Stanford



Peter S. Kim

Virginia and D. K. Ludwig Professor of Biochemistry

CONTACT INFORMATION

- **Administrative Contact**

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Bio

ACADEMIC APPOINTMENTS

- Professor, Biochemistry
- Member, Bio-X
- Member, Wu Tsai Human Performance Alliance
- Member, Maternal & Child Health Research Institute (MCHRI)
- Institute Scholar, Sarafan ChEM-H
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Virginia & D.K. Ludwig Professor of Biochemistry, Stanford University School of Medicine, (2014- present)
- Institute Scholar, Stanford ChEM-H, (2014- present)
- Investigator, Chan Zuckerberg Biohub San Francisco, (2017- present)
- President, Merck Research Laboratories, Merck & Co., Inc., (2003-2013)
- Executive Vice President, Merck Research Laboratories, Merck & Co., Inc., (2001-2002)
- Associate Head, Department of Biology, MIT, (1999-2001)
- Investigator, Howard Hughes Medical Institute, (1997-2001)
- Professor of Biology, MIT, (1995-2001)
- Associate Investigator, Howard Hughes Medical Institute, (1993-1997)
- Member, Whitehead Institute for Biomedical Research, (1992-2001)
- Associate Professor of Biology, MIT, (1992-1995)
- Assistant Investigator, Howard Hughes Medical Institute, (1990-1993)
- Assistant Professor of Biology, MIT, (1988-1992)
- Associate Member, Whitehead Institute for Biomedical Research, (1988-1992)
- Whitehead Fellow, Whitehead Institute for Biomedical Research, (1985-1988)

HONORS AND AWARDS

- Arthur Kornberg and Paul Berg Lifetime Achievement Award in Biomedical Sciences, Stanford University (2018)
- Member, National Academy of Sciences (1997)
- Member, National Academy of Medicine (2000)
- Member, National Academy of Engineering (2016)
- Fellow, American Academy of Arts and Sciences (2008)
- Doctor of Science, Honoris Causa, Pohang University of Science and Technology (2011)
- Presidents' Circle, The National Academies (2006)
- Harvey Lecture, The Harvey Society (2002)
- Fellow, Biophysical Society (1999)
- Fellow, American Association for the Advancement of Science (1999)
- Hans Neurath Award, The Protein Society (1999)
- Ho-Am Prize for Basic Science, The Samsung Foundation (1998)
- Fellow, American Academy of Microbiology (1997)
- DuPont Merck Young Investigator Award, The Protein Society (1994)
- Eli Lilly Award in Biological Chemistry, American Chemical Society (1994)
- NAS Award in Molecular Biology, National Academy of Sciences (1993)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Scientific Advisory Board, Duke Consortia for HIV/AIDS Vaccine Development (CHAVD) (2024 - present)
- Scientific Advisory Board, HIV Obstruction by Programmed Epigenetics (HOPE) Collaboratory (2022 - present)
- Scientific Advisory Board, Vaccine Research Center, NIAID, NIH (2014 - 2023)
- Medical Advisory Board, Howard Hughes Medical Institute (2016 - 2022)
- Council, National Academy of Sciences (2015 - 2018)
- Council, National Academy of Medicine (2006 - 2011)
- MIT Corporation Visiting Committee, Department of Biology, MIT (2004 - 2023)
- Board of Scientific Advisors, Jane Coffin Childs Memorial Fund (2015 - 2018)
- Advisory Council, Department of Molecular Biology, Princeton University (2015 - 2021)
- External Scientific Advisory Board, Harvard Program in Therapeutic Science, HMS (2014 - 2021)

PROFESSIONAL EDUCATION

- A.B., Cornell University , Chemistry (1979)
- Ph.D., Stanford University School of Medicine , Biochemistry (1985)

LINKS

- the Peter Kim Lab: http://www.peterkimlab.stanford.edu

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Vaccines are among the most significant achievements in biomedical science, leading to the eradication of smallpox and targeting infectious agents like polio, measles, and rubella for elimination. Despite these successes, creating vaccines for some critical infectious diseases remains challenging.

