

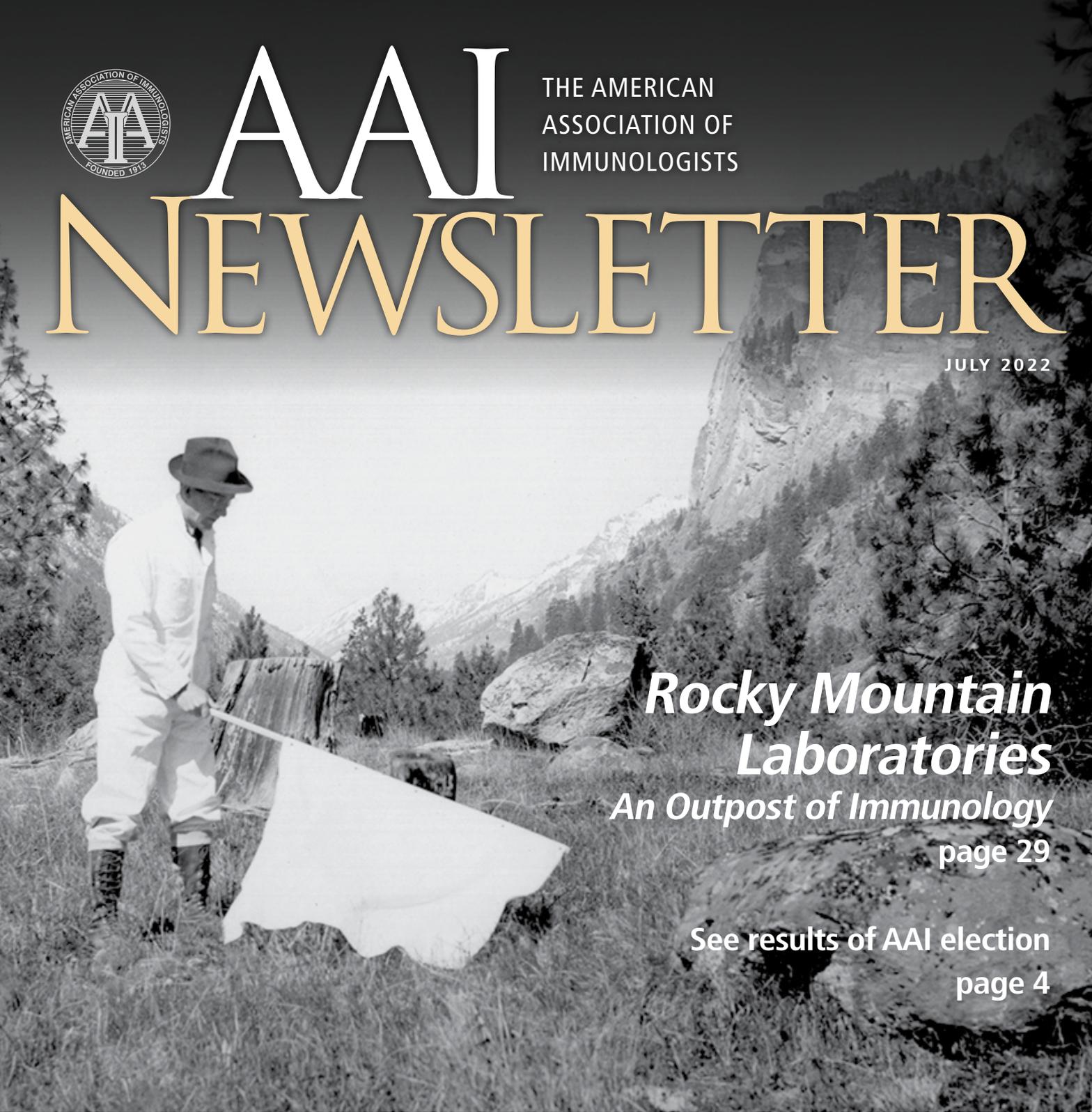


AAI

THE AMERICAN
ASSOCIATION OF
IMMUNOLOGISTS

NEWSLETTER

JULY 2022



***Rocky Mountain
Laboratories***
An Outpost of Immunology
page 29

See results of AAI election
page 4



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On the Cover: Circa 1920, a researcher drags a white cloth across scrubland in Montana to collect ticks for study. This was a practice developed by the Rocky Mountain Laboratories (RML) and was instrumental in identifying ticks as the vector of Rocky Mountain spotted fever. Read more about the RML and the significant role it has played in immunology history on page 31.

Image credit: Office of NIH History



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6 AAI Advocacy Efforts and New Public Policy Fellows



21 Outreach

Connect with AAI!

Do you have a story or a story idea for a future issue of the *AAI Newsletter*? Send us an email! Interested in the latest news from AAI? Keep in touch through our social media channels. Follow us on Twitter, Facebook, or LinkedIn, and keep abreast of daily developments in the world of immunology.

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 [linkedin.com/company/the-american-association-of-immunologists](https://www.linkedin.com/company/the-american-association-of-immunologists)

 AAINewsletter@aai.org (story ideas and comments about the *AAI Newsletter*)

2022 AAI Election Results

AAI congratulates the following members on their election to the AAI Council and committees. All terms commenced July 1, 2022. AAI extends a sincere thanks to all candidates who agreed to stand for election. We thank them for investing in their profession and in the mission of AAI through their participation.

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Mark M. Davis, Ph.D., AAI '88

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Akiko Iwasaki, Ph.D., AAI '00

Sterling Professor of Immunobiology and of Molecular, Cellular & Developmental Biology—Yale School of Medicine; Investigator—Howard Hughes Medical Institute



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Professor and Director, NOMIS Center for Immunobiology and Microbial Pathogenesis; Deputy of Research, Salk Cancer Center—The Salk Institute for Biological Studies

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Bloomberg Distinguished Professor, Department of Oncology—Johns Hopkins University (JHU) School of Medicine; Department of Biochemistry and Molecular Biology—JHU School of Public Health



Gregory M. Barton, Ph.D., AAI '09
Professor, Department of Molecular and Cell Biology; Head, Division of Immunology and Molecular Medicine—University of California, Berkeley; Investigator—Howard Hughes Medical Institute



Elina Zúñiga, Ph.D., AAI '09
Professor, Division of Biological Sciences—University of California, San Diego



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Professor, Department of Pediatrics—Rutgers-Robert Wood Johnson Medical School

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Scientist—St. Michael's Hospital, Toronto



Calvin B. Williams, M.D., Ph.D., AAI '01
Professor of Pediatrics and of Microbiology and Immunology; Associate Dean of Research—Medical College of Wisconsin; Chief Scientific Officer—Children's Wisconsin

Publications Committee 2022–2026



Laurie E. Harrington, Ph.D., AAI '07
Professor, Department of Cell, Developmental, and Integrative Biology—University of Alabama at Birmingham



Congress Enacts Full-Year Funding Bill for FY 2022

NIH Base Budget Increases by More Than \$2 Billion; ARPA-H is Formally Established

President Joe Biden signed a fiscal year (FY) 2022 omnibus appropriations bill into law in March 2022 that includes full-year funding for all federal departments and agencies. Enactment of the bipartisan funding bill ended a drawn-out process that required four short-term funding bills, known as continuing resolutions, to keep the federal government open once the new fiscal year began on October 1, 2021.

The law appropriates \$45 billion, an increase of \$2.25 billion (5.3%), for the National Institutes of Health (NIH) base budget and includes an increase of at least 3.4% for all NIH institutes and centers (ICs). As always, some of the new funding is set aside for specific purposes; for FY 2022, these include:

- a \$289 million increase for research on Alzheimer's disease and related dementias (for a total of \$3.5 billion)
- a \$104 million increase for research on HIV/AIDS (for a total of \$3.2 billion)
- a \$30 million increase for the Implementing a Maternal Health and Pregnancy Outcomes Vision for Everyone (IMPROVE) Initiative (for a total of \$43.4 million)
- a \$25 million increase for the development of a universal influenza vaccine (for a total of \$245 million)
- a \$15 million increase for research to combat antimicrobial resistance (for a total of \$540 million)

- a \$13.4 million increase for the Institutional Development Awards (IDeA) program (for a total of \$410.5 million).

The new law also includes \$1 billion (available for three years) to create President Biden's proposed Advanced Research Projects Agency for Health (ARPA-H). This falls well short of the president's \$6.5 billion request for the new agency and below both the amount approved by the House in August (\$3 billion) and the amount included in the Senate Labor, Health and Human Services, Education, and Related Agencies (Labor-HHS) Appropriations Subcommittee draft spending bill for FY 2022 in October (\$2.4 billion).

Shortly after the bill's passage, Secretary of Health and Human Services (HHS) Xavier Becerra, J.D., officially transferred ARPA-H to NIH, a power given to him by the new law. Though the new agency will operate independently, the new ARPA-H director, once appointed and confirmed, will report directly to Becerra. On May 25, Becerra announced ARPA-H's formal establishment and named Adam H. Russell, D.Phil., the acting deputy director. Dr. Russell is an anthropologist by training and worked as a program manager for both the Defense Advanced Research Projects Agency (DARPA), after which ARPA-H is modeled, and the Intelligence Advanced Research Projects Agency.

President Biden Unveils Budget Request for FY 2023

AAI Committee on Public Affairs Chair Jensen Issues Statement



Biden

President Biden released his budget request for FY 2023 in late March. The president's budget is an important statement of priorities that Congress takes into consideration when developing its own budget and appropriations bills. For FY 2023, the president recommends an extremely modest increase in the regular NIH budget of just \$275 million (0.6%),

less than the projected rate of biomedical research inflation (2.6%). While this small proposed increase resulted in part from the fact that final appropriations bills for FY 2022 had not been enacted at the time that the budget was drafted (it

represented a 5.6% increase over the FY 2021 funding level used as the baseline at the time), it would result in cuts to many NIH ICs, including the National Institute of Allergy and Infectious Diseases (NIAID), the National Cancer Institute, and the National Institute on Aging.

Although the budget includes a very small increase for core operations at NIH, it provides a sizeable increase for ARPA-H, increasing its funding from \$1 billion to \$5 billion. The president's budget also includes a new proposal intended to prepare the nation for future pandemics and high consequence biological threats, allocating \$81.7 billion (available for five years) in new mandatory funding (not subject to the annual

appropriations process) to HHS to support these important goals. The funding is divided as follows (excerpts are from the *FY 2023 HHS Budget-in-Brief*):

- **\$40 billion for the Assistant Secretary of Preparedness and Response** “to conduct advanced research and development of vaccines, therapeutics, and diagnostics for high priority viral families; scale up domestic manufacturing capacity for medical countermeasures; and expand the public health workforce.”
- **\$28 billion for the Centers for Disease Control and Prevention** “to invest in the public health system infrastructure, support international capabilities for vaccine preparedness and medical countermeasure development, enhance domestic and global disease surveillance, expand laboratory capacity, further develop a robust public health workforce, and strengthen public health data systems.”
- **\$12.1 billion for NIH** for “research and development of vaccines, diagnostics, and therapeutics against high priority viral families, biosafety and biosecurity, and to expand laboratory capacity and clinical trial infrastructure.”
- **\$1.6 billion for the Food and Drug Administration (FDA)** “to expand and modernize regulatory capacity, information technology, and laboratory infrastructure to respond rapidly and effectively to any future pandemic or high consequence biological threat.”

The budget also allocates additional mandatory funding for pandemic preparedness activities to the U.S.

AAI Submits Congressional Testimony to Key Congressional Subcommittees

CPA Chair Jensen recently submitted written testimony, on behalf of AAI, to the House and Senate Labor-HHS Appropriations Subcommittees, urging them to appropriate at least \$49 billion (a \$4 billion increase) for the NIH base budget to support its core operations in FY 2023. The testimony also reiterates the support of AAI for ARPA-H but cautions that any funding provided to the new entity should supplement, and not supplant, the NIH base budget.

AAI submits testimony annually to recommend the next year’s funding level for NIH. The testimony describes some exciting recent advances in immunology, which are identified for inclusion by the AAI Public Policy Fellows. This year’s testimony explains some of the

Department of State and the U.S. Agency for International Development (USAID) as follows:

- **\$6.5 billion for the State Department and USAID** “to make transformative investments in global health security and pandemic and other biological threat preparedness in support of national biodefense and pandemic preparedness goals. This funding will strengthen the global health workforce, advance research and development capacity, and increase health security financing to help prevent, detect, and respond to future COVID variants and other biological threats.” (Excerpt from the State Department’s *FY 2023 Congressional Budget Justification*.)



Jensen

funding to further support ARPA-H,” and “to fully fund the President’s request for mandatory funding for ongoing pandemic preparedness.” AAI looks forward to working with the White House and Congress to ensure that the NIH base budget receives robust increases even as important new initiatives, including ARPA-H, are being pursued.

AAI Committee on Public Affairs (CPA) Chair Peter Jensen, M.D. (AAI ’87), issued a statement on April 12 which both acknowledges the president’s longtime support for NIH and biomedical research and expresses concern about the small, below-inflation increase proposed for the NIH base budget. It also asks Congress “to provide substantial

scientific successes and ongoing challenges associated with COVID-19, including a potential intranasal vaccine and a need for further research to understand and treat post-acute sequelae of SARS-CoV-2 (long COVID). Other advances highlighted include the development of the first World Health Organization-recommended malaria vaccine, a new method that dramatically improves the efficacy of the Bacillus Calmette-Guerin (BCG) vaccine against tuberculosis in non-human primates, and the first KRAS inhibitor approved by the FDA to treat a type of non-small cell lung cancer.

