



THE AMERICAN
ASSOCIATION OF
IMMUNOLOGISTS

AAI NEWSLETTER

OCTOBER 2021



Gary Koretzky—105th AAI President

See President's message and profile, pages 4–7



THE AMERICAN ASSOCIATION OF IMMUNOLOGISTS
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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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President's Message



**Gary A. Koretzky, M.D.,
Ph.D., AAI '92**

AAI President, 2021–2022

**Professor, Department of
Medicine, Weill Cornell Medicine
Vice Provost for Academic
Integration, Cornell University
Director, Cornell Center
for Immunology**

This is an incredible time to be an immunologist! In the last few years, discoveries in fundamental immunology have informed the development of amazing new therapeutic agents that have revolutionized the care for patients with myriad disorders. Most recently, the world has also relied on immunologists for its response to the worst pandemic in more than a century. Today, it is impossible to scan a newspaper without encountering words like “antigen,” “T cells,” “checkpoint inhibitor,” or “cytokine storm”—terms that we are more used to reading in the classic Bill Paul or Charlie Janeway textbooks. Truly, immunology is now front and center on the world's stage.

With this as a backdrop, I am both honored and humbled to serve as the president of The American Association of Immunologists (AAI). The AAI brings together thousands of talented scientists at all stages of their careers who collectively have made discoveries that are literally transforming our world. From understanding the most fundamental underpinnings of the body's defense systems to taking this knowledge to the clinic to decrease mortality and morbidity, AAI members continue to have an enormous impact on our society. It is a privilege to lead our organization, particularly at a time when the science of immunology has captured the world's attention. In considering my priorities for the year, I am mindful of the AAI mission statement “...to be a society dedicated to advancing the field of immunology and fostering development opportunities for researchers at every career stage. [AAI] members work together to address common interests and push forward the boundaries of knowledge.” I hope that our members will agree that with the many programs and activities we sponsor, the AAI is true to this mission. My overarching goal as president is to help our

society advance this mission further by concentrating on several specific action items.

Advocacy and Public Engagement

For years, the AAI has had an intensive and successful effort in advocating to Congress for support of basic science research and, in particular, for immunology. I have personally enjoyed many “Hill Days” and have learned a great deal from our public policy staff as they guide us in addressing the most essential budgetary items for each legislative session. Of course, we will continue to support this effort as the importance of funding for fundamental research has never been greater. Additionally, I hope to work with our members and the AAI staff to broaden our outreach. The AAI is perfectly positioned to engage more broadly with the public to explain the basic tenets of our field and help to counter the pervasive misinformation and “fake news” that abounds. One of our priorities for the coming year will be to develop programs to help our members “spread the word” about the importance of the fundamental science of immunology and how discoveries made in immunology laboratories can be translated into benefits for our society.

Member and Trainee Support and Educational Programs

I am extremely proud of the efforts of AAI to identify ways to support our members through grants, awards, and educational programs. Each year, the AAI Council deliberates new ideas and opportunities to elevate this mission. I encourage all of our members to view the AAI website (www.aai.org) and discover programs that fit their needs or those of their trainees. While continuing to support grants we established in past years, the Council recently added new opportunities, including short-term awards that provide resources for travel to a colleague's laboratory to learn a new technique, assistance for members who have taken a pause in their scientific careers and now seek to re-engage, and grants to help immunologists bridge knowledge gaps in the ever-increasingly complex world of computational biology. I strongly encourage all AAI members to consider our award and grant programs and to apply for those that are relevant for their circumstances. In the coming year, the AAI staff will continue to evaluate these new and continuing programs and report on their impact to the Council.

The AAI continues to support trainees with travel awards for meetings and to confer recognition on members at all career stages. Please review the awards for which nominations are required and put forward names of deserving members. The success of our awards programs relies on a robust slate of nominees. Importantly, for these and all of our award and grant programs, our goal is to be inclusive and to provide opportunities and recognition to our entire diverse community.

The past 16 months saw disruptions in nearly everything we do as a society. Even so, the AAI educational programs flourished. Due to the hard work of AAI staff and the dedication of our course instructors, a quick pivot to a virtual format for the introductory and advanced immunology courses resulted in record attendance. Feedback from course attendees was, as usual, phenomenal. One important goal for this year will be to build on this experience, considering whether changes imposed by the pandemic should be retained, refined, or reconsidered altogether. We will know more with time.

Another unique activity supported by AAI is a history program. Assisted by professional historians Dr. John Emrich and Charles Richter, the rich history of AAI and advances made by its members are being documented. AAI also has its most iconic members memorialized in an Oral History Project. View these recordings and hear the words of the pillars of our discipline at www.aai.org/About/History; it is a humbling experience.

The Journal of Immunology and ImmunoHorizons

I know that AAI members share my pride in our flagship publication, *The Journal of Immunology* (*The JI*), the oldest (est. 1916) and most-cited journal in the field. This journal has been a tribute to the field of immunology and serves as a legacy. I am grateful to our many members who gift the field with countless hours as editorial board members, and to the thousands of volunteers who carefully review every submitted paper. I am especially grateful to the authors who memorialize their research in our journals. The AAI Council meets regularly with *The JI* Editor-in-Chief Dr. Eugene Oltz and the professional AAI staff as we collectively strategize to meet the ever-growing challenges facing non-commercial publishing, a landscape that is continuously shifting. Under Dr. Oltz's leadership, *The JI* has maintained its impressive overall review time from submission to decision, while still ensuring that each manuscript is given a fair and full review. The editors and staff are particularly mindful that the review process must be transparent and that the critiques are reasonable and helpful to our authors. *The JI* provides an important service to our community, and I encourage our members to submit their most exciting work.

Similarly, I am pleased to report that *ImmunoHorizons* (*IH*) is also moving in an excellent direction with an increase in the number and quality of submissions. This relatively

new and fully open-access journal is under the creative guidance of Editor-in-Chief Dr. Mark Kaplan. For those not familiar with *IH*, it considers manuscripts that have not been accepted into *The JI* but are of scientific merit, as well as new, submissions. We have all had excellent research that was of value but not quite complete or was descriptive. *IH* is intended to assist with the dissemination of this work in a fair and rapid manner. Authors of articles not selected for publication in *The JI* may choose to send the *Ji* reviews along with their transfer submission to *IH*. Time from submission to decision for these transfer articles has been as little as three days and is an average of five; time from submission to decision for new submissions averages just 14 days. *ImmunoHorizons* is also publishing a series called "On The Horizon," invited articles from junior faculty who are establishing themselves in their areas and have ideas about how a field should be developing as it advances. The outstanding working relationship that Drs. Kaplan and Oltz have developed will help our newer journal continue to grow and flourish.

Re-establishing Community Post Pandemic

At this writing [in July 2021], COVID-19 restrictions in the United States are being lifted at a rapid pace, thanks to falling viral prevalence due to the amazing vaccines now available. While we must be mindful that regions of the world remain in the throes of the pandemic and that risk of resurgence of disease in the United States still exists, we can be hopeful that gatherings of our community will be increasingly possible over the coming year. It will be wonderful to once again welcome AAI members to in-person meetings. In that regard, the AAI will continue to contribute to regional gatherings of immunologists, facilitating discussions and collaborations. I am extremely excited about our upcoming annual meeting, IMMUNOLOGY2022™. This will be our first in-person meeting after a two-year pandemic-induced hiatus, and it promises to be one of the best meetings ever. It will be a wonderful opportunity for colleagues to network and to forge new connections among our members. I hope to see many of you in Portland next May!

Recognition of Our Volunteers and the AAI Staff

Before closing, I would like to call out the individuals who make the AAI work—my fellow councilors who provide the vision for our future, our members who volunteer countless hours to AAI activities, and the outstanding professionals who support all of our activities and programming. I have learned a great deal from being on the Council since 2016, working with dedicated colleagues and studying how my predecessors have navigated their presidencies. I am fully committed to the difficult task of filling their shoes. Over the coming weeks, I will be introducing myself to the members of each AAI standing committee to learn more about their important work, to hear about any pressing issues, and to thank them for their service. The committee meetings I have

attended thus far are topical and interesting. Indeed, I have been inspired further by witnessing firsthand the focus and commitment of our committee members. In the coming year, I will continue to support committees in their work and look forward to learning about their new ideas and concerns.

I am particularly grateful to the AAI staff under the guidance of Dr. Michele Hogan, our chief executive officer; their expertise and dedication are the true engine for our professional society. Whenever I visit the AAI offices or attend the annual meetings, I am struck by their quiet competence, grace, and good humor. We are fortunate to have such

committed and knowledgeable individuals. I will make it a priority to work with Michele to provide even greater support and recognition of those working behind the scenes. Thank you so much for your tireless efforts!

I am looking forward to another outstanding year for the AAI and encourage our members to contact me with ideas, feedback, and any concerns. IMMUNOLOGY2022™ in Portland will provide a much-needed reprise of the annual opportunity for our immunology community to share their science and fellowship. I am eager to reconnect with many of you there!

PRESIDENT'S PROFILE: GARY A. KORETZKY, M.D., PH.D. (AAI '92)

Gary A. Koretzky, a member of the AAI Council since his election in 2016, commenced his leadership of AAI as the 105th president on July 1.

Dr. Koretzky is a professor in the Department of Medicine at Weill Cornell Medicine and serves as vice provost for academic integration at Cornell University and as director of the Cornell Center for Immunology. He also serves as a professor of microbiology and immunology at the Cornell University College of Veterinary Medicine.

Koretzky's research has focused on the development and function of the immune system, and he is credited with the elucidation of some of the key pathways required for activation of immune cells as they function to protect the host. His laboratory has explored the regulation of signal transduction events that lead to hematopoietic cell development and function, primarily focusing on T cells. He has identified and characterized a number of key signaling molecules, including the adaptor proteins LP-76, ADAP, and PRAM-1, which mediate interactions between signaling components downstream of immunoreceptors and integrins. The Koretzky lab has also described how enzymes and adaptor proteins serve as regulators of multiple lineages in both T cells and other hematopoietic cells. The group's analysis of how adaptor molecules regulate and integrate second-messenger cascades has led to a better understanding of how cells are activated to fight infections, as well as how signaling may go awry and cause disease. Koretzky's research has resulted in more than 235 publications and multiple patents. He has been a passionate teacher and mentor and has had the privilege of supervising over 80 student trainees and more than 30 postdoctoral fellows and visiting scientists.

Koretzky was the recipient of the AAI-PharMingen (now AAI-BD Biosciences) Investigator Award in 2000 and was an AAI President's Symposium speaker in 2009. He has participated at AAI meetings as a major symposium chair and speaker as well as abstract programming chair. He served as a faculty member for the AAI Introductory Course in Immunology for many years and his other

service to AAI has included terms on the Awards, Clinical Immunology, Nominating (including as chair), and Program Committees. Koretzky is a past associate and section editor for *The Journal of Immunology*.

Koretzky currently serves as a member of the National Institutes of Health (NIH) Council of Councils. He has also served on multiple NIH study sections and institute review panels. He chairs the Lupus Research Alliance Scientific Advisory Board and has served as a reviewer for the U.S. Department of Veterans Affairs Merit Review Board, Arthritis Foundation, Institute of Medicine (now National Academy of Medicine), Immune Tolerance Network, American College of Rheumatology (ACR) Research and Education Fund, Medical Research Council of Canada, Canadian Arthritis Society, Medical Research Council (UK), Burroughs Wellcome Fund (UK), Israel Science Foundation, Italian Cancer Society, and many other granting bodies.

Koretzky is a past editor-in-chief of *Immunological Reviews* and has held editorial board appointments with *Arthritis Research*, *International Journal of Molecular Medicine*, *Journal of Clinical Investigation*, *Journal of Experimental Medicine*, *Nature Reviews Immunology*, *Signal Transduction*, and *Tissue Antigens*. He has also served as a consultant to numerous biotech companies.

