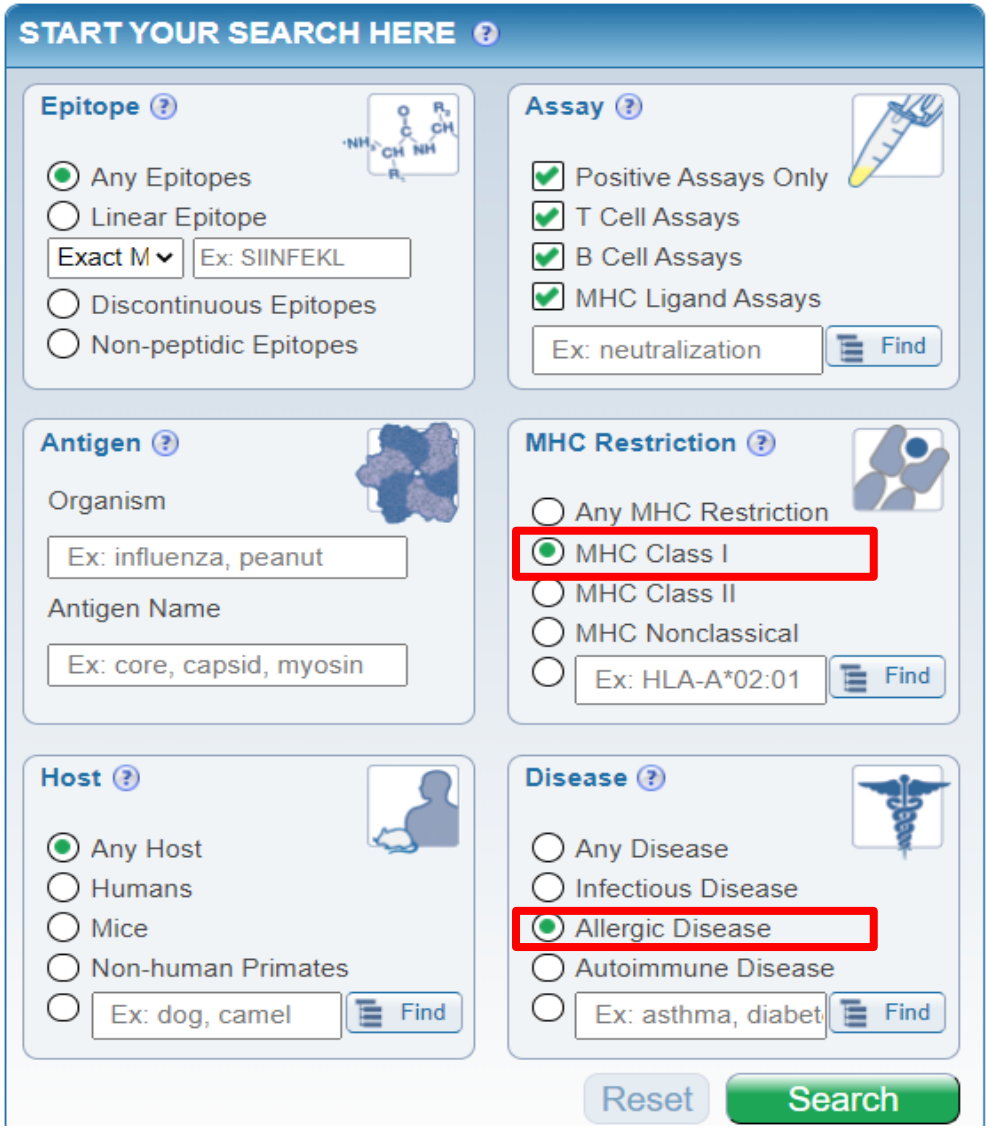
T Cell Assays (0) | B Cell Assays (0) | MHC Ligand Assays (11843)

Go To Records Starting At A,b GO | Export Results

11843 Records Found | Page 1 of 474 | 25 Per Page

ID	Reference	Epitope	Antigen Processing	MHC Restriction	Assay Description	Quantitative Measure
2643032	Daniel Altmann Prof 2016	VAAAPQVKYAVFEAA LTKAI Pollen allergen Phl p 5b precursor (221-240) Phleum pratense (timothy grass)		HLA-DRB1*15:02	purified MHC/competitive/fluorescence half maximal inhibitory concentration (IC50) Positive-High	1 nM
2643024	Daniel Altmann Prof 2016	VAAAPQVKYAVFEAA LTKAI Pollen allergen Phl p 5b precursor (221-240) Phleum pratense (timothy grass)		HLA-DRB1*01:01	purified MHC/competitive/fluorescence half maximal inhibitory concentration (IC50) Positive-High	1 nM
2643014	Daniel Altmann Prof 2016	GGAYDTYKCIPSLEA AVKQA Pollen allergen Phl p 5b precursor (197-216) Phleum pratense (timothy grass)		HLA-DRB1*04:01	purified MHC/competitive/fluorescence half maximal inhibitory concentration (IC50) Positive-High	.4 nM
2643029	Daniel Altmann Prof 2016	VAAAPQVKYAVFEAA LTKAI Pollen allergen Phl p 5b precursor (221-240) Phleum pratense (timothy grass)		HLA-DRB1*11:01	purified MHC/competitive/fluorescence half maximal inhibitory concentration (IC50) Positive-High	14 nM
2643027	Daniel Altmann Prof 2016	VAAAPQVKYAVFEAA LTKAI Pollen allergen Phl p 5b precursor (221-240) Phleum pratense (timothy grass)		HLA-DRB1*07:01	purified MHC/competitive/fluorescence half maximal inhibitory concentration (IC50) Positive-High	1 nM
2643028	Daniel Altmann Prof 2016	VAAAPQVKYAVFEAA LTKAI Pollen allergen Phl p 5b precursor (221-240) Phleum pratense (timothy grass)		HLA-DRB1*09:01	purified MHC/competitive/fluorescence half maximal inhibitory concentration (IC50) Positive-High	.3 nM
2643013	Daniel Altmann Prof 2016	GGAYDTYKCIPSLEA AVKQA Pollen allergen Phl p 5b precursor (197-216) Phleum pratense (timothy grass)		HLA-DRB1*01:01	purified MHC/competitive/fluorescence half maximal inhibitory concentration (IC50) Positive-High	1 nM

User Query: How can we search or analyze the allergen peptides binding to MHC class I or class II molecules?



User Query: How can we search or analyze the allergen peptides binding to MHC class I or class II molecules?

Current Filters: Positive Assays Only | MHC Restriction Type: Class I | Disease Data: Allergic Disease

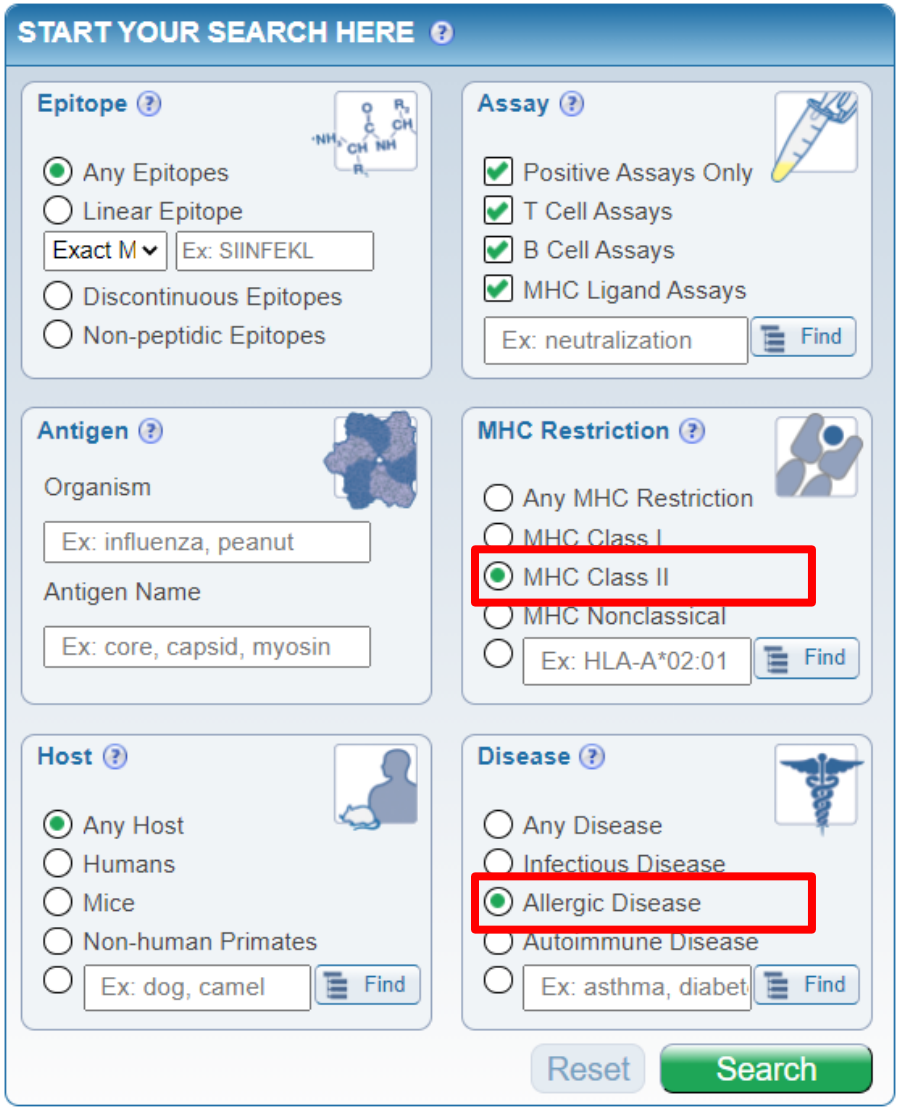
Epitopes (46) | Antigens (18) | Assays (115) | Receptors (0) | References (32)

Go To Records Starting At 1200 GO | Export Results

46 Records Found | Page 1 of 2 | 25 Per Page

Details	Epitope	Antigen	Organism	# References	# Assays
113234	nickel atom			6	14
114999	sulfamethoxazole			5	8
137341	abacavir			3	5
174842	carbamazepine			3	12
112741	2,4-dinitrophenyl group			2	7
114070	benzylpenicillin			2	2
116652	piperacillin			2	7
35586	LELQFRRVKCKY	Phl p 1	Phleum pratense (timothy grass)	1	2
42124	MMIEEYPYV	Der p 1	Dermatophagoides pteronyssinus (European house dust mite)	1	3
59038	SLDLAEQEL	Der p 1	Dermatophagoides pteronyssinus (European house dust mite)	1	3
60436	SQFGGGSQY	Eukaryotic translation initiation factor 3 subunit D	Homo sapiens (human)	1	1
74573	YLAYRNQSL	Der p 1	Dermatophagoides pteronyssinus (European house dust mite)	1	3
75058	YMIDPSGVSY	Proteasome endopeptidase complex (UniProt:G3V4X5)	Homo sapiens (human)	1	1
114080	1,4-phenylenediamine			1	8
115001	nitrososulfamethoxazole			1	2
115011	phenoxymethylpenicillin			1	1
115014	parthenolide			1	2

User Query: How can we search or analyze the allergen peptides binding to MHC class I or class II molecules?



User Query: How can we search or analyze the allergen peptides binding to MHC class I or class II molecules?

Current Filters: Positive Assays Only | MHC Restriction Type: Class II | Disease Data: Allergic Disease

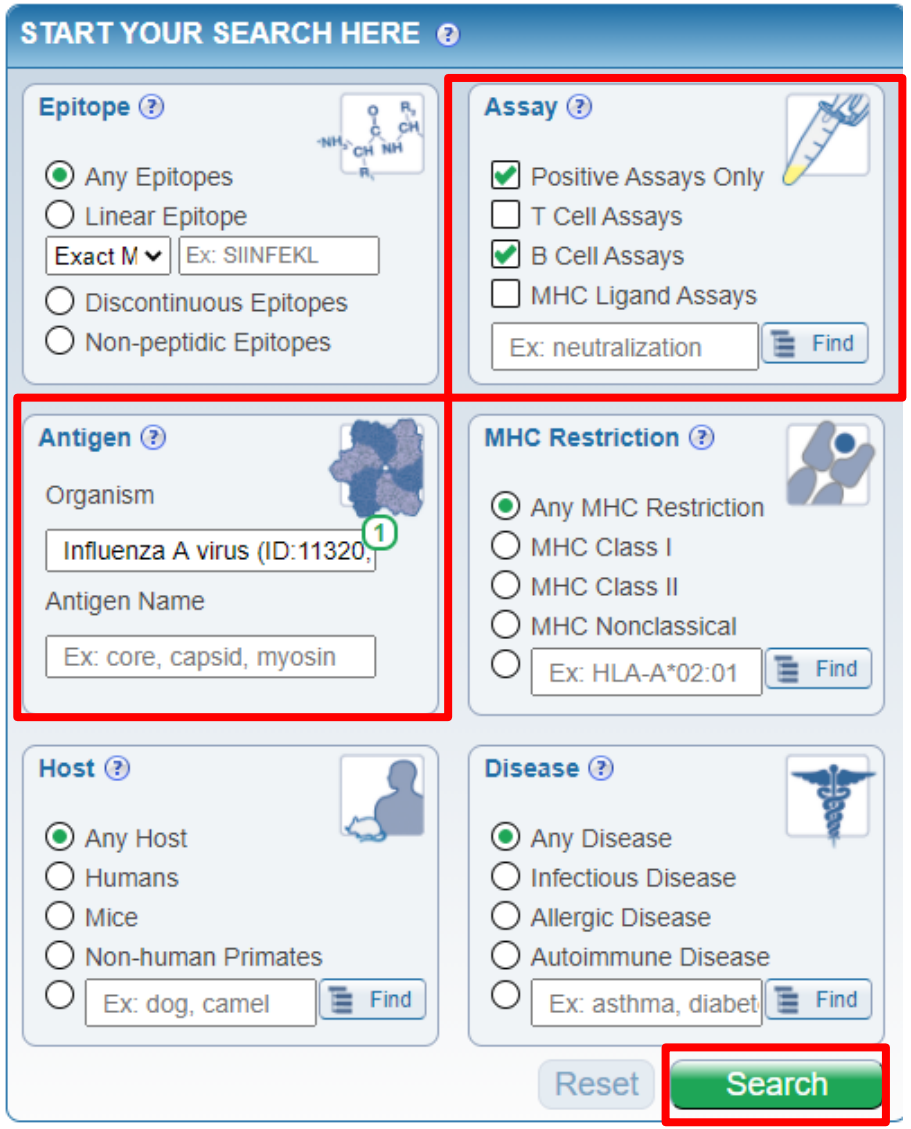
Epitopes (4549) | Antigens (242) | Assays (8011) | Receptors (51) | References (345)

Go To Records Starting At 1200 GO | Export Results

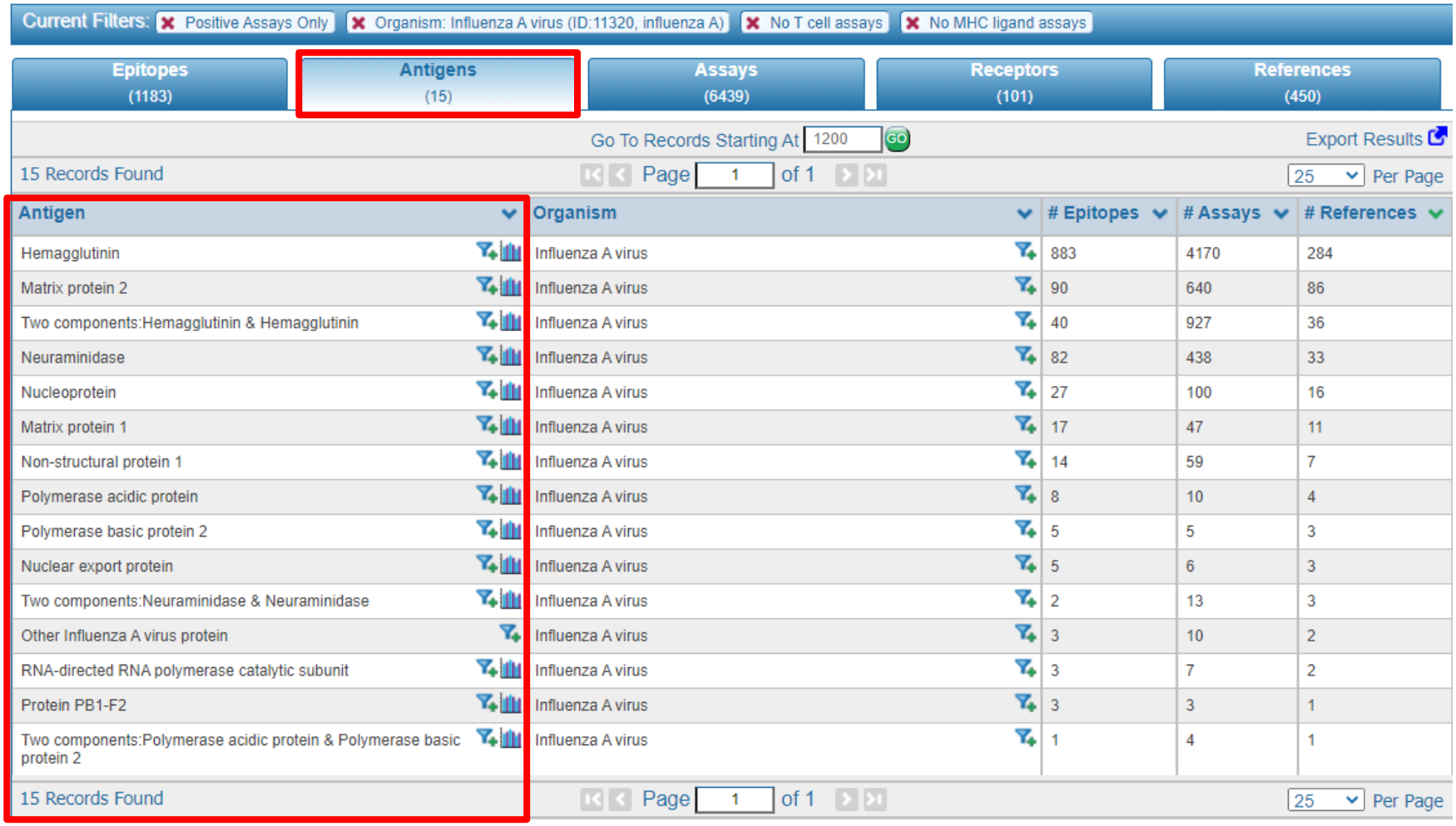
4549 Records Found | Page 1 of 182 | 25 Per Page

Details	Epitope	Antigen	Organism	# References	# Assays
113234	nickel atom			26	89
114078	beryllium atom			13	33
114080	1,4-phenylenediamine			12	41
112741	2,4-dinitrophenyl group			11	18
114070	benzylpenicillin			9	28
114999	sulfamethoxazole			9	82
30059	KCIEWEKAQHGA	Art v 1	Artemisia vulgaris (mugwort)	8	25
64937	TLLRAVESYLLA	Bet v 1	Betula pendula (white birch)	8	36
14464	ETLLRAVESYLLAHS	Bet v 1	Betula pendula (white birch)	6	40
16485	FKYNYSVIEGGP	Bet v 1	Betula pendula (white birch)	6	11
53231	RAVESYLLAHSD	Bet v 1	Betula pendula (white birch)	6	8
58605	SILKISNKYHTK	Bet v 1	Betula pendula (white birch)	6	10
115020	benzylpenicilloyl group			6	11
12409	EICPAVKRDVDLFLTGT	Fel d 1	Felis catus (cat)	5	8
14643	EVDHTNFKYNYS	Bet v 1	Betula pendula (white birch)	5	5
19597	GFPFKYVKDRVD	Bet v 1	Betula pendula (white birch)	5	10
27784	IPAARLFKAFIL	Bet v 1	Betula pendula (white birch)	5	6
38854	LQIIDKIDAAFKVAA	Phl p 5	Phleum pratense (timothy grass)	5	14

User Query: Navigating the IEDB resource efficiently for vaccine development



User Query: Navigating the IEDB resource efficiently for vaccine development



Current Filters: Positive Assays Only | Organism: Influenza A virus (ID:11320, influenza A) | No T cell assays | No MHC ligand assays

Epitopes (1183) | Antigens (15) | Assays (6439) | Receptors (101) | References (450)