To view the AAI testimony, please visit <https://bit.ly/3AC1Z6D>.

AAI Urges Congressional Leaders to Appropriate Additional COVID-19 Relief Funding

The Biden Administration has reported that it is running out of funding for a wide range of activities crucial to controlling the COVID-19 pandemic, including diagnostic tests, monoclonal antibodies, antiviral drugs, and funds to continue crucial research. As a result, the administration has been forced to divert existing COVID-19 funding intended to support at-home rapid tests, personal protective equipment, and research and development, to further support the most immediate needs, including buying COVID-19 vaccine doses for the fall and purchasing a large supply of the oral antiviral treatment Paxlovid.

AAI is strongly advocating for additional supplemental funding to address critical pandemic needs. In April, CPA Chair Jensen sent a letter to key Congressional leaders urging them to appropriate at least \$15.6 billion in additional supplemental funding to address these and

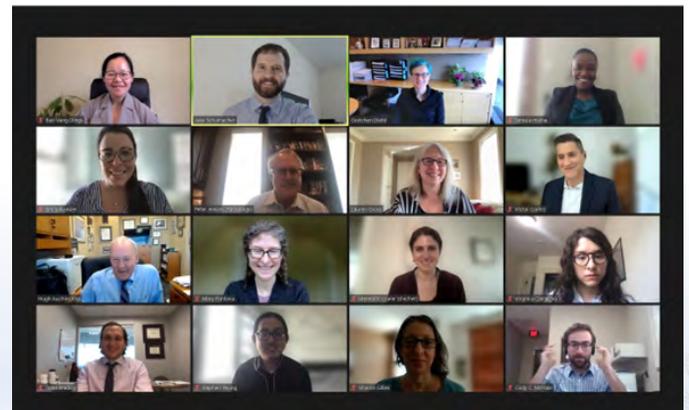
other domestic and international pandemic priorities, including increasing global vaccination rates. This is the same level of funding that was originally included in the FY 2022 omnibus appropriations bill but was ultimately dropped due to a dispute over offsetting its cost.

Negotiations on supplemental COVID-19 funding have largely stalled in Congress. One possible path forward is a bipartisan bill that was announced by Senator Mitt Romney (R-UT) in April. This legislation would provide \$10 billion in supplemental funding for domestic needs, including at least “\$5 billion to research, develop, manufacture, produce, purchase, and administer therapeutics.” Unlike the AAI-supported proposal, it would not address international issues, including providing surge support to under-vaccinated countries through the USAID’s Global Vax program.

AAI Public Policy Fellows Advocate for Increased NIH Funding During Virtual Capitol Hill Day

In mid-March, the 2021–2022 AAI Public Policy Fellows participated in a two-day virtual Capitol Hill Day program. The Fellows, accompanied by CPA Chair Jensen, AAI Advocacy Programs Subcommittee Chair Gretchen Diehl, Ph.D. (AAI ’14), AAI Director of Public Policy and Government Affairs Lauren Gross, J.D., and AAI Senior Manager of Science Policy and Legislative Affairs Jake Schumacher, met with a total of 26 congressional offices by video or phone. They thanked Members of Congress and their staffs for their support of NIH and encouraged them to continue to invest robustly in the agency. The Fellows also advocated for funding for trainees and researchers whose work was negatively impacted by the pandemic and stressed the importance of continuing to provide additional funding to combat the COVID-19 pandemic.

As always, the Fellows received training throughout the fellowship year and in the hours leading up to Capitol Hill Day. The Fellows also met virtually with NIAID Principal Deputy Director Hugh Auchincloss, M.D., DFAAI (AAI ’83), to learn more about both NIH and NIAID. His well-received



AAI 2021–2022 Public Policy Fellows, Jensen and Diehl, and AAI Public Affairs staff meet with Auchincloss

presentation focused largely on issues related to COVID-19. Dr. Auchincloss, a former CPA chair, received the AAI Public Affairs Recognition Award in 2015 in part for his outstanding support for the Public Policy Fellows Program.

AAI Announces 12th Class of Public Policy Fellows

The 12th year of the AAI Public Policy Fellows Program (PPFP) began on May 1, 2022. The PPFP annually engages up to 10 early career scientists in AAI public policy and legislative activities that impact immunology and biomedical research. The program culminates in a visit to Washington, DC, to advocate on Capitol Hill for increased funding for NIH and to describe recent advances in immunological research.

AAI is pleased to welcome the 2022–2023 Class of Fellows:



Adeleye Adeshakin, Ph.D. (AAI '21)
Postdoctoral Research Assistant
St. Jude Children's Research Hospital



Caroline Jones, Ph.D. (AAI '22)
Assistant Professor
University of Texas at Dallas



Victoria Mutua, D.V.M., Ph.D. (AAI '22)
Postdoctoral Scholar
University of California, Davis



Adriana Benavides, Ph.D. (AAI '18)
Associate Editor for Cancer Immunology Research
American Association for Cancer Research



Jamie McCall, Ph.D. (AAI '22)
Research Instructor
West Virginia University



Ninecia Scott, Ph.D. (AAI '21)
Postdoctoral Fellow
The University of Alabama at Birmingham



Jeremy Crawford, Ph.D. (AAI '22)
Principal Scientist / Director of Immunoinformatics
St. Jude Children's Research Hospital



Chandra Menendez, Ph.D. (AAI '17)
Postdoctoral Research Fellow
University of Oklahoma Health Sciences Center



Erin Taylor, Ph.D. (AAI '21)
Assistant Professor
University of Mississippi Medical Center

For complete PPFP details, including program goals and description, and to view Fellows from previous years, visit www.aai.org/PPFP.

CPA Hosts Timely Policy Sessions at IMMUNOLOGY2022™

The CPA sponsored two important and timely policy sessions at IMMUNOLOGY2022™, the 105th AAI annual meeting held in Portland, Oregon, in early May. Both chaired by CPA Chair Jensen, the sessions were: “ARPA-H: What You Need to Know and How it May Impact Federal Funding of Biomedical Research,” and “Vaccine Acceptance: Lessons from the Past and Tools for the Future.”

The ARPA-H session, which took place shortly after the legislation officially establishing ARPA-H had been enacted, featured three excellent presentations. The first speaker, NIH Acting Principal Deputy Director Tara Schwetz, Ph.D., provided detailed information about legislative and administration efforts to create this bold new entity focused on use-driven high-risk, high-reward scientific research. Amy Jenkins, Ph.D., a program manager at the Defense Advanced Research Projects Agency (DARPA), the entity on which ARPA-H is based, described what she believes constitutes a good “ARPA” project. The final talk was given by Amanda Jamieson, Ph.D. (AAI ’15), an associate professor at Brown University, who shared her unique insights as an investigator who has received grant funding from both NIH and DARPA.

The vaccine acceptance session drew a large audience concerned about the problem of misinformation and disinformation and its deleterious impact on both public health and trust in science. Richard Carpiano, Ph.D., M.P.H., professor of Public Policy at the University of California, Riverside, gave a broad overview of the landscape, focusing on factors that drive people to vaccinate or not to vaccinate, and offered policy interventions that might address the problem. The audience was also pleased to hear from AAI Councilor Akiko Iwasaki, Ph.D. (AAI ’00), Sterling Professor of Immunobiology and of Molecular, Cellular and Developmental Biology at Yale School of Medicine, who discussed specific types of misinformation and disinformation that have been spread during the COVID-19 pandemic and some of the ways that she and her colleagues have tried to counter these false claims. Dr. Iwasaki also talked more generally about how scientists can get involved in the public arena, including through some of the lessons she has learned through her robust presence on Twitter.

Both sessions were followed by lengthy question-and-answer periods. Recordings of these events will be made available to annual meeting attendees in the near future.



Carpiano



Iwasaki



Jamieson



Jenkins



Schwetz





AAI Intersect Fellowship Program for Computational Scientists and Immunologists

Fellowship Overview

Recognizing the vital role cross-trained scientists play in furthering immunology research, this fellowship program is intended to promote understanding and communication between immunology researchers and computational scientists. A PI may apply for a one-year fellowship, which will support a postdoctoral fellow trained in basic bench research to train in computational science, or a postdoctoral fellow in computational science to train in an immunology research lab to learn basic immunological principles and laboratory techniques. Reciprocal six-month exchanges between labs will also be considered.

APPLICATIONS OPEN	JUNE 1
APPLICATIONS CLOSE	SEPTEMBER 1

Eligibility

One of the collaborating PIs must be an AAI member in good standing. If the PI is a research immunologist, he/she must be independent. Applicants may request salary support for a maximum of one postdoctoral fellow for one year, or two postdocs for six months each.

Trainees must be in years one through five of postdoctoral training in the physical/mathematical/computational sciences, immunology, or related fields. Postdoctoral fellows who have completed five years of training and transitioned into a second postdoctoral position will be considered on a case-by-case basis.

Review Process

Award consideration is based on a combination of the qualifications of the applicant, the merit of the PI's proposed project, the potential of the trainee, and the quality of the training environment.

For more information or to apply, visit www.aai.org/Intersect.

Please direct inquiries to fellowships@aai.org.

If the application deadline falls on a weekend day or a federal holiday, applications will be due on the next regular business day.

Eight AAI Members Elected to the National Academy of Sciences

The following AAI members were recently elected as members of the National Academy of Sciences in recognition of their distinguished and continuing achievements in original research. AAI congratulates them on this honor!

Arturo Casadevall, M.D., Ph.D. (AAI '98)



Dr. Casadevall is a Bloomberg Distinguished Professor and Alfred and Jill Sommer Professor and chair of the Department of Molecular Microbiology and Immunology, the Johns Hopkins Bloomberg School of Public Health. His research focuses on host defense mechanisms, how fungi

cause disease, and on the development of antibody-based therapies for infectious diseases. Casadevall has served as a member of the AAI Minority Affairs Committee and as a guest lecturer and a Careers Roundtables leader at AAI annual meetings. To learn more about his work, visit <https://publichealth.jhu.edu/faculty/3126/arturo-casadevall>.

Betty A. Diamond, M.D., DFAAI (AAI '80)



Dr. Diamond is the director of the Institute of Molecular Medicine, Center for Autoimmune Musculoskeletal and Hematopoietic Diseases, at the Feinstein Institutes for Medical Research. Diamond's laboratory studies DNA-reactive B cells in the autoimmune disease systemic lupus erythematosus. She

is a past AAI president (2009–2010) and member of the AAI Council (2004–2011) and has also served as a member of the AAI Finance Committee, Clinical Immunology Committee, and Committee on Public Affairs. Diamond was named a Distinguished Fellow of AAI in 2019. She has served as a major symposium chair and speaker at AAI annual meetings. She was also an instructor for both the AAI Introductory Course in Immunology and the Advanced Course in Immunology for many years and as a mentor in the AAI High School Science Teachers Summer Program. She is also a past deputy editor and associate editor for *The Journal of Immunology* (*The JI*). Learn more about her research at <https://feinstein.northwell.edu/institutes-researchers/our-researchers/betty-diamond-md>.

Gordon Freeman, Ph.D. (AAI '01)



Dr. Freeman is a professor and researcher in the Department of Medical Oncology at Dana-Farber Cancer Institute and a professor of medicine at Harvard Medical School. His work helped provide the foundation for developing immune checkpoint blockade immunotherapies. Learn more

about his research at www.dana-farber.org/find-a-doctor/gordon-j-freeman/.

Barney S. Graham, M.D., Ph.D. (AAI '00)



Dr. Graham is professor in the Departments of Medicine and Microbiology, Biochemistry, and Immunology at Morehouse School of Medicine. He is the former deputy director of the Vaccine Research Center and chief of the Viral Pathogenesis Laboratory and Translational Science Core at the

NIAID, NIH. Graham has served as a faculty member for the AAI Introductory Course in Immunology. To learn more about his work, visit www.msm.edu/RSSFeedArticles/2022/May/BarneyGraham.php.

Kristin A. Hogquist, Ph.D., DFAAI (AAI '95)



Dr. Hogquist is the David M. Brown Professor and Vice Chair for Research in the Department of Laboratory Medicine and Pathology as well as the Associate Director for the Center for Immunology at the University of Minnesota. She was named a Distinguished Fellow of AAI in 2021 and is a recipient

of the 2019 AAI-ThermoFisher Meritorious Career Award and Lecture and the 2014 AAI Distinguished Service Award. She was selected as a Distinguished Lecturer at the 2014 AAI annual meeting. She has served as an *ex officio* member of the AAI Council, as chair of the AAI Program and Nominating Committees, and as a member of the AAI Committee on Public Affairs and of the Committee on the Status of Women. Hogquist has been a major

symposium chair and speaker at the AAI annual meeting and an AAI Advanced Course in Immunology director and faculty member. She is also a past deputy editor, section editor, and associate editor for *The JI*. Learn more about Hogquist's research at www.virology.umn.edu/biol/virology/KristinHogquist

Federica Sallusto, D.Sc. (AAI '14) (NAS International Member)



Dr. Sallusto is a professor of medical immunology at ETH (Swiss Federal Institute of Technology), Zurich, and group leader of the Cellular Immunology Laboratory at the Institute for Research in Biomedicine, Bellinzona. She has served as a major symposium speaker and a MAC Careers in

Science roundtable leader at AAI meetings. To learn more about her work, visit <https://micro.biol.ethz.ch/research/sallusto.html>.