Koretzky's contributions in academic medicine have been recognized with his election to the National Academy of Medicine (NAM), American Academy of Arts and Sciences, American Association for the Advancement of Science, and Association of American Physicians. His many additional career honors and appointments include: chair, NAM Interest Group on Cancer, Stem Biology, and Transplantation; Frank H.T. Rhodes Distinguished Professor of Cardiovascular Biology and Genetics, Cornell University; councilor, Association of American Physicians; Lee C. Howley Sr. Prize for Arthritis Research, Arthritis Foundation; Arthur K. Asbury Outstanding Faculty Mentor Award, University of Pennsylvania School of Medicine; NIH MERIT Award; Stanley N. Cohen Biomedical Research



Gary Koretzky (fourth from right) and Cornell Center for Immunology Executive Committee colleagues are shown welcoming Mark Davis (center) as University Lecturer on the Cornell University campus in Ithaca, NY. Committee members pictured (left to right): Ankur Singh, Andrew Grimson, Brian Rudd, Bettina Wagner, Brian Lazzaro, Hector Aguilar-Carreno, and Ilana Brito.

Award, University of Pennsylvania School of Medicine; Senior Fellow of the American Asthma Foundation; Henry Kunkel ACR Young Investigator Award; Established Investigator Award, American Heart Association; Carver Clinician Scientist Award, University of Iowa; American College of Rheumatology Senior Rheumatology Scholar Award; and Henry Christian Award, American Federation for Clinical Research.

A graduate of Cornell University, Koretzky received his M.D. and Ph.D. from the University of Pennsylvania (Penn). He completed a residency in internal medicine and a fellowship in rheumatology at the University of California, San Francisco, where he undertook additional postdoctoral research in microbiology and immunology.

In 1991, he was appointed an assistant professor at the University of Iowa (UI) Carver College of Medicine, where he went on to hold associate and then full professor appointments. His additional UI appointments include service as a member and director of graduate and MST programs.

Koretzky joined the UPenn School of Medicine faculty in 1999 as a professor of pathology and laboratory medicine and director of the Signal Transduction Program at the Abramson Family Cancer Research Institute, where he also served as executive committee chair. During his tenure at Penn, he held appointments as the Francis C. Wood Professor of Medicine; vice chair for research, chief scientific officer, and rheumatology division chief in the Department of Medicine; associate director of the combined M.D.-Ph.D. program; executive committee member for the graduate programs in immunology and in cellular and molecular biology; and co-leader of the immunology program at Penn's Abramson Cancer Center.

Koretzky joined Cornell in 2013 as dean of the Weill Cornell Graduate School of Medical Sciences and senior associate dean of the Weill Cornell Medical College. He has served as professor of medicine since 2014, vice provost for academic integration since 2018, and Cornell Center for Immunology director and College of Veterinary Medicine professor since 2019.

Highlights of the 2021 AAI Business Meeting



The annual AAI Business Meeting and Awards Presentation convened this year during **Virtual IMMUNOLOGY2021™**, on Thursday, May 13. AAI leaders and staff presented on the state of the association, including a finance report, an update on advocacy efforts and public affairs, membership, meetings, AAI publications (*The Journal of Immunology and ImmunoHorizons*), and finally, the presentation and acknowledgment of selected 2020 and 2021 awards.

Prior to the start of the presentations, Hogan acknowledged and thanked AAI Secretary-Treasurer Edith Lord (AAI '78) for her outstanding service to the organization and membership over the past six years. June 30 will conclude her term of service.

AAI Chief Executive Officer (CEO) **M. Michele Hogan, Ph.D., DFAAI (AAI '88)**, called the meeting to order at 5:00 p.m. ET, welcoming all present and thanking the hundreds of member volunteers. She then asked all in attendance to observe a moment of silence in memory of members whose deaths had occurred or become known during the previous year. (See a listing of these names in this issue on page 18.)

AAI Membership

As of December 31, 2020, AAI had 7,779 total members (regular, trainee, emeritus, and associate member scientists). Regular members account for the majority (65 percent) of the membership, and trainee members make up about 30 percent of the total membership. Based on scientists' residency, AAI membership remains approximately 80 percent domestic (United States) and 20 percent international. Dr. Hogan encouraged regular members in attendance to recruit new members.

Virtual IMMUNOLOGY2021™

Due to the global COVID-19 pandemic, the annual meeting was held virtually this year. AAI was still able to offer a full program of scientific sessions and lectures, career development sessions, and social events to attendees. Because of the cancellation of IMMUNOLOGY2020™, AAI Past President Jeremy M. Boss

(AAI '94) and current President Jenny P.-Y. Ting (AAI '97) shared the stage for their Presidents' Addresses. They each also had a dynamic President's Symposium featuring four outstanding research presentations.

Another highlight was a special session entitled "COVID-19 and the Science of Pandemics—Lessons Learned," which featured **Anthony S. Fauci, M.D., DFAAI (AAI '73)**, **Linda J. Saif, Ph.D. (AAI '13)**, and **Akiko Iwasaki, Ph.D. (AAI '00)**. The meeting enjoyed 2,900 registrants from 45 countries, 1,210 abstract submissions, and 54 exhibitors. Nineteen guest sessions were presented at this year's meeting.

Hogan acknowledged the contributions of the many sponsors of the 2021 meeting: Platinum sponsors BD Biosciences/FlowJo, BioLegend, Miltenyi Biotec, Sony Biotechnology, and Thermo Fisher Scientific; Gold sponsor STEMCELL Technologies; Silver sponsors Adaptive Biotechnologies, Bio-Rad Laboratories, and Bio X Cell; and Bronze sponsors Agilent Technologies, CDI Labs,



During a special session about COVID-19 and the science of pandemics, Virtual IMMUNOLOGY2021™ attendees heard from Drs. Linda Saif, Akiko Iwasaki, and Anthony Fauci. The session was moderated by AAI CEO Michele Hogan and Program Chair David Masopust.

Cytek, Fluidigm, Genentech, Grifols, IonPath, Kyowa Kirin, Luminex, Nanostring Technologies, Quanterix, Science Immunology/AAAS, 10X Genomics, and TonBo Biosciences. AAI also thanked Allen Institute for Immunology, Life Diagnostics, and Pfizer-Showell for their contributions.

Future AAI Annual Meetings

Hogan shared the dates and locations of the next four AAI annual meetings. IMMUNOLOGY2022™ will be held in person in Portland, OR, from May 6–10. IMMUNOLOGY2023™ will take place in our nation's capital, Washington, DC, from May 11–15. Attendees of IMMUNOLOGY2024™ will travel to Phoenix, AZ, from May 3–7.

2021 AAI Education and Awards Programs

Hogan recognized the 2020 and 2021 classes of Distinguished Fellows, which included 20 and 16 new members, respectively. The Distinguished Fellows Program honors active, long-term members for excellence in research accomplishment; exceptional leadership to the immunology community; or notable distinction as an educator.

Hogan provided information about the 2021 Virtual AAI Summer Courses. The Introductory Course in Immunology was set to be held online July 12–17 with course director **Helen Goodridge, Ph.D. (AAI '09)**, associate professor, Cedars-Sinai Medical Center. The Advanced Course in Immunology was set to be held July 25–30 with course director **Wayne Yokoyama, M.D., DFAAI (AAI '84)**, Sam J. Levin and Audrey Loew Levin Professor of Arthritis Research, Washington University School of Medicine.

For Virtual IMMUNOLOGY2021™, AAI conferred awards to 477 AAI members, including 311 **Trainee Abstract Awards**, 11 **Late-Breaking Poster Awards**, 29 **Laboratory Grants**, 44 **Early Career Faculty Grants**, 15 **Undergraduate Faculty Grants**, 6 **Young Scholars Awards**, 10 **Minority Scientist Awards**, and 34 **Fellowship Trainee Awards**.

AAI awarded 10 **Intersect Fellowships for Computational Scientists and Immunologists**. This program improves understanding and communication between immunology researchers and computational scientists by affording an opportunity to train in each other's disciplines. There were five **Career Reentry Fellowships** awarded in 2021. The Fellowship Program for Career Reentry provides support for postdoctoral trainees who have taken a leave of absence of one year or more for family-related issues, medical absences, or military obligations. The largest AAI awards program, **Careers in Immunology Fellowship**, providing PIs with salary support for trainee lab members, supported 25 PIs and trainees in 2020 for \$1 million. Hogan noted that 2021 recipients would be announced in the summer.

Hogan reported that the AAI Outreach Program continues to provide robust support for member-organized regional immunology meetings. While the program was cut short in 2020, supporting six domestic immunology meetings, AAI provided support for awards and career development sessions at 18 domestic meetings in 2019. Since 2011, the

Outreach Program has supported more than 1,040 young investigator awards. In total, AAI honored over 1,000 scientists during the last year with more than \$1.8 million for career awards, fellowships, and travel awards.

AAI Committee on Public Affairs (CPA)

AAI CPA Chair Ross Kedl (AAI '02) reported on the committee's continued work on major advocacy priorities and programs, including increasing funding for the National Institutes of Health (NIH). Despite remarkable congressional support that has resulted in a \$12.9 billion (42 percent) increase in the NIH budget over the past six years, NIH's purchasing power has not yet been restored to its peak level, reached in fiscal year (FY) 2003. The FY 2021 appropriations law provided NIH with a total funding level of \$42.9 billion, an increase of \$1.25 billion (~3 percent) over the previous year, well below the AAI funding recommendation but not entirely unexpected in a very difficult fiscal climate.

In April 2021, President Joe Biden released his budget request for FY 2022. His detailed proposal for federal spending includes an unprecedented \$9 billion funding increase for NIH, \$6.5 billion of which would be allocated to the creation of a new Advanced Research Projects Agency for Health (ARPA-H). To date, President Biden has not yet released his full budget with the complete details of the ARPA-H proposal, and AAI has therefore not yet taken a position on ARPA-H. Meanwhile, the House and Senate have not yet begun work on any of the FY 2022 appropriations bills.

The CPA has also been heavily engaged in issues related to the COVID-19 pandemic.

- The AAI leadership issued a statement expressing concern about reports of political interference by the Trump Administration in efforts by the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA) to combat the pandemic.
- AAI President **Jenny P.-Y. Ting, Ph.D. (AAI '97)** and CPA Chair **Ross Kedl, Ph.D. (AAI '02)**, issued a statement opposing any effort to achieve herd immunity through natural infection, instead highlighting the importance of vaccination.
- AAI endorsed and continues to actively advocate for legislation [the Research Investment to Spark the Economy (RISE) Act] that authorizes \$25 billion for federal science agencies (\$10 billion for NIH) to address issues related to lost lab productivity.
- AAI submitted comments in response to a White Paper released by then-Senator Lamar Alexander (R-TN) entitled, "Preparing for the Next Pandemic."
- At Virtual IMMUNOLOGY2021™, the CPA sponsored a session on "The U.S. COVID-19 Response: Successes, Failures, and Ongoing Challenges."

Although Capitol Hill has been closed to visitors since March 2020, AAI has taken advantage of the opportunity to schedule virtual meetings with Members of Congress and their staffs. In March 2021, AAI held its first-ever virtual Capitol

Hill Day with the members of the 2020–2021 Public Policy Fellows Program (PPFP). Many of the Congressional staff with whom the Fellows met with were eager to talk about science, especially COVID-19. Prior to their Hill meetings, the Fellows were briefed by National Institute of Allergy and Infectious Diseases (NIAID) Principal Deputy Director **Hugh Auchincloss, M.D., DFAAI (AAI '83)**, on ongoing activities at NIH/NIAID and on scientific developments related to COVID-19. In addition, the Fellows helped AAI develop a new handout (“COVID-19: Your Questions Answered”), which they provided to the congressional offices they visited.

The 11th PPFP class began its fellowship year on May 1, 2021. The Fellows are scheduled to visit Capitol Hill in March 2022. To view a complete list of the 2021–2022 Fellows, please visit www.aai.org/Public-Affairs/PPFP.