Our research focuses on eliciting antibody-mediated immune responses with vaccines. While monoclonal antibodies (mAbs) can offer broad protection against diseases like HIV-1, pandemic influenza, and Ebola virus, creating vaccines that induce similar antibody properties has been elusive. Accordingly, a major goal of our research is to devise protein-engineering strategies to enable immunofocusing – the creation of vaccines capable of eliciting an antibody response against a targeted epitope.

Additionally, we complement our experimental efforts with machine learning algorithms to reconstruct protein evolution landscapes, predicting evolutionary velocity. This approach aids in guiding artificial evolution and enhancing antibody affinity maturation using protein sequence data alone. While our work established the effectiveness of language models to guide evolution using sequence alone, a protein's function is inherently linked to its structure. By incorporating structural information with an inverse-folding informed language model, we generalize the approach to protein complexes, and demonstrate substantial gains in predictive capabilities, enabling efficient antibody and protein engineering. These results lay the groundwork for more potent and resilient vaccine and therapeutic design.

Teaching

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Anthony Buzzanco, Karan Kathuria, Steven Truong

Postdoctoral Faculty Sponsor

Zheng Cao, Camille Moore, Owen Ouyang, Youngseon Park

Doctoral Dissertation Advisor (AC)

Rebekah Costello, Ava Graham, Alyana Granados, Gokul Kannan, Chau Le, Arvind Muruganantham, Dominic Pham, Varun Shanker, Katie Travisano, Ashley Utz, Arvie Violette

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biochemistry (PhD Program)
- Biophysics (PhD Program)
- Cancer Biology (PhD Program)
- Chemical and Systems Biology (PhD Program)
- Immunology (PhD Program)
- Microbiology and Immunology (PhD Program)
- Molecular and Cellular Physiology (PhD Program)

Publications

PUBLICATIONS

- **Design of Epitope-Focused Vaccines via Epitope Cleavage.** *ACS central science*
  Pham, D. M., Costello, R. M., Bruun, T. U., Kim, P. S.
  2026; 12 (9): 1348-1359
- **Design of Epitope-FocusedVaccines via Epitope Cleavage** *ACS CENTRAL SCIENCE*
  Pham, D. M., Costello, R. M., Bruun, T. U. J., Kim, P. S.
  2026
- **Oriented Multivalent Display Drives Consistent Serum Immunodominance to the Ebola Virus Glycoprotein.** *ACS central science*
  Zheng, C., Rubio, A. A., Vasquez, S., Pham, D., Pan, Z., Barnes, C. O., Kim, P. S.