Jenny Ting, Ph.D. (AAI '97)



Dr. Ting is a William Rand Kenan Professor of Genetics and professor of microbiology and immunology at the University of North Carolina School of Medicine, where she also serves as immunology program leader at the Lineberger Comprehensive Cancer Center and director of the

Center for Translational Immunology. Ting is a past AAI president (2020–2021) and member of the AAI Council (2015–2022) and has also served as the elected chair of the AAI Nominating Committee and a member of the AAI Publications Committee. She is the recipient of the 2013 AAI-Life Technologies Meritorious Career Award in 2013 and was selected that year as an AAI Distinguished Lecturer. She has participated as a major symposium chair and speaker at AAI annual meetings and faculty member for the AAI Advanced Course in Immunology. Dr. Ting is a past associate and section editor for *The JI*. To learn more about her research, visit www.med.unc.edu/microimm/directory/jenny-ting-phd/.

Casey T. Weaver, M.D. (AAI '91)



Dr. Weaver is the Wyatt and Susan Haskell Endowed Professor of Medical Excellence in the Departments of Pathology, Medicine, and Microbiology at the University of Alabama at Birmingham School of Medicine. His lab conducts research concerning the mechanisms

by which CD4 T cells control adaptive immunity. He was a member of the AAI Nominating Committee and has also served as a major symposium chair and speaker at AAI annual meetings. To learn more about his research, visit www.uab.edu/medicine/immunology/faculty?id=162:weaver&catid=39:faculty.

To see a full list of NAS electees, visit <https://bit.ly/3NZbYqk>.

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gives immunologists a forum to publish their incremental work—insightful and potentially impactful stepping stones that add to the greater knowledge and benefit other researchers!

www.immunohorizons.org

Garcia, Mackall, Mellman, and Rudensky Elected as Fellows of AACR Academy

Four AAI members were recently elected as Fellows of the American Association for Cancer Research (AACR) Academy Class of 2022. **K. Christopher Garcia, Ph.D. (AAI '18)**, **Crystal L. Mackall, M.D. (AAI '97)**, **Ira Mellman, Ph.D. (AAI '11)**, and **Alexander Y. Rudensky, Ph.D. (AAI '94)**, were among 33 distinguished scientists selected to honor and recognize their scientific contributions that have propelled significant innovation and progress against cancer.



Dr. Garcia is a professor of molecular and cellular physiology and of structural biology at Stanford University School of Medicine and a Howard Hughes Medical Institute (HHMI) Investigator. His world-renowned contributions to the fields of immunology and structural biology include defining

the biophysical properties of receptor-ligand binding and the visualization of protein complexes crucial to the understanding of the immune system and drug design. For more information about his lab and research, visit www.med.stanford.edu/garcialab.



Dr. Mackall is the Ernest and Amelia Gallo Family Professor and a professor of pediatrics and medicine at Stanford University School of Medicine. She is recognized for pioneering contributions to the fields of pediatric oncology, immunology, and immunotherapeutics, including

the discovery of the role of IL-7 in T cell homeostasis, significant efforts to advance the use of CAR-T cell therapies, and for consistent and groundbreaking translational research dedicated to establishing novel treatments for pediatric cancer patients. Mackall has been a major symposium speaker at AAI annual meetings. To learn

more about the Mackall lab and research, visit <https://med.stanford.edu/mackalllab.html>.



Dr. Mellman is vice president of cancer immunology at Genentech Inc., and a professor at the University of California. Mellman's research has informed the development of cancer immunotherapies and had a profound impact on our understanding of cancer immunity. Dr. Mellman has served as a major symposium chair

and speaker at AAI annual meetings. For more information about his lab and research, visit www.gene.com/scientists/our-scientists/ira-mellman.



Dr. Rudensky is an HHMI Investigator, chair of the Immunology Program and director of the Ludwig Center at Memorial Sloan Kettering Cancer Center. He is recognized for pivotal discoveries of the molecular and cellular mechanisms of the immune system governing the differentiation and function of regulatory T cells

(Treg), the discovery of the FOXP3 gene switch as a cell lineage specification factor for Tregs, and fundamental contributions to understanding the role of Tregs in the control of autoimmunity, immunity to infections, and tumor immunity and progression. Rudensky has served as a member of the AAI Awards Committee, is the recipient of the 2020 AAI-Thermo Fisher Meritorious Career Award and the 1999 AAI-PharMingen Investigator Award, was the 2009 Distinguished Lecturer, and has served as a major symposium speaker at AAI annual meetings. To learn more about his lab and research, visit www.mskcc.org/research/ski/labs/alexander-rudensky.

To see the full announcement, visit <https://bit.ly/3NWKIJf>.

Connect with AAI!

Want to hear the latest from The American Association of Immunologists? You can find AAI on social media:



@ImmunologyAAI



@ImmunologyAAI



[linkedin.com/company/the-american-association-of-immunologists/](https://www.linkedin.com/company/the-american-association-of-immunologists/)

If you'd like to join the AAI email list, please email infoaai@aai.org.

Ahmed, Goldrath, Iwasaki, and Wu Elected to the American Academy of Arts and Sciences

Four AAI members were elected as members to the American Academy of Arts and Sciences in February 2022. **Rafi Ahmed, Ph.D., DFAAI (AAI '84), Ananda W. Goldrath, Ph.D. (AAI '05), Akiko Iwasaki, Ph.D. (AAI '00), and Hao Wu, Ph.D. (AAI '19)** were selected for excellence in the biological sciences.



Dr. Ahmed is a professor of microbiology and immunology at Emory University, investigator at the Emory Center for AIDS Research, and Eminent Scholar for the Georgia Research Alliance. He served AAI on the Nominating Committee. Ahmed was named an AAI Distinguished Fellow in 2020 and is the recipient

of the 2015 AAI Excellence in Mentoring Award. He was a speaker at the 2017 President's Symposium and a 2001 Distinguished Lecturer. Ahmed has taught at the Advanced Course in Immunology for many years and served as a major symposium chair and speaker at AAI annual meetings. To learn more about his work visit www.vaccines.emory.edu/faculty/primary-faculty/ahmed-rafi.



Dr. Goldrath is a professor of molecular biology at the University of California. Goldrath has served on the AAI Education and Nominating Committees. She has also served as major symposium chair and speaker at multiple AAI annual meetings and as an associate editor of *The JI*. To

learn more about her work, visit www.goldrathlab.com.



Dr. Iwasaki is the Sterling Professor of Immunobiology and Molecular, Cellular, and Developmental Biology at Yale University and an HHMI Investigator. She serves as AAI Vice President (2022–2023) and a member of the AAI Council (2018–2025) and has also served on the AAI Nominating and Program

Committees. She is recipient of the 2018 AAI-Thermo Fisher Meritorious Career Award and the 2011 AAI-BD Biosciences Investigator Award. She was a 2016 President's Symposium speaker and has also served as a special session speaker, major symposium chair and speaker, and Careers in Science Roundtables leader at AAI meetings. To learn more about her work, see page 18 of this newsletter and visit www.medicine.yale.edu/lab/iwasaki.



Dr. Wu is the Asa and Patricia Springer Professor of Structural Biology and a professor of biological chemistry and molecular pharmacology at Harvard Medical School/Boston Children's Hospital. To learn more about her research, visit <https://bcmp.hms.harvard.edu/faculty-staff/hao-wu>.

To see the full announcement, visit <https://bit.ly/3xsEvxu>.

GRIP

Grant Review for Immunologists Program

Get a GRIP: An AAI program designed to help new investigators prepare their NIH grant proposals

The AAI Grant Review for Immunologists Program (GRIP) offers new principal investigators (PIs) access to established PIs for guidance in preparing grant proposals as they embark on their independent careers. Early-career PIs (assistant professors or equivalents) are invited to submit their grants' "Specific Aims" pages to the GRIP coordinator who, with the assistance of a small volunteer subcommittee, will attempt to match each topic of the proposal with the research experience of an established PI. Matches will be made as quickly as possible to allow participants to meet upcoming NIH grant deadlines. Participation is open only to AAI regular members and is strictly voluntary. The program is not intended to supplant internal mentoring programs at applicants' institutions.

To apply, please send your CV and the grant's "Specific Aims" page to infoaai@aai.org. (please write "GRIP" in the subject line)

To volunteer as a mentor, please send your CV and a brief description of your grant-reviewing experience to infoaai@aai.org. (subject line "GRIP")



Program details at aai.org/Education/GRIP

Artis and Chen to Receive 2022 ICI-BioLegend William E. Paul Award

David Artis, Ph.D. (AAI '06), and **Wanjun Chen, M.D. (AAI '18)**, are set to receive the 2022 ICIS-BioLegend William E. Paul Award in September 2022 during the Cytokines 2022 Hybrid Joint Meeting with ILC4 in Hawai'i for their combined contributions to unraveling the exciting and important biology of cytokines.



Dr. Artis is the director of the Jill Roberts Institute for Research in Inflammatory Bowel Disease, the Michael Kors Professor of Immunology in the Department of Medicine, and a professor of microbiology and immunology in the Department of Microbiology and Immunology at Weill Cornell

Medicine. Artis' work has pushed the boundaries of conventional approaches to immune defenses and elucidated the important role of cytokines in host defenses at the barrier surfaces of the gut, skin, and lungs. Artis received the 2013 AAI-BD Biosciences Investigator Award, a 2008

AAI Minority Scientist Mentor Travel Award, and a 2006 AAI Junior Faculty Travel Grant. He has served as an instructor for the Introductory Course in Immunology for many years, and has been a major symposium speaker at AAI annual meetings. More information about his research and lab can be found at artislabs.weill.cornell.edu/team/david-artis-phd.



Dr. Chen is a senior investigator and the chief of the Mucosal Immunology Unit at the National Institute of Dental and Craniofacial Research, National Institutes of Health. Chen's work has significantly advanced understanding of pathogenesis and has led to the development of immunotherapies

for autoimmunity, cancer, and infectious diseases. To learn more about his work, visit www.nidcr.nih.gov/research/conducted-at-nidcr/investigators/wanjun-chen

See the full award announcement at <https://bit.ly/3y3shgB>.

International Harrington Prize Jointly Awarded to Crowe and Nussenzweig

The ninth annual Harrington Prize for Innovation in Medicine has been jointly awarded to **James E. Crowe Jr., M.D. (AAI '99)**, and **Michel C. Nussenzweig, M.D., Ph.D. (AAI '91)**. The award recognizes their groundbreaking work, which has elucidated fundamental principles of the human immune response and enabled the use of human antibodies to treat COVID-19.



Dr. Crowe is the director of the Vanderbilt Vaccine Center and a professor in the Department of Pediatrics and the Department of Pathology, Microbiology and Immunology at the Vanderbilt School of Medicine. He has served on the AAI Program Committee and as a major symposium chair and

speaker at AAI annual meetings. For more information about his lab and research, visit crowelab.org.



Dr. Nussenzweig is an HHMI Investigator and the Zanvil A. Cohn and Ralph M. Steinman Professor at The Rockefeller University. He has served on the AAI Awards and Program Committees and as an abstract programming chair for AAI annual meetings. He was the 2017 recipient of the AAI-BioLegend Herzenberg

Award and the 2004 recipient of the AAI-Huang Foundation Meritorious Career Award. He has been an AAI Distinguished Lecturer (2017), President's Symposium speaker (2014), and major symposium speaker at AAI meetings. More information about his work can be found at www.rockefeller.edu/our-scientists/heads-of-laboratories/875-michel-c-nussenzweig.

For the full award announcement, visit <https://bit.ly/3xT8GiK>.

Saphire Receives ASBMB Bert & Natalie Valle Award in Biomedical Science



Erica O. Saphire, Ph.D. (AAI '20), has been named the Bert & Natalie Valle Award in Biomedical Science by the American Society for Biochemistry and Molecular Biology. This honor is given to an established scientist for outstanding accomplishments in basic biomedical research.

Dr. Saphire is a professor and the president and chief executive officer of the La Jolla Institute for Immunology. Saphire's lab has solved structures of key

proteins of the Ebola, Marburg, rabies and Lassa viruses and explained how they remodel these structures as they drive themselves into cells, how their proteins suppress immune function and where human antibodies can defeat these viruses. She used this information to galvanize two international consortia of former competitors to advance antibody therapeutics together. Saphire serves as director of the Viral Hemorrhagic Fever Immunotherapeutic Consortium (VIC), which brings together labs from industry, government, and academia to study and generate antibody treatments for deadly viruses. She also leads the Coronavirus Immunotherapy Consortium

(CoVIC), which analyzes therapeutic antibody candidates for COVID-19 treatment. For more information about her research, visit www.lji.org/labs/sapphire/.

To read the full announcement, visit www.eurekalert.org/news-releases/956663.