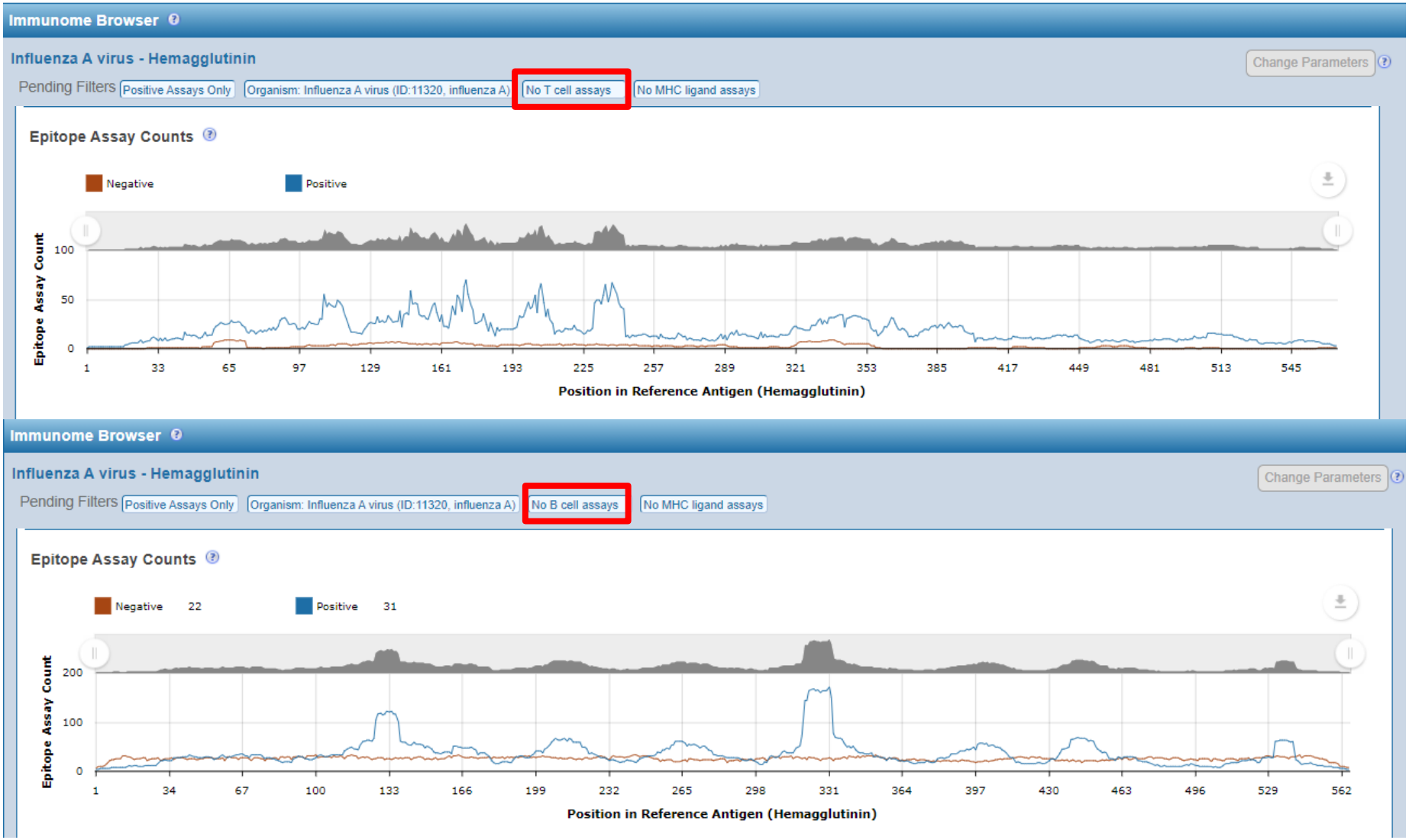
Go To Records Starting At 1200 GO — Export Results

15 Records Found — Page 1 of 1 — 25 Per Page

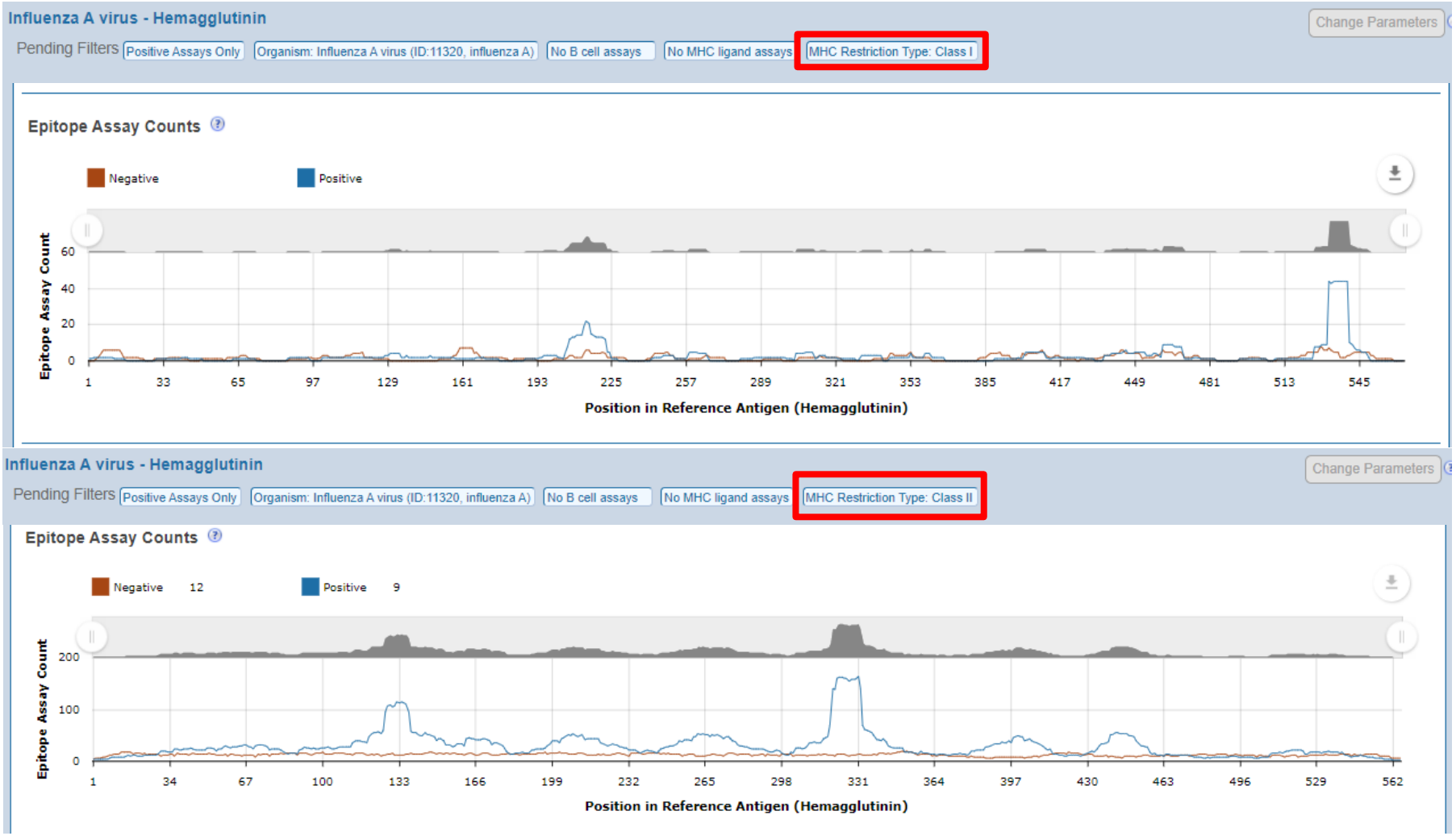
Antigen	Organism	# Epitopes	# Assays	# References
Hemagglutinin	Influenza A virus	883	4170	284
Matrix protein 2	Influenza A virus	90	640	86
Two components:Hemagglutinin & Hemagglutinin	Influenza A virus	40	927	36
Neuraminidase	Influenza A virus	82	438	33
Nucleoprotein	Influenza A virus	27	100	16
Matrix protein 1	Influenza A virus	17	47	11
Non-structural protein 1	Influenza A virus	14	59	7
Polymerase acidic protein	Influenza A virus	8	10	4
Polymerase basic protein 2	Influenza A virus	5	5	3
Nuclear export protein	Influenza A virus	5	6	3
Two components:Neuraminidase & Neuraminidase	Influenza A virus	2	13	3
Other Influenza A virus protein	Influenza A virus	3	10	2
RNA-directed RNA polymerase catalytic subunit	Influenza A virus	3	7	2
Protein PB1-F2	Influenza A virus	3	3	1
Two components:Polymerase acidic protein & Polymerase basic protein 2	Influenza A virus	1	4	1

15 Records Found — Page 1 of 1 — 25 Per Page

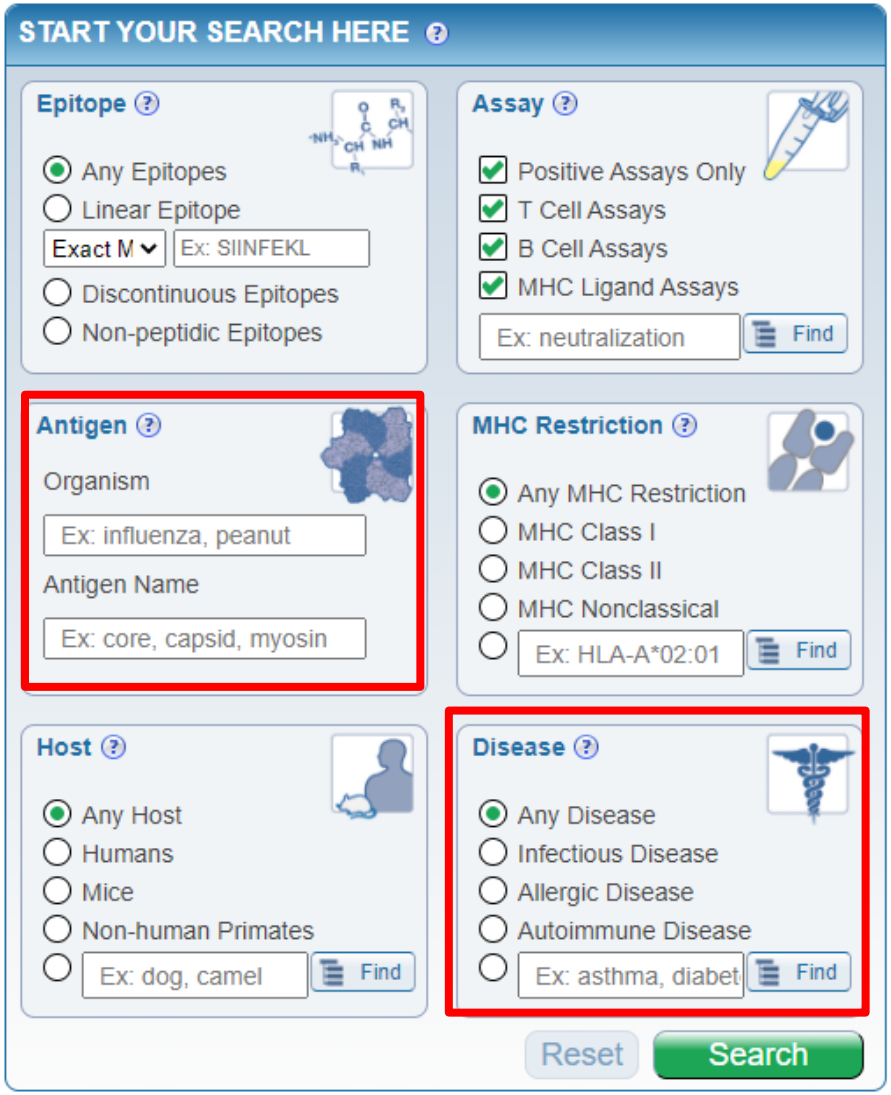
User Query: Navigating the IEDB resource efficiently for vaccine development

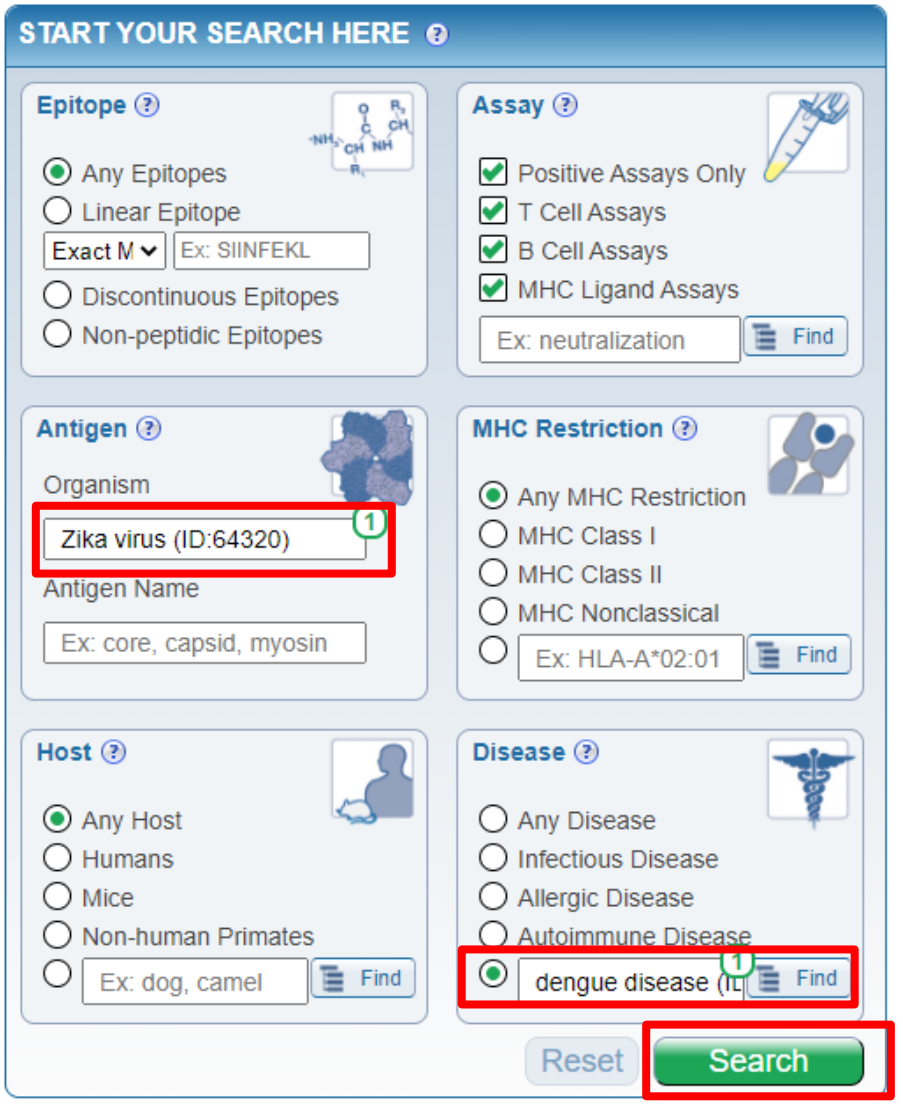


User Query: Navigating the IEDB resource efficiently for vaccine development



User Query: Cross reactivity arising from similar epitopes – Zika and Dengue





User Query: Cross reactivity arising from similar epitopes – Zika and Dengue

Current Filters: Positive Assays Only | Organism: Zika virus (ID:64320) | Disease Data: dengue disease (ID:DOID:12205, Dengue Fever)

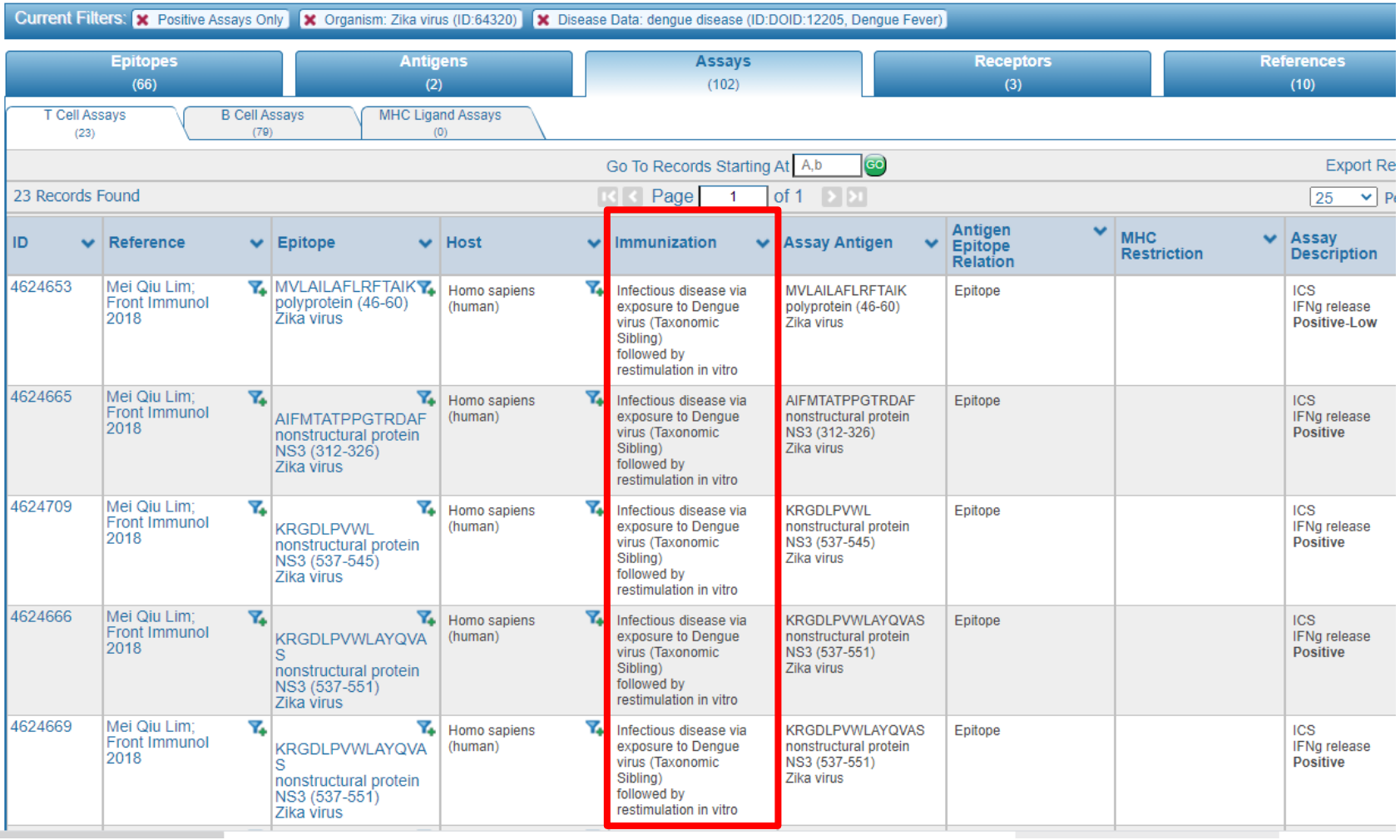
Epitopes (66) | Antigens (2) | Assays (102) | Receptors (3) | References (10)

Go To Records Starting At 1200 GO Export

66 Records Found Page 1 of 3 25

Details	Epitope	Antigen	Organism	# References	# A
547255	M358, S360, Q367, D373, R389, G394, R542, Q543, T6...	Genome polyprotein	Zika virus	1	5
547256	S360, D361, S362, R363, R389, G392, G394, V443, K5...	Genome polyprotein	Zika virus	1	5
569843	A: R2, H27, V46, T47, M140, S149, G150, M151, I152...	Two components:Genome polyprotein & Genome polyprotein	Zika virus	1	1
591797	YGTCHHKKGEARRSR	Genome polyprotein	Zika virus	1	1
740832	A: R2, H27, V46, T47, M140, S149, G150, M151, I152...	Two components:Genome polyprotein & Genome polyprotein	Zika virus	1	2
857759	AGITYTDRRWCFDGT	Genome polyprotein	Zika virus	1	2
857760	AIFMTATPPGTRDAF	Genome polyprotein	Zika virus	1	4
857780	KRGDLPVWL	Genome polyprotein	Zika virus	1	4
857781	KRGDLPVWLAYQVAS	Genome polyprotein	Zika virus	1	6
857785	LRTVILAPTRVVAAE	Genome polyprotein	Zika virus	1	1
857788	MVLAILAFLRFTAIK	Genome polyprotein	Zika virus	1	1
857792	PNYNLYIMDEAHFTD	Genome polyprotein	Zika virus	1	1
857811	YIMDEAHFTDPSSIA	Genome polyprotein	Zika virus	1	4
857862	DVGCSVDFSKKETRCGTG	Genome polyprotein	Zika virus	1	1
886475	TLVDRGWGNGCGLFGKGS	Genome polyprotein	Zika virus	1	4
919519	AGPLSHHNTREGYRTQMK	Genome polyprotein	Zika virus	1	1

User Query: Cross reactivity arising from similar epitopes – Zika and Dengue



Current Filters: Positive Assays Only | Organism: Zika virus (ID:64320) | Disease Data: dengue disease (ID:DOID:12205, Dengue Fever)

Epitopes (66) | Antigens (2) | Assays (102) | Receptors (3) | References (10)