AAI Finances

AAI Secretary-Treasurer Edith M. Lord, Ph.D. (AAI '78), provided an overview of the finances of AAI. Lord reported that AAI is on good financial footing. Operating revenue in 2020 was \$8.02 million. Lord reviewed AAI 2020 revenues by category, noting that the largest sources of gross revenue were *The JI* (74 percent), followed by membership dues (10 percent) and the AAI Virtual Summer Courses (10 percent). These percentages were affected by the cancellation of IMMUNOLOGY2020™. Expenses for 2020 totaled \$8.51 million. The largest categories for 2020 expenses by activity were *The JI* (33 percent of all AAI expenses), followed by AAI awards programs (22 percent). The net assets in 2020 were \$77.72 million. Lord highlighted the 2020 AAI investment activity and outlined the historical difference between AAI revenue from operations and income from investments.

The Journal of Immunology (The JI)

Eugene M. Oltz, Ph.D. (AAI '95), editor-in-chief of *The JI*, thanked outgoing section editors, who will complete their terms of service in June, and welcomed incoming section editors, who will begin on July 1, 2021. The impact factor for *The JI* was released in June 2020 and was 4.89*; the journal continues to rank first in number of citations among 158 immunology journals. The current cited half-life of *The JI* remains more than 11 years, which is one of the longest in the field. The average time from manuscript submission to initial decision for full-length (33 days) and “Cutting Edge” manuscripts (16 days) remains stable. In the coming months, the journal is planning to publish two Topical Review issues. In October 2021, *The JI* will publish “Modern World Influences on the Microbiome and their Consequences for Immune-Mediated Diseases” with guest editor **Cathryn Nagler, Ph.D. (AAI '90)**. In January 2022, *The JI* will publish, “Celebrating Diversity in Immunology” with co-guest editors **DeBroski Herbert, Ph.D. (AAI '00)**, and **Irene Salinas, Ph.D. (AAI '17)**.

ImmunoHorizons (IH)

Mark H. Kaplan, Ph.D. (AAI '98), editor-in-chief for *IH*, described how there are two paths to publication in *IH*: de novo submission or through author-initiated transfer of

manuscripts not accepted into *The JI* that are scientifically sound and communicate important information. The average time from manuscript submission to initial decision for de novo submissions is 14 days; the average time for transfers is five days. *IH* now publishes the largest percentage of manuscripts not accepted by *The JI*. *IH* published three editorials in 2021, including, “*ImmunoHorizons*: What We're Publishing.” *IH* is indexed in MEDLINE and the Directory of Open-Access Journals, both of which are highly selective in which journals they choose to index.

**Please note that the impact factor as of June 30, 2021, rose to 5.422.*

The following awards were presented,

with Hogan presiding:

Distinguished Service Award to Juan Carlos (JC) Zúñiga-Pflücker, Ph.D. (AAI '96), University of Toronto and Sunnybrook Research Institute, Canada, for enduring and exemplary service to AAI and the immunology community.

Pfizer-Showell Travel Award to Monika Bambouskova, Ph.D. (AAI '19), Washington University School of Medicine, to recognize the professional promise of an early career investigator.

Chambers-Thermo Fisher Scientific Memorial Award to Timotheus Y.F. Halim, Ph.D. (AAI '17), University of Cambridge, Cambridge, United Kingdom, to advance the career of an early career scientist who attends the AAI annual meeting and presents an outstanding abstract specifically in the area of cancer biology.

Lefrançois-BioLegend Memorial Award to Jacob Van Winkle, Oregon Health & Science University, to advance the career of a trainee who attends the AAI annual meeting and presents an outstanding abstract specifically in the area of mucosal immunology.

Lustgarten-Thermo Fisher Scientific Award to Venuprasad K. Poojary, Ph.D. (AAI '05), University of Texas Southwestern Medical Center, to advance the career of a mid-career scientist who attends the AAI annual meeting and presents an outstanding abstract specifically in the area of immune regulation.

AAI-Thermo Fisher Scientific Trainee Achievement Awards

- Adeleye O. Adeshakin (AAI '18), University of Chinese Academy of Sciences, Beijing, China
- Elliot H. Akama-Garren (AAI '21), Harvard Medical School
- Ian C. Boothby (AAI '19), University of California, San Francisco
- Elizabeth S. Borden (AAI '21), University of Arizona College of Medicine
- Betsabel J. Chicana (AAI '18), University of California, Merced
- Masato Ogishi, M.D. (AAI '17), The Rockefeller University

The meeting was adjourned by CEO Hogan at 7:00 PM.

THANK YOU

FOR A GREAT VIRTUAL ANNUAL MEETING!

Faced with the ongoing COVID-19 pandemic, AAI leadership made the decision to go forward with IMMUNOLOGY2021™—in a virtual format. Planning the first-ever AAI virtual annual meeting was an enormous undertaking and not without some technical glitches. That notwithstanding, the meeting was met with overwhelmingly positive feedback throughout the week. Thank you to everyone who attended, volunteered, or took the time to connect with us on social media!



Stephanie Orchanian @stephorch
 @VirusesImmunity, Anthony Fauci, and many more of the top immunologists speaking in one week? Thank you @ImmunologyAAI for putting together an amazing conference! Although not in person, I know all of us are thrilled that we can attend all of the talks since they're recorded! 🙌

joanne flynn @joanneflynn19
 Amazing talk by @DonnaFarber3 at #AAI2021 on human tissue resident T cells. Fascinating look and amazing cohort of samples!

Saraswathy Vaidyanathan @calmodulin148
 Loving this panel discussion on vaccine equity, science communication, and pandemic preparedness!! Thank you!!! #Sciencetotherescue #AAI2021 @ImmunologyAAI @VirusesImmunity



Dr. Irene Salinas Remiro @DrSalinasLab
 #AAI2021 #Neuroimmunology symposium is on and it's 🙌🙌 with @jonykipnis @zfabry @LouveauAntoine @IsaacMChiu @stevens1lab @MosemanLab and Stanley Perlman

Scientist in Make-up @OliviaKUmama
 You know that moment you hear a presentation that makes you go back and reevaluate your own data? Yeah, that just happened to me listening to Frances Lund talk on T-bet and memory B cells. #AAI2021

ImmunologyMireia @ImmunoM
 We had a great time meeting the next generation of amazing Immunologists at various career levels. Here building AAI! #AAI2021



AAI Council Participates in Virtual Capitol Hill Event

The AAI Council recently participated in a virtual “Capitol Hill Day,” with meetings over the course of three days in June. Councilors visited 19 congressional offices, including meetings with two members of Congress: Representatives David Price (D-NC, 4th) and Joe Morelle (D-NY, 25th).

These meetings took place at a fortuitous time, as Congress continued to be deeply immersed in responding to the COVID-19 pandemic and preparing appropriations bills for FY 2022. Crucially, the meetings occurred shortly after President Joe Biden released his full FY 2022 budget proposal, which calls for the creation of a new agency within NIH, the Advanced Research Projects Agency for Health (ARPA-H). This offered AAI an early opportunity to express support for both ARPA-H and a continued commitment to protecting NIH’s core mission (for more, see “AAI Comments on Cures 2.0 Draft Legislation” below).

The following members of the AAI leadership participated in this virtual Hill event (note: titles listed are as of June 2021): AAI President Jenny P.-Y. Ting, Ph.D. (AAI ’97); AAI Past President Jeremy Boss, Ph.D. (AAI ’94); AAI Vice President Gary Koretzky, M.D., Ph.D. (AAI ’92); AAI Secretary-Treasurer Edith Lord, Ph.D. (AAI ’78); AAI Councilors Mark Davis, Ph.D. (AAI ’88), Akiko Iwasaki, Ph.D. (AAI ’00), Stephen Jameson, Ph.D. (AAI ’96), and Ulrich H. von Andrian, M.D. (AAI ’97); AAI *ex officio* Councilors David Masopust, Ph.D. (AAI ’07), and Eugene Oltz, Ph.D. (AAI ’95); and AAI Committee on Public Affairs Chair Ross Kedl, Ph.D. (AAI ’02). AAI Director of Public Policy and Government Affairs Lauren Gross, J.D., and AAI Manager of Science Policy and Legislative Affairs Jake Schumacher accompanied the AAI leaders to their appointments.

AAI Comments on Cures 2.0 Draft Legislation

AAI recently submitted detailed comments on draft legislation developed by Representatives Diana DeGette (D-CO, 1st) and Fred Upton (R-MI, 6th), known as the Cures 2.0 Act (see <https://bit.ly/2Wi936Q>). This draft builds on their previous legislation, the 21st Century Cures Act, which aimed to facilitate dramatic advancements in biomedical research across the pipeline, and which was approved overwhelmingly by Congress before being signed into law by President Barack Obama in 2016. Although the original focus of Cures 2.0 was to help ensure that treatments and cures reach patients, the pandemic caused the bill’s authors to broaden their focus, resulting in the inclusion of numerous research and public health provisions.

In addition to the draft bill, Reps. DeGette and Upton released a request for information (RFI) to solicit input specifically about President Joe Biden’s proposal to create ARPA-H. In responding to the RFI, AAI explained its position on ARPA-H, an excerpt of which appears below:

“AAI is enthusiastic about ARPA-H’s potential, which could greatly advance human immunology by supporting broad collaborations and high-risk, high-reward research. We believe, however, that any funding provided for ARPA-H must supplement, and not supplant, the regular budget of the National Institutes of Health (NIH), its parent agency, and that ARPA-H’s activities must enhance, and not interfere with, NIH’s historic commitment to funding basic research. In addition, NIH, as ARPA-H’s parent agency, should solicit stakeholder input to help answer many outstanding questions, including whether existing NIH entities and programs, like the National Center for Advancing Translational Sciences (NCATS), will be integrated into the new agency, and which research areas will be identified and selected.”

AAI looks forward to continuing to provide input to DeGette and Upton, as well as other members of the House Energy and Commerce Committee, as this legislation moves forward.

House Committees Approve \$6.5 Billion Funding Increase for NIH

No Senate action to date

The House of Representatives recently approved a seven-bill appropriations package, which includes the FY 2022 Labor, Health and Human Services, Education, and Related Agencies (Labor-HHS) appropriations bill. A similar version of the legislation had been approved by the House Appropriations Committee and the House Labor-HHS Appropriations Subcommittee earlier this summer. Notably, the bill contains a historic \$6.5-billion increase for NIH, which if enacted would represent the largest annual funding increase in the history of the agency. Of this increase, \$3.5 billion is allocated to the base NIH budget to support its regular operations (including basic research), and \$3 billion (available for three years) is allocated to launch ARPA-H.

The Committee report that accompanies the bill includes a detailed description of how Congress expects these funds to be spent, if ultimately appropriated. Some of the significant funding allocations include:

- increases of at least five percent for all NIH Institutes and Centers
- a \$627 million increase for research on opioids, stimulants, and pain management
- a \$330 million increase for health disparities research
- a \$200 million increase for Alzheimer's disease research (total of \$3.4 billion)
- a \$100 million increase for research on the role of climate change on human health (total of \$110 million)
- a \$52 million increase for the BRAIN Initiative (total of \$612 million)
- a new \$50 million allocation to create rapid vaccine development platforms
- a \$41 million increase for the *All of Us* cohort program (total of \$541 million) and
- a \$30 million increase to support research on a universal influenza vaccine (total of \$250 million).

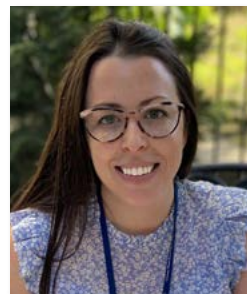
The Senate has made minimal progress on its FY 2022 appropriations bills and has yet to consider the Labor-HHS Appropriations bill even at the subcommittee level.