Lydia Lynch Awarded the 2022 ICIS-Luminex John R. Kettman Award for Excellence in Cytokine & Interferon Research



Lydia Lynch, Ph.D. (AAI '15), is the recipient of the 2022 ICIS-Luminex John R. Kettman Award for Excellence in Cytokine & Interferon Research in recognition of her outstanding contributions to the field of interferon or cytokine biology.

Dr. Lynch is an associate professor at Brigham and Women's Hospital/Harvard Medical School. She has served as a member of the AAI Immunology Teaching Interest Group Committee, as a major symposium speaker at the AAI annual meeting, and was a 2012 recipient of an AAI Trainee Abstract Award. To learn more about her research, visit <https://lynchlab.bwh.harvard.edu/lab-members/>.

To see the full award announcement, visit cytokinesociety.org/lydia-lynch/.

Sharpe Receives ASIP Meritorious Rous-Whipple Award



Arlene Sharpe, M.D., Ph.D., DFAAI ('97), received the ASIP Meritorious Rous-Whipple Award for her outstanding contributions to pathology, excellence in research, outstanding teaching, mentorship, and leadership in the field of pathology.

Dr. Sharpe is the George Fabyan Professor of Comparative Pathology in the Department of Immunology in the Evergrande Center for Immunologic

Diseases at Harvard Medical School. Sharpe is a past AAI president (2016–2017) and member of the AAI Council (2011–2018) and has also served on the AAI Publications and Program Committees. In 2022, Sharpe was named an AAI Distinguished Fellow and also received the AAI Lifetime Achievement Award. She has also served as major symposium chair and speaker at AAI annual meetings. More information about his research and lab can be found at <https://sharpe lab.hms.harvard.edu/>.

To see the award announcement, visit <https://bit.ly/3zBLpmU>.

Vishva M. Dixit Receives 2022 Dr. A.H. Heineken Prize for Medicine



Vishva M. Dixit, M.D. (AAI '16), has received the 2022 Dr. A.H. Heineken Prize for Medicine for his pioneering biomedical research on apoptosis.

Dr. Dixit is vice president of Early Discovery Research at Genentech.

His discoveries have provided mechanistic insight for new clinical treatments, including immunotherapy in cancer patients. He has been a major symposium chair and speaker at AAI annual meetings. To learn more about his work, visit www.gene.com/scientists/our-scientists/vishva-dixit.

To see the full award announcement, visit <https://bit.ly/3Oi6h6J>.

Eight AAI Members Elected as Fellows of the American Academy of Microbiology

The AAI members listed below were recently elected 2022 Fellows of the American Academy of Microbiology in recognition of their scientific achievements and original contributions that have advanced microbiology. AAI congratulates them on this honor!

- **Shane Crotty, Ph.D. (AAI '04)**
- **Satya Dandekar, Ph.D. (AAI '07)**
- **Eric Denkers, Ph.D. (AAI '95)**
- **Eran Elinav, M.D., Ph.D. (AAI '15)**
- **Carolina Lopez, Ph.D. (AAI '05)**
- **Mary O'Riordan, Ph.D. (AAI '21)**
- **Marcela Pasetti, Ph.D. (AAI '04)**
- **Barbara Rehermann, M.D. (AAI '00)**

Read the full announcement at <https://bit.ly/3QIYtmh>.

Allison and Sharma to Lead New James P. Allison Institute at MD Anderson Cancer Center

AAI members **James P. Allison, Ph.D., DFAAI (AAI '78)** and **Padmanee Sharma, M.D., Ph.D. (AAI '13)** were appointed to lead the University of Texas MD Anderson Cancer Center's James P. Allison Institute, a visionary research and innovation hub designed to foster groundbreaking science, develop new treatments, and bring the benefits of immunotherapy to all patients.



Dr. Allison is regental chair of immunology and director of the Allison Institute. Allison is renowned for his fundamental discoveries in T cell biology and his invention of ipilimumab, the first immune checkpoint inhibitor to treat cancer. In 2018, Allison was jointly awarded the Nobel Prize in Physiology or Medicine with Dr. Tasuku Honjo (AAI '88) for their discovery of cancer therapy by inhibition of negative immune regulation. He is a past AAI president (2001–2002) and member of the AAI Council (1996–2003) and has also served on the AAI Committee on Public Affairs. Allison was named an AAI Distinguished Fellow in 2019, is the recipient of the 2011 AAI Lifetime Achievement Award and the 2008 Dana Foundation Award for Human Immunology Research, and was a 1993 AAI Distinguished Lecturer. He

has served as a major symposium chair and speaker and an abstract programming chair for multiple AAI annual meetings as well as an instructor for the AAI Advanced Course in Immunology. He has also served as a section and associate editor for *The Journal of Immunology*. For more information about his research, visit www.faculty.mdanderson.org/profiles/james_allison.html.



Dr. Sharma is a professor of genitourinary medical oncology at the University of Texas MD Anderson Cancer Center. Sharma's research is directed at identifying the presence and function of various immunological

components, including tumor antigen expression, effector T cell recognition of tumor cells, regulatory T cell suppression of effector T cells, and cytokine profiles that bias effector or regulatory T cell function, within the systemic circulation and tumor microenvironment of patients with genitourinary malignancies. She has been a major symposium speaker at AAI annual meetings. To learn more about her research visit www.faculty.mdanderson.org/profiles/padmanee_sharma.
To see the full announcement, visit <https://bit.ly/3NYg9CP>.

Iwasaki Named Yale Sterling Professor and Founding Director of Yale Center for Infection and Immunity



Akiko Iwasaki, Ph.D. (AAI '00), was appointed Sterling Professor of Immunobiology and of Molecular, Cellular & Developmental Biology, at Yale School of Medicine in February 2022. A Sterling Professorship is considered the highest academic honor a Yale professor can receive. To learn more about her appointment, visit <https://bit.ly/3Oduj2I>.

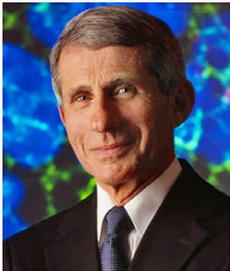
Dr. Iwasaki was also named the founding director of the new Yale Center for Infection and Immunity. The center aims to produce better diagnoses, treatments, and ultimately cures. It will also work toward vaccine

development, based on Iwasaki's pioneering work showing that vaccines directed toward the mucosa might provide better protection than systemic vaccination. To learn more, visit <https://bit.ly/3xxwvLR>.

Iwasaki serves as AAI Vice President (2022–2023) and a member of the AAI Council (2018–2025) and has also served on the AAI Nominating and Program Committees. She is recipient of the 2018 AAI-Thermo Fisher Meritorious Career Award and the 2011 AAI-BD Biosciences Investigator Award. She was a 2016 President's Symposium speaker and has also served as a special session speaker, major symposium chair and speaker, and Careers in Science Roundtables leader at AAI meetings. To learn more about her research, visit https://medicine.yale.edu/profile/akiko_iwasaki/.

Fauci and Hood Named to STAT STATus List 2022

Anthony Fauci, M.D., DFAAI (AAI '73) and **Leroy Hood M.D., Ph.D., DFAAI (AAI '69)**, were among the 46 named on the inaugural STATus List for their leadership in health, medicine, and science. The list is published by STAT, a science journalism platform produced by Boston Globe Media covering biotech, pharma, and the life sciences.



Dr. Fauci is the director of the National Institute of Allergy and Infectious Diseases. He is one of the lead members of the White House COVID-19 Response Team and serves as chief medical advisor. Fauci has served as AAI Program Committee chair and an AAI Clinical Immunology Committee member. He received the 2000 AAI Public Service Award, was named an AAI Distinguished Fellow in 2019, and is the recipient of the 2005

AAI Lifetime Achievement Award. He has also been a major symposium speaker at AAI annual meetings. To learn more about his career, visit www.niaid.nih.gov/about/director.



Dr. Hood is the co-founder and chief strategy officer for the Institute for Systems Biology. He has served on the AAI Awards Committee and was named an AAI Distinguished Fellow in 2020. Hood has also twice been a Distinguished Lecturer at the AAI annual meeting. To learn more about his career, visit www.isbscience.org/bio/leroy-hood.

www.isbscience.org/bio/leroy-hood.

To see the full announcement, visit www.statnews.com/status-list/2022.

Glimcher Named to Modern Healthcare's 50 Most Influential Clinical Executives Class of 2022



AAI member **Laurie H. Glimcher, M.D., DFAAI (AAI '83)**, is featured in the 2022 *Modern Healthcare's* 50 Most Influential Clinical Executives Class of 2022. This award program honors individuals in health care who are deemed by their peers and the senior editors of *Modern Healthcare* to be paving the way to better health

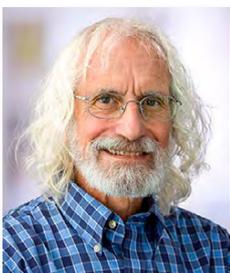
through their executive responsibility, leadership qualities, innovation, community service, and achievements.

Dr. Glimcher is president and CEO of Dana-Farber Cancer Institute, director of the Dana-Farber Harvard Cancer Center, and the Richard and Susan Smith Professor of Medicine at Harvard Medical School. She is recognized for her research identifying key transcriptional regulators of protective immunity and the origin of pathophysiological

immune responses underlying autoimmune, infectious, and malignant diseases. She is an AAI past president (2003–2004) and a member of the AAI Council (1998–2005) and has also served as a chair and member of the AAI Awards Committee, as well as a member of the Liaison Committee with Research Granting Agencies and the Committee for Liaison with DRG, NIH. Glimcher was named an AAI Distinguished Fellow in 2019 and has received the 2018 AAI Lifetime Achievement Award, the 2008 AAI Excellence in Mentoring Award, and the 2006 AAI-Huang Foundation Meritorious Career Award. She was a 2021 AAI President's Symposium Speaker and a 1995 AAI Distinguished Lecturer. She has also served as a major symposium chair and speaker at AAI meetings. Glimcher has been an associate editor and section editor for *The Journal of Immunology*. To learn more about her research, visit www.dana-farber.org/about-us/leadership/laurie-glimcher.

To see the full announcement, visit <https://bit.ly/3udOHjr>.

Greenburg Is AACR President-Elect



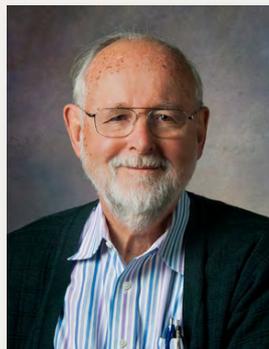
Philip D. Greenberg, M.D., DFAAI, FAACR (AAI '82), has been named president-elect of the American Association for Cancer Research for 2022–2023. Dr. Greenberg is the Rona Jaffe Foundation endowed chair and professor and head of the Program in Immunology, Clinical Research Division at the

Fred Hutchinson Cancer Research Center. He is also a

professor of medicine and immunology at the University of Washington School of Medicine. He was named an AAI Distinguished Fellow in 2019. He has served on the AAI Program Committee, Education Committee, and Committee on Public Affairs. Greenberg has also been a major symposium speaker at AAI annual meetings and an instructor for the AAI Advanced Course in Immunology. To learn more about his work, visit www.fredhutch.org/en/faculty-lab-directory/greenberg-philip.html.

See the full AACR announcement at <https://bit.ly/39x1lvV>.

IN MEMORIAM



Joost J. Oppenheim, M.D., DFAAI (AAI '68)

August 11, 1934 – May 14, 2022

AAI extends condolences to the family, friends, and colleagues of Joost J. Oppenheim, M.D. DFAAI (AAI '68), a renowned immunologist and dedicated AAI member of over five decades who died on May 14. Dr. Oppenheim was senior investigator and head of the Cellular Immunology Section in the Cancer Innovation Laboratory at the National Cancer Institute (NCI), NIH.

Oppenheim was elected this spring as a Distinguished Fellow of AAI, one of the highest honors bestowed by AAI. The honor recognizes active, long-term members for distinguished careers and outstanding scientific contributions as well as their service to AAI and the immunology community.

Oppenheim's active AAI involvement included service as a member of the Finance Committee, Program Committee (including as chair), ad hoc Meetings Committee (now defunct), and Committee on Travel Awards to the Third International Congress of Immunology. He participated as a major symposium chair and speaker at multiple AAI meetings and on the faculty of the AAI Advanced Course in Immunology. He also served as an associate editor for The Journal of Immunology and held appointments as AAI representative to the FASEB Finance and Meetings Committees.

The following remembrance was published by Oppenheim's colleagues at the NCI Center for Cancer Research (CCR), and is reprinted here with the kind permission of CCR director Tom Misteli, Ph.D.

The CCR community is profoundly saddened by the recent passing of Joost “Joe” Oppenheim, M.D., Senior Investigator and Head of the Cellular Immunology Section in the Cancer Innovation Laboratory (see <https://bit.ly/3O2NjBy>). He died on May 14, 2022, at the age of 87.

Joost was engaged in cellular immunology research at the NIH for five decades and was instrumental in the discovery of cytokines, chemokines, and alarmins, which are substances produced by immune cells that enable them to communicate and act as “first responders” to injury or infection.

A pioneer in the field of immune cell regulation and response, Joost was one of the first to recognize the importance of intercellular cytokine signals in the regulation of immune defenses against infections and tumors. His early research focused on interleukin 1 (IL-1), and he proved the compound's capacity to protect animals from death caused by radiation and chemotherapeutic agents. His findings led to clinical evaluation of IL-1 for human cancer treatments.