2026; 12 (1): 100-110

- **Oriented Multivalent Display Drives Consistent Serum Immunodominance to the Ebola Virus Glycoprotein** *ACS CENTRAL SCIENCE*
  Zheng, C., Rubio, A. A., Vasquez, S., Pham, D., Pan, Z., Barnes, C. O., Kim, P. S.
  2026
- **Development of ACE2-tropic-betacoronavirus therapeutics for future pandemic preparedness.** *Nature communications*
  Utz, A., Armbrust, M., Nguyen, T. T., Morris, M. K., Matthews, C. O., Kompella, P., Cao, Z., Ha, J. W., Violette, A., Brewer, R. C., Lanz, T. V., Robinson, W. H., Xu, et al
  2025
- **Exceptionally broad HIV-1 neutralization via bispecific antibody-mediated prepositioning.** *Proceedings of the National Academy of Sciences of the United States of America*
  Kim, S., Travisano, K. A., Wilder, B., Palomares, M., Cao, Z., Seaman, M. S., Kim, P. S.
  2025; 122 (40): e2517311122
- **Utilizing Machine Learning to Improve Neutralization Potency of an HIV-1 Antibody Targeting the gp41 N-Heptad Repeat.** *ACS chemical biology*
  Filsinger Interrante, M. V., Tang, S., Kim, S., Shanker, V. R., Hie, B. L., Bruun, T. U., Wu, W., Pak, J. E., Fernandez, D., Kim, P. S.
  2025
- **A broad antibody with enhanced HIV-1 neutralization via bispecific antibody-mediated prepositioning.** *Nature communications*
  Kim, S., Radford, C. E., Xu, D., Zhong, J., Do, J., Pham, D. M., Travisano, K. A., Filsinger Interrante, M. V., Bruun, T. U., Rezek, V., Wilder, B., Palomares, M., Seaman, et al
  2025; 16 (1): 4617
- **Development of Pan-Betacoronavirus Therapeutics for Future Pandemic Preparedness**
  Utz, A., Thi Thuy Tien Nguyen, Weidenbacher, P. A. B., Kim, P. S.
  WILEY.2024: 96-97
- **Engineering a SARS-CoV-2 Vaccine Targeting the Receptor-Binding Domain Cryptic-Face via Immunofocusing.** *ACS central science*
  Bruun, T. U., Do, J., Weidenbacher, P. A., Utz, A., Kim, P. S.
  2024; 10 (10): 1871-1884
- **Engineering a SARS-CoV-2 Vaccine Targeting the Receptor-Binding Domain Cryptic-Face via Immunofocusing** *ACS CENTRAL SCIENCE*
  Bruun, T. U. J., Do, J., Weidenbacher, P., Utz, A., Kim, P. S.
  2024
- **Unsupervised evolution of protein and antibody complexes with a structure-informed language model.** *Science (New York, N.Y.)*
  Shanker, V. R., Bruun, T. U., Hie, B. L., Kim, P. S.
  2024; 385 (6704): 46-53
- **Engineering a SARS-CoV-2 vaccine targeting the RBD cryptic-face via immunofocusing.** *bioRxiv : the preprint server for biology*
  Bruun, T. U., Do, J., Weidenbacher, P. A., Kim, P. S.
  2024
- **Interstitial macrophages are a focus of viral takeover and inflammation in COVID-19 initiation in human lung.** *The Journal of experimental medicine*
  Wu, T. T., Travaglini, K. J., Rustagi, A., Xu, D., Zhang, Y., Andronov, L., Jang, S., Gillich, A., Dehghannasiri, R., Martinez-Colon, G. J., Beck, A., Liu, D. D., Wilk, et al
  2024; 221 (6)
- **Stabilized trimeric peptide immunogens of the complete HIV-1 gp41 N- heptad repeat and their use as HIV-1 vaccine candidates** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Wu, C., Raheem, I. T., Nahas, D. D., Citron, M., Kim, P. S., Montefiori, D. C., Ottinger, E. A., Hepler, R. W., Hrin, R., Patel, S. B., Soisson, S. M., Joyce, J. G.
  2024; 121 (22): e2317230121
- **Design of universal Ebola virus vaccine candidates via immunofocusing.** *Proceedings of the National Academy of Sciences of the United States of America*
  Xu, D., Powell, A. E., Utz, A., Sanyal, M., Do, J., Patten, J. J., Moliva, J. I., Sullivan, N. J., Davey, R. A., Kim, P. S.