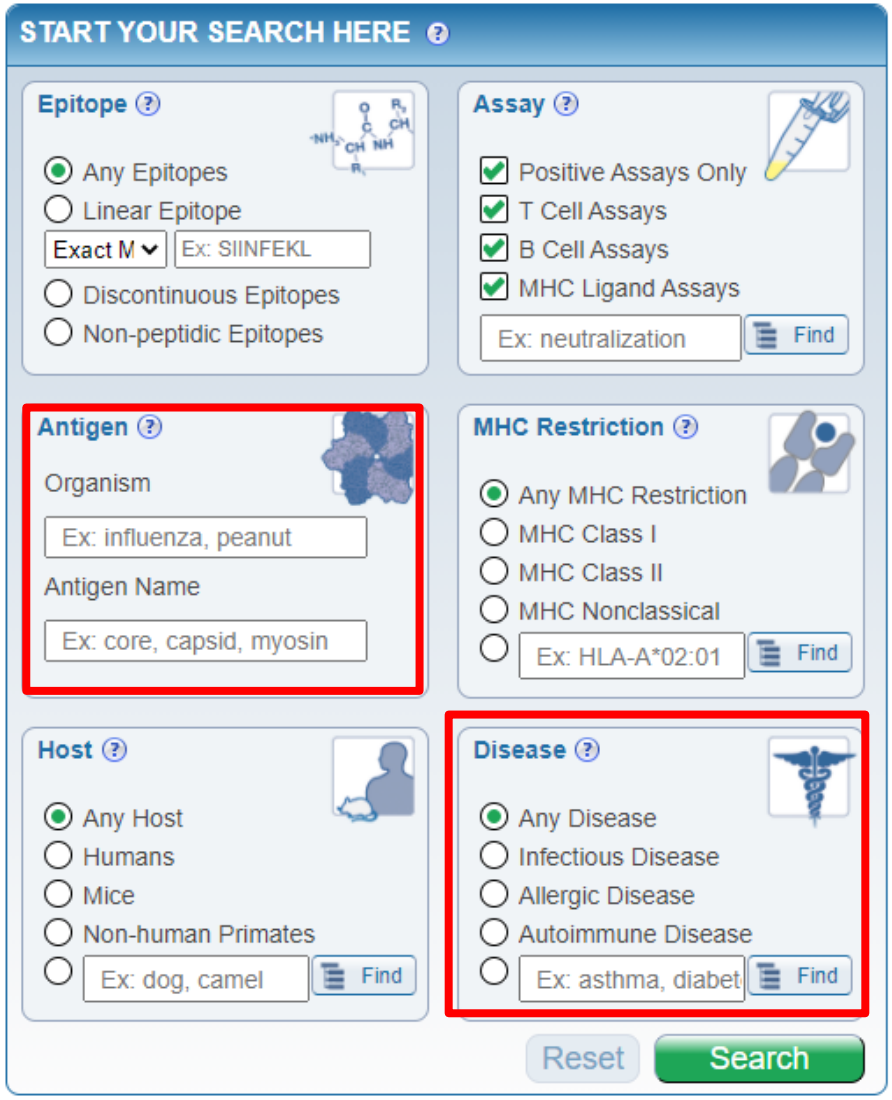
T Cell Assays (23) | B Cell Assays (79) | MHC Ligand Assays (0)

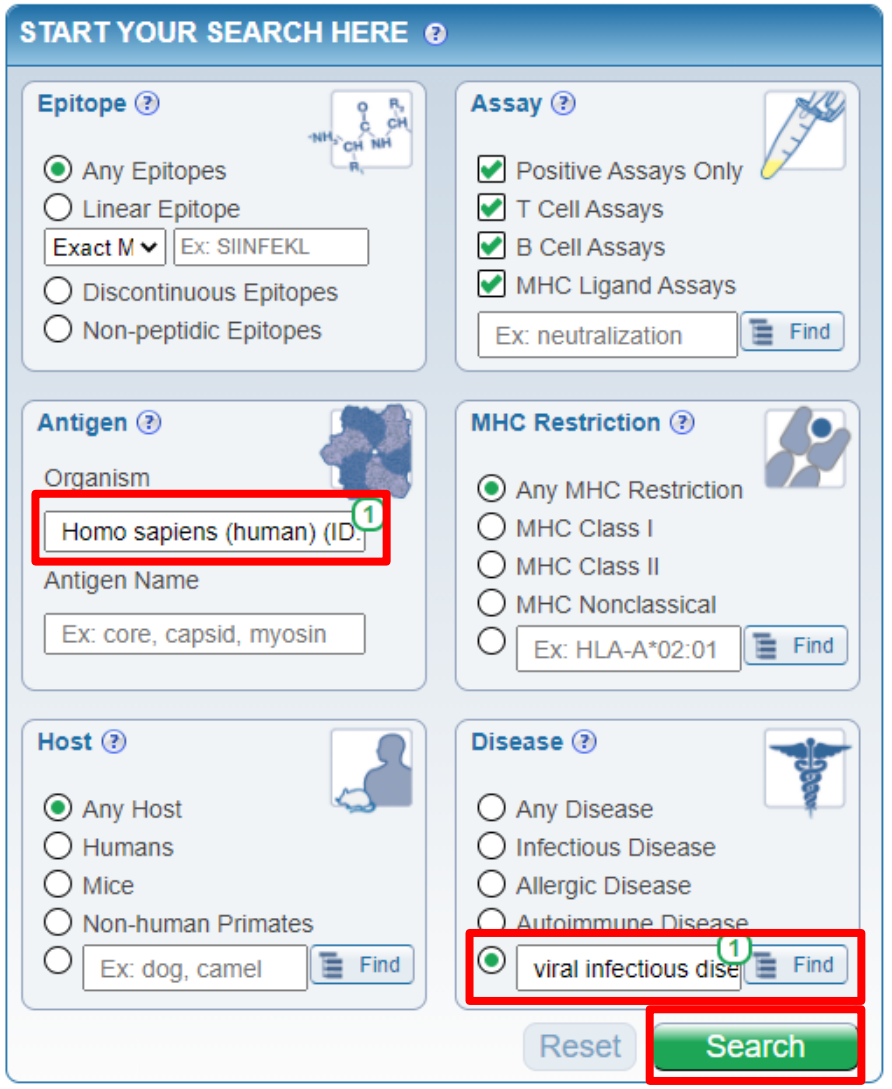
Go To Records Starting At A,b GO | Export Re

23 Records Found | Page 1 of 1 | 25

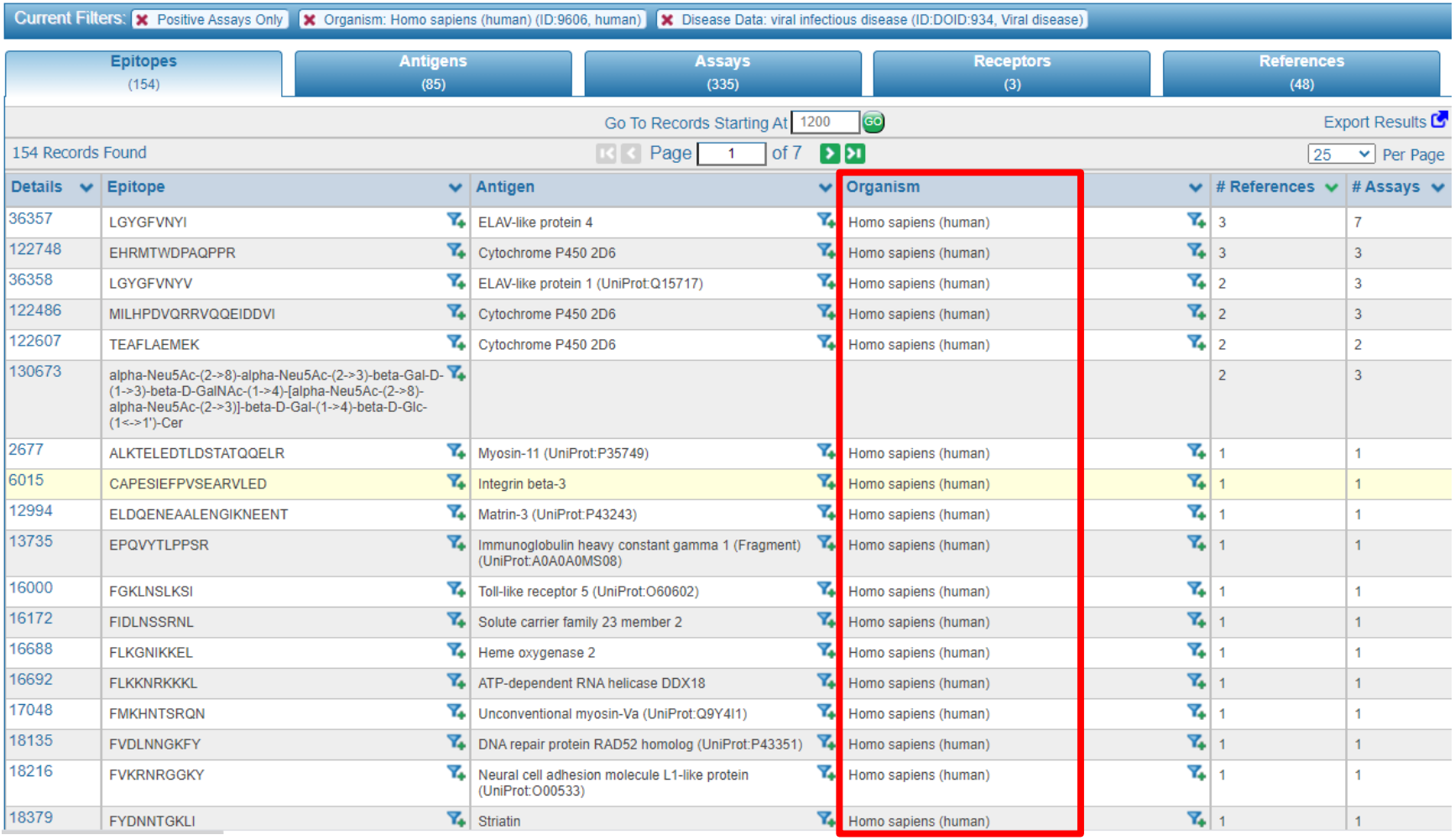
ID	Reference	Epitope	Host	Immunization	Assay Antigen	Antigen Epitope Relation	MHC Restriction	Assay Description
4624653	Mei Qiu Lim; Front Immunol 2018	MVLAILAFLRFTAIK polyprotein (46-60) Zika virus	Homo sapiens (human)	Infectious disease via exposure to Dengue virus (Taxonomic Sibling) followed by restimulation in vitro	MVLAILAFLRFTAIK polyprotein (46-60) Zika virus	Epitope		ICS IFNg release **Positive-Low**
4624665	Mei Qiu Lim; Front Immunol 2018	AIFMTATPPGTRDAF nonstructural protein NS3 (312-326) Zika virus	Homo sapiens (human)	Infectious disease via exposure to Dengue virus (Taxonomic Sibling) followed by restimulation in vitro	AIFMTATPPGTRDAF nonstructural protein NS3 (312-326) Zika virus	Epitope		ICS IFNg release **Positive**
4624709	Mei Qiu Lim; Front Immunol 2018	KRGDLPVWL nonstructural protein NS3 (537-545) Zika virus	Homo sapiens (human)	Infectious disease via exposure to Dengue virus (Taxonomic Sibling) followed by restimulation in vitro	KRGDLPVWL nonstructural protein NS3 (537-545) Zika virus	Epitope		ICS IFNg release **Positive**
4624666	Mei Qiu Lim; Front Immunol 2018	KRGDLPVWLAYQVAS nonstructural protein NS3 (537-551) Zika virus	Homo sapiens (human)	Infectious disease via exposure to Dengue virus (Taxonomic Sibling) followed by restimulation in vitro	KRGDLPVWLAYQVAS nonstructural protein NS3 (537-551) Zika virus	Epitope		ICS IFNg release **Positive**
4624669	Mei Qiu Lim; Front Immunol 2018	KRGDLPVWLAYQVAS nonstructural protein NS3 (537-551) Zika virus	Homo sapiens (human)	Infectious disease via exposure to Dengue virus (Taxonomic Sibling) followed by restimulation in vitro	KRGDLPVWLAYQVAS nonstructural protein NS3 (537-551) Zika virus	Epitope		ICS IFNg release **Positive**

User Query: Cross reactivity arising from similar epitopes – Self and Virus





User Query: Cross reactivity arising from similar epitopes – Self and Virus



Current Filters: Positive Assays Only | Organism: Homo sapiens (human) (ID:9606, human) | Disease Data: viral infectious disease (ID:DOID:934, Viral disease)

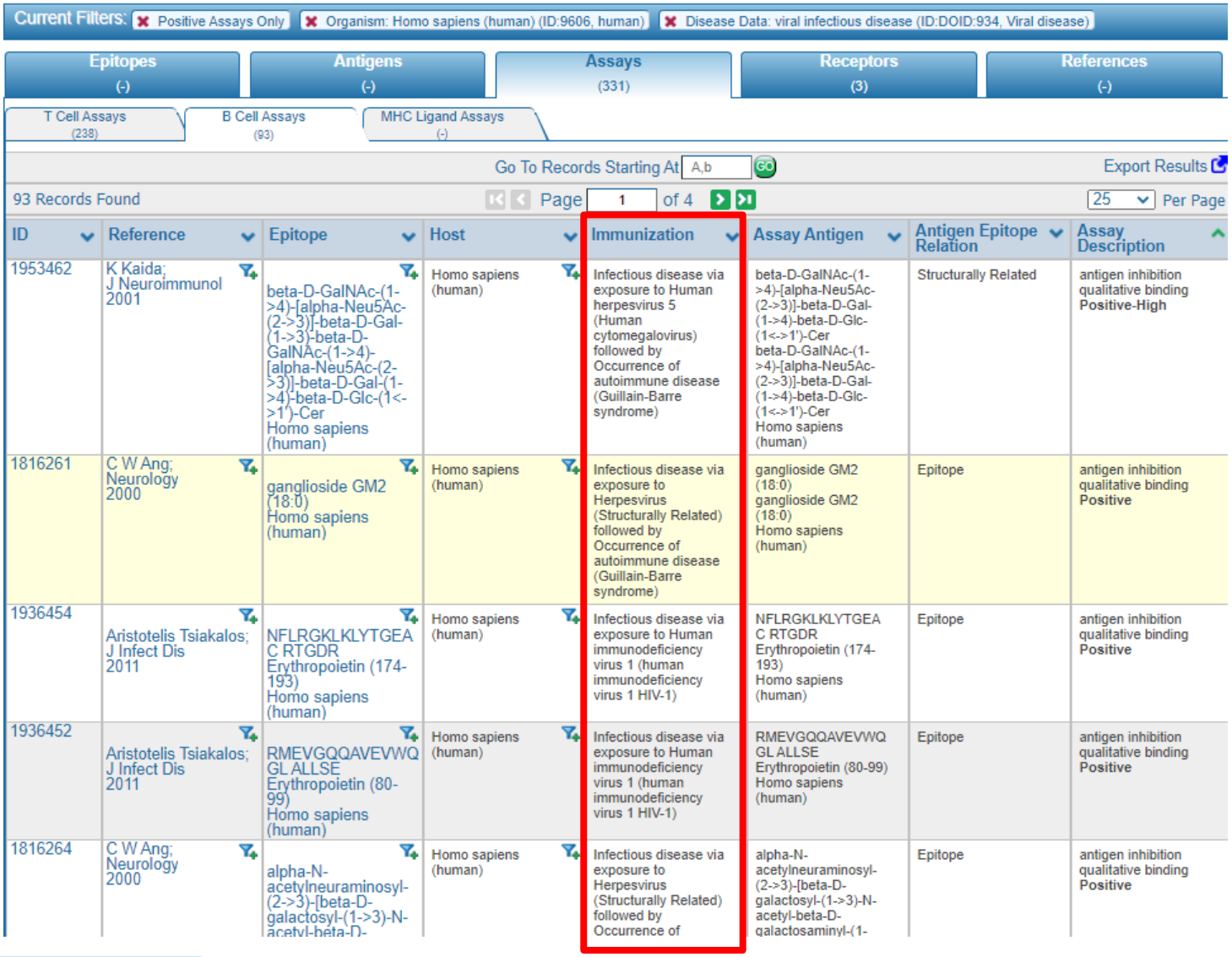
Epitopes (154) | Antigens (85) | Assays (335) | Receptors (3) | References (48)

Go To Records Starting At 1200 GO — Export Results

154 Records Found — Page 1 of 7 — 25 Per Page

Details	Epitope	Antigen	Organism	# References	# Assays
36357	LGYGFVNYI	ELAV-like protein 4	Homo sapiens (human)	3	7
122748	EHRMTWDPAQPPR	Cytochrome P450 2D6	Homo sapiens (human)	3	3
36358	LGYGFVNYV	ELAV-like protein 1 (UniProt:Q15717)	Homo sapiens (human)	2	3
122486	MILHPDVQRRVQQEIDDVI	Cytochrome P450 2D6	Homo sapiens (human)	2	3
122607	TEAFLAEMEK	Cytochrome P450 2D6	Homo sapiens (human)	2	2
130673	alpha-Neu5Ac-(2->8)-alpha-Neu5Ac-(2->3)-beta-Gal-D-(1->3)-beta-D-GalNAc-(1->4)-[alpha-Neu5Ac-(2->8)-alpha-Neu5Ac-(2->3)]-beta-D-Gal-(1->4)-beta-D-Glc-(1<->1')-Cer			2	3
2677	ALKTELEDTLDSTATQQELR	Myosin-11 (UniProt:P35749)	Homo sapiens (human)	1	1
6015	CAPESIEFPVSEARVLED	Integrin beta-3	Homo sapiens (human)	1	1
12994	ELDQENEAALENGIKNEENT	Matrin-3 (UniProt:P43243)	Homo sapiens (human)	1	1
13735	EPQVYTLPPSR	Immunoglobulin heavy constant gamma 1 (Fragment) (UniProt:A0A0A0MS08)	Homo sapiens (human)	1	1
16000	FGKLNSLKSI	Toll-like receptor 5 (UniProt:O60602)	Homo sapiens (human)	1	1
16172	FIDLNSSRNL	Solute carrier family 23 member 2	Homo sapiens (human)	1	1
16688	FLKGNIKKEL	Heme oxygenase 2	Homo sapiens (human)	1	1
16692	FLKKNRKKKL	ATP-dependent RNA helicase DDX18	Homo sapiens (human)	1	1
17048	FMKHNTSRQN	Unconventional myosin-Va (UniProt:Q9Y4I1)	Homo sapiens (human)	1	1
18135	FVDLNNGKFY	DNA repair protein RAD52 homolog (UniProt:P43351)	Homo sapiens (human)	1	1
18216	FVKRNRGGKY	Neural cell adhesion molecule L1-like protein (UniProt:O00533)	Homo sapiens (human)	1	1
18379	FYDNNTGKLI	Striatin	Homo sapiens (human)	1	1

User Query: Cross reactivity arising from similar epitopes – Self and Virus



Current Filters: Positive Assays Only | Organism: Homo sapiens (human) (ID:9606, human) | Disease Data: viral infectious disease (ID:DOID:934, Viral disease)

Epitopes (-) | Antigens (-) | Assays (331) | Receptors (3) | References (-)

T Cell Assays (238) | B Cell Assays (93) | MHC Ligand Assays (-)