Joost's research group generated landmark discoveries and the birth of the chemokine field. They purified, characterized, and patented IL-8 and monocyte chemoattractant protein-1 (MCP-1) and demonstrated

that chemokines play key roles in AIDS, inflammation, immune responses, and development. The lab's numerous discoveries prompted some to nickname him the “Father of Cytokines,” and his later work focused on utilizing alarmins as vaccine ingredients for use against infectious agents and tumors.

Joost was born in 1934 in the town of Venlo, Netherlands, near the German border. He and his brother survived the Holocaust as Jewish children hidden by a Catholic Dutch family, the Heuvelmans. Joost's family moved to the United States soon after World War II. A talented student, he attended the Bronx High School of Science and then Columbia University. He obtained his M.D. degree from the Columbia College of Physicians and Surgeons, New York, in 1960, and then interned at King County Hospital in Seattle.

He joined the NIH postgraduate program in 1962 and trained as a clinical associate at the NCI. Following that, he was an honorary research fellow in immunology at the University of Birmingham, England. In 1966, he returned to the NIH and started his lab at the National Institute of Dental Research. He served as the medical director of the United States Public Health Service from 1975 to 1983, then moved to the NCI in 1983 and served as the chief of the Laboratory of Immunoregulation until 2015.

* * * * *

Over the course of his career, Joost accumulated numerous accolades, including the Technology Transfer Award from NCI (2001–2005), the NCI Outstanding Mentor Award (2004), the International Cytokine Society (ICS) Honorary Lifetime Award (2004), the Metaphor Scientist Award from Regensburg, Germany (2006), the Trisociety Award from the International Cytokine Society (ICS), International Society for Interferon and Cytokine Research (IFN), and Society for Leukocyte Biology (SLB) (2009), the Harold Stewart Award from the Jackson Foundation of the Uniformed Services University of the Health Sciences (USUHS) (2010), and a Certificate of Appreciation from the China Academy of Chinese Medical Sciences Cancer Institute (2013). He was editor-in-chief of the *Journal of Leukocyte Biology*, served on the editorial board of several prominent international scientific journals, and was a member of numerous societies including the American Academy of Microbiology, American Association of Immunologists, American Society for Clinical Investigation, International Cytokine Society, SLB, and the Association of American Physicians. Most recently, in 2022, he was elected as a Distinguished Fellow of the American Association of Immunologists.

Joost was a titan in his research and academic accomplishments, and he was an inspiration both to his mentees and colleagues. “His publications do not convey that a secret of his success as a researcher often seemed to flow as much from intuition as from serendipity,” said his longtime colleague and friend Scott K. Durum, Ph.D., “nor do they convey the self-deprecatory wit that sparkled through his lectures from the most prestigious podiums.”

In lieu of flowers, the family suggests a donation to Joost's preferred charities: Hebrew Immigrant Aid Society (www.hias.org/get-involved/ways-to-give), Montgomery Hospice, Inc. (Casey House) (<https://montgomeryhospice.org/donate-now/>), and Weizmann Institute (www.weizmann.ac.il/pages/). Please share stories and memories about Joost on this remembrance Facebook page: www.facebook.com/joost.oppenheim.1/.

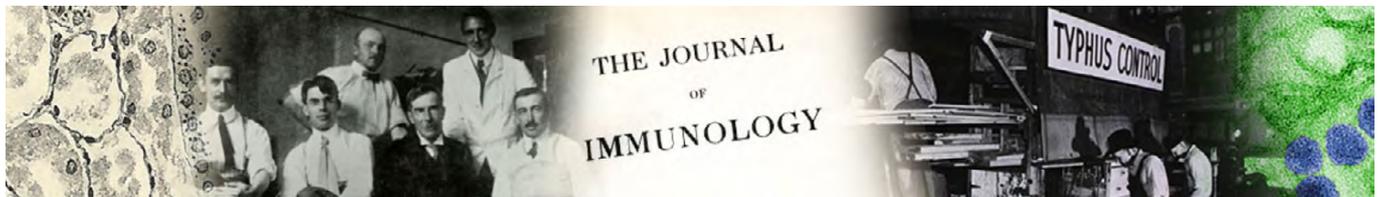
Other remembrances of Dr. Oppenheim include those offered by fellow AAI members Arthur A. “Andy” Hurwitz, Ph.D. (AAI '99), senior vice president, Mana Therapeutics; and Howard A. Young, Ph.D. (AAI '90), senior investigator, Cancer Innovation Laboratory, NCI, NIH.

Dr. Hurwitz, a past Oppenheim mentee, said “It is hard to assess the impact of Joe’s journey and career on so many scientists. Like others, I was lucky to have Joe as a mentor and colleague for many years. He delivered the kind of critical advice with his unique warmth and humor that we rarely find in science. And he was always ready to challenge and discuss with his beloved ‘So what?’”

Of his longtime CCR colleague, Dr. Young said “Joe Oppenheim was a force of nature who made everyone think about the relevance of their work with his famous ‘So what’ question. While it might initially be taken as harsh or rude, when one thought about the question in a calmer environment, it did make one think about the relevance of one’s work. At our Frederick laboratories, I had many discussions with him about my work, and I felt it was always a challenge to convince him that my experimental approaches would lead to relevant data. Joe was extremely loyal to the many scientists who went through his lab and always helped them reach their career goals. He had a wonderful, long life—despite a rough early life that included being hidden from the Nazis by a Dutch family—and Joe was very proud of his children and many grandchildren. His loss has saddened many, but his memory will forever be a part of the rich history of immunology.”

Dr. Young’s May 15 message to NIH Immunology Interest Group colleagues cited Dr. Oppenheim’s surviving family members and other loved ones:

Joost Oppenheim is survived by his second wife, Ann Goldman; four children, Meers, Monty, Matthew, and Emilia; two stepchildren, Randy and Dale; and many grandchildren. He was predeceased by his beloved first wife, Elizabeth (Libby) Oppenheim.



More Than 100 Years of AAI History

Visit www.aai.org/history for stories of immunology past and present, the Oral History Project, and the AAI Timeline, which chronicles 100-plus years of immunology history—and more.

AAI Announces Winter 2022 Travel for Techniques Awardees

AAI is pleased to announce the most recent **AAI Travel for Techniques Award** recipients, selected from among applicants during the program's Winter 2022 application cycle.

The AAI Travel for Techniques Program assists member principal investigators (regular or associate) in their efforts to expand their skill sets to benefit their research. Selected applicants may choose to use the award to travel themselves, assign the award to a trainee in their lab, or assign the award to another lab member. AAI reimburses award recipients as much as \$1,500 in travel expenses incurred on a trip to another laboratory to learn a technique.

AAI extends congratulations to:



Silvia Guglietta, Ph.D. (AAI '19)
Assistant Professor, Medical University of South Carolina

Destination: The laboratory of Dr. Kathryn Hamilton, Children's Hospital of Philadelphia and University of Pennsylvania Perelman School of Medicine

Technique: Generation of intestinal organoids

Application: To study the role of complement in intestinal barrier dysfunction and immune dysregulation



Jay Reddy, M.V.Sc., Ph.D. (AAI '09)
Professor, University of Nebraska, Lincoln

Designated Traveler: Kiruthiga Mone (AAI '22), graduate student

Destination: The laboratory of Dr. Eugene Oltz (AAI '95), The Ohio State University Wexner School of Medicine

Technique: Chromatin immunoprecipitation and CHIP qPCR analysis

Application: To investigate the innate memory response resulting from CFA-induced immunization



Maria Dulfary Sanchez-Pino, Ph.D. (AAI '19)
Assistant Professor, LSUHSC School of Medicine

Designated Traveler: Phaethon Philbrook (AAI '22), graduate student

Destination: The laboratory of Dr. Paulo C. Rodriguez (AAI '17), Moffitt Cancer Center

Technique: CRISPR/Cas9 in primary CD8⁺ T cells and development of CAR-T cells

Application: To explore the ability to change the metabolic state and fate of immune cells in the treatment of cancer



Pranita P. Sarangi, D.V.M., Ph.D. (AAI '17)

Associate Professor, Indian Institute of Technology Roorkee

Destination: The laboratory of Dr. James McGrath, University of Rochester

Technique: Isolation and characterization of extracellular vesicles/exosomes

Application: To study the role of extracellular vesicles/exosomes and their components in the modulation of innate immune cell function under inflammatory disease conditions

Travel for Techniques Award applications are reviewed in three cycles annually—winter, spring, and fall.

Details on applying for the AAI Travel for Techniques Award are available at www.aai.org/TravelForTechniques.

AAI Fellowship Program for Career Reentry



Fellowship Overview

This fellowship program provides one year of salary support to postdoctoral fellows who have taken a leave of absence of one year or more due to military obligations, personal or family medical leave, or other related family circumstances. These reasons may include recovering from a serious illness, providing elder or child care, fulfilling a military obligation, or relocating due to a spousal career transition.

Eligibility

- An applicant must have a tentative written offer of appointment as a postdoctoral fellow.
- The fellowship must be in immunology or a related field.

Award consideration is based on a combination of the merit of the research project, quality of the training environment, research and career accomplishments, and career potential.

APPLICATIONS OPEN JUNE 1
APPLICATIONS CLOSE SEPTEMBER 1



For more information or to apply, visit www.aai.org/Reentry.
Please direct inquiries to fellowships@aai.org.

If the application deadline falls on a weekend day or a federal holiday, applications will be due on the next regular business day.

AAI Outreach Program Update

The AAI Outreach Program provides career development opportunities for young investigators by supporting podium and poster presentation awards at member-organized immunology meetings throughout the United States. The program most recently provided sponsorship at the conferences highlighted in this section.

The UC Irvine Institute for Immunology (IFI) 19th Annual Immunology Symposium

The University of California, Irvine, IFI 19th Annual Immunology Symposium was held virtually on December 2–3, 2021, and drew approximately 120 attendees. Participants enjoyed learning about the immunology field and the cutting-edge research presented by the invited speakers. Young investigators had an opportunity to engage with meeting participants by presenting their posters, sharing their research findings, and receiving feedback from immunology experts.

The meeting was organized by Eric Pearlman, Ph.D. (AAI '22), professor and director, Institute for Immunology, University of California, Irvine; Francesco Marangoni, Ph.D. (AAI '20), assistant professor, University of California, Irvine; and Lisa Wagar, Ph.D., assistant professor, University of California, Irvine. The keynote speakers included Estelle Bettelli, Ph.D. (AAI '04), associate member, Benaroya Research Institute; Florian Krammer, Ph.D., professor, Icahn School of Medicine at Mount Sinai; Jennifer Wargo, M.D., M.M.Sc. (AAI '18), endowed professor, University of Texas MD Anderson Cancer Center; and Jedd D. Wolchok, M.D., Ph.D. (AAI '12), chief, Immuno-oncology, Memorial Sloan-Kettering Cancer Center.

AAI supported seven AAI Young Investigator Awards at the IFI Symposium, four for podium presentations and three for poster presentations.

The awardees for podium presentations were:

- Martin Minns, Ph.D., postdoctoral fellow, University of California, Irvine
- Mahina Tabassum Mitul, graduate student, University of California, Irvine
- Jessica Sanchez, graduate student, University of California, Irvine

- Praveen Veerasubramanian, graduate student, University of California, Irvine

The awardees for poster presentations were:

- Joshua Gu, graduate student, University of California, Irvine
- Suhas Sureshchandra, Ph.D., postdoctoral fellow, University of California, Irvine
- Edward A. Vizcarra, graduate student, University of California, Riverside



Minns



Mitul



Sanchez



Veerasubramanian



Gu



Sureshchandra



Vizcarra

Conference of Research Workers in Animal Diseases (CRWAD) and American Association of Veterinary Immunologists (AAVI) Symposium

The AAVI Symposium drew members of more than 50 research institutions from around the world at the CRWAD, which was held as a hybrid event on December 4–7, 2021, at the Chicago Marriott Downtown Magnificent Mile in Chicago, Illinois. The AAVI Symposium was organized by Jodi McGill, Ph.D. (AAI '15), associate professor, Iowa State University; Crystal L. Loving, Ph.D. (AAI '13), research immunologist, National Animal Disease Center (NADC), Agricultural Research Service (ARS), United States Department of Agriculture (USDA); Carol Chitko-Mckown, Ph.D., research microbiologist, U.S. Meat Animal Research Center, ARS, USDA; Laura C. Miller, Ph.D., research microbiologist, NADC, ARS, USDA; Randy E. Sacco, Ph.D., microbiologist, NADC, ARS, USDA; and Heather L. Wilson, Ph.D., research scientist, Vaccine and Infectious Disease Organization, University of Saskatchewan.

Gary Entrican, Ph.D., honorary professor, The Roslin Institute at The University of Edinburgh, delivered the keynote address, entitled “Applying Knowledge

of Immunological Correlates to Vaccine Design for Prevention of Chlamydial Abortion.” Dr. Entrican received the AAVI Distinguished Veterinary Immunologist award.