2024; 121 (7): e2316960121

- **Vaccine design via antigen reorientation.** *Nature chemical biology*
  Xu, D., Carter, J. J., Li, C., Utz, A., Weidenbacher, P. A., Tang, S., Sanyal, M., Pulendran, B., Barnes, C. O., Kim, P. S.
  2024
- **Bringing immunofocusing into focus.** *NPJ vaccines*
  Musunuri, S., Weidenbacher, P. A., Kim, P. S.
  2024; 9 (1): 11
- **Inverse folding of protein complexes with a structure-informed language model enables unsupervised antibody evolution.** *bioRxiv : the preprint server for biology*
  Shanker, V. R., Bruun, T. U., Hie, B. L., Kim, P. S.
  2023
- **Designing epitope-focused vaccines via antigen reorientation**
  Xu, D., Kim, P.
  WILEY.2023
- **Design of universal Ebola virus vaccine candidates via immunofocusing.** *bioRxiv : the preprint server for biology*
  Xu, D., Powell, A. E., Utz, A., Sanyal, M., Do, J., Patten, J. J., Moliva, J. I., Sullivan, N. J., Davey, R. A., Kim, P. S.
  2023
- **Author Correction: A ferritin-based COVID-19 nanoparticle vaccine that elicits robust, durable, broad-spectrum neutralizing antisera in non-human primates.** *Nature communications*
  Weidenbacher, P. A., Sanyal, M., Friedland, N., Tang, S., Arunachalam, P. S., Hu, M., Kumru, O. S., Morris, M. K., Fontenot, J., Shirreff, L., Do, J., Cheng, Y. C., Vasudevan, et al
  2023; 14 (1): 6211
- **Formulation development and comparability studies with an aluminum-salt adjuvanted SARS-CoV-2 spike ferritin nanoparticle vaccine antigen produced from two different cell lines.** *Vaccine*
  Kumru, O. S., Sanyal, M., Friedland, N., Hickey, J. M., Joshi, R., Weidenbacher, P., Do, J., Cheng, Y. C., Kim, P. S., Joshi, S. B., Volkin, D. B.
  2023
- **Decreased efficacy of a COVID-19 vaccine due to mutations present in early SARS-CoV-2 variants of concern.** *bioRxiv : the preprint server for biology*
  Weidenbacher, P. A., Friedland, N., Sanyal, M., Morris, M. K., Do, J., Hanson, C., Kim, P. S.
  2023
- **Efficient evolution of human antibodies from general protein language models.** *Nature biotechnology*
  Hie, B. L., Shanker, V. R., Xu, D., Bruun, T. U., Weidenbacher, P. A., Tang, S., Wu, W., Pak, J. E., Kim, P. S.
  2023
- **A ferritin-based COVID-19 nanoparticle vaccine that elicits robust, durable, broad-spectrum neutralizing antisera in non-human primates.** *Nature communications*
  Weidenbacher, P. A., Sanyal, M., Friedland, N., Tang, S., Arunachalam, P. S., Hu, M., Kumru, O. S., Morris, M. K., Fontenot, J., Shirreff, L., Do, J., Cheng, Y. C., Vasudevan, et al
  2023; 14 (1): 2149
- **Formulation development and comparability studies with an aluminum-salt adjuvanted SARS-CoV-2 Spike ferritin nanoparticle vaccine antigen produced from two different cell lines.** *bioRxiv : the preprint server for biology*
  Kumru, O. S., Sanyal, M., Friedland, N., Hickey, J., Joshi, R., Weidenbacher, P., Do, J., Cheng, Y. C., Kim, P. S., Joshi, S. B., Volkin, D. B.
  2023
- **Structure-guided stabilization improves the ability of the HIV-1 gp41 hydrophobic pocket to elicit neutralizing antibodies.** *The Journal of biological chemistry*
  Bruun, T. J., Tang, S., Erwin, G., Deis, L., Fernandez, D., Kim, P.
  2023: 103062
- **HIV-1 prehairpin intermediate inhibitors show efficacy independent of neutralization tier.** *Proceedings of the National Academy of Sciences of the United States of America*
  Bell, B. N., Bruun, T. U., Friedland, N., Kim, P. S.