NIH Releases Strategic Plan for 2021–2025

The *2021–2025 NIH-Wide Strategic Plan* (see <https://bit.ly/2ZaDUTE>), which was released in July 2021, outlines the framework, objectives, and themes meant to guide NIH efforts over the next five years. The framework seeks to advance NIH's mission of "turning discovery into health" and is organized around three key objectives: "(1) Advancing Biomedical and Behavioral Sciences, (2) Developing, Maintaining and Renewing Scientific Research Capacity, and (3) Exemplifying and Promoting the Highest Level of Scientific Integrity, Public Accountability, and Social Responsibility in the Conduct of Science." Five "Crosscutting Themes," relevant to each objective, include "Improving Minority Health and Reducing Health Disparities, Enhancing Women's Health, Health Challenges Across the Lifespan, Promoting Collaborative Science, and Leveraging Data Science for Biomedical Discovery."

In addition to highlighting ongoing research initiatives and areas of focus such as COVID-19, the *All of Us* research program, and the Helping to End Addiction Long-Term (HEAL) initiative, the plan outlines initiatives and programs already in place to enhance diversity, update and use modern technology, support infrastructure needs, and prioritize rigorous and transparent scientific practices. Building upon the previous 2016–2020 Strategic Plan, the NIH lists "35 Bold Predictions" for outcomes that NIH would like to produce over the next five years. Examples include development of a gene therapy for muscular dystrophy, decreasing maternal deaths "among Black and American Indian or Alaska Native women," and the development of a universal coronavirus vaccine. NIH also seeks to increase by 50 percent R01 awards to principal investigators from underrepresented racial and ethnic groups.

Introduction to the New AAI Science Policy Analyst



AAI is delighted to welcome Emily Kansler, Ph.D., as the new science policy analyst on staff. Dr. Kansler joined AAI in July after obtaining her Ph.D. from the Louis V. Gerstner Jr. Graduate School of Biomedical Sciences of Memorial Sloan Kettering Cancer Center (MSKCC) in New York. Kansler studied in the laboratory of Ming Li, Ph.D. (AAI '10), where she worked on multiple projects centered around tumor immunology and innate lymphocyte biology in humans and mice.

Kansler received her bachelor of science degree from Salisbury University and her master of science degree from the Department of Molecular Microbiology and Immunology at Johns Hopkins Bloomberg School of Public Health, where she also received a certificate in Vaccine Science and Policy. Wanting to explore cancer biology, Kansler went on to work as a senior research technician in the laboratory of Richard White, M.D., Ph.D., at MSKCC, where she studied drivers of melanoma metastasis using a zebrafish model.

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.

MEMBERS IN THE NEWS

Butts, Garvy Join FASEB Leadership

Cherié L. Butts, Ph.D. (AAI '10), and **Beth A. Garvy, Ph.D. (AAI '98)**, joined the leadership of the Federation of American Societies for Experimental Biology (FASEB) this summer following their selection as officers of the FASEB Board of Directors.



Dr. Butts became FASEB treasurer-elect on July 1 and will serve jointly as FASEB treasurer and Finance Committee chair beginning on July 1, 2022. Dr. Butts is the first industry scientist, first African American, and second woman scientist named to the position.

Butts served as AAI representative to the FASEB Finance Committee from 2017 to 2021. In 2020, as chair of the FASEB Emerging Issues/Revenue Opportunities Task Force, she helped identify a number of initiatives, including the FASEB Institute on Bioentrepreneurship, Drug Development, and Advocacy. As FASEB treasurer-elect and then treasurer, she will play a major role in advancing these initiatives.

Butts is medical director and head of Clinical Assessments-Digital and Quantitative Medicine at Biogen in Cambridge, Massachusetts, where she leads activities to include more sensitive and specific measurement tools in clinical trials for drug candidates. She was the clinical lead for Plegridy IM (pegylated interferon beta-1a), approved in 2021 in the United States and European Union for multiple sclerosis. Her recent work has included a focus on health equity to identify opportunities to reduce the time to diagnosis and better understand the scientific basis for responses to therapies. Prior to joining Biogen, Butts was a senior staff fellow at the U.S. Food and Drug Administration, where she conducted neuroendocrine immunology research and reviewed drug and biologics applications. Her early career research focused on characterizing dendritic cell-mediated immune responses in ovarian cancer patients and evaluating hormonal regulation of these responses in autoimmune and infectious disease models.

Butts is a member of the AAI Committee on Public Affairs (CPA), where she has served on the NIH, Public Health and Biosecurity, and Advocacy Programs subcommittees. She served as scientific co-author of the AAI primer on the clinical trial vaccine development process (see <https://bit.ly/3hkB1Gh>) produced by the CPA subcommittee in November 2020. Butts has also served as a member and chair of the AAI Minority Affairs Committee (MAC) and has been a strong advocate and advisor for AAI diversity, equity, and inclusion efforts. At this year's virtual AAI annual meeting, she was a panelist in the MAC-sponsored session "Minority Scientists' Experience:

Challenging and Overcoming Barriers to Enhancing Diversity and Career Advancement." She also served as a returning table leader at the annual MAC Careers Roundtables. Butts is a past recipient of the AAI Minority Scientist Travel Award and AAI Trainee Abstract Award.



Dr. Garvy joined the FASEB Board on July 1 as vice president-elect for science policy. She has served since 2018 as AAI representative to the FASEB Board, a role she retains until becoming FASEB vice president for science policy next July.

Garvy is associate dean for biomedical education at the University of Kentucky College of

Medicine, where she is also a professor and past chair of the Departments of Microbiology, Immunology, and Molecular Genetics and Internal Medicine. Her research focuses on the immune response to an opportunistic fungal pathogen, *Pneumocystis carinii*, that can cause pneumonia in infected, immunosuppressed individuals. The Garvy laboratory uses murine models to investigate how the ascus and trophic forms of the fungus interact differently with the immune system and differences in the immune response of neonatal versus adult mice to infection with *P. carinii* and influenza.

Garvy was the recipient of the AAI Distinguished Service Award in 2019 for outstanding service to AAI and the immunology community as a member and chair of the AAI CPA. During her CPA tenure from 2011 to 2018, Garvy helped AAI champion efforts by the NIH to increase funding for early stage investigators and presided over the first two CPA "Town Hall" meetings held at the AAI annual meetings, during which attendees contributed their input on multiple NIH policy proposals. Garvy has also served as an associate editor for *The Journal of Immunology (The JI)* and is a past AAI Laboratory Travel Grant recipient.

Capitini, Kaczanowska, Mackall, Orentas, Otto, Sondel are AACR Team Science Award Honorees

Christian M. Capitini, M.D. (AAI '12), **Sabina Kaczanowska, Ph.D. (AAI '19)**, **Crystal L. Mackall, Ph.D. (AAI '97)**, **Rimas J. Orentas, Ph.D. (AAI '14)**, **Mario Otto, M.D., Ph.D. (AAI '16)**, and **Paul M. Sondel, M.D., Ph.D. (AAI '77)**, are co-recipients of the Team Science Award presented by the American Association for Cancer Research. The award, which serves to acknowledge and catalyze the growing importance of interdisciplinary teams to the understanding of cancer, this year honors the 73 investigators

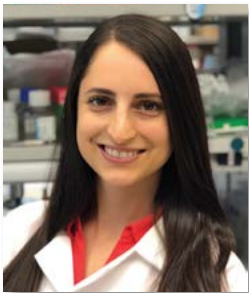
comprising the St. Baldrick's Foundation Stand Up to Cancer Pediatric Cancer Dream Team, co-led by Dr. Mackall.



Dr. Capitini is an associate professor in the Department of Pediatrics at the University of Wisconsin School of Medicine and Public Health and a St. Baldrick's Dream Team-affiliated institutions principal investigator. He pursues research focused on maximizing graft-versus-tumor effects, while minimizing graft-versus-host disease, in using

allogeneic blood and marrow transplantation to treat childhood cancers. Current methods include activating natural killer (NK) cells *ex vivo* to eradicate the tumor and inducing macrophages via mesenchymal stromal cells *ex vivo* to become anti-inflammatory and minimize host cell damage. He has also studied chimeric antigen receptor T cells as a treatment for B cell leukemia in children, serving as a site principal investigator in the multi-center trial that led to FDA approval of tisagenlecleucel (Kymriah).

Capitini serves as a member of the AAI Clinical Immunology Committee and the AAI Committee on the Status of Women Career Advisory Board. He was an AAI Careers in Immunology Fellowship recipient in 2014 and has also received multiple AAI Early Career Faculty Travel Grants.



Dr. Kaczanowska is a postdoctoral fellow in the Tumor Micro-environment and Metastasis Section of the Pediatric Oncology Branch at the National Cancer Institute (NCI), NIH. She received her Ph.D. in molecular microbiology and immunology from the University of Maryland School of Medicine, where her

research was focused on applying MyD88 signaling in CD8⁺ T cells to enhance anti-tumor immunity. During her postdoctoral fellowship at the NCI, she has worked to characterize immune populations in the pre-metastatic niche with the aim of developing novel immunotherapeutic strategies for the treatment of solid tumors. This has included characterization of a myeloid-rich immunosuppressive microenvironment that promotes metastasis and use of genetically engineered myeloid cells to activate anti-tumor immunity.

Kaczanowska is a past recipient of multiple AAI Trainee Abstract Awards.



Dr. Mackall is the Ernest and Amelia Gallo Family Professor and a professor of pediatrics and of medicine at the Stanford University School of Medicine. Her additional Stanford University appointments include co-executive director of the Stanford Laboratory for Cell and Gene Medicine, founding director of the Stanford Center for Cancer Cell

Therapy, associate director of the Stanford Cancer Institute, leader of the Cancer Immunology and Immunotherapy Program, and director of the Parker Institute for Cancer Immunotherapy. Her work has identified the integral roles of the thymus in human T cell regeneration, and IL-7 in regulating T cell homeostasis. She has also conducted clinical trials using dendritic cells, cytokines, and NK cells as cancer therapies. Currently, her research focuses on CAR T cells. Her group has demonstrated CD19- and CD22-targeting CAR T cells as tools to battle leukemia and is currently developing CAR T cell immunotherapy for brain tumors. Her group studies multiple topics relating to T cell function, aiming to tailor these cells to specific tumors and maintain the CAR T cells in an effector state following transfer and antigen encounter. These topics include T cell metabolism, clonal analysis of tumor-infiltrating T cells, target antigen identification, and T cell exhaustion.

Mackall is a past major symposium speaker at AAI annual meetings.

In addition to her recognition as an AACR Team Science Award co-recipient, Mackall received individual AACR honors earlier this year as recipient of the AACR-St. Baldrick's Foundation Award for Outstanding Achievement in Pediatric Cancer Research. The award honors her pioneering contributions to pediatric oncology, immunology, and immunotherapeutics, including her discovery of the role of IL-7 in T cell homeostasis, her significant efforts to advance the use of CAR T cell therapies, and her consistent and ongoing translational research dedicated to establishing novel treatments for pediatric cancer patients.



Dr. Orentas is a professor in the Department of Pediatrics at the University of Washington School of Medicine and a principal investigator at the Ben Towne Center for Childhood Cancer Research at Seattle Children's Hospital and Research Institute. His work has used CAR T cells to target CD19 and CD22 as an immunotherapy against leukemia.

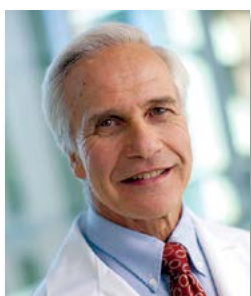
Currently, his group is also working to apply CAR T cell therapy to pediatric solid tumors, with the goal of both appropriately targeting the tumor and maintaining the effector function of the CAR T cells once they home to the tumor. In addition to studying the cell surface expression of proteins within tumors to develop CAR targets, they also study the elements within tumor microenvironment that may dampen T cell, including CAR T cell, responses.



Dr. Otto is an associate professor in the Department of Pediatrics at the University of Wisconsin School of Medicine and Public Health whose research focuses on three methods of eradicating tumors. One focus is a novel phospholipid ether CLR1404 that is used as a highly tumor-selective molecule for both imaging and radiotherapy, and in higher

doses, inducing cell apoptosis. Another focus studies the role of enriched human $\gamma\delta$ T cells in their anti-tumor and immunosurveillance responses, and he has worked to enrich both NK and $\gamma\delta$ T cells for use on a clinical scale. A third area of research studies tumor-specific iron-oxide nanoparticles as a diapaetic, an agent that both diagnoses and treats cancer.