A total of 22 graduate students participated in podium and poster presentation competitions. Six graduate students selected by AAVI members received AAVI Young Investigator Awards. Award recipients were:

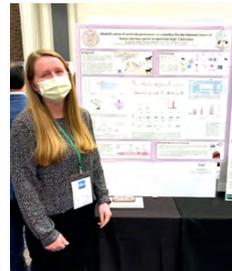
- Alisa Herbst, graduate student, University of Kentucky
- Camille Holmes, graduate student, Cornell University
- Bryan Tegner Jacobson, graduate student, Montana State University
- Elisabeth Larson, graduate student, Cornell University
- Darling Melany Madrid, graduate student, University of Florida
- Jayne E. Wiarda (AAI '19), graduate student, Iowa State University



At AAVI, Dr. Gary Entrican, Distinguished Veterinary Immunologist Awardee and keynote speaker, with Jodi McGill, president-elect for the AAVI



Herbst



Holmes



Jacobson



Larson



Madrid



Wiarda

Midwinter Conference of Immunologists (MCI)

The 60th MCI was held virtually and in person from January 22–25, 2022, at Asilomar Conference Grounds in Pacific Grove, California. The meeting drew 355 attendees from the United States and internationally. One of the major objectives is to stimulate interaction between graduate students, postdoctoral fellows, and established immunologists during the meeting. This year, the sessions

were organized by naming them after classic rock n’ roll songs that were played as “walk-up” music for speakers at the main sessions in line with this theme.

The meeting was organized in part by Christel H. Uittenbogaart, M.D. (AAI '84), professor, David Geffen School of Medicine at the University of California, Los Angeles; Susan Kaech, Ph.D. (AAI '04), professor and director, Salk



At MCI, recipients of the Ray Owen Poster Awards (top row from left): Viramontes, Wheeler, Pruner, Kersten, and Kovacs; and (bottom row from left): Maxwell, Shenoy, Timblin, Callaway, and Stanbery



At MCI, recipients of the Ray Owen Young Investigator Oral Presenter Award (from left): Billipp, Greene, Tran, and Mroz (Not pictured: Maltbaek)

Institute (elected this spring to the AAI Council; see page 4); and Russell E. Vance, Ph.D. (AAI '10), professor and HHMI Investigator, University of California, Berkeley.

Richard M. Locksley, M.D. (AAI '88), professor, University of California, San Francisco, delivered the Dan H. Campbell Memorial Lecture.

AAI supported 10 poster awards and five podium presentation awards at MCI this year. Recipients of the Ray Owen Poster Award included:

- Perri Callaway, graduate student, University of California, San Francisco
- Kelly Kersten, Ph.D., postdoctoral fellow, University of California, San Francisco
- Michael Kovacs (AAI '21), graduate student, University of Virginia
- Matthew Maxwell, graduate student, Salk Institute
- Kurt Pruner, graduate student, University of Washington
- Meera Shenoy, Ph.D., postdoctoral fellow, University of Washington and Fred Hutchinson Cancer Research Center

- Alison Stanbery, Ph.D., postdoctoral fellow, University of Washington
- Greg Timblin, Ph.D., postdoctoral fellow, University of California, San Francisco
- Benjamin Wheeler, graduate student, University of California, San Francisco
- Karla Viramontes, graduate student, University of California, Irvine

Recipients of the Ray Owen Young Investigator Award were:

- Tyler Billipp, graduate student, University of Washington
- Trevor Greene, Ph.D., postdoctoral fellow, University of California, San Diego
- Joanna Maltbaek, graduate student, University of Washington
- Nick Mroz, graduate student, University of California, San Francisco
- Mai Tran, Ph.D., postdoctoral fellow, University of Utah

AAI Education Committee Highlight: Teaching Tools

In 2016, the AAI Education Committee initiated a new session focused on improving immunology education: the Immunology Teaching Interest Group (ITIG). The ITIG is an informal group comprised of past speakers and attendees of the ITIG sessions, including current immunology educators spanning a range of institutions and levels. It serves as a resource for novel teaching tools and practices that can be implemented in courses to enhance immunology education. The session has grown from an audience of 20 in 2016 to more than 200 participants today. Because of the great interest in this topic, the AAI Newsletter features “Teaching Tools” articles highlighting ITIG presentations.

Using Learning Management Systems to Help Students Apply Immunologic Concepts



Michelle Swanson-Mungerson, Ph.D.
(AAI '11)
professor of microbiology and immunology, Northwestern University, Downers Grove, IL

The application of immunological concepts is a major challenge for students. Many students memorize the details but fail to critically process the information

into a comprehensive understanding of how the immune system works. This challenge may be even more true during a pandemic, when many students are learning remotely and are isolated from natural discussions and interactions with faculty and other students.

To address this concern, we developed a “test-based learning” approach to engage medical students and reinforce important concepts in our required Infectious

Disease and Immunology course. We converted our interactive lecture-based cases that used Tophat responses to a case-based format using the quiz option in our learning management software (LMS). In our LMS, we uploaded individual patient presentations, each with five to six questions addressing lab result interpretation, identifying the immunological mechanism of the disease, and/or how treatments influence the immune response.

Before the pandemic, we had rooms with 52 students per faculty member, and they were broken up into groups of four who worked together. After the pandemic hit, students could work collaboratively through Microsoft Teams to help each other and/or reach out to faculty who were present on Teams to answer questions during a defined class period. This quiz-based approach to learning provides the opportunity for students to apply the information presented in lecture to clinical case-based questions either remotely in small groups or in person

with a faculty member. This flexibility was critical to maintain our educational standards during the pandemic, which limited in-person learning.

We found that case-based learning in groups and/or individually provided many advantages for both students and faculty. For example, students must apply details that they learn from lecture, which tends to identify any misconceptions before exams. All of our exams are case based, in a format similar to board questions, so applying the fundamentals

Hypersensitivity Cases

TABLE 18.3 The Characteristics of the Four Types of Hypersensitivity Reactions

Descriptive	Name	Cause	Time Course	Characteristic Cells Involved
Type I	Immediate hypersensitivity	Antibody (IgE) on sensitized cells' membranes binds antigen, causing degranulation	Seconds to minutes	Mast cells, basophils, and eosinophils
Type II	Cytotoxic hypersensitivity	Antibodies and complement lyse target cells	Minutes to hours	Red blood cells
Type III	Immune complex-mediated hypersensitivity	Nonphagocytized complexes of antibodies and antigens trigger mast cell degranulation	Several hours	Neutrophils
Type IV	Delayed hypersensitivity	T cells attack the body's cells	Several days	Activated T cells

© 2015 Pearson Education

GRADED - ONE PERSON PER GROUP IS ALLOWED TO ACCESS	UNGRADED - FOR VIEWING AND DISCUSSION PURPOSES ONLY
Hypersensitivity Case 1	Hypersensitivity Case 1 - Not Graded
Hypersensitivity Case 2	Hypersensitivity Case 2 - Not Graded
Hypersensitivity Case 3	Hypersensitivity Case 3 - Not Graded
Hypersensitivity Case 4	Hypersensitivity Case 4 - Not Graded
Hypersensitivity Case 5	Hypersensitivity Case 5 - Not Graded
Hypersensitivity Case 6	Hypersensitivity Case 6 - Not Graded

Web page containing a series of hypersensitivity case examples for students to study.

Question 1	1 pts
<p>A 34-year-old female (G4, P1+2) presents to a new OB/Gyn at 9 weeks. Patient history: her first pregnancy was uneventful and was born at home with the help of a midwife. Her second and third pregnancies resulted in stillbirth at 31 weeks and a spontaneous abortion at 21 weeks, respectively. A vaginal speculum examination revealed a normal parous cervix and no masses on bimanual palpation. Blood pressure was 135/85 with cardiovascular and respiratory systems normal. Lab and ultrasound results are as follows:</p> <ul style="list-style-type: none"> • 9 weeks gestation, gravida 4, para 1+2 • Normal pregnancy thus far • Lab results: <ul style="list-style-type: none"> ◦ Hg - normal ◦ CBC - normal ◦ mother is A neg (cDe/CdE); anti-RhD and anti-B antibodies detected in serum ◦ father is A pos (cDe/CDDe) • All other findings are normal <p>Question 1: This individual is manifesting with a type ____ hypersensitivity.</p> <hr/> <p><input type="radio"/> I</p> <hr/> <p><input type="radio"/> II</p> <hr/> <p><input type="radio"/> III</p> <hr/> <p><input type="radio"/> IV</p>	

One question from the quiz based on hypersensitivity cases.

of immunology to cases before the exams is helpful. Another advantage is that in a small group setting, students can learn among peers. These interactions not only increase student confidence, but also invoke an important sense of community. Additionally, this

approach provides the opportunity for faculty to answer questions as they arise, which allows misconceptions to be corrected immediately. Finally, this format allows the faculty to quickly review student responses and identify areas of weakness among the class. If the majority of the students miss a question, the faculty can address this quickly in the next lecture to the entire class.

Another major advantage of this approach is its adaptability. Even though we have used quiz-based learning in the context of medical school education, this format can easily be modified for fundamental immunology teaching to undergraduates and/or graduate students. Also, this approach can be used as a graded assignment or as an ungraded “knowledge check” for students to assess their understanding of the material as they study. As mentioned above, this format is flexible in that it can be done independently or in groups. More importantly, in a pandemic, this format can be used in person or remotely. Lastly, this format is not specific to one LMS program, as we have used it with both CANVAS and BLACKBOARD LMS.

Our goal as immunology educators is to help students understand immunology rather than simply memorize cell types and CD numbers. The inclusion of these cases on our LMS has been extremely helpful for our students and faculty, both before and during the pandemic. If you would like additional information, please contact me at mshwans@midwestern.edu.

PillarTalk

Tune in to our new video interview series led by the editor-in-chief of *The Journal of Immunology*, highlighting the Pillars of Immunology authors and commentary writers.

Available on VIMEO

<https://vimeo.com/theaai>

Editor-in-Chief Dr. Gene Oltz
deep in thought on the Pillars
of Immunology.

The Origins of the Pillars of Immunology

Within the last century, the field of immunology has experienced a renaissance in both basic and clinically relevant research. Throughout this time, The American Association of Immunologists (AAI) and *The Journal of Immunology* (*The JI*) have been regarded as the preeminent association for immunology professionals and the premier immunology publication in the world.



Rich Students of immunology, both young and experienced, study textbooks available to them with thousands of pages of immunological doctrine based on scientific studies that span more than 100 years. The doctrines presented in textbooks and classrooms are often taken for granted. However, Robert R. Rich, M.D., DFAAI (AAI '73), believed that history warrants recognition. It was this belief that prompted him to establish Pillars of Immunology series in 2004 during his tenure as editor-in-chief.

A motivation behind this initiative was Dr. Rich's desire to create an educational resource about the foundation of the field for students of immunology. "I realized that graduate students today in immunology did not know anything about the history beyond the last two years," Rich said.

Thus, the Pillars of Immunology series was born. This series features seminal papers in immunology from more than 15 years ago, accompanied by commentaries from experts in the field who were not involved in the formative work. "Generally, [the Pillars of Immunology articles] should be papers that in some way changed the way we thought about a problem or its solution," Rich said.

Throughout the last 18 years, the Pillars of Immunology series has covered a wide array of immunological principles and discoveries, from gamma delta T cells to genome engineering with Cre-loxP technology.

The first featured Pillars of Immunology article was entitled "Immunocompetence of transferred thymus-marrow cell combinations," by Henry Claman and colleagues.^{1,2} It was published in *The JI* in 1966 and demonstrated an essential role for thymus-derived lymphocytes in the production of antibodies. Rich explained, "The collaboration of T and B cells in the generation of most antibody responses is now a common feature of introductory lectures and chapters in immunology, but it was experiments such as those described by Claman et al. that shed early light on this phenomenon."

Along with publishing Brief Reviews and short summaries highlighting exciting papers in the issue of *The JI*, the Pillars of Immunology series was one of the greatest legacies created by Rich during his editor-in-chief term. He described the series as one of his favorite editorial responsibilities. "In re-reading many of the [Pillars of Immunology] papers, those of us who are properly regarded as senior citizens in the discipline will have an opportunity to relive moments of excitement from our scientific youth..." Rich said. "[However], the more important goal of this effort is directed to those who have come more recently to immunology."

Indeed, many graduate programs across the United States have incorporated this series into their curriculum in the form of classes or journal clubs. Such schools include Loyola University Chicago, Duke University School of Medicine, and Washington University School of Medicine in St. Louis (WUSTL). The graduate students at WUSTL

host a Pillars of Immunology Journal Club where they gather throughout the year with a faculty member to discuss seminal papers.

“Foundational immunology articles have been critical for my education and thesis project,” WUSTL immunology Ph.D. candidate Melissa Cook (AAI '19) said. “It’s exciting to see that there are fundamental immunological findings from decades ago for which we still don’t have exact mechanisms. I think it is important to understand the experiments that led the field to certain paradigms so that we can judge when it is appropriate to challenge those paradigms with new evidence and findings.”

The Pillars of Immunology series continues to be a cornerstone of *The JI*. Current Editor-in-Chief Eugene Oltz,

Ph.D. (AAI '95), believes that it is the responsibility of *The JI* and AAI to continue to serve as an archive for immunology, as it has for over 100 years. Oltz emphasizes that the Pillars of Immunology series is a resource for both young and experienced immunologists alike. He hopes that more of the immunological community will continue to take advantage of this amazing resource that *The JI* has curated.