2023; 120 (8): e2215792120

- **A ferritin-based COVID-19 nanoparticle vaccine that elicits robust, durable, broad-spectrum neutralizing antisera in non-human primates.** *bioRxiv : the preprint server for biology*
  Weidenbacher, P. A., Sanyal, M., Friedland, N., Tang, S., Arunachalam, P. S., Hu, M., Kumru, O. S., Morris, M. K., Fontenot, J., Shirreff, L., Do, J., Cheng, Y. C., Vasudevan, et al
  2022
- **Enhancing HIV-1 Neutralization by Increasing the Local Concentration of Membrane-Proximal External Region-Directed Broadly Neutralizing Antibodies.** *Journal of virology*
  Kim, S., Filsinger Interrante, M. V., Kim, P. S.
  2022: e0164722
- **Designing epitope-focused vaccines via antigen reorientation.** *bioRxiv : the preprint server for biology*
  Xu, D., Li, C., Utz, A., Weidenbacher, P. A., Tang, S., Sanyal, M., Pulendran, B., Kim, P. S.
  2022
- **Human sperm TMEM95 binds eggs and facilitates membrane fusion.** *Proceedings of the National Academy of Sciences of the United States of America*
  Tang, S., Lu, Y., Skinner, W. M., Sanyal, M., Lishko, P. V., Ikawa, M., Kim, P. S.
  2022; 119 (40): e2207805119
- **Converting non-neutralizing SARS-CoV-2 antibodies into broad-spectrum inhibitors.** *Nature chemical biology*
  Weidenbacher, P. A., Waltari, E., de Los Rios Kobara, I., Bell, B. N., Morris, M. K., Cheng, Y., Hanson, C., Pak, J. E., Kim, P. S.
  2022
- **Simplified Purification of Glycoprotein-Modified Ferritin Nanoparticles for Vaccine Development.** *Biochemistry*
  Weidenbacher, P., Musunuri, S., Powell, A. E., Tang, S., Do, J., Sanyal, M., Kim, P. S.
  2022
- **Chemically Modified Bacterial Sacculi as a Vaccine Microparticle Scaffold.** *ACS chemical biology*
  Weidenbacher, P. A., Rodriguez-Rivera, F. P., Sanyal, M., Visser, J. A., Do, J., Bertozzi, C. R., Kim, P. S.
  2022
- **Mechanisms of innate and adaptive immunity to the Pfizer-BioNTech BNT162b2 vaccine.** *Nature immunology*
  Li, C., Lee, A., Grigoryan, L., Arunachalam, P. S., Scott, M. K., Trisal, M., Wimmers, F., Sanyal, M., Weidenbacher, P. A., Feng, Y., Adamska, J. Z., Valore, E., Wang, et al
  2022
- **Evolutionary velocity with protein language models predicts evolutionary dynamics of diverse proteins.** *Cell systems*
  Hie, B. L., Yang, K. K., Kim, P. S.
  2022
- **Multimerization of Ebola GPDeltamucin on protein nanoparticle vaccines has minimal effect on elicitation of neutralizing antibodies.** *Frontiers in immunology*
  Powell, A. E., Xu, D., Roth, G. A., Zhang, K., Chiu, W., Appel, E. A., Kim, P. S.
  2022; 13: 942897
- **Hydrogel-Based Slow Release of a Receptor-Binding Domain Subunit Vaccine Elicits Neutralizing Antibody Responses Against SARS-CoV-2.** *Advanced materials (Deerfield Beach, Fla.)*
  Gale, E. C., Powell, A. E., Roth, G. A., Meany, E. L., Yan, J., Ou, B. S., Grosskopf, A. K., Adamska, J., Picece, V. C., d'Aquino, A. I., Pulendran, B., Kim, P. S., Appel, et al
  2021: e2104362
- **The conserved alpha-helical face of the HIV-1 gp41 C-heptad repeat is a target for neutralizing antibodies**
  Bell, B., Kim, P.
  WILEY.2021: 127
- **The high-affinity immunoglobulin receptor FcgRI potentiates HIV-1 neutralization via antibodies against the gp41 N-heptad repeat: implications for vaccine development**
  Interrante, M., Kim, P.