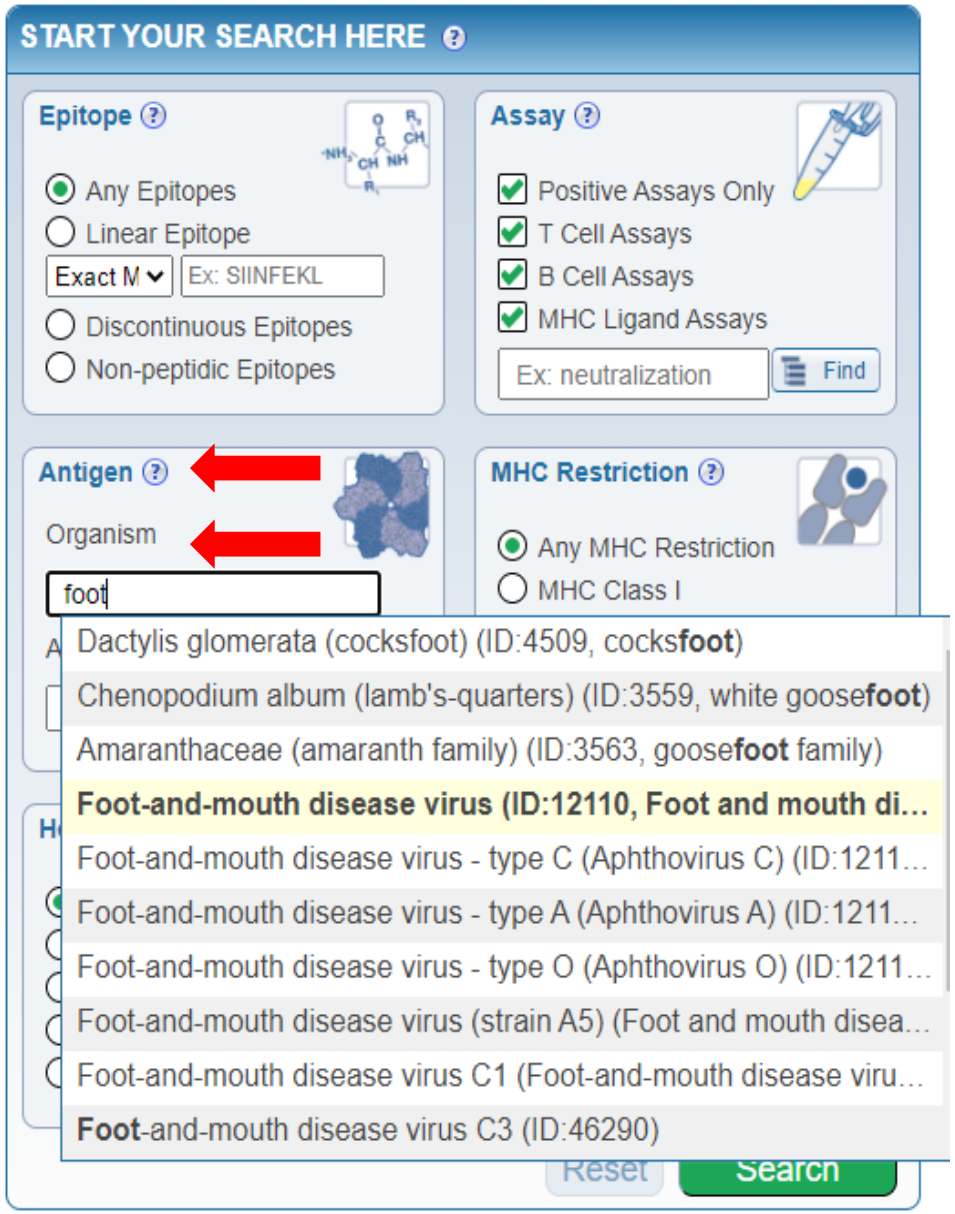
Go To Records Starting At A,b GO | Export Results

93 Records Found | Page 1 of 4 | 25 Per Page

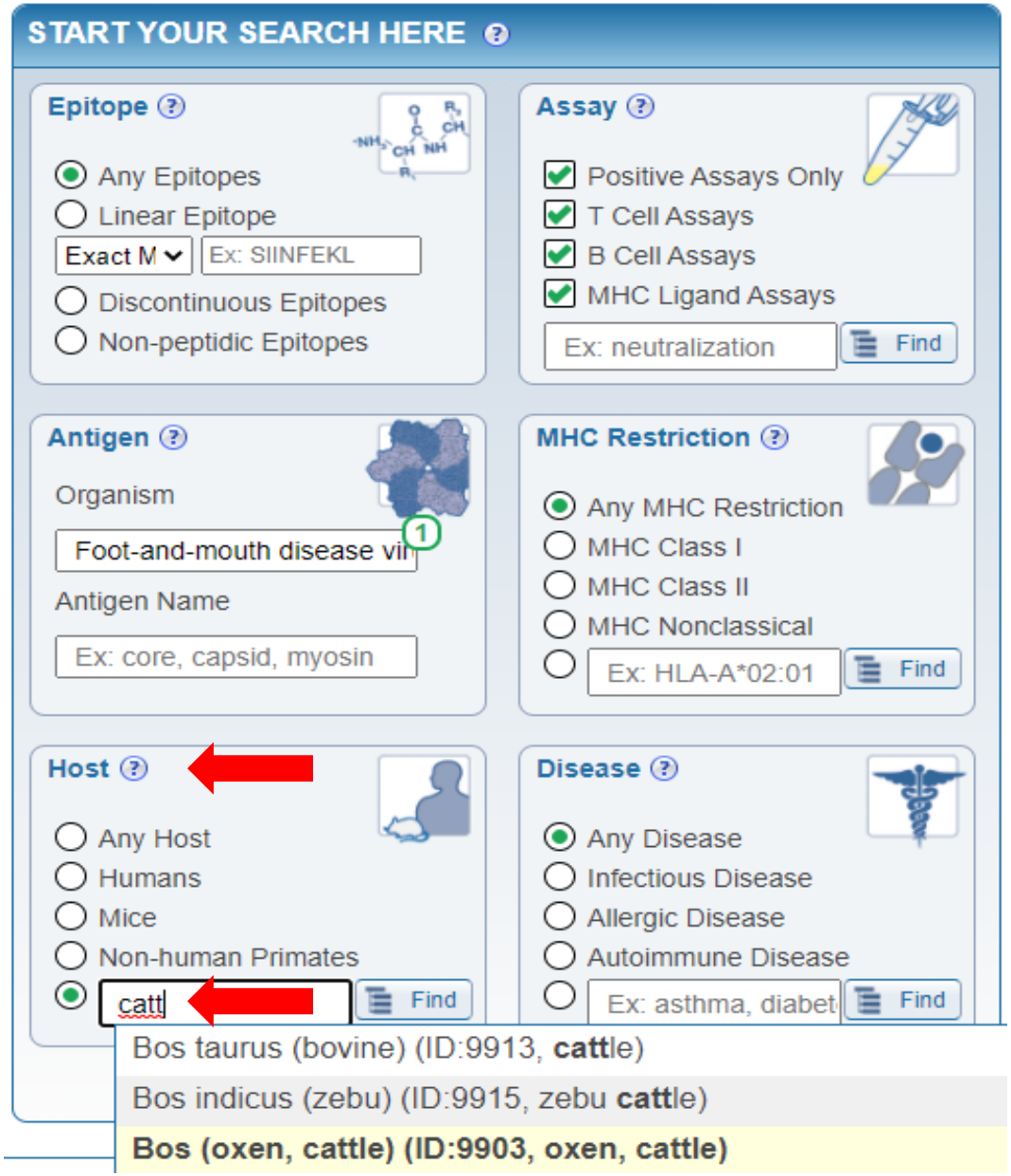
ID	Reference	Epitope	Host	Immunization	Assay Antigen	Antigen Epitope Relation	Assay Description
1953462	K Kaida; J Neuroimmunol 2001	beta-D-GalNAc-(1->4)-[alpha-Neu5Ac-(2->3)]-beta-D-Gal-(1->3)-beta-D-GalNAc-(1->4)-[alpha-Neu5Ac-(2->3)]-beta-D-Gal-(1->4)-beta-D-Glc-(1<->1')-Cer Homo sapiens (human)	Homo sapiens (human)	Infectious disease via exposure to Human herpesvirus 5 (Human cytomegalovirus) followed by Occurrence of autoimmune disease (Guillain-Barre syndrome)	beta-D-GalNAc-(1->4)-[alpha-Neu5Ac-(2->3)]-beta-D-Gal-(1->4)-beta-D-Glc-(1<->1')-Cer beta-D-GalNAc-(1->4)-[alpha-Neu5Ac-(2->3)]-beta-D-Gal-(1->4)-beta-D-Glc-(1<->1')-Cer Homo sapiens (human)	Structurally Related	antigen inhibition qualitative binding Positive-High
1816261	C W Ang; Neurology 2000	ganglioside GM2 (18:0) Homo sapiens (human)	Homo sapiens (human)	Infectious disease via exposure to Herpesvirus (Structurally Related) followed by Occurrence of autoimmune disease (Guillain-Barre syndrome)	ganglioside GM2 (18:0) ganglioside GM2 (18:0) Homo sapiens (human)	Epitope	antigen inhibition qualitative binding Positive
1936454	Aristotelis Tsiakalos; J Infect Dis 2011	NFLRGKLKLYTGEA C RTGDR Erythropoietin (174-193) Homo sapiens (human)	Homo sapiens (human)	Infectious disease via exposure to Human immunodeficiency virus 1 (human immunodeficiency virus 1 HIV-1)	NFLRGKLKLYTGEA C RTGDR Erythropoietin (174-193) Homo sapiens (human)	Epitope	antigen inhibition qualitative binding Positive
1936452	Aristotelis Tsiakalos; J Infect Dis 2011	RMEVGQQAVEVWQ GL ALLSE Erythropoietin (80-99) Homo sapiens (human)	Homo sapiens (human)	Infectious disease via exposure to Human immunodeficiency virus 1 (human immunodeficiency virus 1 HIV-1)	RMEVGQQAVEVWQ GL ALLSE Erythropoietin (80-99) Homo sapiens (human)	Epitope	antigen inhibition qualitative binding Positive
1816264	C W Ang; Neurology 2000	alpha-N-acetylneuraminosyl-(2->3)-[beta-D-galactosyl-(1->3)-N-acetyl-beta-D-	Homo sapiens (human)	Infectious disease via exposure to Herpesvirus (Structurally Related) followed by Occurrence of	alpha-N-acetylneuraminosyl-(2->3)-[beta-D-galactosyl-(1->3)-N-acetyl-beta-D-galactosaminyl-(1-	Epitope	antigen inhibition qualitative binding Positive

User Query:
Protective epitopes from *Sarcocystis neurona No S. neuroa* in IEDB

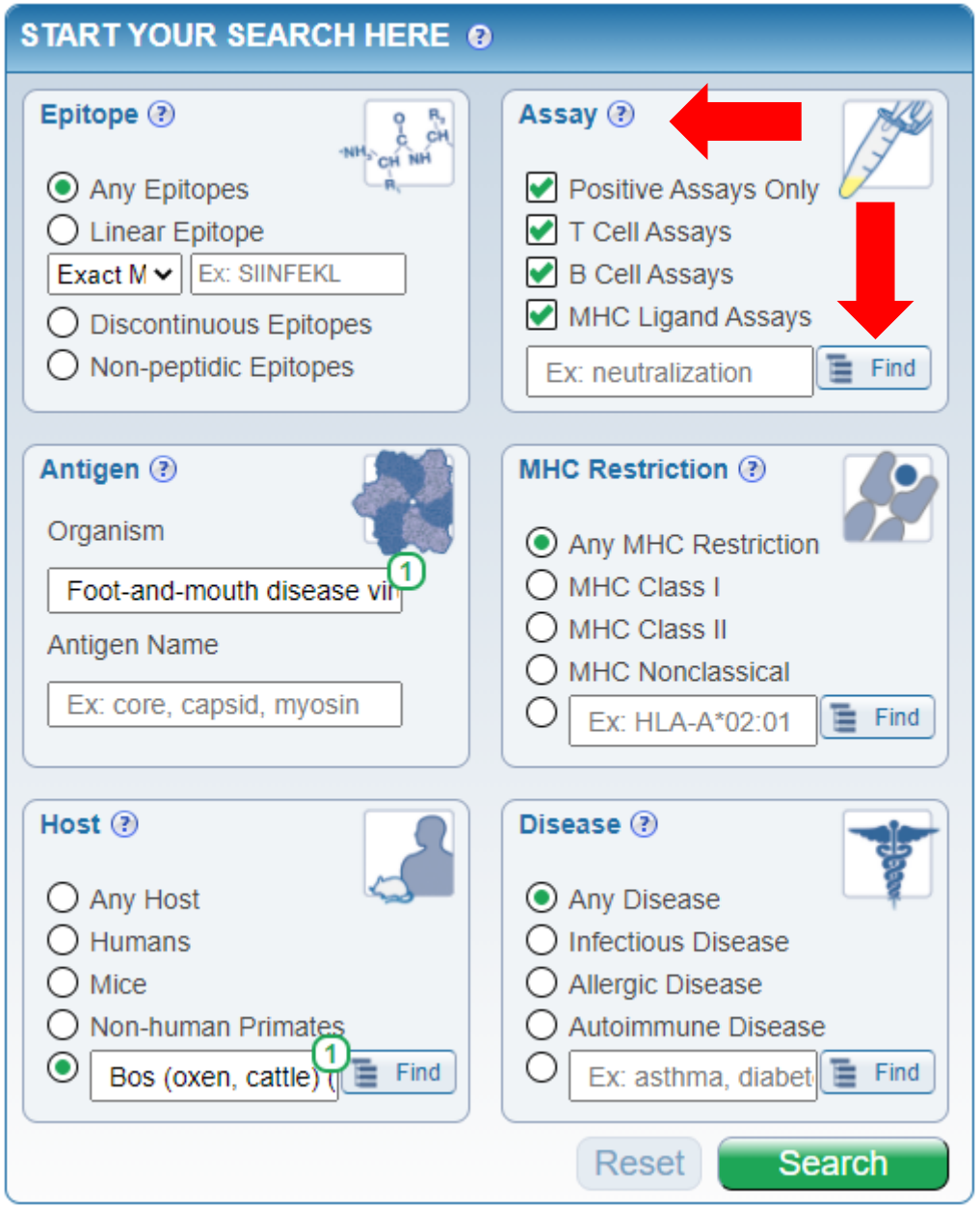
Showing protective epitopes from foot-and-mouth disease virus in cattle



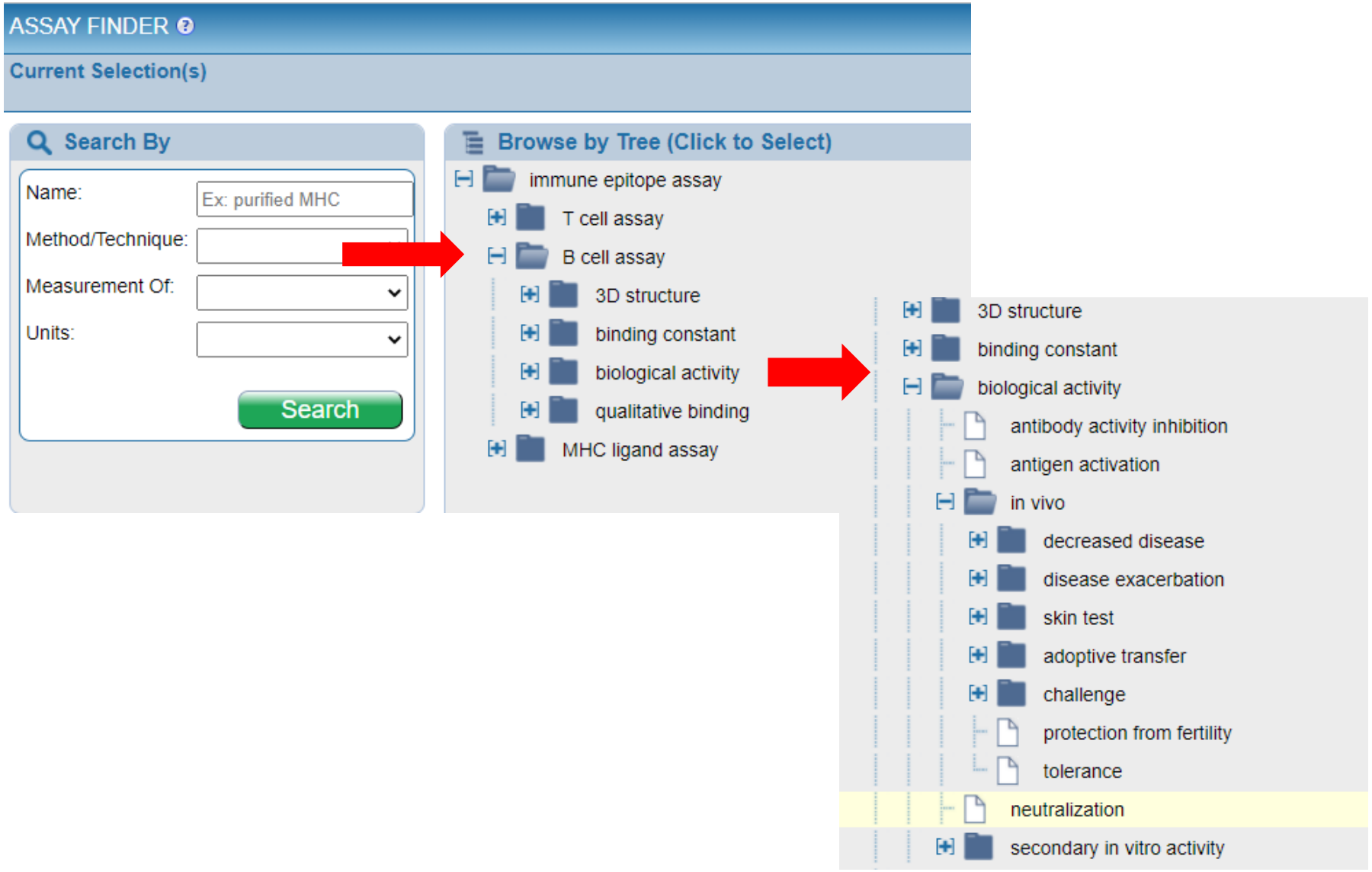
Example Query: Finding protective epitopes from foot-and-mouth disease virus in cattle



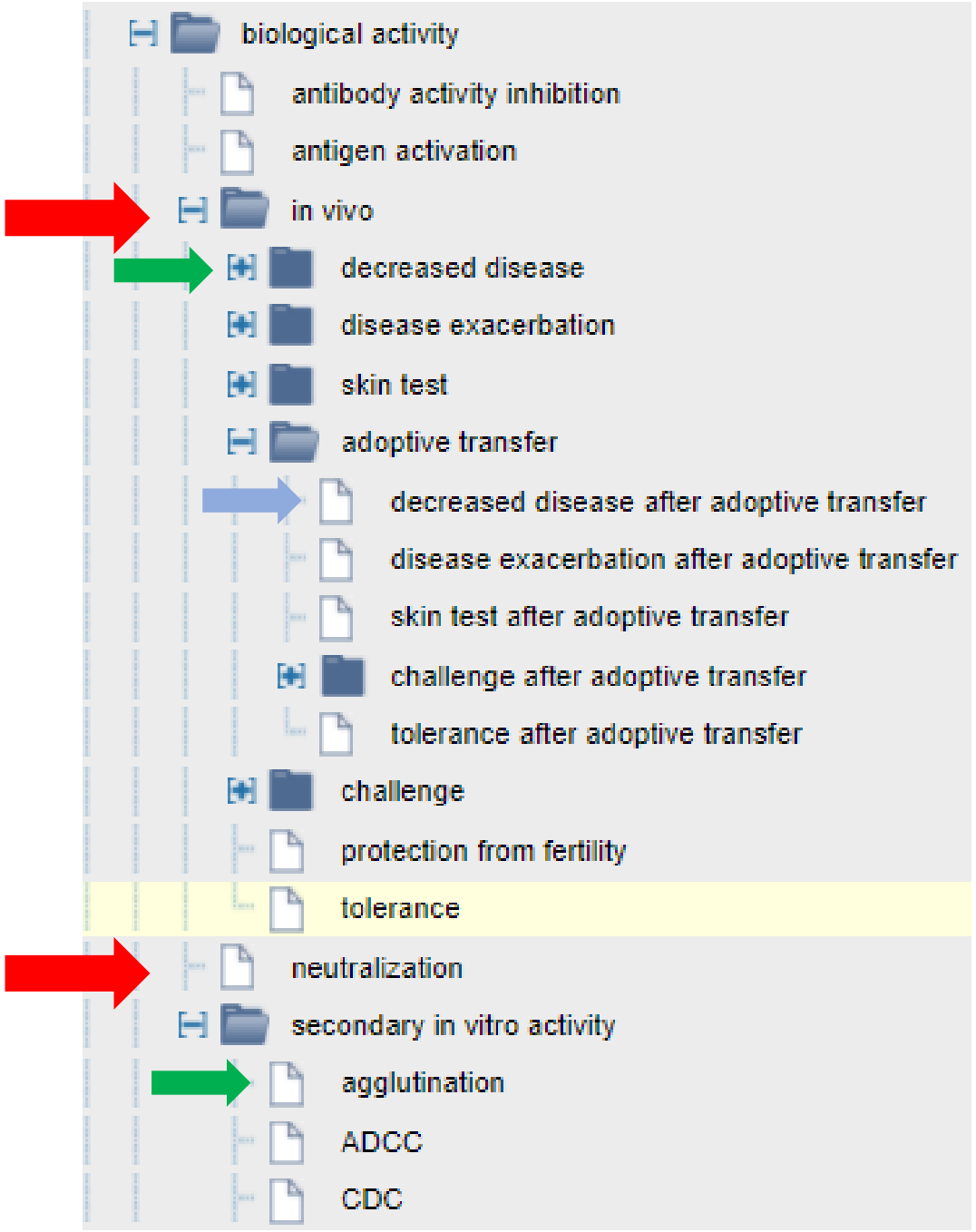
Example Query: Finding protective epitopes from foot-and-mouth disease virus in cattle