“All of these seminal papers have created paradigms that have survived for decades in our field,” said Oltz. “It is always good to have a basic understanding of how these paradigms arose and the work that underlies the basic concepts that we all take for granted.”

Visit www.jimmunol.org/pillarsofimmunology to read all the Pillars of Immunology articles and commentaries.

References

- 1 Claman, H. N., E. A. Chaperon, & R. F. Triplett. 1966. Immunocompetence of transferred thymus-marrow cell combinations. *J. Immunol.* 97 (6) 828–832.
- 2 Bromberg, J. S. 2004. The Beginnings of T-B Collaboration. *J. Immunol.* 173 (1) 7–13.

Get the Story Behind the Breakthrough with *PillarTalk*

For the last 18 years, *The Journal of Immunology* (*The JI*) has published a series of commentaries on seminal immunology papers called Pillars of Immunology. This series has evolved under the guidance of Editors-in-Chief Robert R. Rich, M.D., DFAAI (AAI '73), Jeremy M. Boss, Ph.D., DFAAI (AAI '94), Pamela J. Fink, Ph.D., DFAAI (AAI '87), and Eugene M. Oltz, Ph.D., (AAI '95).

To accompany the written commentaries in the Pillars of Immunology series, current *JJ* Editor-in-Chief Oltz began hosting *PillarTalk*, a series of video interviews with the author(s) of the Pillars of Immunology article as well as the writer(s) of the accompanying commentary. “The commentary writers can provide a more general perspective on where the field was when the Pillars of Immunology paper was published and why this finding was so important at the time,” Oltz said. “The authors of the paper are able to give us the inside story, what it took to get the breakthrough paper published, and what quirky things happened along the way.”

The motivation behind this initiative was to make the history of immunology available to scientists around the world and to further The American Association of Immunologists’ mission to serve as a scientific archive and disseminate scientific advances.

On *PillarTalk*, scientists converse about both their academic and personal lives. Oltz believes that the

PillarTalk series makes these groundbreaking papers more accessible to junior faculty members and trainees. “We share a lot of laughs, and you get to see that all of these scientists have a personality and a sense of humor as well,” Oltz said. “I love that [*PillarTalk*] humanizes the authors and their big papers. Sometimes students think these authors are going to be somewhat unapproachable and may not have time for them. However, it is just the opposite. The authors are excited about their science and teaching, and they want to share their discovery process.”

PillarTalk creates an entertaining learning environment in a user-friendly format. Oltz would like to see each *PillarTalk*, Pillars of Immunology commentary, and original paper packaged and used in immunology courses, both at the undergraduate and graduate levels.

One of the biggest lessons scientists can learn from *PillarTalk* is that great research findings and discoveries come about when you least expect them, a recurring theme of many episodes. “*PillarTalk* has shown us that hypothesis-driven research is valuable, but discovery-driven research can lead to even bigger breakthroughs,” Oltz said.

The PillarTalk series is featured on The AAI Vimeo channel at <https://vimeo.com/theaai>.



HISTORY

VALUABLE EXPERIMENT
PLEASE DO NOT DISTURB
MONTANA STATE BOARD
OF ENTOMOLOGY
HAMILTON, MONT.

Rocky Mountain Laboratories: An Outpost of Immunology

Notice of ongoing ecological study in Hamilton, Montana, 1928
Office of NIH History

From a humble beginning in an old schoolhouse in Montana, the Rocky Mountain Laboratories (RML) have become a premier research hub and an integral part of the National Institutes of Health (NIH). Many significant scientists in the U.S. Public Health Service (PHS) and AAI came through the lab or made it their long-term research home.

Rocky Mountain Spotted Fever

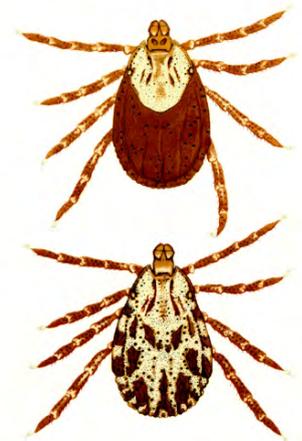
As European settlers moved west into the northern Rocky Mountains and began to colonize the area that would become Montana, they began to experience outbreaks of a new deadly disease of unknown origins.

This malady was named for the telltale, distinctive dark measles-like rash all over the body and dangerously high—and sometimes weeks-long—fever. It could also produce a variety of additional symptoms, including neck stiffness, body aches, vomiting, diarrhea, inflammation of major organs, gangrene of the toes and fingers, and neurological issues such as severe headaches and confusion. Prior to the creation of effective treatments, those who were infected faced long-term complications like liver damage, hearing

loss, neurological deficits, and partial paralysis. Once the rash presented, the disease was fatal in up to 80% of cases.¹

Originally referred to as “black measles,” it became commonly referred to as Rocky Mountain spotted fever (RMSF), especially after the 1890s, when frequent outbreaks occurred in the Bitterroot Valley of southwest Montana.²

By the turn of the century, RMSF was a significant enough problem that the newly formed Montana State Board of Health (MSBH) made it one of its first priorities. In February of 1902, MSBH agreed to investigate cases as soon as they appeared that spring. When those first cases emerged, a Great Falls physician named Earle Strain noticed a tick on one of the victims. Strain, who had been to Europe to study bacteriology, was aware of recent discoveries of arthropod vectors for disease and advised the Board of the tick’s potential role in transmission.³



Rocky Mountain wood tick,
Dermacentor andersonii
Rocky Mountain Laboratories



ERUPTION OF TICK FEVER.

Illustration of RMSF rash by John F. Anderson, 1920
Rocky Mountain Laboratories

The First Labs

Working out of temporary laboratory quarters in a local hospital, MSBH researchers, with the help of the PHS,

began a two-pronged approach: physicians gathered epidemiological data on all cases, while pathologists examined the tissues of spotted fever sufferers. By the summer of 1902, an unknown parasite was regularly seen in the red blood cells. This evidence, coupled with the timing of the disease to correspond with the annual emergence of ticks, seemed to confirm Strain's suspicions.⁴

At the beginning of the 1903 tick season, bacteriologist and future director of the PHS Hygienic Laboratory John F. Anderson (AAI 1918) arrived in Montana.⁵ He examined the collected epidemiological data and decided that it all supported a tick vector: cases correlated with activities that involved likely exposure to ticks. Nearly all patients had a history of tick bites a week before the onset of spotted fever.⁶ Comparing the blood-borne parasites with those of malaria and Texas cattle fever, he found similarities that further supported a bacterial agent transmitted by a tick. He was so sure of this finding that he suggested renaming the disease "tick fever."



*A staff member, possibly Ralph Parker, sweeps for ticks, c. 1920
Office of NIH History*

To prove the tick hypothesis, MSBH staff went tick hunting. They dragged large white cloths across the Montana scrublands to collect countless ticks and other possible vectors for study. One of the likely suspects found during these collections, the Rocky Mountain wood tick, was named *Dermacentor andersoni*, after Anderson, in 1908.⁷

Identifying the Agent

In 1906, Howard T. Ricketts, then a University of Chicago pathologist, came to Montana to perform research on tissue samples from spotted fever patients. His laboratory was no more than a tent on the grounds of the Northern Pacific Hospital in Montana.⁸ By using guinea pig models, he was able to study the disease year-round, not only during tick season.

The breakthrough came when Ricketts inoculated several guinea pigs with either washed cells, serum, or filtered serum, from one nine-year-old patient. When only the guinea pigs injected with filtered serum avoided infection, he knew the agent had to be a blood-borne bacte-



*The tent laboratory of Howard Ricketts, 1906
Office of NIH History*

rium and not what was then known as a filterable virus.⁹ Ricketts had identified a new class of vector-borne obligately intracellular bacteria that became known as *Rickettsia rickettsii*.¹⁰ The bacterium responsible for RMSF was described as *Rickettsia rickettsii*.

Ricketts also conducted an experiment on transmission somewhat similar to the one by Theobald Smith (AAI 1920) in Texas that first established ticks as a disease vector. He took ticks from infected guinea pigs and transferred them to healthy ones, which then showed signs of spotted fever.¹¹ This confirmed the tick transmission theory once and for all.

Public Health Measures

Armed with this new knowledge, research into prevention and cure for RMSF could begin. After 1910, the Montana State Board of Entomology began a cattle-dipping program to kill ticks on livestock with a quick bath in an arsenic solution. Public health officials educated locals about the tick menace and how to protect themselves from exposure.

The Schoolhouse Laboratory



*The two-story empty school building in Hamilton, Montana, which in 1922 became RML, 1925
National Library of Medicine*

The earliest labs that would become the RML were temporary structures or borrowed woodsheds. Only in 1921 did Ralph Parker, an entomologist assigned by the PHS, secure an abandoned schoolhouse on the Bitterroot River as a more stable home for research. At the "Schoolhouse Lab," the research teams kept



*Ralph Parker and his wife Adah Parker on their honeymoon conducting tick research, 1916
Rocky Mountain Laboratories*

countless live ticks, all collected from the countryside and painstakingly catalogued by species, source, and life cycle stage. Parker and Roscoe Spencer managed to produce the first effective vaccine against RMSF in 1924 by emulsifying tick tissue and killing the bacillus with phenol.

Green Light



Green Light novel and film adaptation

The struggle to defeat RMSF at RML was dramatized in the 1937 film *Green Light*, starring Errol Flynn as a wrongly disgraced surgeon who goes to Montana to research spotted fever. There, he falls victim to the disease and receives an experimental dose of the vaccine. Based on a best-selling novel by Lloyd C. Douglas and inspired by the actual scientific endeavor, *Green Light* was well received by critics and at the box office, showing

that a scientific drama could captivate audiences.¹²

Expansion of the Laboratories

In 1928, Montana finally approved funds for a new permanent facility in the town of Hamilton. Through the 1930s, the RML grew from a single building and 26 employees to a federally owned and operated campus of seven buildings and more than 100 staff, including virologists, bacteriologists, and parasitologists.¹³ In 1937, RML became part of the NIH.¹⁴

Wartime Vaccine Production

The Second World War transformed RML from a regional research center into an essential vaccine production



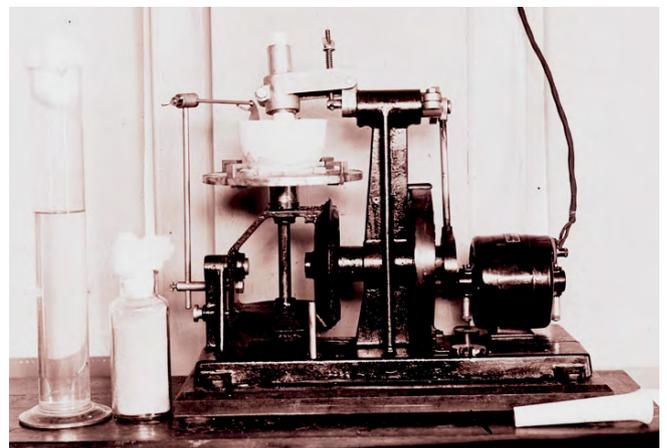
Researcher Emily Emmart working in RML, c. 1937
National Library of Medicine



Shepherds in Idaho receiving RMSF vaccine, 1926
Rocky Mountain Laboratories

facility. Using seed virus from the Rockefeller Institute and serum donated by students at Montana State University in Missoula,¹⁵ RML began producing the yellow fever vaccine in February 1941. When the United States was drawn into war in the Pacific after the attack on Pearl Harbor later that year, vaccines against yellow fever and other tropical diseases became an essential part of military readiness, administered to every member of the armed forces.¹⁶

Two researchers at RML, Mason Hargett and Harry Burruss, developed their own novel yellow fever vaccine in 1941 that did not rely on human serum. After several lots of the Rockefeller vaccine were found to be contaminated with hepatitis B, the Hargett-Burruss vaccine, produced with chick embryo protein in an aqueous base, became the standard vaccine for the U.S. Army by May 1942.¹⁷ Throughout the war, RML was also a vital production site for vaccines against RMSF and typhus.



Automatic tick grinder to prepare the large volumes of tick tissue necessary for vaccine research, 1931
Rocky Mountain Laboratories

Vaccine Innovations

After the war, RML remained an important research site. John J. "Jack" Muñoz (AAI 1951) and his team were instrumental in the development of acellular vaccines that use only a part of the bacterial agent to induce immunity. Working with *B. pertussis* in the 1970s and 80s, this group

of researchers isolated the piece of DNA that contained the genes for pertussis toxin, eventually making possible the pertussis vaccine that is included in today's DTaP vaccine.¹⁸

RMSF and RML Today

Today RMSF is found in the United States, Mexico, Canada, and Central and South America. In the United States, 60% of the cases are from five states—North Carolina, Oklahoma, Arkansas, Tennessee, and Missouri—though it can still be found in the area where it was first discovered. When treated early with antibiotics (typically doxycycline) and palliative care, symptoms diminish within a few days and patients make a full recovery. In the United States, in addition to the Rocky Mountain wood tick, the American dog tick and the brown dog tick have been discovered to serve as vectors for RMSF.

The RML continue to produce important and innovative basic research into a wide array of human and livestock diseases, including mad cow disease, Lyme disease, Q fever, and SARS-CoV-2. The facility, now comprising 30 buildings on 36 acres, features BSL-4 laboratory space equipped to handle the most dangerous infectious organisms—a far cry from the tent laboratories where the earliest discoveries were made.