WILEY.2021: 117

- **Protect, modify, deprotect (PMD): A strategy for creating vaccines to elicit antibodies targeting a specific epitope**
  Weidenbacher, P., Kim, P.
  WILEY.2021: 143
- **New-onset IgG autoantibodies in hospitalized patients with COVID-19.** *Nature communications*
  Chang, S. E., Feng, A., Meng, W., Apostolidis, S. A., Mack, E., Artandi, M., Barman, L., Bennett, K., Chakraborty, S., Chang, I., Cheung, P., Chinthrajah, S., Dhingra, et al
  2021; 12 (1): 5417
- **New-Onset IgG Autoantibodies in Hospitalized Patients with COVID-19**
  Chang, S., Feng, A., Meng, W., Apostolidis, S., Mack, E., Artandi, M., Barman, L., Bennett, K., Chakraborty, S., Chang, I., Cheung, P., Chinthrajah, S., Dhingra, et al
  WILEY.2021: 3202-3205
- **A derivative of the D5 monoclonal antibody that targets the gp41 N-heptad repeat of HIV-1 with broad tier-2 neutralizing activity.** *Journal of virology*
  Rubio, A. A., Filsinger Interrante, M. V., Bell, B. N., Brown, C. L., Bruun, T. U., LaBranche, C. C., Montefiori, D. C., Kim, P. S.
  2021
- **Neutralizing antibodies targeting the SARS-CoV-2 receptor binding domain isolated from a naive human antibody library.** *Protein science : a publication of the Protein Society*
  Bell, B. N., Powell, A. E., Rodriguez, C., Cochran, J. R., Kim, P. S.
  2021
- **Mapping Binding Interfaces and Allosteric Changes in the SARS-Cov-2 Spike Protein using Hydrogen/Deuterium Exchange Mass Spectrometry**
  Costello, S. M., Hobbs, H. T., Shoemaker, S. R., Powell, A. E., Lim, S. A., Wells, J. A., Kim, P. S., Pak, J. E., Marqusee, S.
  CELL PRESS.2021: 127A–128A
- **A Single Immunization with Spike-Functionalized Ferritin Vaccines Elicits Neutralizing Antibody Responses against SARS-CoV-2 in Mice.** *ACS central science*
  Powell, A. E., Zhang, K., Sanyal, M., Tang, S., Weidenbacher, P. A., Li, S., Pham, T. D., Pak, J. E., Chiu, W., Kim, P. S.
  2021; 7 (1): 183–99
- **The high-affinity immunoglobulin receptor FcgammaRI potentiates HIV-1 neutralization via antibodies against the gp41 N-heptad repeat.** *Proceedings of the National Academy of Sciences of the United States of America*
  Montefiori, D. C., Filsinger Interrante, M. V., Bell, B. N., Rubio, A. A., Joyce, J. G., Shiver, J. W., LaBranche, C. C., Kim, P. S.
  2021; 118 (3)
- **Modeling human adaptive immune responses with tonsil organoids.** *Nature medicine*
  Wagar, L. E., Salahudeen, A. n., Constantz, C. M., Wendel, B. S., Lyons, M. M., Mallajosyula, V. n., Jatt, L. P., Adamska, J. Z., Blum, L. K., Gupta, N. n., Jackson, K. J., Yang, F. n., Röltgen, et al
  2021
- **Accuracy of serological testing for SARS-CoV-2 antibodies: first results of a large mixed-method evaluation study.** *Allergy*
  Brigger, D., Horn, M. P., Pennington, L. F., Powell, A. E., Siegrist, D., Weber, B., Engler, O., Piezzi, V., Damonti, L., Iseli, P., Hauser, C., Froehlich, T. K., Villiger, et al
  2020
- **SARS-CoV-2 Antibody Responses Correlate with Resolution of RNAemia But Are Short-Lived in Patients with Mild Illness.** *medRxiv : the preprint server for health sciences*
  Röltgen, K., Wirz, O. F., Stevens, B. A., Powell, A. E., Hogan, C. A., Najeeb, J., Hunter, M., Sahoo, M. K., Huang, C., Yamamoto, F., Manalac, J., Otrelo-Cardoso, A. R., Pham, et al
  2020
- **Enhancing natural killer cell function with gp41-targeting bispecific antibodies to combat HIV infection.** *AIDS (London, England)*
  Ramadoss, N. S., Zhao, N. Q., Richardson, B. A., Grant, P. M., Kim, P. S., Blish, C. A.
  2020