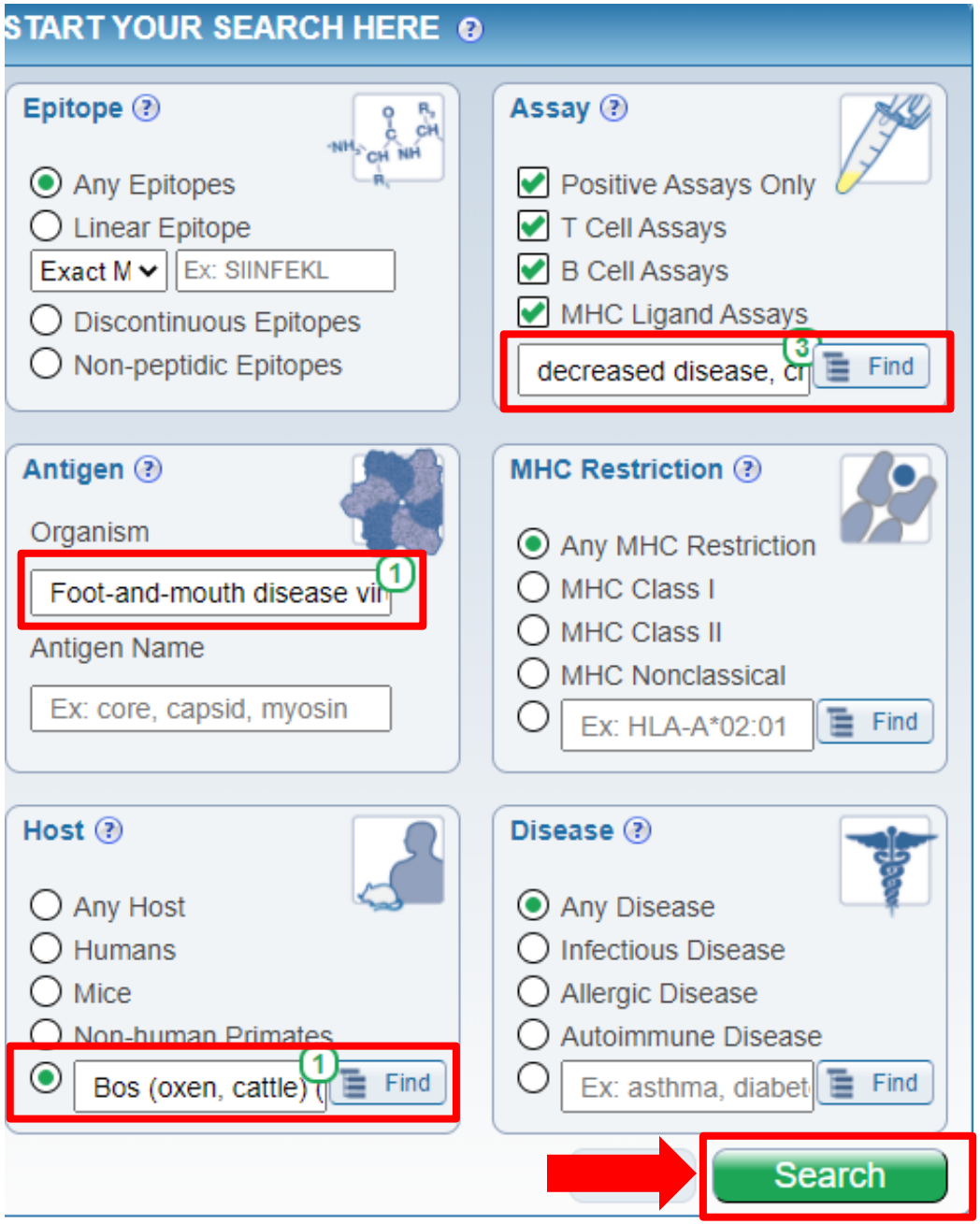
Example Query: Finding protective epitopes



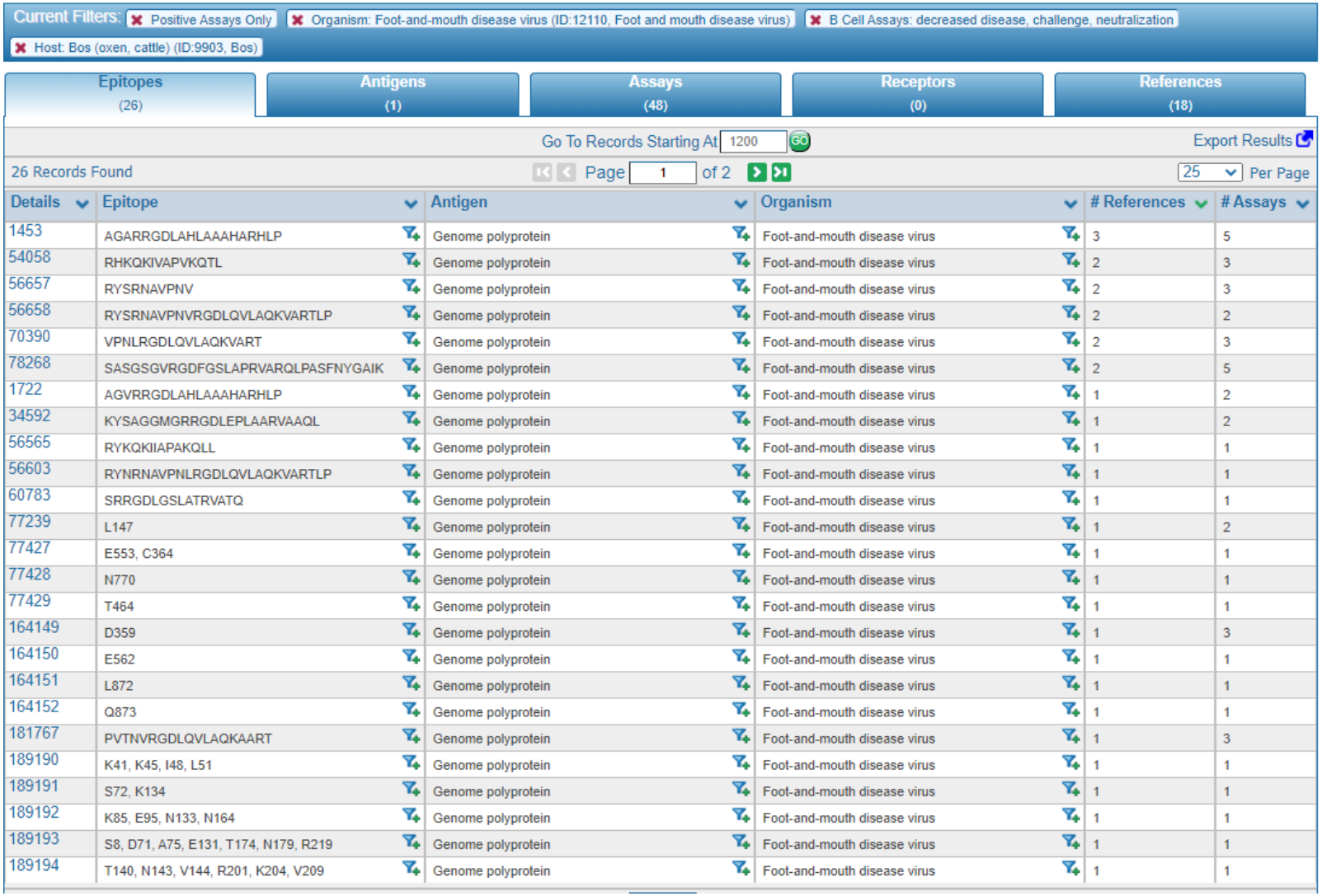
Example Query: Finding protective epitopes



Example Query: Finding protective epitopes from foot-and-mouth disease virus in cattle



Example Query: Finding protective epitopes from foot-and-mouth disease virus in cattle



Current Filters: Positive Assays Only | Organism: Foot-and-mouth disease virus (ID:12110, Foot and mouth disease virus) | B Cell Assays: decreased disease, challenge, neutralization | Host: Bos (oxen, cattle) (ID:9903, Bos)

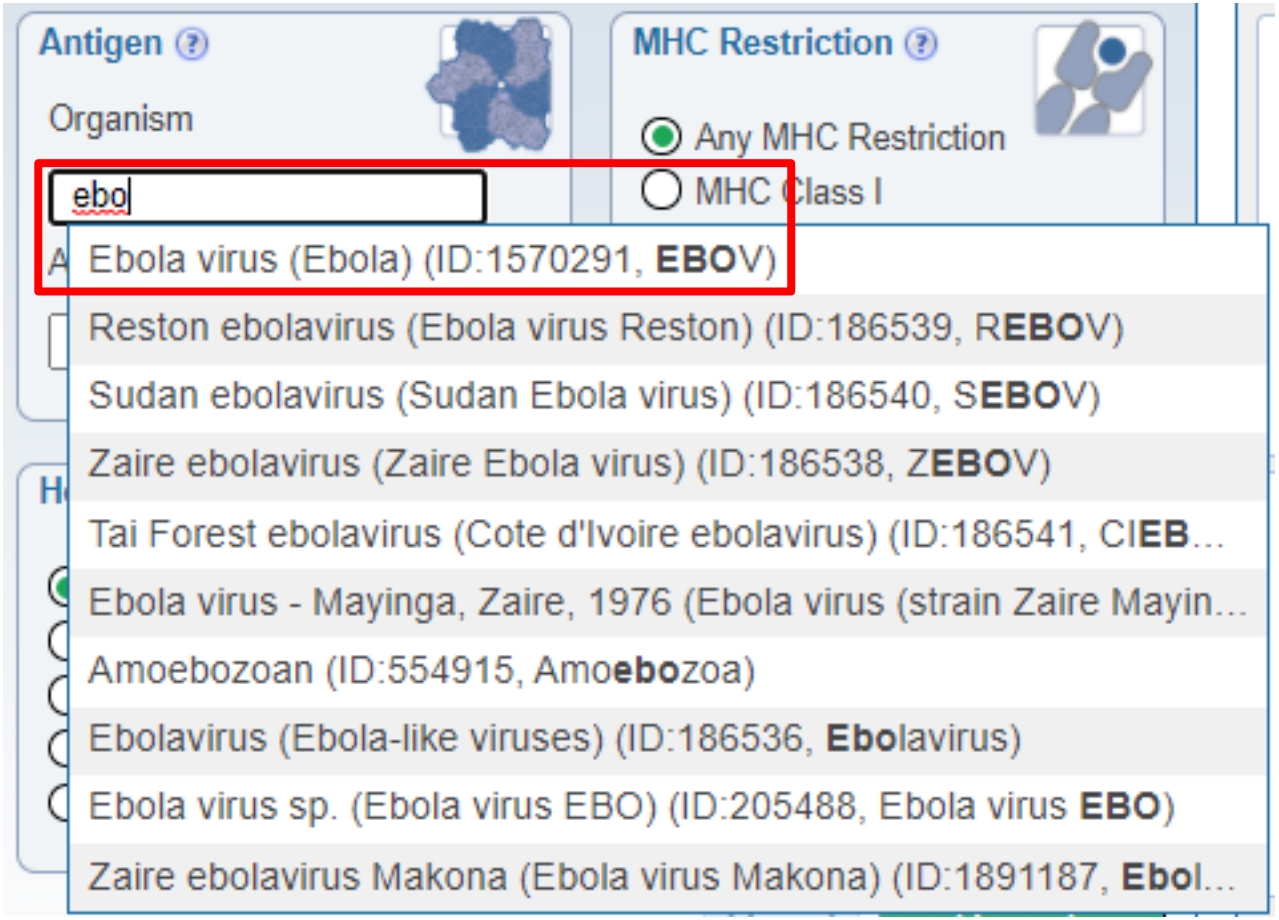
Epitopes (26) | Antigens (1) | Assays (48) | Receptors (0) | References (18)

Go To Records Starting At 1200 GO — Export Results

26 Records Found — Page 1 of 2 — 25 Per Page

Details	Epitope	Antigen	Organism	# References	# Assays
1453	AGARRGDLAHLAAAHARHLP	Genome polyprotein	Foot-and-mouth disease virus	3	5
54058	RHKQKIVAPVKQTL	Genome polyprotein	Foot-and-mouth disease virus	2	3
56657	RYSRNAVPNV	Genome polyprotein	Foot-and-mouth disease virus	2	3
56658	RYSRNAVPNVRGDLQVLAQKVARTLP	Genome polyprotein	Foot-and-mouth disease virus	2	2
70390	VPNLRGDLQVLAQKVART	Genome polyprotein	Foot-and-mouth disease virus	2	3
78268	SASGSGVRGDFGSLAPRVARQLPASFNYGAIK	Genome polyprotein	Foot-and-mouth disease virus	2	5
1722	AGVRRGDLAHLAAAHARHLP	Genome polyprotein	Foot-and-mouth disease virus	1	2
34592	KYSAGGMGRRGDLEPLAARVAAQL	Genome polyprotein	Foot-and-mouth disease virus	1	2
56565	RYKQKIIAPAKQLL	Genome polyprotein	Foot-and-mouth disease virus	1	1
56603	RYNRNAVPNLRGDLQVLAQKVARTLP	Genome polyprotein	Foot-and-mouth disease virus	1	1
60783	SRRGDLGSLATRVATQ	Genome polyprotein	Foot-and-mouth disease virus	1	1
77239	L147	Genome polyprotein	Foot-and-mouth disease virus	1	2
77427	E553, C364	Genome polyprotein	Foot-and-mouth disease virus	1	1
77428	N770	Genome polyprotein	Foot-and-mouth disease virus	1	1
77429	T464	Genome polyprotein	Foot-and-mouth disease virus	1	1
164149	D359	Genome polyprotein	Foot-and-mouth disease virus	1	3
164150	E562	Genome polyprotein	Foot-and-mouth disease virus	1	1
164151	L872	Genome polyprotein	Foot-and-mouth disease virus	1	1
164152	Q873	Genome polyprotein	Foot-and-mouth disease virus	1	1
181767	PVTNVRGDLQVLAQKAART	Genome polyprotein	Foot-and-mouth disease virus	1	3
189190	K41, K45, I48, L51	Genome polyprotein	Foot-and-mouth disease virus	1	1
189191	S72, K134	Genome polyprotein	Foot-and-mouth disease virus	1	1
189192	K85, E95, N133, N164	Genome polyprotein	Foot-and-mouth disease virus	1	1
189193	S8, D71, A75, E131, T174, N179, R219	Genome polyprotein	Foot-and-mouth disease virus	1	1
189194	T140, N143, V144, R201, K204, V209	Genome polyprotein	Foot-and-mouth disease virus	1	1

User Query: Full analysis of Ebola virus



User Query: Full analysis of Ebola virus

Current Filters: Positive Assays Only | Organism: Ebola virus (Ebola) (ID:1570291, Ebola)

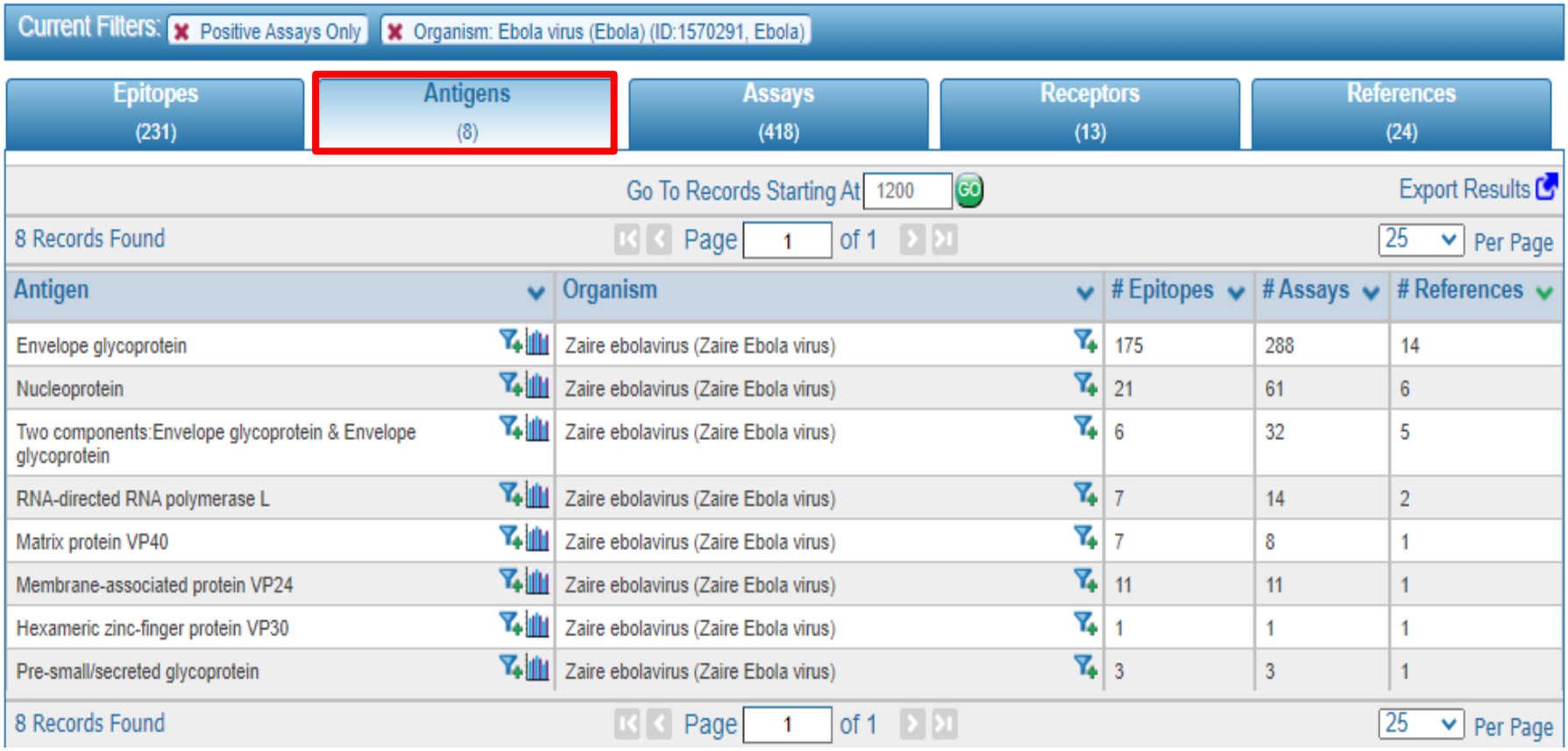
Epitopes (231) | Antigens (8) | Assays (418) | Receptors (13) | References (24)

Go To Records Starting At 1200 GO — Export Results

231 Records Found — Page 1 of 10 — 25 Per Page

Details	Epitope	Antigen	Organism	# References	# Assays
16337	FIYFGKKQY	RNA-directed RNA polymerase L	Zaire ebolavirus (Zaire Ebola virus)	2	3
18186	FVHSGFIYF	RNA-directed RNA polymerase L	Zaire ebolavirus (Zaire Ebola virus)	2	2
23396	GYLEGTRTL	RNA-directed RNA polymerase L	Zaire ebolavirus (Zaire Ebola virus)	2	2
26670	IISDLSIFI	RNA-directed RNA polymerase L	Zaire ebolavirus (Zaire Ebola virus)	2	2
29799	KAFPSNMMV	RNA-directed RNA polymerase L	Zaire ebolavirus (Zaire Ebola virus)	2	2
37081	LLADGLAKA	RNA-directed RNA polymerase L	Zaire ebolavirus (Zaire Ebola virus)	2	2
442032	T270, K272	Envelope glycoprotein	Zaire ebolavirus (Zaire Ebola virus)	2	6
1091	AENCYNLEI	Envelope glycoprotein	Zaire ebolavirus (Zaire Ebola virus)	1	1
2155	AKATGRYNL	Membrane-associated protein VP24	Zaire ebolavirus (Zaire Ebola virus)	1	1
4933	ATEDPSSGY	Envelope glycoprotein	Zaire ebolavirus (Zaire Ebola virus)	1	1
7754	DDDIPF	Nucleoprotein	Zaire ebolavirus (Zaire Ebola virus)	1	2
8748	DIPFP	Nucleoprotein	Zaire ebolavirus (Zaire Ebola virus)	1	4
8777	DISEATQVEQHHRRTDND	Envelope glycoprotein	Zaire ebolavirus (Zaire Ebola virus)	1	1
8885	DKIDQIIHDFVDKTL	Envelope glycoprotein	Zaire ebolavirus (Zaire Ebola virus)	1	1
9996	DRLASTVIY	Envelope glycoprotein	Zaire ebolavirus (Zaire Ebola virus)	1	1
10496	DTTIP	Nucleoprotein	Zaire ebolavirus (Zaire Ebola virus)	1	3
14569	ETTQALQLF	Envelope glycoprotein	Zaire ebolavirus (Zaire Ebola virus)	1	1
14919	EWAENCYNL	Envelope glycoprotein	Zaire ebolavirus (Zaire Ebola virus)	1	1
15520	FEEMYRHILRSQGPFDAVLYYHMMKD	Nucleoprotein	Zaire ebolavirus (Zaire Ebola virus)	1	1
16117	FHKKRVEPL	Hexameric zinc-finger protein VP30	Zaire ebolavirus (Zaire Ebola virus)	1	1
16888	FLSFASLFL	Nucleoprotein	Zaire ebolavirus (Zaire Ebola virus)	1	3
16985	FLYDRLAST	Envelope glycoprotein	Zaire ebolavirus (Zaire Ebola virus)	1	1
17527	FQQTNAMVT	Nucleoprotein	Zaire ebolavirus (Zaire Ebola virus)	1	1
17945	FTFDLTALK	Matrix protein VP40	Zaire ebolavirus (Zaire Ebola virus)	1	1
20619	GKLIWKVNPEIDTTI	Envelope glycoprotein	Zaire ebolavirus (Zaire Ebola virus)	1	1