Otto was a 2016 AAI Careers in Immunology Fellowship recipient.



Dr. Sondel is a professor in the Department of Pediatrics at the University of Wisconsin School of Medicine and Public Health and a St. Baldrick's Dream Team-affiliated institutions principal investigator. His research focuses on two forms of cancer immunotherapy, the first of which uses interleukin-2-activated NK cells, or more recently a human-

ized fusion protein that attached interleukin-2 to anti-tumor antibodies, to destroy tumor cells in vivo. A second approach is to provide adjuvants, such as blocking CTLA-4 or activating CD40 and Toll-like receptor-9, to anti-tumor vaccine strategies. As a chair for the University of Wisconsin Institute for Clinical and Translational Research Scientific Review Committee, Sondel also reviews proposals for non-exempt human subject research.

Sondel has served as an associate editor for *The JI*.

Fairchild Receives Outstanding Innovation Recognition

Robert L. Fairchild, Ph.D. (AAI '20), has received **Outstanding Innovation in Therapeutics and Diagnostics** recognition from the Cleveland Clinic for the recent license of his urine biomarker platform test for kidney transplant rejection. This non-invasive solution has the potential to at least partially replace current biopsy-based diagnostics and represents an important advancement for kidney transplant patients worldwide.



Dr. Fairchild is a professor of molecular medicine in the Department of Inflammation and Immunity at the Cleveland Clinic and a professor of pathology at Case Western Reserve University School of Medicine. His laboratory works to describe mechanisms of solid organ transplant rejection

and inflammation and to non-invasively monitor graft health. The platform that he and collaborators recently licensed with Eurofins-Viracor uses multiplex technology to test urine from kidney transplant recipients for specific markers of clinical acute rejection. Urine analysis is less invasive than the current transplant biopsy sample testing. Fairchild is working with Eurofins-Viracor to verify this assay in transplant recipients and to expand its diagnostic abilities to include other immune and non-immune mediators of graft damage.

Fairchild serves as a member of the AAI Publications Committee and has served as an abstract programming chair at AAI annual meetings. He is also a past associate editor, section editor, and deputy editor for *The JI*.

Graham is Sabin Gold Medal Recipient

Barney S. Graham, M.D., Ph.D. (AAI '00), has been honored by the Sabin Vaccine Institute as recipient of the Albert B. Sabin Gold Medal, the institute's highest scientific honor. It is given each year to a distinguished member of the global health community who has made extraordinary contributions to vaccinology or a complementary field. The award reflects his achievements over three decades as a vaccinology researcher, mentor, and vaccine advocate, including his critical role in accelerating the development of multiple COVID-19 vaccines and his dedication to making vaccines available to underserved populations.



Dr. Graham is deputy director of the Vaccine Research Center and chief of the Viral Pathogenesis Laboratory and Translational Science Core at the National Institute of Allergy and Infectious Diseases (NIAID), NIH. In collaboration with his NIAID colleagues and others, his research has focused over many years on the development of experimental

vaccines against emerging viral pathogens, including the coronaviruses SARS and MERS. Their work positioned Graham and his collaborators to quickly pivot to generating a vaccine candidate targeting SARS-CoV-2, the virus that causes COVID-19, soon after the viral genome was sequenced in January 2020 by other scientists. Leveraging existing vaccine platforms and prior research on the structure of MERS-CoV, Graham and his colleagues rapidly identified and worked to better understand the SARS-CoV-2 spike protein as a promising vaccine target. Their prior validation of relevant animal models and ongoing evaluation of MERS vaccine candidates also facilitated rapid preclinical testing. Due to the collaborative work of these and other researchers, several vaccine candidates were in late-stage clinical trials by December 2020 and subsequently approved and deployed nationally and internationally in 2021 based on their effectiveness in preventing COVID-19 infection in humans.

Graham has served as a faculty member for the AAI Introductory Course in Immunology.

Pepper, Ting, Ware, Young Receive ICIS Award Honors

Marion Pepper, Ph.D. (AAI '11), Jenny P.-Y. Ting, Ph.D. (AAI '97), Carl F. Ware, Ph.D. (AAI '82), and Howard A. Young, Ph.D. (AAI '90), are recipients of 2021 award honors from the International Cytokine & Interferon Society (ICIS).



Dr. Pepper was selected for the **2021 ICIS-LUMINEX John R. Kettman Award for Excellence in Interferon & Cytokine Research**, which recognizes those in the top tier of mid-career investigators who have made outstanding contributions to the field of interferon or cytokine biology.

Pepper is an associate professor in the Department of Immunology at the University of Washington. Her research focuses on the genesis and tracking of antigen-specific memory CD4⁺ T cell and B cell populations in response to bacterial, viral, and allergic challenge. These studies seek to better understand memory to support both vaccine development and treatment/prevention of allergies.

Pepper serves as a member of the AAI Program Committee. She also has served as a major symposium speaker and careers roundtable discussion leader at AAI annual meetings and as a faculty member for the AAI Introductory Immunology Course. Pepper is a past associate editor for *The JI* and AAI Early Career Faculty Travel Grant recipient.



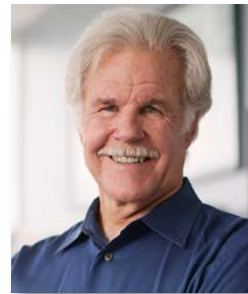
Dr. Ting was selected for the **ICIS-Pfizer Award for Excellence in Interferon and Cytokine Research**, in recognition of her outstanding discoveries in the fields of immunology, molecular biology, genomics, and microbiology, and especially for the impact her control-of-immunity observations have had on a wide variety of diseases.

A current member of the AAI Council as past president, 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's early work focused on the regulation of MHC class II by the master Class II Major Histocompatibility Complex Transactivator (CIITA). Subsequently, her laboratory discovered the NLR (for nucleotide-binding domain and leucine-rich repeat-containing proteins or NOD-like receptors) family of genes that encoded structural motifs similar to CIITA. She has since played a significant role in characterizing NLR family members and has found

that NLR inflammasome formation affects the severity of neuronal inflammation, cancer, and viral and bacterial infections. The Ting laboratory has also pioneered the study of new NLR molecules, many of which negatively regulate inflammatory pathways, including immune signaling and cytokine induction by NLRP12, NLRC3, and NLRX1. Her lab is actively pursuing the importance of innate immune receptors in adaptive immune cells and epithelial cells. Current research in her laboratory additionally focuses on the impact of gut microbiota on disease outcomes and new adjuvant formulation for vaccines.

Ting served as the 2020–2021 AAI president and has been an AAI Council member since her election in 2015. She was the recipient of the AAI-Life Technologies Meritorious Career Award in 2013 and was also 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. Prior to her election to Council, Dr. Ting served as the elected chair of the AAI Nominating Committee and a member of the AAI Publications Committee. Dr. Ting is a past associate and section editor for *The JI*.



Dr. Ware was selected for the **ICIS Honorary Lifetime Membership Award** as a tribute to his seminal and original contributions to understanding the role of cytokines in immunobiology and his active engagement in cytokine research.

Dr. Ware is a professor in the Immunity and Pathogenesis Program at the Sanford Burnham

Prebys Medical Discovery Institute, where he serves as director of the Infectious and Inflammatory Diseases Research Center and head of the Laboratory of Molecular Immunology. He is widely recognized for his seminal contributions to cytokine immunobiology research over a long and active scientific career. His research focuses on the Tumor Necrosis Factor (TNF)-related cytokines and their direction of immune responses to viral infection, autoimmunity, and cancer. The TNF-related cytokines dictate many functions within the immune response, including homeostasis, responses to foreign antigen, lymphoid organ development, and interactions between stromal cells, lymphocytes, and antigen-presenting cells. Among his laboratory's discoveries, Lymphotoxin- $\alpha\beta$ receptor, LIGHT, HVEM, and BTLA have been therapeutic targets in clinical trials for autoimmunity and severe COVID-19.

Ware has served as a member of the AAI Program Committee and Nominating Committee and as an AAI President's Symposium speaker and major symposium chair and speaker at AAI annual meetings. He has also served as an associate editor for *The JI* and as a faculty member for the AAI Advanced Course in Immunology.



Dr. Young was selected as the inaugural recipient of the **ICIS Mentorship Award** in recognition of his significant and sustained contributions to the career development of trainees and to the profession through outstanding mentoring over four decades. Young has guided numerous post-doctoral and post-baccalaureate trainees

who have gone on to establish their own labs around the world. They, in turn, have mentored hundreds of additional trainees following Young's example of promoting exceptional scientific and career-advancing interactions in the laboratory and beyond.

Young is a senior investigator in the Laboratory of Cancer Immunometabolism, Center for Cancer Research, National Cancer Institute, NIH. His laboratory studies the effects of chronic inflammation, specifically chronic exposure to interferon- γ on anti-tumor and anti-inflammatory immune responses. His work has furthered the understanding of how interferon- γ affects disease and infection pathogenesis and how disease progression may be blocked.

Young has served as an associate editor for *The JI*.

Saphire Named LJI President, CEO

Erica O. Saphire, Ph.D. (AAI '20), has been appointed president and chief executive officer of the La Jolla Institute for Immunology (LJI), effective September 1. She has served LJI as a professor in the Center for Infectious Disease and Vaccines and will continue to lead her research laboratory, which serves as a global clearinghouse in the search for antibodies capable of defeating numerous viruses, including SARS-CoV-2, Ebola, Sudan, Marburg, Bundibugyo, and Lassa.



Dr. Saphire's research has solved the structures for a variety of viral glycoproteins, helped describe how these viruses are pathogenic, and provided potential targets for therapy. 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.

Recently Deceased Members

AAI extends condolences to the families, friends, and colleagues of the following members whose deaths were recorded since July 2020.

Agnes Marie Azimzadeh, Ph.D., AAI '10
Boston, MA
d. 3/15/2021

Frank W. Fitch, M.D., Ph.D., AAI '61
Chicago, IL
d. 4/2/2021

Satvir S. Tevethia, Ph.D., AAI '68
Hershey, PA
d. 11/3/2020

Byung-Kil Choe, M.D., Ph.D., AAI '82
Ann Arbor, MI
d. 8/1/2019

Kimberly J. Payne, Ph.D., AAI '95
Loma Linda, CA
d. 11/1/2020

Anthony van den Pol, Ph.D., AAI '18
Branford, CT
d. 10/28/2020

Raphael J. DeHoratius, M.D., AAI '77
Upper Gwynedd, PA
d. 11/26/2020

Ronald Penny, D.Sc., M.D., AAI '71
Sydney, New South Wales, Australia
d. 12/21/2019

Gerald Weissmann, M.D., AAI '70
New York, NY
d. 7/10/2019

Amy L. Dugan, Ph.D., AAI '02
Fairborn, OH
d. 8/7/2020

Nilabh Shastri, Ph.D., AAI '95
Baltimore, MD
d. 1/22/2021

Leon Wofsy, Ph.D., AAI '68
Alameda, CA
d. 8/25/2019

Thomas S. Edgington, M.D., AAI '70
La Jolla, CA
d. 1/22/2021



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Call for 2022 Award Nominations

Deadline: October 14, 2021

Nominations are invited for the following AAI Career Awards. These awards honor immunologists of extraordinary scientific achievement and promise.

AAI Members! Don't miss the opportunity to nominate a worthy colleague for awards that are among the leading professional honors presented annually to immunologists!

AAI-BioLegend Herzenberg Award

Established to honor the memory of AAI member Leonard A. Herzenberg, Ph.D., this award recognizes an individual who has made exemplary research contributions to the field of B cell biology. The award recipient will receive a \$5,000 cash award, meeting registration, and travel support to the AAI annual meeting. The recipient will present their research in an award lecture.