Immunologists at the Rocky Mountain Laboratory
National Library of Medicine

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- 10 David H. Walker, "Ricketts Creates Rickettsiology, the Study of Vector-Borne Obligately Intracellular Bacteria," *Journal of Infectious Diseases* 189, no. 5: 939.
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- 12 "'Green Light' to Show Here; Starts Today," *Cushing Daily Citizen*, April 18, 1937.
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- 15 From 1935 to 1965, the University of Montana in Missoula was renamed the Montana State University. When the Missoula school got its original name back in 1965, the college in Bozeman became the Montana State University.
- 16 Hettrick, 56.
- 17 Hettrick 56-7.
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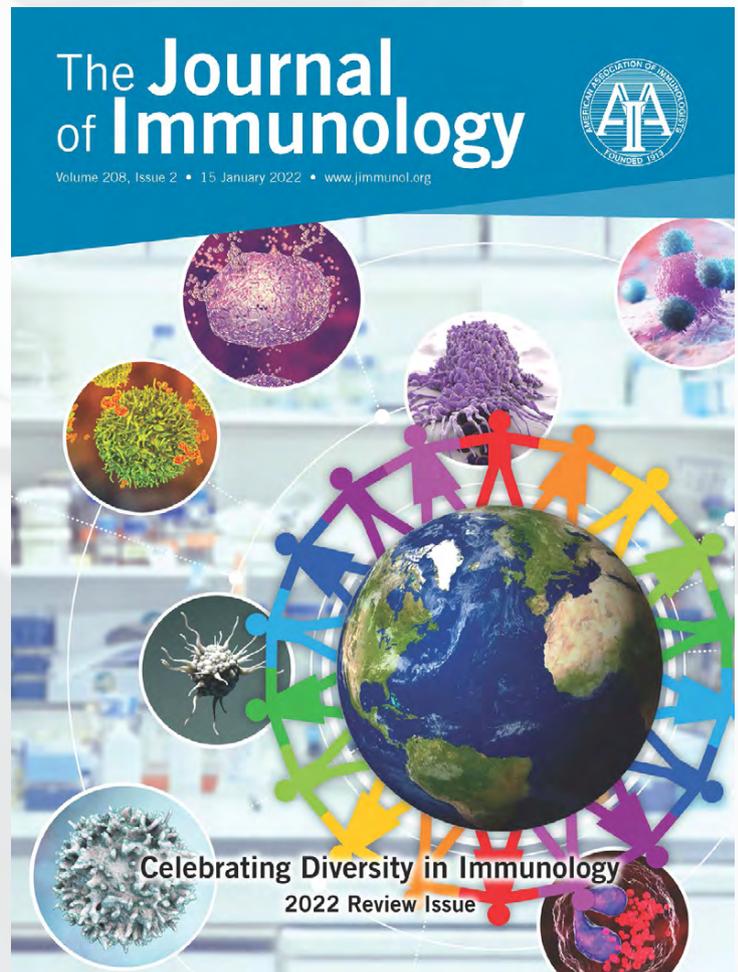


An exciting new collection from

The Journal of Immunology

2022: Celebrating Diversity in Immunology

A collection of Brief Reviews by guest editors De'Broski R. Herbert, Ph.D., University of Pennsylvania, and Irene Salinas, Ph.D., University of New Mexico, that celebrates diversity, equity, and inclusion and showcases authors representing diverse career stages, gender identities, ethnicities, racial identities, and disciplines in immunology.



AAI Grants and Awards

September 1

AAI Fellowship Program for Career Reentry

- **Prize/Award:** In support of immunologists' reentry into the workforce after a qualifying lapse of research or research training, multiple awards providing one year of salary support to postdoctoral trainees who have taken a leave of absence of one year or more for family-related issues, medical absences, or military obligations
- **Eligibility:** Applicants with a tentative written offer of appointment as a postdoctoral fellow in immunology or a related field; trainees funded under this program may not be supported concomitantly by other fellowships that provide salary compensation
- **Details:** www.aai.org/ReentryFellowship
- **Contact:** fellowships@aai.org

September 1

AAI Intersect Fellowship Program for Computational Scientists and Immunologists

- **Prize/Award:** Multiple postdoctoral fellowship awards providing one year of salary support affording immunology researchers the opportunity to train in computational science and/or computational scientists to train in immunology
- **Eligibility:** At least one of the collaborating PIs seeking support must be an AAI member in good standing; application may be for support of a postdoctoral fellow trained in basic bench research to undertake one year of training in computational science, or a postdoctoral fellow trained in computational science to spend one year in an immunology research lab to learn basic immunological principles and laboratory techniques; reciprocal six-month exchanges between labs will also be considered; trainees must be in years 1–5 of postdoctoral training in the physical/mathematical/computational sciences, immunology, or related fields (those who have completed five years of training and transitioned into a second postdoctoral position will be considered on a case-by-case basis); trainees funded under this program may not be supported concomitantly by other fellowships that provide salary compensation
- **Details:** www.aai.org/IntersectFellowship
- **Contact:** fellowships@aai.org

October 15

AAI Travel for Techniques Awards

2022 application cycle opens August 15

- **Prize/Award:** Multiple awards providing up to \$1,500 each in reimbursement of travel expenses for a visit to another laboratory specifically to learn a technique beneficial to award applicant's research
- **Eligibility:** AAI regular and associate member scientists with independent research programs; awarded travel may be that of the applicant, applicant's trainee, or applicant's lab member (traveler must be an AAI member); award selection is based on relevance of the technique to the applicant's program and financial need
- **Details:** www.aai.org/TravelforTechniques
- **Contact:** awards@aai.org

Non-AAI Grants and Awards

Visit the AAI website at www.aai.org/GrantsAwardsDeadlines for links to non-AAI grant and award program listings and deadlines.





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MEETINGS AND EVENTS

Mark Your Calendar for These Important Dates!

Dear readers, please note that the meetings listed on these pages were still scheduled at press time, but due to the global COVID-19 pandemic, cancellations may occur. Please check an individual meeting's website to confirm that it is still scheduled.

ON-SITE MEETINGS

2022

August 26–29

18th European Meeting on Complement in Human Disease

Bern, Switzerland

www.emchd2022.com/

September 15–16

2022 Cancer Immunology and Immunotherapy Conference: Discovery to Mainstream Oncology

NIH, Bethesda, MD

<https://go.cancer.gov/Gpp47Nn>

September 20–23

SPECIAL JOINT MEETING: CYTOKINES 2022 AND ILC4

Hilton Waikoloa Village, Big Island, Hawaii

Cytokines 2022 Hybrid: 10th Annual Meeting of the International Cytokine and Interferon Society (ICIS)

<https://hawaii.cytokinesociety.org/>

4th International Conference on Innate Lymphoid Cells (ILC4 2022)

www.ilc2020.org

October 17–20

24th Annual Upstate New York Immunology Conference

The Otesaga Resort Hotel, Cooperstown, NY

www.amc.edu/NYIC/index.cfm

October 26–29

55th Annual Meeting of the Society for Leukocyte Biology: Leukocytes on the Wave for Translating Medicine

Hilton Waikoloa Village, Big Island, HI

www.leukocytebiology.org/meetings

November 7–10

The 1st ImmunoSensation2-IFReC International School on Advanced Immunology

Awaji, Japan

<https://advanced-immunology.net/>

2023

May 11–15

IMMUNOLOGY2023™

106th AAI Annual Meeting

Walter E. Washington Convention Center, Washington, DC

www.IMMUNOLOGY2023.org



Fall 2023 (exact dates TBD)

17th International Workshop on Langerhans Cells and Related Myeloid Cells of the Skin

Jerusalem, Israel

www.lc2021.org

September 1–5

29th International Complement Workshop 2023

New Castle, United Kingdom

www.complement.org/

September 7–10

Joint Meeting (hybrid), German Society of Immunology (DGfI) and Austrian Society for Allergology & Immunology (ÖGAI)

Hannover Medical School, Hannover, Germany

www.immunology-conference.de/

November 27–December 2

IUIS 2023: 18th International Congress of Immunology

Cape Town, South Africa

<https://iuis2023.org/>

2024

May 3–7

IMMUNOLOGY2024™

107th AAI Annual Meeting

Phoenix Convention Center
Phoenix, AZ

www.aai.org/FutureMeetings



2025

May 3–7

IMMUNOLOGY2025™

108th AAI Annual Meeting

Hawai'i Convention Center
Honolulu, HI

www.aai.org/FutureMeetings





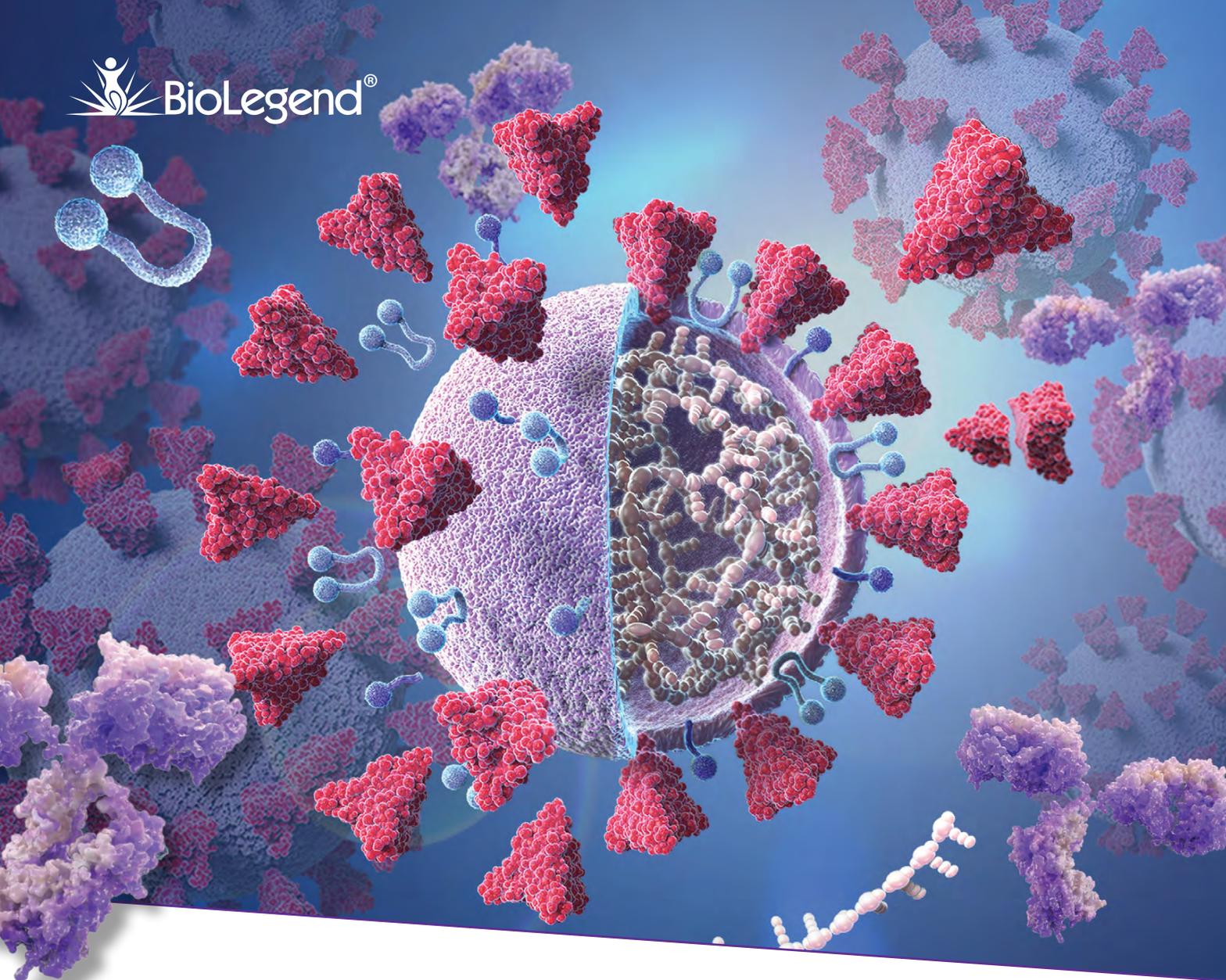
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DATE

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MAY 11-15, 2023 | WASHINGTON, DC

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Detect activated T cells

For effective control of the COVID-19 pandemic, it's crucial we have a thorough understanding of the immune responses against SARS-CoV-2. This is especially the case with CD4⁺ and CD8⁺ T cells, which contribute to virus control during infection. Our new SARS-CoV-2 Reactive T cell Kit offers a flow cytometry-based solution for detecting T cells activated in response to SARS-CoV-2 peptide stimulation.

Measure neutralizing antibodies to Omicron and other variants

Tools to measure antibodies generated against the SARS-CoV-2 virus is also of paramount importance. Our LEGENDplex™ SARS-CoV-2 Variants Neut. Ab Panel (5-plex) accurately measures neutralizing antibodies against SARS-CoV-2 spike protein variants Alpha, Beta, Gamma, Wild type S1, and Delta. In addition, you can now request a panel designed to specifically detect neutralizing antibodies against SARS-CoV-2 S1 Variant Omicron (B.1.1.529).

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