User Query: Full analysis of Ebola virus



Current Filters: Positive Assays Only | Organism: Ebola virus (Ebola) (ID:1570291, Ebola)

Epitopes (231) | Antigens (8) | Assays (418) | Receptors (13) | References (24)

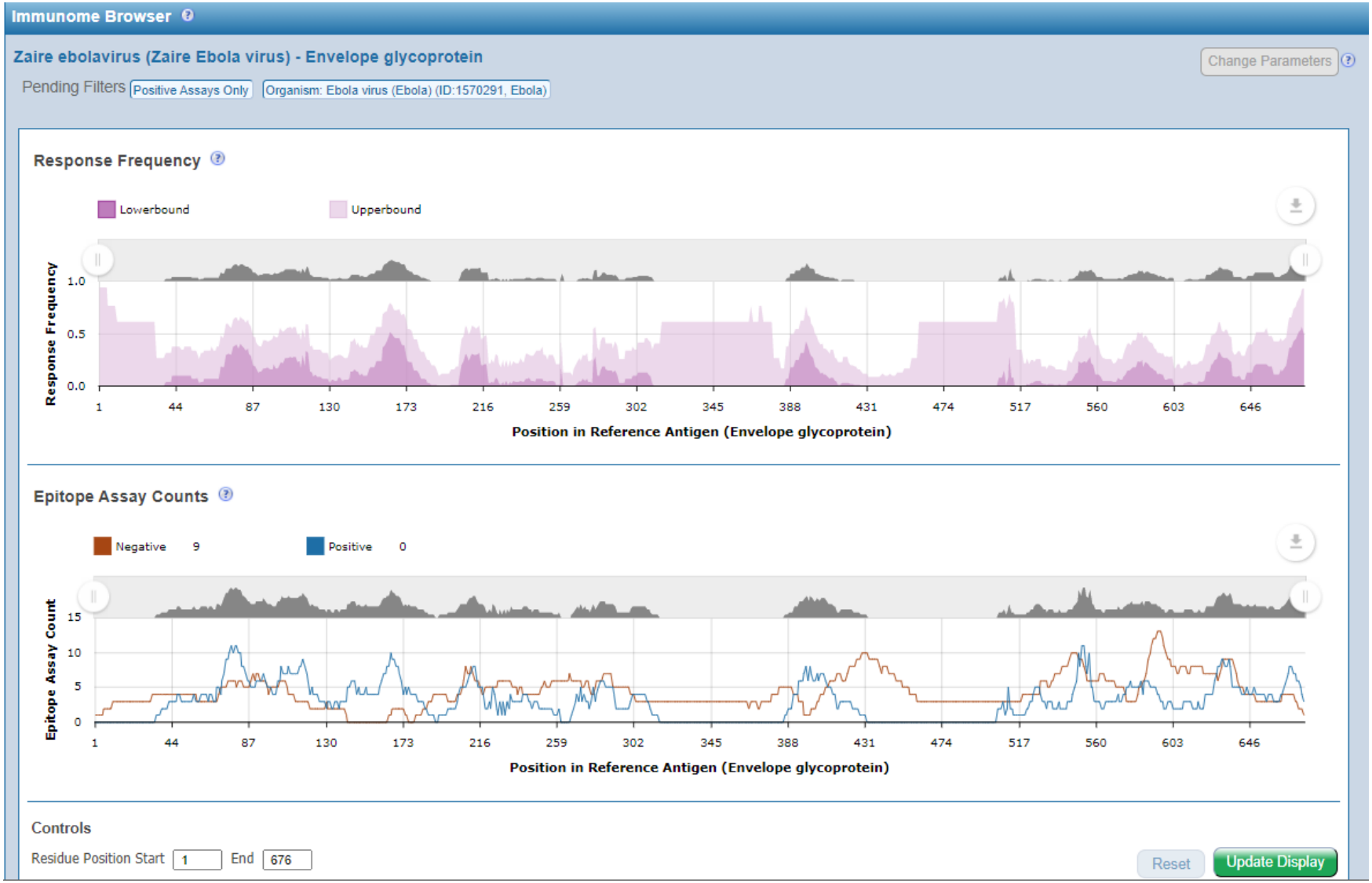
Go To Records Starting At 1200 GO — Export Results

8 Records Found — Page 1 of 1 — 25 Per Page

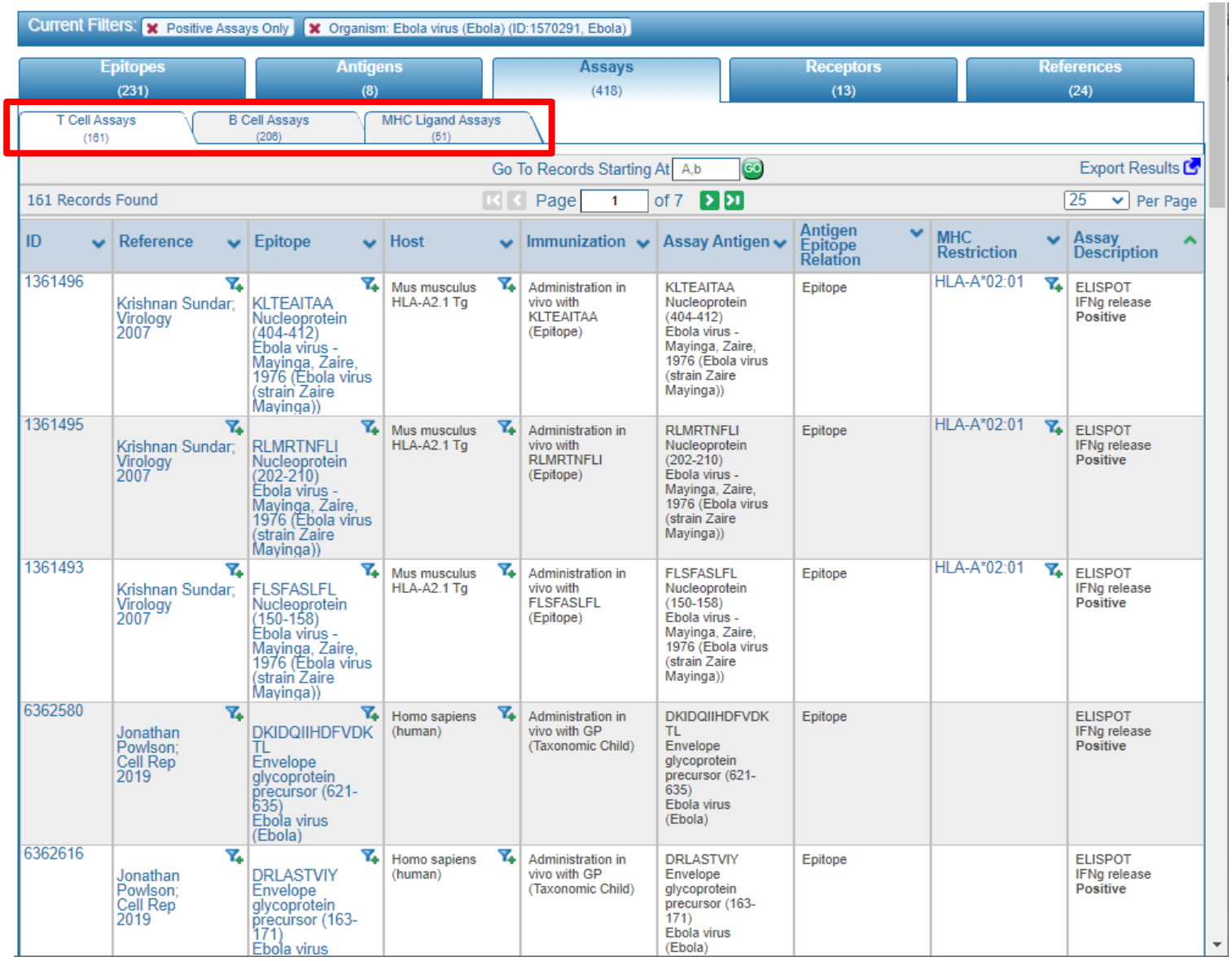
Antigen	Organism	# Epitopes	# Assays	# References
Envelope glycoprotein	Zaire ebolavirus (Zaire Ebola virus)	175	288	14
Nucleoprotein	Zaire ebolavirus (Zaire Ebola virus)	21	61	6
Two components:Envelope glycoprotein & Envelope glycoprotein	Zaire ebolavirus (Zaire Ebola virus)	6	32	5
RNA-directed RNA polymerase L	Zaire ebolavirus (Zaire Ebola virus)	7	14	2
Matrix protein VP40	Zaire ebolavirus (Zaire Ebola virus)	7	8	1
Membrane-associated protein VP24	Zaire ebolavirus (Zaire Ebola virus)	11	11	1
Hexameric zinc-finger protein VP30	Zaire ebolavirus (Zaire Ebola virus)	1	1	1
Pre-small/secreted glycoprotein	Zaire ebolavirus (Zaire Ebola virus)	3	3	1

8 Records Found — Page 1 of 1 — 25 Per Page

User Query: Full analysis of Ebola virus



User Query: Full analysis of Ebola virus



Current Filters: Positive Assays Only | Organism: Ebola virus (Ebola) (ID:1570291, Ebola)

Epitopes (231) | Antigens (8) | Assays (418) | Receptors (13) | References (24)

T Cell Assays (161) | B Cell Assays (206) | MHC Ligand Assays (51)

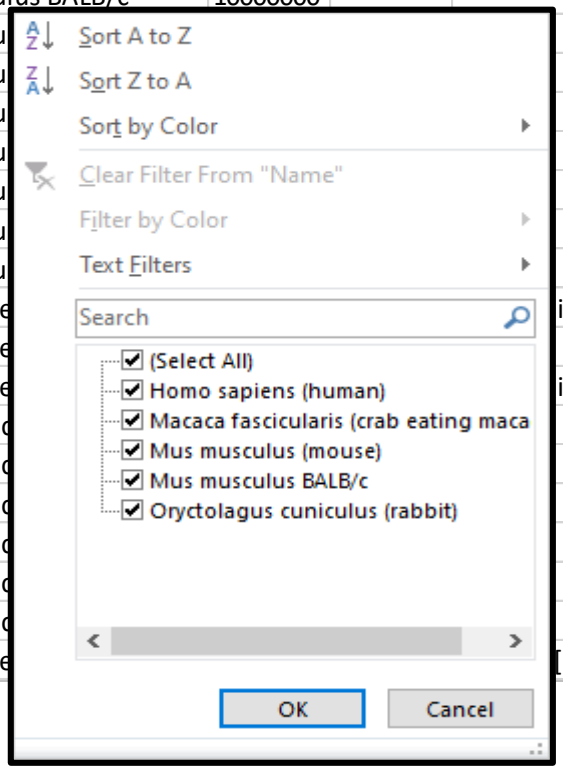
Go To Records Starting At A,b GO | Export Results

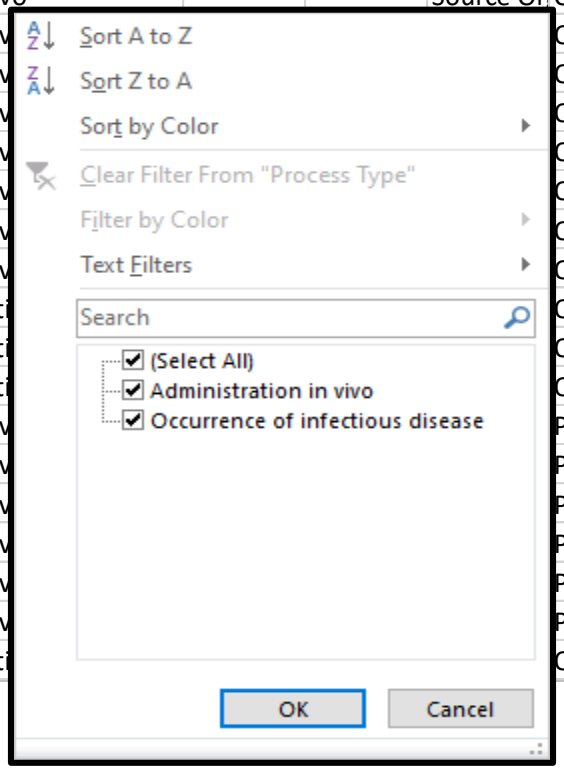
161 Records Found | Page 1 of 7 | 25 Per Page

ID	Reference	Epitope	Host	Immunization	Assay Antigen	Antigen Epitope Relation	MHC Restriction	Assay Description
1361496	Krishnan Sundar; Virology 2007	KLTEAITAA Nucleoprotein (404-412) Ebola virus - Mayinga, Zaire, 1976 (Ebola virus (strain Zaire Mayinga))	Mus musculus HLA-A2.1 Tg	Administration in vivo with KLTEAITAA (Epitope)	KLTEAITAA Nucleoprotein (404-412) Ebola virus - Mayinga, Zaire, 1976 (Ebola virus (strain Zaire Mayinga))	Epitope	HLA-A*02:01	ELISPOT IFNg release Positive
1361495	Krishnan Sundar; Virology 2007	RLMRTNFLI Nucleoprotein (202-210) Ebola virus - Mayinga, Zaire, 1976 (Ebola virus (strain Zaire Mayinga))	Mus musculus HLA-A2.1 Tg	Administration in vivo with RLMRTNFLI (Epitope)	RLMRTNFLI Nucleoprotein (202-210) Ebola virus - Mayinga, Zaire, 1976 (Ebola virus (strain Zaire Mayinga))	Epitope	HLA-A*02:01	ELISPOT IFNg release Positive
1361493	Krishnan Sundar; Virology 2007	FLSFASLFL Nucleoprotein (150-158) Ebola virus - Mayinga, Zaire, 1976 (Ebola virus (strain Zaire Mayinga))	Mus musculus HLA-A2.1 Tg	Administration in vivo with FLSFASLFL (Epitope)	FLSFASLFL Nucleoprotein (150-158) Ebola virus - Mayinga, Zaire, 1976 (Ebola virus (strain Zaire Mayinga))	Epitope	HLA-A*02:01	ELISPOT IFNg release Positive
6362580	Jonathan Powlson; Cell Rep 2019	DKIDQIIHDFVDK TL Envelope glycoprotein precursor (621-635) Ebola virus (Ebola)	Homo sapiens (human)	Administration in vivo with GP (Taxonomic Child)	DKIDQIIHDFVDK TL Envelope glycoprotein precursor (621-635) Ebola virus (Ebola)	Epitope		ELISPOT IFNg release Positive
6362616	Jonathan Powlson; Cell Rep 2019	DRLASTVIY Envelope glycoprotein precursor (163-171) Ebola virus	Homo sapiens (human)	Administration in vivo with GP (Taxonomic Child)	DRLASTVIY Envelope glycoprotein precursor (163-171) Ebola virus (Ebola)	Epitope		ELISPOT IFNg release Positive

User Query: Full analysis of Ebola virus

Host Name	Host Host ID	Host Geoloc	Host MHC Ty	1st in vivo Process Process Type	1st in vivo Disease	1st in vivo Disease	1st in vivo Immun	1st in vivo Immun	1st in vivo Immun
Mus musculus BALB/c	10000000			Administration in vivo			Source An	Protein	Nucleopro
Mus musculus BALB/c	10000000			Administration in vivo	healthy		Source An	Protein	Nucleopro
Mus musculus BALB/c	10000000			Administration in vivo	healthy		Source An	Protein	Nucleopro
Mus musculus BALB/c	10000000			Administration in vivo	healthy		Source An	Protein	Nucleopro
Mus musculus BALB/c	10000000			Administration in vivo			Source An	Protein	Envelope
Mus musculus BALB/c	10000000			Administration in vivo			Source An	Protein	Envelope
Mus musculus BALB/c	10000000			Administration in vivo			Source An	Protein	Envelope
Mus musculus BALB/c	10000000			Administration in vivo			Source An	Protein	Envelope
Mus musculus BALB/c	10000000			Administration in vivo			Source Or	Organism	Ebola viru
Mus muscu				Administration in viv				Organism	Ebola viru
Mus muscu				Administration in viv				Organism	Ebola viru
Mus muscu				Administration in viv				Organism	Ebola viru
Mus muscu				Administration in viv				Organism	Ebola viru
Mus muscu				Administration in viv				Organism	Ebola viru
Mus muscu				Administration in viv				Organism	Ebola viru
Mus muscu				Administration in viv				Organism	Ebola viru
Homo sapie				ic Occurrence of infecti				Organism	Ebola viru
Homo sapie				Occurrence of infecti				Organism	Ebola viru
Homo sapie				ic Occurrence of infecti				Organism	Ebola viru
Macaca fasc				Administration in viv				Protein	envelope
Macaca fasc				Administration in viv				Protein	envelope
Macaca fasc				Administration in viv				Protein	envelope
Macaca fasc				Administration in viv				Protein	envelope
Macaca fasc				Administration in viv				Protein	envelope
Macaca fasc				Administration in viv				Protein	envelope
Homo sapie				[I Occurrence of infecti				Organism	Ebola viru

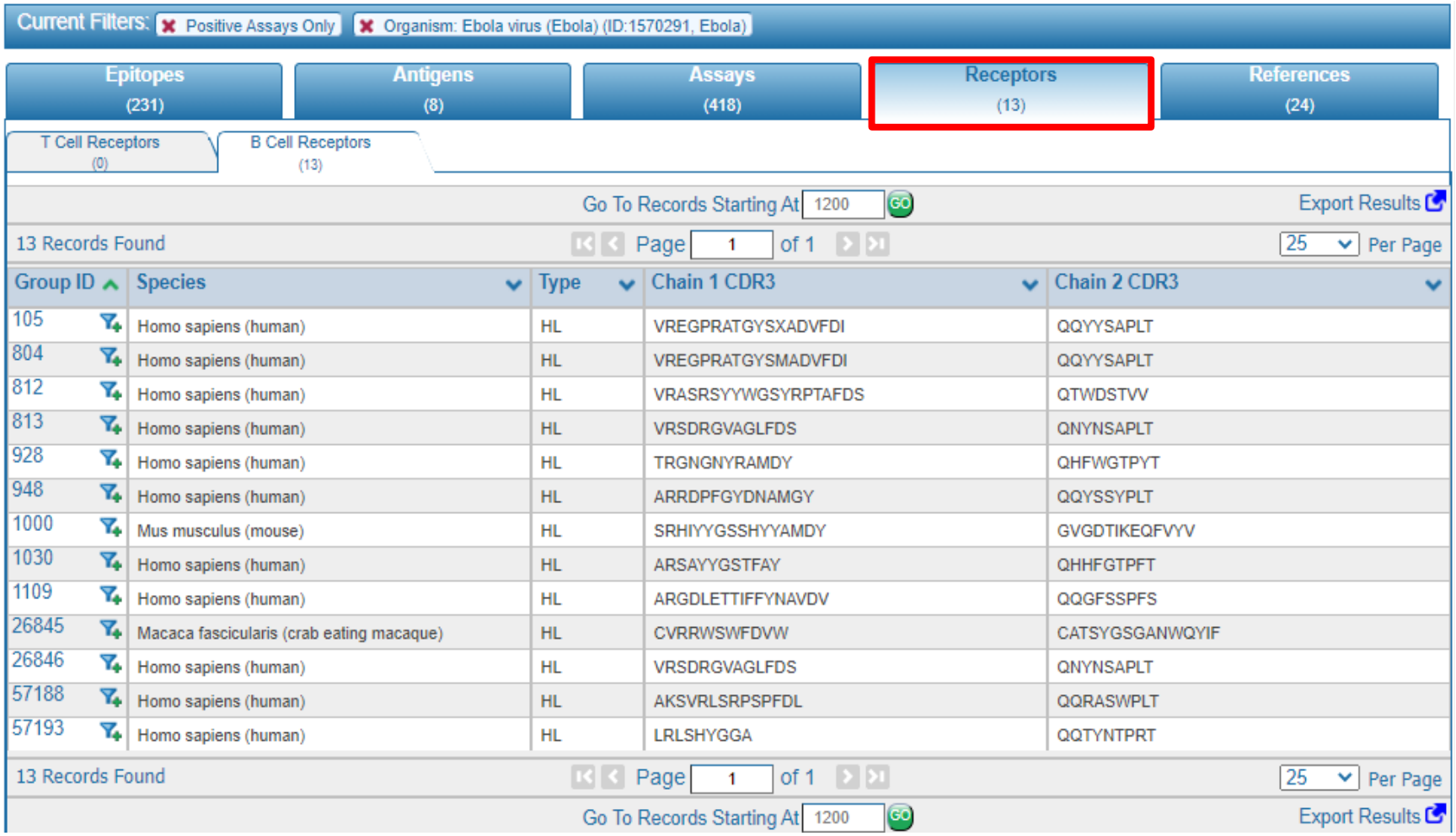




User Query: Full analysis of Ebola virus

Method/Technique	Assay Group	Units
x-ray crystallography	3D structure	angstroms
electron microscopy	3D structure	
biological activity	antibody-dependent cellular cytotoxicity	
in vivo assay	decreased disease after adoptive transfer	
antigen inhibition (~ IC50)	dissociation constant KD	nM
bio-layer interferometry assay	dissociation constant KD	nM
surface plasmon resonance (SPR)	dissociation constant KD	nM
binding assay	dissociation constant KD	nM
ELISA	dissociation constant KD	nM
biological activity	neutralization	
bio-layer interferometry assay	off rate	1/s
surface plasmon resonance (SPR)	off rate	1/s
binding assay	off rate	1/s
bio-layer interferometry assay	on rate	M^-1s^-1
surface plasmon resonance (SPR)	on rate	M^-1s^-1
binding assay	on rate	M^-1s^-1
western blot	qualitative binding	
ELISA	qualitative binding	
bio-layer interferometry assay	qualitative binding	
electron microscopy	qualitative binding	
flow cytometry	qualitative binding	
immuno staining	qualitative binding	
immunoprecipitation	qualitative binding	
chromatography	qualitative binding	
biological activity	secondary in vitro activity	
in vivo assay	survival from challenge after adoptive transfer	