AAI Excellence in Mentoring Award

This award recognizes a senior scientist who has significantly influenced the professional development and careers of a new generation. AAI honors the award recipient's contributions to the profession through outstanding mentoring. The award includes a plaque, meeting registration, and travel support to the AAI annual meeting. This award is presented at an awards presentation program at the AAI annual meeting.

AAI-Steinman Award for Human Immunology Research

This award recognizes an individual who has made significant contributions to the understanding of immune processes underlying human disease pathogenesis, prevention, or therapy. The award recipient will receive a \$5,000 cash award, meeting registration, and travel support to the AAI annual meeting. The recipient will present their research in an award lecture.

AAI-Thermo Fisher Meritorious Career Award

This award recognizes a mid-career scientist for outstanding research contributions to the field of immunology. The award recipient will receive a \$10,000 cash award, meeting registration, and travel support to the AAI annual meeting for presentation of their research in an award lecture.

AAI-BD Biosciences Investigator Award

This award recognizes an early-career investigator who has made outstanding contributions to the field of immunology. The awardee will receive a \$5,000 cash prize, meeting registration, and travel support to the AAI annual meeting for presentation of their research in an award lecture.

For complete AAI Career Award nomination details, as well as information on applying for AAI Travel Awards and Grants, visit www.AAI.org/Awards.

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Questions? Contact AAI at 301-634-7178 or awards@aai.org



AAI Announces Summer 2021 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 Summer 2021 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 his or her 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:



Tesfay Belay, Ph.D. (AAI '16)
Professor, Bluefield State College

Destination: The laboratory of Dr. Dennis Vida, Alabama State University

Technique: Flow cytometry and data analysis

Application: To investigate the role of chronic stress on the immune response to infection in a mouse model



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

Designated Traveler: Meghna Sur (AAI '21), graduate student

Destination: The laboratory of Dr. Rachael Sirianni, University of Texas Health Science Center at Houston

Technique: Preparation and characterization of nanoencapsulations

Application: To test the utility of cytokine-encapsulated nanoparticles in inducing tolerance in a mouse model of inflammatory cardiomyopathy

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 Announces Recipients of 2021 *Careers in Immunology Fellowships*

AAI congratulates 22 members selected to receive AAI *Careers in Immunology Fellowships* in 2021. The program, launched in 2014, provides independent research scientists with fellowships supporting one year of salary for a trainee (predoctoral or postdoctoral) in their labs. Details about this program may be found at www.aai.org/CIFP.

The investigators selected for the 2021 *Careers in Immunology Fellowships* are:



Colin C. Anderson, Ph.D. (AAI '99)

Professor, University of Alberta, Canada

Trainee: Adeolu O. Adegoke (AAI '21), graduate student

Project: Ontogeny of T cell control by BTLA and PD-1



William A. Boisvert, Ph.D. (AAI '16)

Professor, University of Hawaii

Trainee: Jonathan Yap, Ph.D. (AAI '19), postdoctoral fellow

Project: Attenuating adverse ventricular remodeling by delivery of anti-inflammatory cytokines via nanoscale structures



Shanjana Awasthi, Ph.D. (AAI '04)

Professor, University of Oklahoma Health Science Center

Trainee: Nachiket M. Godbole, Ph.D. (AAI '21), postdoctoral fellow

Project: Molecular mechanism of action of TLR4-interacting SPA4 peptide in lung epithelial cell systems

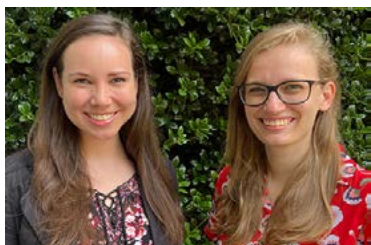


Elissa Deenick, Ph.D. (AAI '19)

Associate Professor, Garvan Institute of Medical Research, Australia

Trainee: Julia Bier, Ph.D. (AAI '20), postdoctoral fellow

Project: Lymphocyte dysfunction in the development and control of lymphoma



Victoria K. Baxter, D.V.M., Ph.D. (AAI '19)

Assistant Professor, University of North Carolina at Chapel Hill

Trainee: Audrey C. Knight, Ph.D. (AAI '21), postdoctoral fellow

Project: Effect of prior infection exposure in the periphery on neuroimmunity



Patricia A. Fitzgerald-Bocarsly, Ph.D. (AAI '84)

Professor, Rutgers New Jersey Medical School

Trainee: Alicia L. Codrington (AAI '19), graduate student

Project: Investigating the role of histone and DNA methyltransferases on virus-stimulated pDC IFN-alpha production

AWARDS



Lee Ann Garrett-Sinha, Ph.D. (AAI '02)

Professor, University at Buffalo

Trainee: Michael C. Battaglia (AAI '19), graduate student

Project: *Staphylococcus aureus* invasion of skin keratinocytes and mechanisms of immune clearance



Meghan A. Koch, Ph.D. (AAI '19)

Assistant Professor, Fred Hutchinson Cancer Research Center

Trainee: Bingjie Wang (AAI '21), graduate student

Project: Effects of breast milk antibodies on neonatal immunity and host-microbe mutualism



Stephen M. Hedrick, Ph.D. (AAI '81)

Professor, University of California, San Diego

Trainee: Nimi Marcel, Ph.D. (AAI '21), postdoctoral fellow

Project: FOXO1 mediates immune senescence in T cells

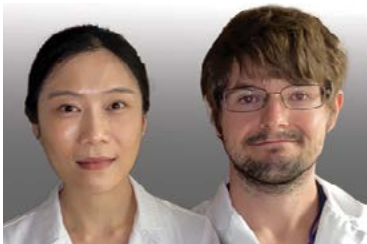


Adriana T. Larregina, M.D., Ph.D. (AAI '05)

Professor, University of Pittsburgh

Trainee: Mohna Bandyopadhyay, Ph.D. (AAI '18), postdoctoral fellow

Project: An immunosuppressive approach that co-delivers haptens and NK1R antagonists to a circumscribed skin area to prevent the sensitization and ameliorate already established contact dermatitis



Weishan Huang, Ph.D. (AAI '17)

Assistant Professor, Louisiana State University

Trainee: Michael C. McGee (AAI '18), graduate student

Project: ITK signaling in tissue resident memory T cell development and function in flu-associated pulmonary sequelae

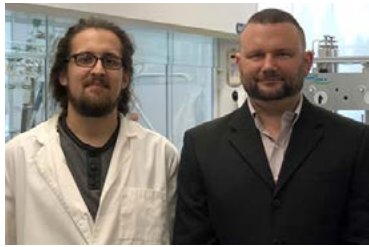


Elizabeth A. Leadbetter, Ph.D. (AAI '10)

Associate Professor, University of Texas Health Science Center at San Antonio

Trainee: Raksha Parthasarathy (AAI '21), graduate student

Project: Leveraging iNKT cell help to identify signals for B cell memory commitment

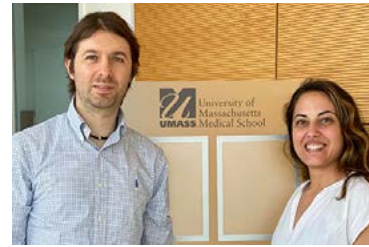


Rock Mancini, Ph.D. (AAI '15)

Assistant Professor, Washington State University

Trainee: Austin T. Ryan (AAI '21), graduate student

Project: Using β -lactamase-directed toll-like receptor agonist prodrugs to modulate bacterial clearance mechanisms in macrophages



Andrea Reboldi, Ph.D. (AAI '16)

Assistant Professor, University of Massachusetts Medical School

Trainee: Simona Ceglia, Ph.D. (AAI '20), postdoctoral fellow

Project: Immunomodulatory effect of IEC-derived oxysterols on intestinal plasma cells



Sharon Celeste Morley, M.D., Ph.D. (AAI '10)

Assistant Professor, Washington University in St. Louis

Trainee: Hemant Joshi, Ph.D. (AAI '19), postdoctoral fellow

Project: Mechano-sensitivity of NLRP3 inflammasome in macrophages



David A. Rosen, M.D., Ph.D. (AAI '19)

Assistant Professor, Washington University in St. Louis

Trainee: Joseph J. Mackel, Ph.D. (AAI '21), postdoctoral fellow

Project: Host T cell and effector responses against *Klebsiella pneumoniae* pathotypes



Sachin Mulik, Ph.D. (AAI '20)

Assistant Professor, University of Texas Health Science Center at Tyler

Trainee: Weshely Kujur, Ph.D. (AAI '19), postdoctoral fellow

Project: Heterogeneity in NK memory stem cells using single-cell epigenetic profiling



Ronit Sagi-Eisenberg, Ph.D. (AAI '10)

Professor, Tel Aviv University, Israel

Trainee: Pia Lazki-Hagenbach (AAI '21), graduate student

Project: Mechanisms and regulation of MRGPRX2-regulated exocytosis in mast cells



Derek B. Sant'Angelo, Ph.D. (AAI '98)
Professor; Rutgers, The State University of New Jersey
Trainee: Agata K. Krzyzanowska (AAI '17), graduate student
Project: Zbtb20 expression defines an innate-like Treg subset that is essential for intestinal homeostasis



Marc Swidergall, Ph.D. (AAI '19)
Assistant Professor; Lundquist Institute for Biomedical Innovation at Harbor-UCLA Medical Center
Trainee: Nicolas O. J. Millet, Ph.D. (AAI '20), postdoctoral fellow
Project: IL-23 regulation in dendritic cells during invasive candidiasis



Walter J. Storkus, Ph.D. (AAI '90)
Professor; University of Pittsburgh School of Medicine
Trainee: Jessica Filderman (AAI '19), graduate student
Project: Treatment of disseminated melanoma lesions with systemic STING agonists to induce formation of tertiary lymphoid structures in individual lesions



Tiphanie P. Vogel, M.D., Ph.D. (AAI '16)
Assistant Professor; Baylor College of Medicine
Trainee: Stephanie L. Wood (AAI '19), graduate student
Project: Investigating STAT3 serine phosphorylation in inflammatory arthritis

The Journal of Immunology

Topical Reviews Collections

The *Journal of Immunology* Topical Reviews collection provides an authoritative, up-to-date overview of critical areas in immunology. These reviews focus on rapidly developing topics and provide an indication of future directions.

2021: Stromal Immunology:
Frameworks for Development and Response

2020: Neuroimmunology:
To Sense and Protect

2019: Immunity to Influenza:
Closing in on a Moving Target



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Call for 2022 Award Applications

Deadline: December 14, 2021

More than half of members who submit abstracts receive travel grants or awards! Don't miss out—join AAI and submit your abstract for IMMUNOLOGY2022™ to be eligible for one of the many awards offered!

Lefrançois-BioLegend Memorial Award

Established to honor the memory of AAI member Dr. Leo Lefrançois, this award is intended to advance the career of a trainee who attends the AAI annual meeting and presents an outstanding abstract specifically in the area of mucosal immunology. The award recipient will receive a \$1,000 cash award and a certificate during an awards presentation program at the AAI annual meeting. *This award is generously supported through a grant from BioLegend and donations from friends and colleagues of Dr. Lefrançois.*

AAI Trainee Poster Awards

These awards provide up to \$300 in travel reimbursement to AAI trainee members whose first-author abstracts submitted to the AAI annual meeting are selected for poster sessions only and found to be exceptional by the AAI Abstract Programming Chairs. Selection is based on the originality and significance of the research being presented.

