T-cell epitopes in SARS-CoV-2 infected mice

Version 1. March 2021

The importance of T-cell response in COVID-19 research

Thanks to the work of many immunologists in the past year, substantial scientific evidence shows that T-cells must be engaged to achieve long-lasting immunity to SARS-CoV-2.

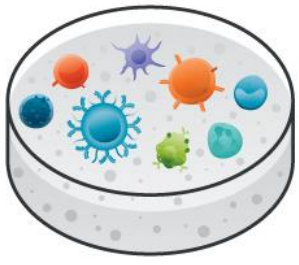
However, more data is needed to carefully delineate the specificity, functionality, and durability of T cells during COVID-19 to help address some of the remaining uncertainties:

- Understand how to use T-cell as targets for vaccines
- Decipher long-term immunity and predict patients at risk
- Determine which COVID-19 vaccine options will induce strong, long-lasting cell-mediated immunity and efficiently combat the global pandemic
- Learn more about the virus and how to prepare for a new pandemic

Mouse SARS-CoV-2 epitopes

Understanding the role of T-cell responses in mice will guide immunopathogenesis studies of COVID-19.

Immudex is committed to supporting the global efforts in advancing the insights to COVID-19 immunity. To better enable mechanistic and vaccination studies in mice, we provide a curated list of SARS-CoV-2–specific T-cell epitopes shown to be recognized by disease-specific CD4+ and CD8+ T cells in mice genetically modified to express human ACE2.



From this list, you can choose the epitopes most suitable for your SARS-CoV-2 specific T-cells research.

The list reflects work presented by dedicated researchers worldwide. We continuously update it based on peer-reviewed and non-peer-reviewed publications identifying SARS-CoV-2 epitopes in mice.

Stay connected with Immudex to ensure you have the latest version.

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customer@immudex.com

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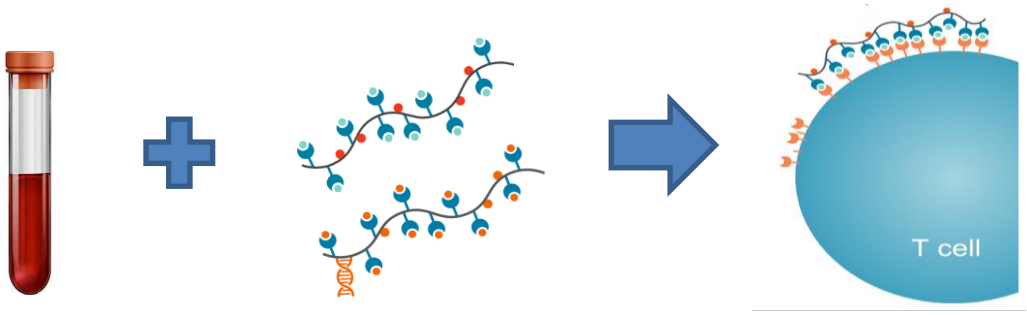
Reliable Identification of virus-Specific T-Cell Responses with Dextramer®

Do you want to measure the magnitude of the SARS-CoV-2-specific T-cells?

Follow SARS-CoV-2-specific CD8+ and CD4+ T-cells responses over time using Dextramer® reagents.

Dextramer® reagents can help you detect, quantify, and isolate SARS-CoV-2-specific CD4+ and CD8+ T cells in blood without missing rare-occurring cells.



Blood from SARS-CoV-2 infected mice

MHC Dextramer® reagents/ dCODE Dextramer® reagents

Dextramer® binds to TCR on virus-specific T cells

SARS-CoV-2-specific T-cell immune monitoring solutions for your lab

- See the curated collection of HLA allele/epitope combinations for unraveling the SARS-CoV-2-specific T-cell immunity in infected or vaccinated individuals.
- Learn more about our high-quality Immudex SARS-CoV-2 Panels.
- Check out a case study on a cohort of 106 recovered COVID-19 patients, where 90% mounted a detectable SARS-CoV-2-specific CD8+ T-cell response.
- Read more about how our unique immune monitoring tools can revolutionize your SARS-CoV-2 research in an easy and reproducible way.
- Immudex is your trusted partner in immune monitoring. Discover how the MHC Dextramer® and dCODE® technologies can benefit your research, or contact us to discuss your research need at customer@immudex.com.

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The following list of the antigen-specific epitopes have been shown to be recognized by SARS-CoV-2 specific T-cells.

HLA Allele	Peptide	Antigen	Reference
H2-Kd	GYLQPRTF	Spike	1
H2-Dd	KNKCVNFNF	Spike	1
H-2Ld	FPQSAPHGV	Spike	1
H2-Kb	GFSALEPL	Nucleocapsid	1
H2-Kb	RTLSYYKL	Membrane	1
H2-Kb	RGWIFGTT	Spike	1
H2-Db	PIGINITRF	Spike	1
H2-Kb	AAYYVGYL	Spike	1
H2-Kb	EIYQAGST	Spike	1
H2-Kb	VVVLSFEL	Spike	1
H2-Db	CVNFNFNGL	Spike	1
H2-Db	DLLFNKVTL	Spike	1
H2-Db	YLYALVYFL	ORF3a	1
H2-Db	LALLLLDRL	Nucleocapsid	2
I-Ad	FPRGQGVPINTNSSP	Nucleocapsid	1
I-Ad	QTVTKKSAAEASKK	Nucleocapsid	1
I-Ad	ILLNKHIDAYKTFPP	Nucleocapsid	1
I-Ed	NVTWFHAIHVSGTNG	Spike	1
I-Ad	KVGGNYNYLYRLFRK	Spike	1
I-Ad	FYSKWYIRVGARKSA	ORF8	1
I-Ab	QRNAPRITFGGPSDS	Nucleocapsid	1
I-Ab	VTWFHAIHVSGTNGT	Spike	1
I-Ab	CYDYCIPYNSVTSSI	ORF3a	1
I-Ab	EPIYDEPTTTTSVPL	ORF3a	1
I-Ab	QFAFACPDGVKHVYQ	ORF7a	1

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REFERENCES

1 Zhuang, Z., *et al.* (2021). Mapping and role of T cell response in SARS-CoV-2-infected mice. J Exp Med, 218(4). doi:10.1084/jem.20202187

2 Joag, V., *et al.* (2021). Cutting Edge: Mouse SARS-CoV-2 Epitope Reveals Infection and Vaccine-Elicited CD8 T Cell Responses. J Immunol. doi:10.4049/jimmunol.2001400