User Query: Full analysis of Ebola virus



Current Filters: Positive Assays Only | Organism: Ebola virus (Ebola) (ID:1570291, Ebola)

Epitopes (231) | Antigens (8) | Assays (418) | Receptors (13) | References (24)

T Cell Receptors (0) | B Cell Receptors (13)

Go To Records Starting At 1200 GO — Export Results

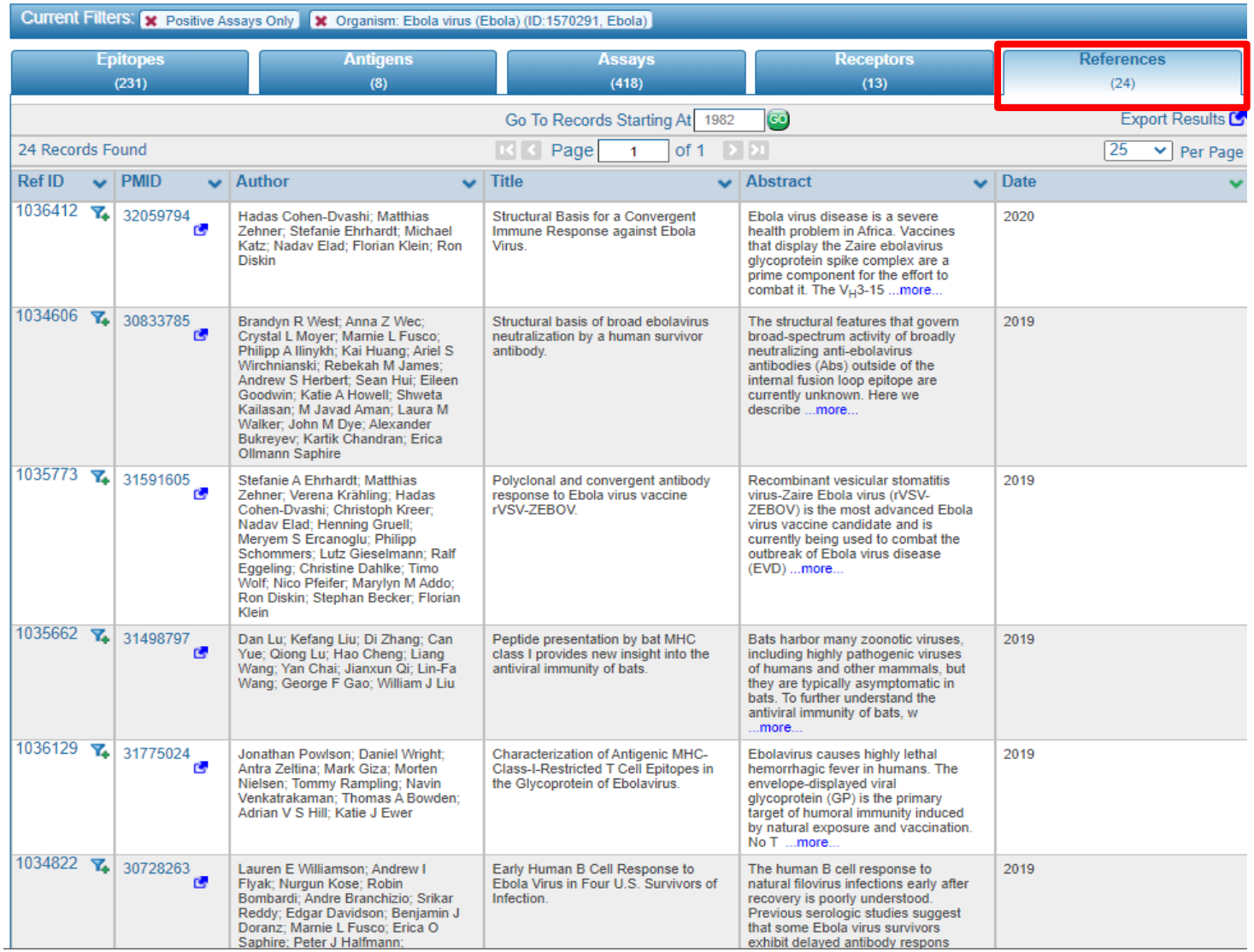
13 Records Found — Page 1 of 1 — 25 Per Page

Group ID	Species	Type	Chain 1 CDR3	Chain 2 CDR3
105	Homo sapiens (human)	HL	VREGPRATGYSXADVFDI	QQYYSAPLT
804	Homo sapiens (human)	HL	VREGPRATGYSMADVFDI	QQYYSAPLT
812	Homo sapiens (human)	HL	VRASRSYYWGSYRPTAFDS	QTWDSTVV
813	Homo sapiens (human)	HL	VRSDRGVAGLFDS	QNYNSAPLT
928	Homo sapiens (human)	HL	TRGNGNYRAMDY	QHFWGTPYT
948	Homo sapiens (human)	HL	ARRDPFGYDNAMGY	QQYSSYPLT
1000	Mus musculus (mouse)	HL	SRHIYYGSSHYYAMDY	GVGDTIKEQFVYV
1030	Homo sapiens (human)	HL	ARSAYYGSTFAY	QHHFGTPFT
1109	Homo sapiens (human)	HL	ARGDLETTIFFYNAVDV	QQGFSSPFS
26845	Macaca fascicularis (crab eating macaque)	HL	CVRRWSWFDVW	CATSYGSGANWQYIF
26846	Homo sapiens (human)	HL	VRSDRGVAGLFDS	QNYNSAPLT
57188	Homo sapiens (human)	HL	AKSVRLSRPSPFDL	QQRASWPLT
57193	Homo sapiens (human)	HL	LRLSHYGGA	QQTYNTPRT

13 Records Found — Page 1 of 1 — 25 Per Page

Go To Records Starting At 1200 GO — Export Results

User Query: Full analysis of Ebola virus



Current Filters: Positive Assays Only | Organism: Ebola virus (Ebola) (ID:1570291, Ebola)

Epitopes (231) | Antigens (8) | Assays (418) | Receptors (13) | References (24)

Go To Records Starting At 1982 GO | Export Results

24 Records Found | Page 1 of 1 | 25 Per Page

Ref ID	PMID	Author	Title	Abstract	Date
1036412	32059794	Hadas Cohen-Dvashi; Matthias Zehner; Stefanie Ehrhardt; Michael Katz; Nadav Elad; Florian Klein; Ron Diskin	Structural Basis for a Convergent Immune Response against Ebola Virus.	Ebola virus disease is a severe health problem in Africa. Vaccines that display the Zaire ebolavirus glycoprotein spike complex are a prime component for the effort to combat it. The V_H3-15 ...more...	2020
1034606	30833785	Brandyn R West; Anna Z Wec; Crystal L Moyer; Marnie L Fusco; Philipp A Ilinykh; Kai Huang; Ariel S Wirchnianski; Rebekah M James; Andrew S Herbert; Sean Hui; Eileen Goodwin; Katie A Howell; Shweta Kailasan; M Javad Aman; Laura M Walker; John M Dye; Alexander Bukreyev; Kartik Chandran; Erica Ollmann Saphire	Structural basis of broad ebolavirus neutralization by a human survivor antibody.	The structural features that govern broad-spectrum activity of broadly neutralizing anti-ebolavirus antibodies (Abs) outside of the internal fusion loop epitope are currently unknown. Here we describe ...more...	2019
1035773	31591605	Stefanie A Ehrhardt; Matthias Zehner; Verena Krähling; Hadas Cohen-Dvashi; Christoph Kreer; Nadav Elad; Henning Gruell; Meryem S Ercanoglu; Philipp Schommers; Lutz Gieselmann; Ralf Eggeling; Christine Dahlke; Timo Wolf; Nico Pfeifer; Marylyn M Addo; Ron Diskin; Stephan Becker; Florian Klein	Polyclonal and convergent antibody response to Ebola virus vaccine rVSV-ZEBOV.	Recombinant vesicular stomatitis virus-Zaire Ebola virus (rVSV-ZEBOV) is the most advanced Ebola virus vaccine candidate and is currently being used to combat the outbreak of Ebola virus disease (EVD) ...more...	2019
1035662	31498797	Dan Lu; Kefang Liu; Di Zhang; Can Yue; Qiong Lu; Hao Cheng; Liang Wang; Yan Chai; Jianxun Qi; Lin-Fa Wang; George F Gao; William J Liu	Peptide presentation by bat MHC class I provides new insight into the antiviral immunity of bats.	Bats harbor many zoonotic viruses, including highly pathogenic viruses of humans and other mammals, but they are typically asymptomatic in bats. To further understand the antiviral immunity of bats, w ...more...	2019
1036129	31775024	Jonathan Powlson; Daniel Wright; Antra Zeltina; Mark Giza; Morten Nielsen; Tommy Rampling; Navin Venkatrakaman; Thomas A Bowden; Adrian V S Hill; Katie J Ewer	Characterization of Antigenic MHC-Class-I-Restricted T Cell Epitopes in the Glycoprotein of Ebolavirus.	Ebolavirus causes highly lethal hemorrhagic fever in humans. The envelope-displayed viral glycoprotein (GP) is the primary target of humoral immunity induced by natural exposure and vaccination. No T ...more...	2019
1034822	30728263	Lauren E Williamson; Andrew I Flyak; Nurgun Kose; Robin Bombardi; Andre Branchizio; Srikar Reddy; Edgar Davidson; Benjamin J Doranz; Marnie L Fusco; Erica O Saphire; Peter J Halfmann;	Early Human B Cell Response to Ebola Virus in Four U.S. Survivors of Infection.	The human B cell response to natural filovirus infections early after recovery is poorly understood. Previous serologic studies suggest that some Ebola virus survivors exhibit delayed antibody respons	2019


Q
A

Bonus Questions

User Query: Is it possible to apply B cell and T cell analysis to a cancer sequence? Use lymphoma as an example.

Note:

- Cancer is not within the primary scope of the IEDB
- Most cancer data in the IEDB is from MHC Ligand Elution assays or neoepitope papers (pilot project)
- Two methods of searching by sequence are presented

User Query: Is it possible to apply B cell and T cell analysis to a cancer sequence? Use lymphoma as an example.

Substring Search

RecName: Full=Serine/threonine-protein kinase Kist; AltName: Full=Kinase interacting with stathmin; AltName: Full=PAM COOH-terminal interactor protein 2; Short=P-CIP2; AltName: Full=U2AF homology motif kinase 1