Pfizer-Showell Travel Award

This award recognizes the professional promise of an early career investigator (assistant professor or equivalent) by assisting the award recipient with travel to the AAI annual meeting. Selection is based on career progress and submission of an outstanding abstract selected for podium presentation in a block symposium at the meeting. The award recipient will be recognized and presented with a certificate at an awards presentation program at the AAI annual meeting. Support of up to \$1,500 will be provided for meeting registration and travel. *This award is supported through an endowment from Henry J. Showell and Pfizer, Inc.*

AAI-Thermo Fisher Trainee Achievement Awards

These awards recognize up to six promising trainees in the field of immunology. Selection is based on career promise and presentation of an outstanding first-author abstract selected for podium presentation in a block symposium. Awardees will receive a \$1,000 cash award and reimbursement for meeting expenses. *These awards are generously supported by Thermo Fisher Scientific.*

AAI Undergraduate Faculty Travel Grants

These grants assist undergraduate faculty in attending the AAI annual meeting. Each grant will also support travel costs for an undergraduate student of the recipient's selection. A grant of up to \$1,250 is awarded to the undergraduate faculty member, and a grant of up to \$1,000 is awarded to the selected undergraduate student.

AAI Early Career Faculty Travel Grants

These grants assist young investigators (assistant professor or equivalent) in attending the AAI annual meeting. Recipients will be reimbursed up to \$1,250 for registration and travel expenses.

Chambers-Thermo Fisher Scientific Memorial Award

Established to honor the memory of AAI member Dr. Cynthia Chambers, this award is intended to advance the career of an early career scientist who attends the AAI annual meeting and presents an outstanding abstract specifically in the area of cancer biology. The award recipient will receive a \$1,000 cash award and a certificate during an awards presentation program at the AAI annual meeting. *This award is generously supported through a grant from Thermo Fisher Scientific.*

Lustgarten-Thermo Fisher Scientific Memorial Award

Established to honor the memory of AAI member Dr. Joseph Lustgarten, this award is intended to advance the career of a mid-career scientist who attends the AAI annual meeting and presents an outstanding abstract specifically in the area of immune regulation. The award recipient will receive up to \$1,250 in travel reimbursement and a certificate during an awards presentation program at the AAI annual meeting. *This award is generously supported through a grant from Thermo Fisher Scientific.*

AAI Trainee Abstract Awards

These awards provide up to \$750 in travel reimbursement to AAI trainee members whose first-author abstracts submitted to the AAI annual meeting are selected for podium presentation in block symposia.

AAI Laboratory Travel Grants

These grants assist mid-career and senior investigators in attending the AAI annual meeting. Applicants must hold an appointment of associate professor, full professor, or equivalent; have limited research funding; and be a first or last author on one or more abstracts submitted to the annual meeting. Each grant will provide two travel awards of up to \$1,250 each: one to the PI or laboratory director and another to a member of their lab, chosen by the PI or laboratory director. Recipients will be reimbursed for registration and travel expenses.

AAI Minority Scientist Travel Awards

These awards assist eligible underrepresented minority (URM) scientists, including trainees and early-career faculty members, in attending the AAI annual meeting. Recipients will be reimbursed up to \$1,250 for registration and travel expenses.

For complete AAI Travel Award and Grant application details, visit www.AAI.org/Awards.

The 2022 AAI Awards will be presented in conjunction with

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AAI Summer Immunology Courses Go Virtual Again in 2021

The courses once again attracted record-breaking numbers of registrants

The AAI Introductory and Advanced Courses in Immunology are held annually each summer, bringing students and top names in immunology research together for an intensive week of immunology education. This year, the courses were once again presented virtually due to the global COVID-19 pandemic, attracting 956 attendees. The virtual format allowed AAI to continue its commitment to providing educational offerings despite the ongoing challenges of travel and social distancing restrictions, while also making it possible for those who would not otherwise be able to attend to do so.

2021 AAI Introductory Course in Immunology

The virtual 2021 AAI Introductory Course in Immunology drew a high of 438 registrants from the United States and 29 foreign countries. Helen S. Goodridge, Ph.D. (AAI '09), associate professor, Cedars-Sinai Medical Center, directed the course after serving as director in 2020 and co-director in 2019.

Designed for students new to the discipline of immunology or seeking more information to complement general biology or science training, the intensive AAI Introductory Course is taught by world-renowned immunologists, providing a comprehensive overview of the basics of immunology.

Scientists participating as 2021 course faculty, along with the topics they covered, appear at www.aai.org/IntroCourse. In addition to the lectures, Goodridge moderated Q&As following each lecture and a faculty panel discussion at the end of each course day.

Responses to the course survey were favorable. One attendee wrote, "Thank you for putting together such a fantastic lineup of speakers and covering such interesting topics! I enjoyed the course immensely." Another stated, "The course worked really well in the virtual format with interesting Q&A and panel discussions."

International attendees at this year's course included representatives of Argentina, Australia, Belgium, Brazil, Canada, Chile, China, Denmark, Egypt, Finland, France, Germany, Hong Kong, India, Ireland, Italy, Japan, Kenya, Lithuania, Luxembourg, Mexico, Nepal, Nigeria, Philippines, Romania, Senegal, South Korea, Switzerland, and United Kingdom. Among them were six International Union of Immunological Societies (IUIS) Scholars, recipients of support from AAI and the IUIS to attend the AAI course:

- Rebecca Ayako, Ph.D., postgraduate intern, Institute of Primate Research, Kenya



Juan Carlos Zuñiga-Pflücker, University of Toronto and Sunnybrook Research Institute, answers questions about T cell development at the AAI Introductory Course.

- Jaqueline Poleto Bragato, graduate student, Universidade Estadual Paulista (UNESP), Brazil
- Maricar W. Ching, Ph.D., assistant dean, Centro Escolar University, Philippines
- Frédéric Christian Diaz, Pharm.D., graduate student, University Cheikh Anta Diop, Senegal
- Joaquín Pedro Merlo, graduate student, Instituto de Biología y Medicina Experimental (IBYME), Argentina
- John Mokuia Mose, Ph.D., lecturer, The Technical University of Kenya, Kenya

Participants in the AAI High School Teachers Program were offered the opportunity to attend this intensive introductory course and take part in a research experience with the goal of enhancing their ability to convey the



Ilhem Messaoudi, University of California, Irvine, responds to Introductory Course attendee questions on immunity to viruses.

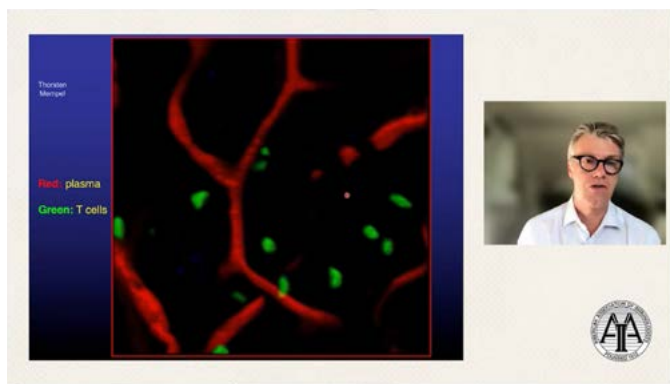
excitement of immunology to their students. This year's Intro Course attendees included three AAI High School Teachers Program participants:

- Kate Cilluffo, John P. Stevens High School, Edison, NJ
- Susan O'Meara, Colorado State University, Fort Collins, CO
- Mariel Rancel, Solorio Academy High School, Chicago, IL

2021 AAI Advanced Course in Immunology

The virtual 2021 AAI Advanced Course in Immunology drew 518 registrants from the United States and 36 foreign countries. Wayne M. Yokoyama, M.D., DFAAI (AAI '84), professor, Washington University School of Medicine in St. Louis, returned as course director.

Designed for advanced trainees and scientists who wish to expand or update their understanding of the field, the intensive AAI Advanced Course is taught by world-renowned immunologists, highlighting recent advances in the biology of the immune system and addressing its role in health and disease.



Ulrich von Andrian, Harvard Medical School and Ragon Institute of MGH, MIT and Harvard, begins the AAI Advanced Course with a lecture on the "Anatomy of the Immune Response."



Introductory Course Director Helen Goodridge moderates a faculty panel discussion with (pictured clockwise from top center) Olivia Martinez, Steven Ziegler, Matthias von Herrath, and Prosper Boyaka on Day 5 of the course.

The 2022 AAI Introductory Course in Immunology will be held July 12–17 at the UCLA Luskin Conference Center in Los Angeles, CA. Details will be published on the AAI website in February 2022 at www.aai.org/IntroCourse. (Please also check the AAI website for updates on future virtual opportunities.)

Scientists participating as 2021 course faculty, along with the topics they covered, appear at www.aai.org/AdvancedCourse. Lecturers responded to live questions from attendees in individual breakout sessions, and Yokoyama also moderated two daily faculty panel discussions that explored the intersections between immunology areas.

Responses to the course survey were favorable. One participant wrote, "This was truly the most inspiring week in my academic career! As a recent graduate, this course has made me curious about many topics of immunology that I would love to investigate." Another stated, "The virtual version of this course gave the possibility of attending to people for whom it is difficult to travel. I really enjoyed the course!"

Overseas attendees at this year's course included representatives of Algeria, Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Denmark, Finland, France, Gambia, Germany, Hong Kong, India, Indonesia, Italy, Japan, Kenya, Lithuania, Luxembourg, Mexico, Netherlands, Nigeria, Norway, Peru, Romania, Senegal, South Korea, Sweden, Switzerland, Taiwan, Tunisia, Uganda, and United Kingdom. Among them were seven IUIS Scholars, recipients of support from AAI and the IUIS to attend the AAI course:

- Juan Sebastian Henao Agudelo, Ph.D., professor, Unidad Central del Valle del Cauca, Colombia
- Marianela Leporati, graduate student, Universidad Nacional de San Luis, Argentina

EDUCATION

- Olfa Magherbi, graduate student, Institut Pasteur de Tunis, Tunisia
- Faez Amokrane Nait Mohamed, Ph.D., assistant professor, Houari Boumediene University of Sciences and Technology, Algeria (now Research Fellow, Ragon Institute of MGH, MIT and Harvard)
- James Nyabuga Nyariki, Ph.D., lecturer, The Technical University of Kenya, Kenya
- Uchenna John Ogbodo, lecturer, Enugu State University of Science and Technology, Nigeria

- Camila Fuentes Villegas, graduate student, Universidad de Chile, Chile

The 2022 AAI Advanced Course in Immunology will be held July 24–29 at The Westin Copley Place in Boston, MA. Details will be published on the AAI website in February 2022 at www.aaai.org/AdvancedCourse. (Please also check the AAI website for updates on future virtual opportunities.)



Advanced Course Director Wayne Yokoyama moderates a faculty panel discussion with (pictured clockwise from top right) Avery August, Kai Wucherpfennig, and Carrie Lucas on Day 3 of the course.



Advanced Course Director Wayne Yokoyama discusses single-cell analysis and inflammation with Alex Shalek (top right) and Jenny P.-Y. Ting (bottom) on Day 4 of the course.



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<p>IMMUNOLOGY2022™ May 6 – 10 Portland, Oregon</p>	<p>IMMUNOLOGY2023™ May 11 – 15 Washington, DC</p>	<p>IMMUNOLOGY2024™ May 3 – 7 Phoenix, Arizona</p>

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 100 participants in 2019 (the last time the session was held in person due to the cancellation of IMMUNOLOGY2020™). Because of the great interest in this topic, the AAI Newsletter features “Teaching Tools” articles highlighting ITIG presentations.

Putting Movement into Immunology Active Learning



Sharon A. Stranford, Ph.D. (AAI '20)
Professor of Biology
Pomona College, Claremont, CA

We all know that movement is good for immune function. Here, I argue that movement can also be good for *learning about* the immune system. Below, I outline two examples from a recent paper that involve movement-based activities

in immunology instruction.¹ I have used these in an elective undergraduate lecture course with 20 to 25 students; the same principles could be adapted to almost any level of immunology teaching.