- **B cell clonal expansion and convergent antibody responses to SARS-CoV-2.** *Research square*
  Nielsen, S. C., Yang, F. n., Hoh, R. A., Jackson, K. J., Roeltgen, K. n., Lee, J. Y., Rustagi, A. n., Rogers, A. J., Powell, A. E., Kim, P. S., Wang, T. T., Pinsky, B. n., Blish, et al
  2020

- **Defining the features and duration of antibody responses to SARS-CoV-2 infection associated with disease severity and outcome.** *Science immunology*
  Röltgen, K. n., Powell, A. E., Wirz, O. F., Stevens, B. A., Hogan, C. A., Najeeb, J. n., Hunter, M. n., Wang, H. n., Sahoo, M. K., Huang, C. n., Yamamoto, F. n., Manohar, M. n., Manalac, et al
  2020; 5 (54)

- **Human B Cell Clonal Expansion and Convergent Antibody Responses to SARS-CoV-2.** *Cell host & microbe*
  Nielsen, S. C., Yang, F. n., Jackson, K. J., Hoh, R. A., Röltgen, K. n., Jean, G. H., Stevens, B. A., Lee, J. Y., Rustagi, A. n., Rogers, A. J., Powell, A. E., Hunter, M. n., Najeeb, et al
  2020

- **A single immunization with spike-functionalized ferritin vaccines elicits neutralizing antibody responses against SARS-CoV-2 in mice.** *bioRxiv : the preprint server for biology*
  Powell, A. E., Zhang, K. n., Sanyal, M. n., Tang, S. n., Weidenbacher, P. A., Li, S. n., Pham, T. D., Pak, J. E., Chiu, W. n., Kim, P. S.
  2020

- **Human B cell clonal expansion and convergent antibody responses to SARS-CoV-2.** *bioRxiv : the preprint server for biology*
  Nielsen, S. C., Yang, F. n., Jackson, K. J., Hoh, R. A., Röltgen, K. n., Stevens, B. n., Lee, J. Y., Rustagi, A. n., Rogers, A. J., Powell, A. E., Najeeb, J. n., Otrelo-Cardoso, A. R., Yost, et al
  2020

- **Functional Enrichment and Analysis of Antigen-Specific Memory B Cell Antibody Repertoires in PBMCs.** *Frontiers in immunology*
  Waltari, E., McGeever, A., Friedland, N., Kim, P. S., McCutcheon, K. M.
  2019; 10: 1452

- **Identification of HIV gp41-specific antibodies that mediate killing of infected cells.** *PLoS pathogens*
  Williams, K. L., Stumpf, M., Naiman, N. E., Ding, S., Garrett, M., Gobillot, T., Vezina, D., Dusenbury, K., Ramadoss, N. S., Basom, R., Kim, P. S., Finzi, A., Overbaugh, et al
  2019; 15 (2): e1007572

- **Identification of HIV gp41-specific antibodies that mediate killing of infected cells** *PLOS PATHOGENS*
  Williams, K. L., Stumpf, M., Naiman, N., Ding, S., Garrett, M., Gobillot, T., Vezina, D., Dusenbury, K., Ramadoss, N. S., Basom, R., Kim, P. S., Finzi, A., Overbaugh, et al
  2019; 15 (2)

- **A high-affinity human PD-1/PD-L2 complex informs avenues for small-molecule immune checkpoint drug discovery.** *Proceedings of the National Academy of Sciences of the United States of America*
  Tang, S. n., Kim, P. S.
  2019

- **Protect, modify, deprotect (PMD): A strategy for creating vaccines to elicit antibodies targeting a specific epitope.** *Proceedings of the National Academy of Sciences of the United States of America*
  Weidenbacher, P. A., Kim, P. S.
  2019

- **FLASH: a next-generation CRISPR diagnostic for multiplexed detection of antimicrobial resistance sequences.** *Nucleic acids research*
  Quan, J. n., Langelier, C. n., Kuchta, A. n., Batson, J. n., Teyssier, N. n., Lyden, A. n., Caldera, S. n., McGeever, A. n., Dimitrov, B. n., King, R. n., Wilheim, J. n., Murphy, M. n., Ares, et al
  2019