UniProtKB/Swiss-Prot: Q8TAS1.2

GenPept Identical Proteins Graphics

```
>sp|Q8TAS1.2|UHMK1_HUMAN RecName: Full=Serine/threonine-protein kinase Kist; AltName:
Full=Kinase interacting with stathmin; AltName: Full=PAM COOH-terminal interactor protein
2; Short=P-CIP2; AltName: Full=U2AF homology motif kinase 1
MAGSGCAWGAEPPRFLEAFGRLWQVQSRLGSGSSASVYRVRCCGNPGSPPGALKQFLPPGTTGAAASAAE
YGFRKERAALEQLQGHRNIVTLYGVFTIHFSPNVPSRCLLLELLDVSVSELLLYSSHQGCSMWMIQHCAR
DVLEALAFLHHEGYVHADLKPRNILWSAENECFKLIDFGLSFKEGNQDVKYIQTDGYRAPEAELQNCLAQ
AGLQSDTECTSAVDLWSLGIILLEMFSGMKLKHTVRSQEWKANSSAIIDHIFASKAVVNAAIPAYHLRDL
IKSMLHDDPSRRIPAEMALCSPFFSIPFAPHIEDLVMLPTPVLRLLNVLDDDYLENEEEYEDVVEDVKEE
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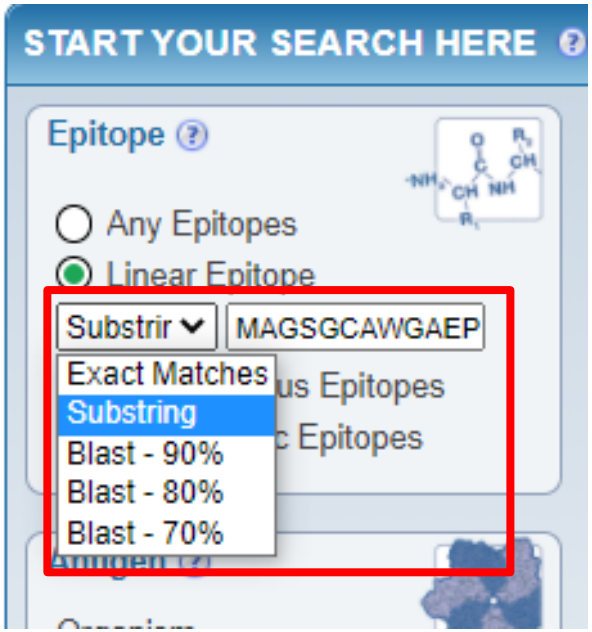
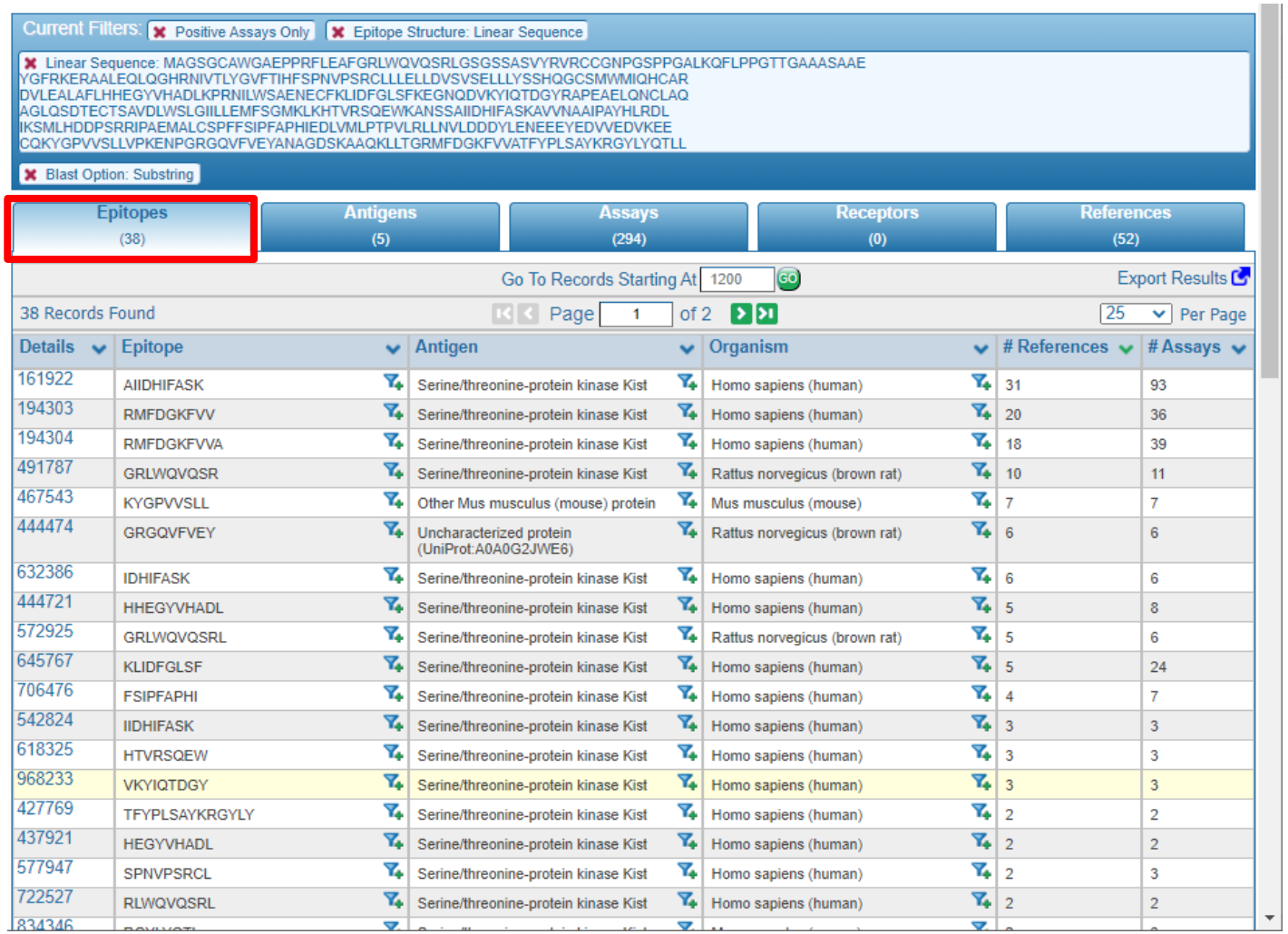


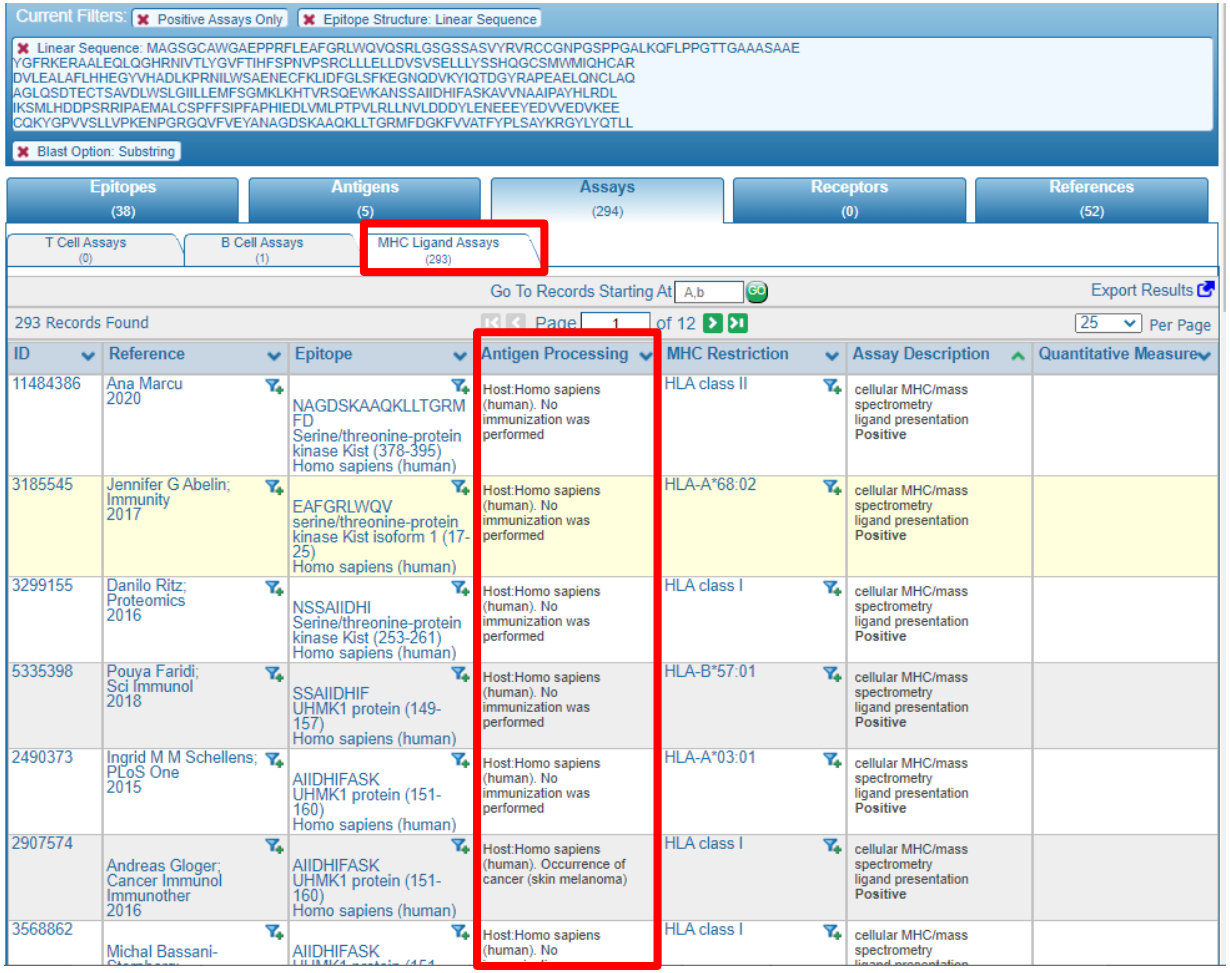
User Query: Is it possible to apply B cell and T cell analysis to a cancer sequence? Use lymphoma as an example.

Substring Search

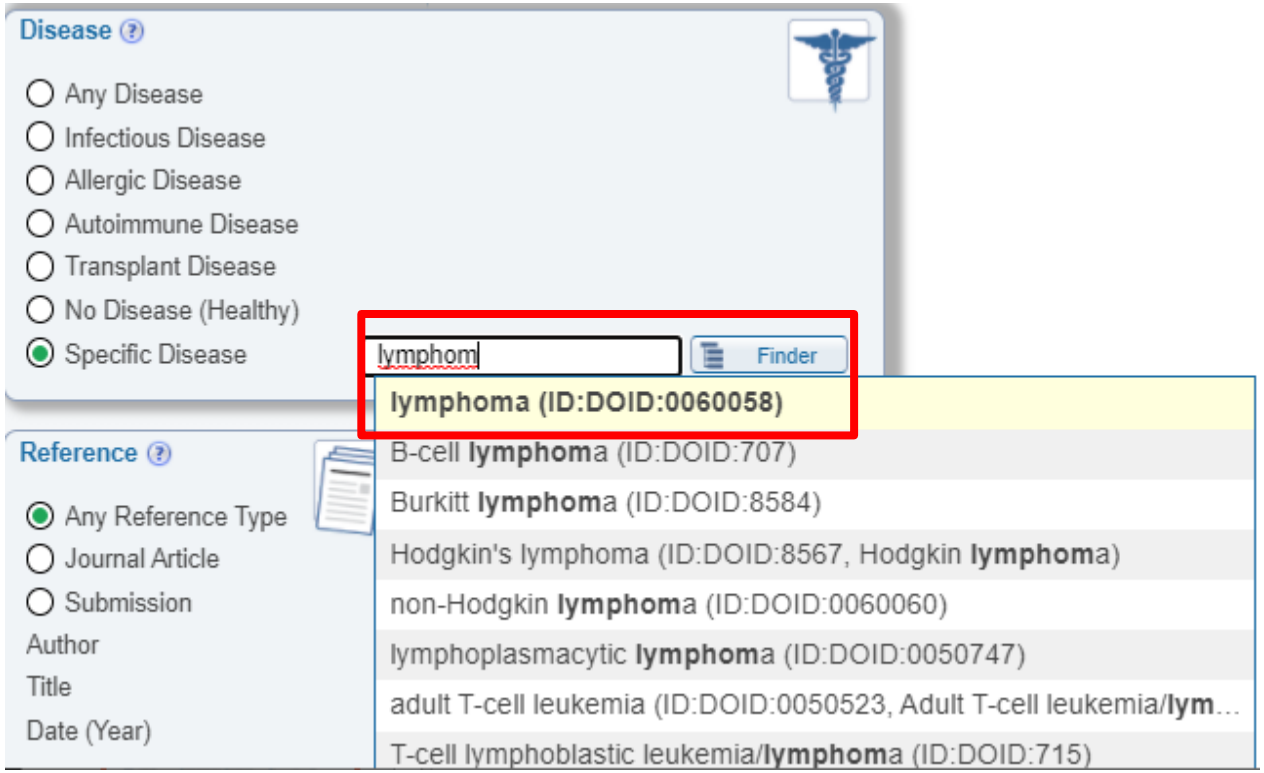


User Query: Is it possible to apply B cell and T cell analysis to a cancer sequence? Use lymphoma as an example.

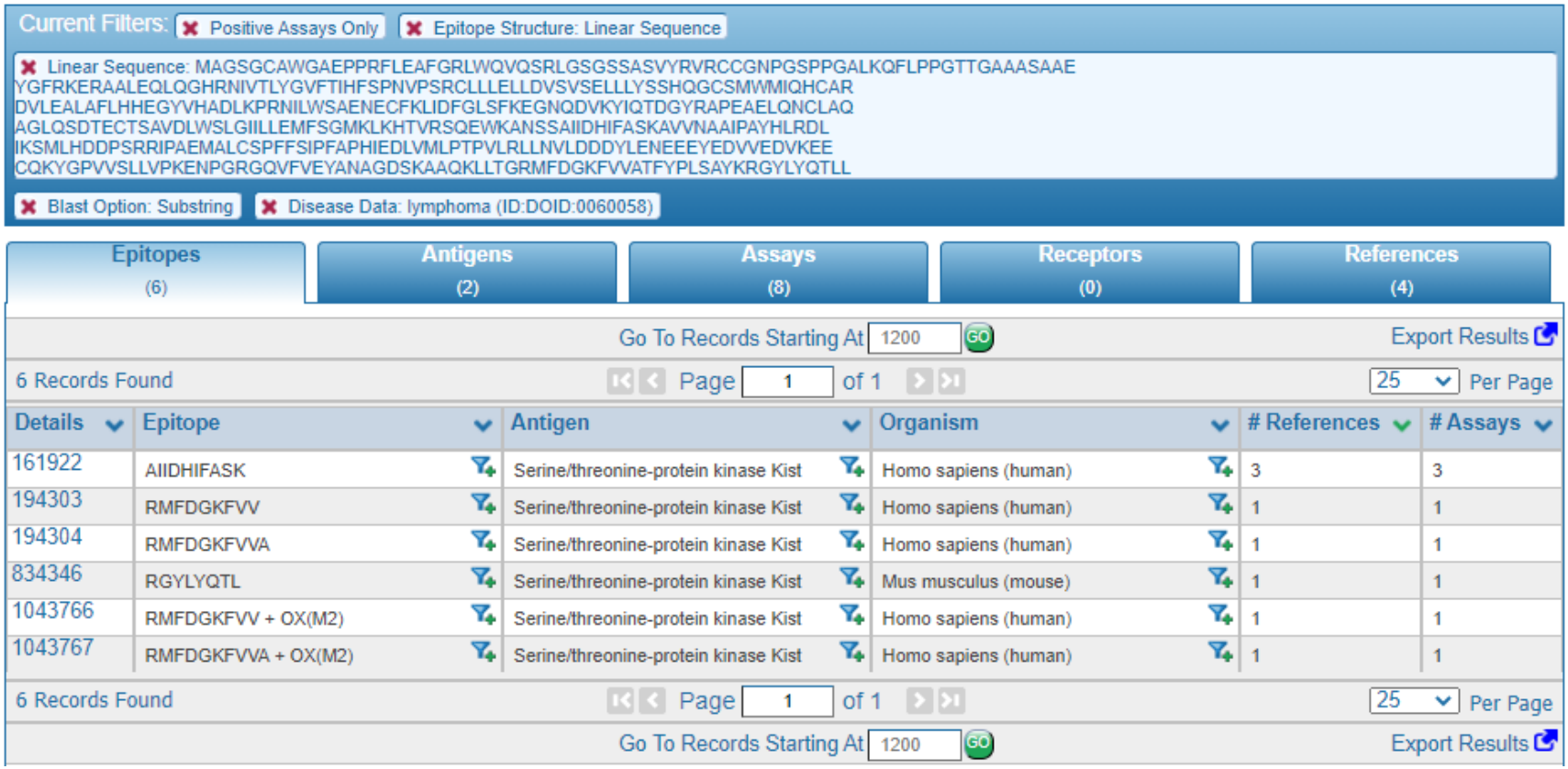
Substring Search



User Query: Is it possible to apply B cell and T cell analysis to a cancer sequence? Use lymphoma as an example.



User Query: Is it possible to apply B cell and T cell analysis to a cancer sequence? Use lymphoma as an example.



User Query: Is it possible to apply B cell and T cell analysis to a cancer sequence? Use lymphoma as an example.

Current Filters: Positive Assays Only | Epitope Structure: Linear Sequence

Linear Sequence: MAGSGCAWGAEPPRFLEAFGRLWQVQSRLGSGSSASVYRVRCCGNPGSPPGALKQFLPPGTTGAAASAAE
YGFRKERAALEQLQGHRNIVTLYGVFTIHFSPNVPSRCLLLELLDVSVSELLLYSSHQGCSMWMIQHCAR
DVLEALAFLHHEGYVHADLKPRNILWSAENECFKLIDFGLSFKEGNQDVKYIQTDGYRAPEAELQNCLAQ
AGLQSDTECTSAVDLWSLGIILLEMFSGMKLKHTVRSQEWKANSSAIIDHIFASKAVVNAAIPAYHLRDL
IKSMLHDDPSRRIPAEMALCSPFFSIPFAPHIEDLVMLPTPVLRLLNVLDDDYLENEEEYEDVVEDVKEE
CQKYGPVVSLLVPKENPGRGQVFVEYANAGDSKAAQKLLTGRMFDGKFVVATFYPLSAYKRGYLYQTLL

Blast Option: Substring | Disease Data: lymphoma (ID:DOID:0060058)

Epitopes (6) | Antigens (2) | Assays (8) | Receptors (0) | References (4)

T Cell Assays (0) | B Cell Assays (0) | MHC Ligand Assays (8)

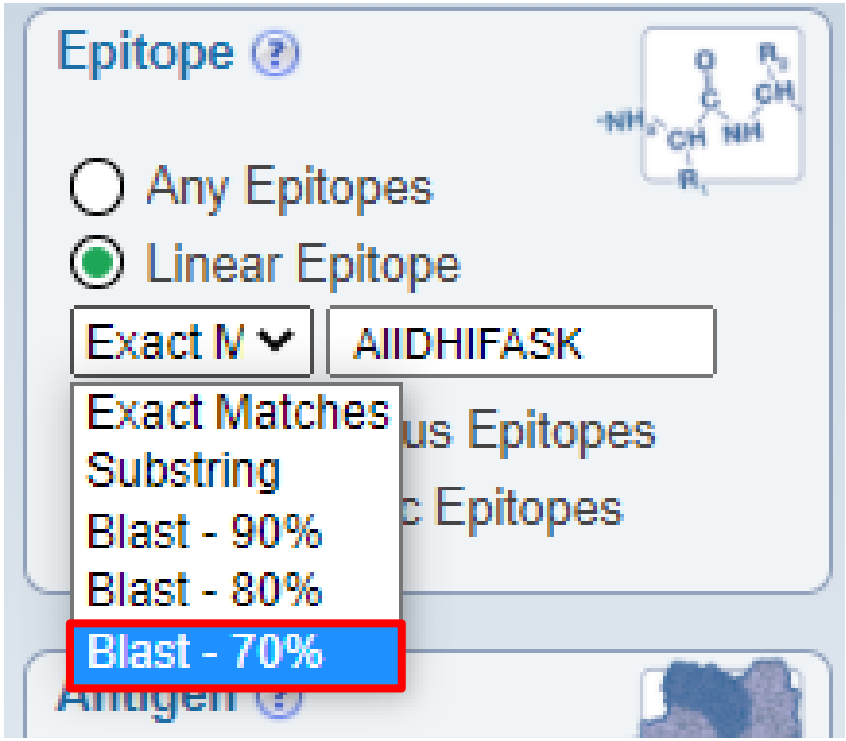
Go To Records Starting At A,b GO | Export Results

8 Records Found | Page 1 of 1 | 25 Per Page

ID	Reference	Epitope	Antigen Processing	MHC Restriction	Assay Description	Quantitative Measure
3956225	Joël Lanoix; Proteomics 2018	AIIDHIFASK UHMK1 protein (151-160) Homo sapiens (human)	Host:Homo sapiens (human). Occurrence of cancer (chronic lymphocytic leukemia)	HLA class I	cellular MHC/mass spectrometry ligand presentation **Positive**	
2711614	Dmitry Bourdetsky; Proc Natl Acad Sci U S A 2014	AIIDHIFASK Serine/threonine-protein kinase Kist (256-265) Homo sapiens (human)	Host:Homo sapiens (human). Occurrence of cancer (lymphoplasmacytic lymphoma)	HLA class I	cellular MHC/mass spectrometry ligand presentation **Positive**	
5628407	J Patrick Murphy; Anal Chem 2019	RGYLYQTL U2AF homology motif (UHM) kinase 1, partial [Mus musculus] (224-231) Mus musculus (mouse)	Host:Mus musculus C57BL/6. Occurrence of cancer (lymphoplasmacytic lymphoma)	H2-Kb	cellular MHC/mass spectrometry ligand presentation **Positive**	

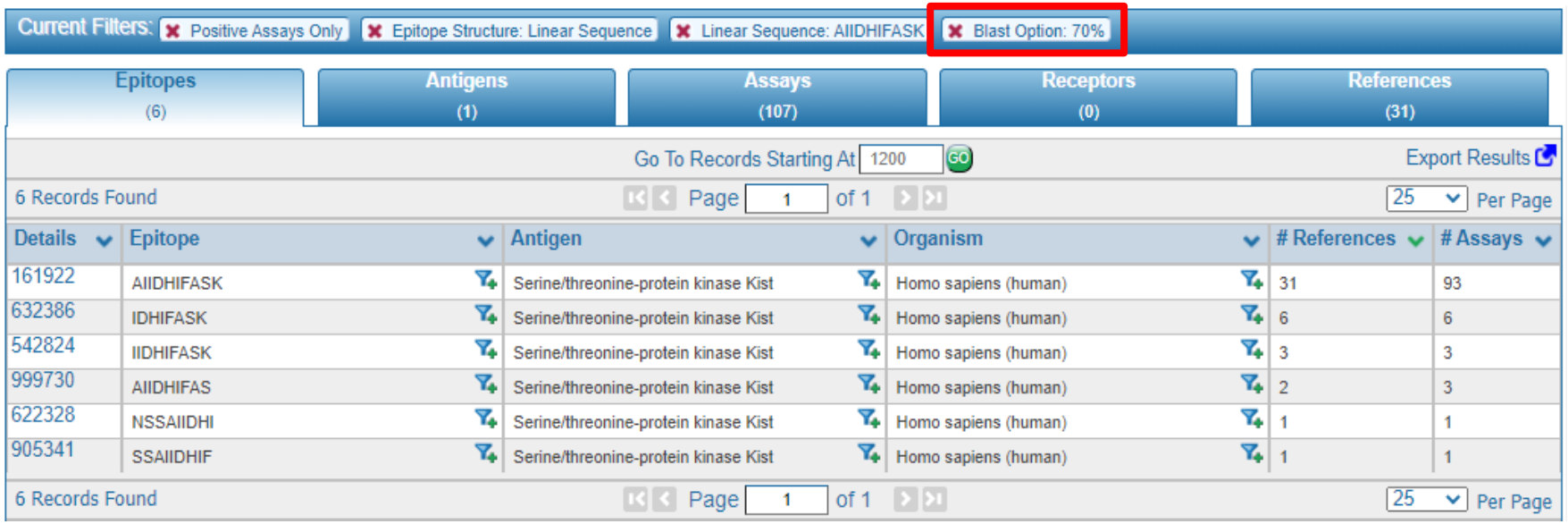
User Query: Is it possible to apply B cell and T cell analysis to a cancer sequence? Use lymphoma as an example.

Search by Blast to known epitope



User Query: Is it possible to apply B cell and T cell analysis to a cancer sequence? Use lymphoma as an example.

Search by Blast to known epitope

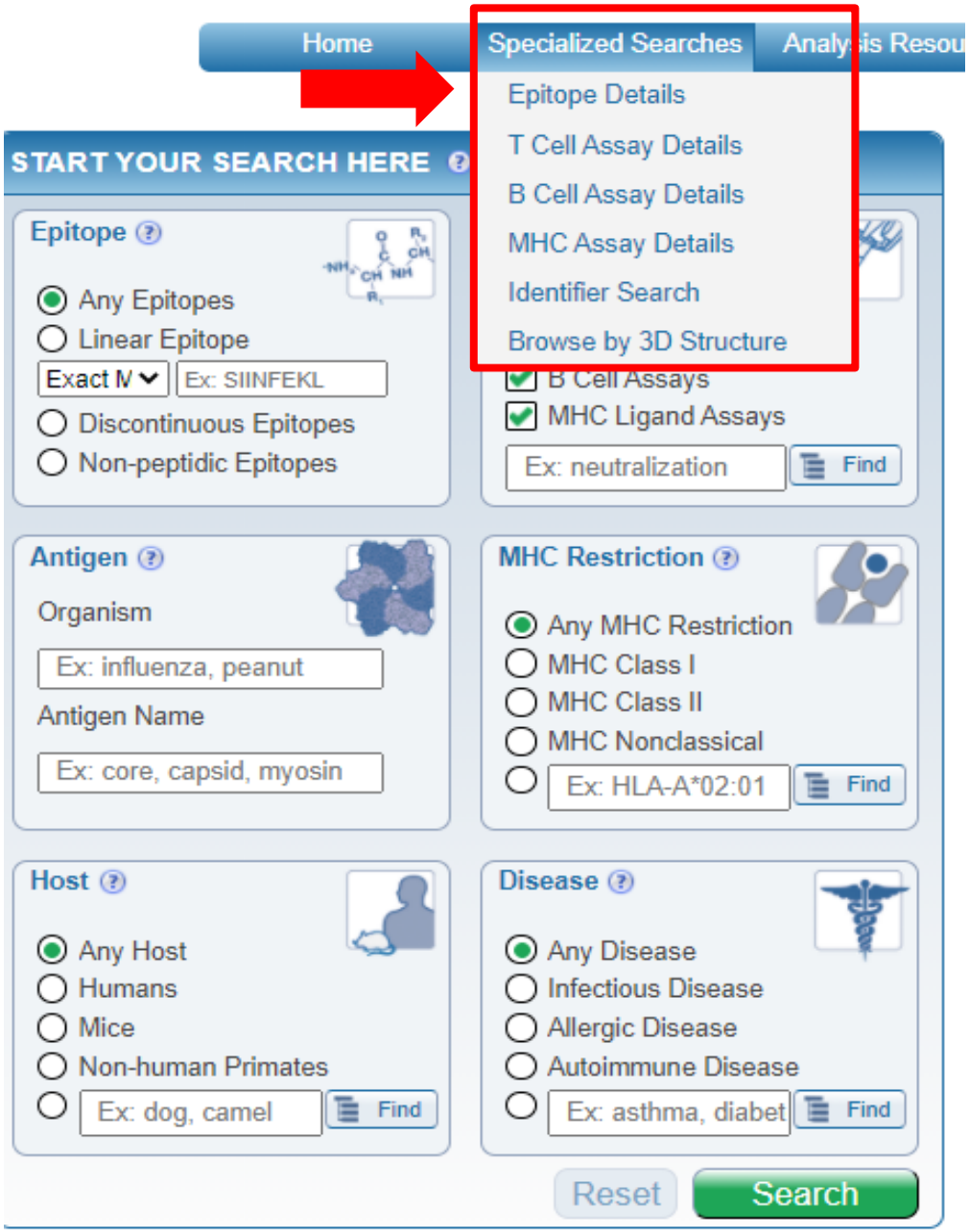


Details	Epitope	Antigen	Organism	# References	# Assays
161922	AIIDHIFASK	Serine/threonine-protein kinase Kist	Homo sapiens (human)	31	93
632386	IDHIFASK	Serine/threonine-protein kinase Kist	Homo sapiens (human)	6	6
542824	IIDHIFASK	Serine/threonine-protein kinase Kist	Homo sapiens (human)	3	3
999730	AIIDHIFAS	Serine/threonine-protein kinase Kist	Homo sapiens (human)	2	3
622328	NSSAIIDHI	Serine/threonine-protein kinase Kist	Homo sapiens (human)	1	1
905341	SSAIIDHIF	Serine/threonine-protein kinase Kist	Homo sapiens (human)	1	1

6 Records Found
Page 1 of 1
25 Per Page

User Query: Neoantigens

Note that we are making this query possible from the 'Results' page soon



User Query: Neoantigens

Epitope Details Search – Related Object