By definition, active learning employs a student-centered approach, where students are *doing things* and *thinking about* what they are doing, rather than passively receiving information.² When teamwork and movement are involved, active learning also takes on a kinesthetic element. I have found these movement-based activities can lead to unforgettable “aha” moments for some students. To be effective, the activities require preparation before class (student and instructor) plus a willingness to be creative and spontaneous. As a benefit, students engage in higher order tasks, like application of new knowledge and synthesis of information. Finally, we know from research that active learning helps to close achievement gaps, increase retention, and improve comprehension for all students, and especially for those from traditionally marginalized groups.^{3,4}

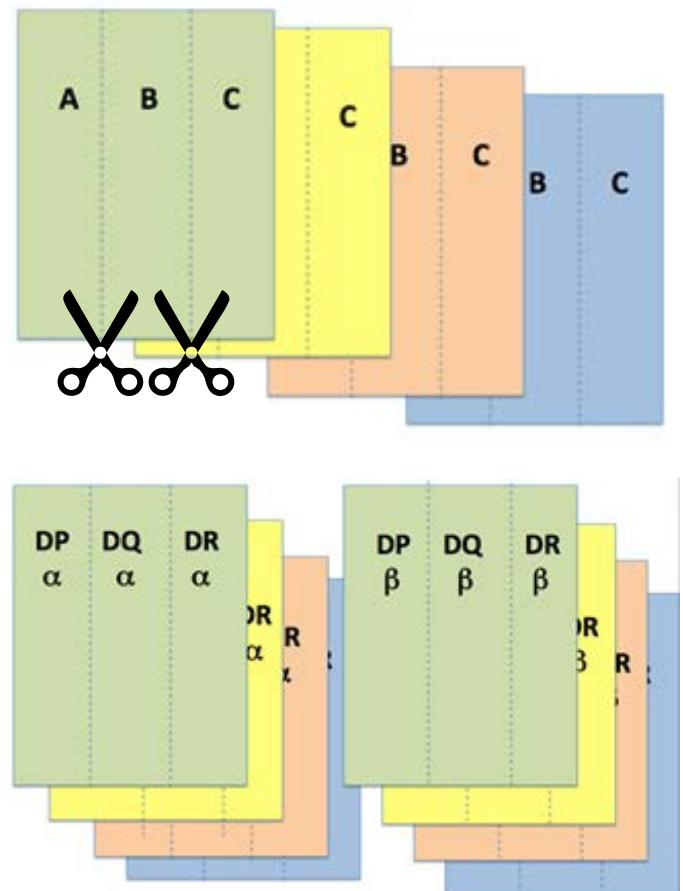
Major Histocompatibility Complex (MHC) diversity exercise

The mechanisms that regulate MHC diversity and its role in immune function are notoriously difficult concepts to master. They employ core principles like polygeny, polymorphism, and codominant expression, often taught in prerequisite courses, and thus have the potential to facilitate connected learning.

Before this activity, we cover the nuts and bolts of MHC locus and protein structure. This usually involves a prior lecture, some reading, and a short set of preclass questions that students answer online. This exercise employs packets

of labeled colored paper (representing polymorphism) to simulate MHC genes.

Students work in pairs to recreate the genomic organization of their MHC genotype. I circulate to answer questions and check work. Once all have recreated genomic arrangements, students hold up their paper genes, illustrating the phenotypic diversity in the room. This leads to excellent discussions of homo/heterozygosity, codominant expression, allotypes, and individual- *versus* population-level diversity. This part of the activity takes approximately 30 minutes. Time allowing, students may create “paper gametes,” mate with another student group, and generate a new MHC genotype, designed so that unique class II allotypes appear.



Labeled pieces of colored paper simulate MHC genes for the MHC diversity exercise. Different colors represent polymorphisms.



Students work in pairs to recreate their MHC genotype during the MHC diversity exercise.

We then discuss mate selection and the association between specific alleles and disease susceptibility or resistance (this can take upwards of 20 minutes). While I was able to adapt this activity to online learning using slides, it lacked the visual power of standing in a room with a rainbow of MHC allotypes on display!

Acting out an immune response

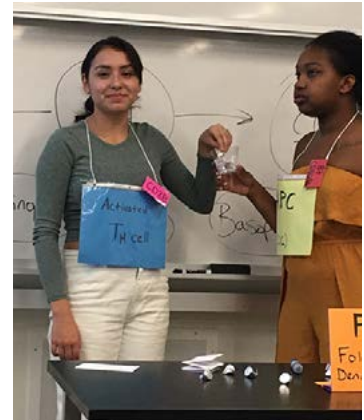
Each time I teach immunology, we spend time acting out specific immune processes. Before doing this, we cover the mechanics of antigen processing, MHC presentation, plus B and T cell activation. However, I find that putting these ideas together into a sequence is challenging for most students. This activity asks students to practice “walking through” an element of the immune response.

The students’ favorite reenactment comes during the B cell affinity maturation segment of the course and is fondly referred to as the “candy relay race.” Hershey’s kisses make nice antigens, students serve as volunteers for various cell types (wearing placards), labeled pins substitute for surface markers and co-modulatory molecules, and bubbles make a nice simulation of cytokine release. While only five to eight students are needed as volunteers, the audience can also be engaged as stage directors who tell student volunteers what they should do next. The entire process takes a chunk of time (at least 50 minutes) but leads to great clarifying questions and enlightening discussions, plus lots of candy eating and laughter.



Conclusions

Much like movement aids lymphatic circulation, students’ movement around the classroom can help to surface clogged conceptual learning. I described two examples applied to undergraduate immunology. Of note, I found that virtual instruction presented both challenges and opportunities to incorporate these and other active learning exercises into my teaching. I am certain there are many other examples of active learning in immunology teaching. I look forward to hearing of others’ experiences and having more opportunities to share these teaching strategies.



Top Image: Students act out B cell affinity maturation during a “candy relay race.”

Bottom Image: Students reenact the process of T cell activation.

References

- 1 Stranford SS, Owen JA, Mercer F, Pollock RR. Active Learning and Technology Approaches for Teaching Immunology to Undergraduate Students. *Front Public Health* (2020) 8:114. doi: 10.3389/fpubh.2020.00114.
- 2 Bonwell CC, Eison JA. Active learning: creating excitement in the classroom. *ASHE-ERIC Higher Educ Rep.* (1991) 1–98. Available online at <https://files.eric.ed.gov/fulltext/ED336049.pdf>.
- 3 Freeman S, Eddy SL, McDonough M, Smith MK, Okoroafor N, Jordt H, et al. Active learning increases student performance in science, engineering, and mathematics. *Proc Natl Acad Sci USA.* (2014) 111:8410–5. doi: 10.1073/pnas.1319030111.
- 4 Riestra AM, Morales AJ, Mercer F Targeting the achievement gap: strategies toward removing inequities in undergraduate immunology education. *Front Immunol.* (2019) 10:2906. doi: 10.3389/fimmu.2019.02906.

AAI Education Committee Seeks to Strengthen Basic Immunology Education

The AAI Education Committee recently published the new “AAI Recommendations for an Undergraduate Immunology Course,” fulfilling a years-long mission to assemble and analyze information and research that would enable committee members to identify the essential components of an undergraduate course in immunology. The recommendations, which encompass 14 topics, were published in the June 2021 issue of *ImmunoHorizons*.

An Urgent Need for Recommendations



Dr. Edith Porter

There were multiple factors demonstrating the urgent need for recommendations: the lack of a basic immunology course in most undergraduate science programs, the mountain of curriculum content available, the needs of new instructors not yet familiar with the material, and the increasing need for well-trained immunologists in multiple industries.

“Undergraduate science instructors are often overwhelmed by the sheer amount of content in the ever-changing and ever-evolving field of immunology,” said Edith Porter, M.D. (AAI '12), chair of the AAI Education Curriculum Ad Hoc Committee and a professor of microbiology and immunology at the California State University, Los Angeles. “Additionally, immunology is not a course you routinely find in an undergraduate program [see <https://bit.ly/3DVthUK>]—it typically requires completion of multiple prerequisites, and there are not enough trained immunologists going into teaching. We want to encourage the creation of more undergraduate immunology classes as well as incorporate immunology into existing curricula. To do that, we knew we needed to organize the information and offer assistance to instructors in creating a curriculum that meets their needs and those of their students.”

Finally, the increasing role of immunology in medicine and biologics-based immunotherapies has heightened the importance of equipping undergraduate students with a strong foundation in immunology in preparation for medical or graduate school and work in the biotechnology sector. The current COVID-19 pandemic has further highlighted this need; however, specific guidance in offering such a foundation was lacking.

Purpose and Usage

Designed to be as flexible as possible, the recommendations detail 14 key topics that allow and foster the development of a customized curriculum. “We’ve structured the recommendations so that an instructor can review the

topics, choose the ones they want to include in a curriculum, be as general or as in depth as they feel comfortable with, and design the curriculum to be just a few weeks in length or an entire semester,” explained Porter.

The topic areas are:

- Overview and terminology of the immune system
- Immunological techniques
- Innate immunity
- Inflammation
- Development & activation of self-tolerant adaptive immune cells
- Adaptive immune cell effector function
- Integrated immune response
- Mucosal immunity
- Active and passive immunizations
- Tumor immunology
- Allergies and hypersensitivities
- Autoimmune diseases
- Transplant rejection
- Immunodeficiencies

The goal is that all instructors, regardless of experience level, will find the recommendations to be an invaluable tool in their curricula planning. “The curriculum could stand on its own or be inserted into a biology course or other related course that might benefit from including an introduction to immunology,” said Porter.

A Commitment to Antiracism

Within the greater recommendations for an undergraduate course, the Curriculum Ad Hoc Committee was strongly committed to developing a component about inclusive and antiracist teaching that outlines opportunities to meet the needs of diverse student populations.

“When we first started drafting the recommendations in the summer of 2019, we had no idea what was coming,” said Porter. “As we worked, the pandemic struck, and then the murder of George Floyd occurred and everything that evolved from that. We had already been discussing a piece on antiracist teaching, but those events increased

the urgency and reaffirmed our decision to include this information now.

“As a professional association, we have an obligation to serve society. We want to help all students, and this will hopefully make educators more aware of those who are underserved.”

Who Benefits?

The recommendations were developed to benefit a number of groups. Undergraduate instructors and students were foremost in mind, but the Curriculum Ad Hoc Committee designed these with a broader goal: by exposing undergraduate science students to key topics in immunology, thus strengthening their knowledge base and better preparing them for graduate school science programs, whether they be drawn to medicine, pharmacy, or immunology—graduate programs will gain from recruiting these strong science students.

“The biotech industry, as well, will benefit from better undergraduate education in immunology,” stated Porter, “and ultimately, society will. In the end, that is why many of us are in this field—to provide the world with better diagnostics, therapy, and vaccines.”

This philanthropic goal was also behind the decision to publish “AAI Recommendations for an Undergraduate Immunology Course” in *ImmunoHorizons*, the AAI open-access journal. “We wanted to make the immunology community aware of the need for early training for immunology students,” said Porter, “and we wanted to

remove any barriers to educators being able to read this article. *ImmunoHorizons* was the perfect place to publish.”

Mark H. Kaplan, Ph.D. (AAI '98), editor-in-chief of *ImmunoHorizons*, agreed that the recommendations were a perfect fit for the online journal. “*ImmunoHorizons* is about looking to the future, and what could be more important to the future of our field than the education of the next generation of scientists? The current pandemic and the public health response has demonstrated that literacy in immunology is critical to overcoming current and future crises.”

Future Recommendations

Porter stressed that the recommendations are not final. “We see this as a living document. We want to formulate some sample learning outcomes for each section to provide new professors with a starting point to develop their own courses, program specific learning outcomes, and continue to update the recommendations. We would also like to connect our topics to the many wonderful AAI resources available, such as teaching resources, Pillars of Immunology, relevant journal articles, and more. Finally, we would also like to develop similar recommendations for teaching immunology at medical schools and allied health professional programs.”

To read the full “AAI Recommendations for an Undergraduate Immunology Course,” visit www.immunohorizons.org/content/5/6/448.

AAI Establishes COVID-19 Resources and Information Web Page

In response to the global coronavirus pandemic, AAI has established a *COVID-19 Resources and Information* page on its website to assist the immunology community in accessing essential pandemic resources, including articles and other information of interest to scientists and the public.

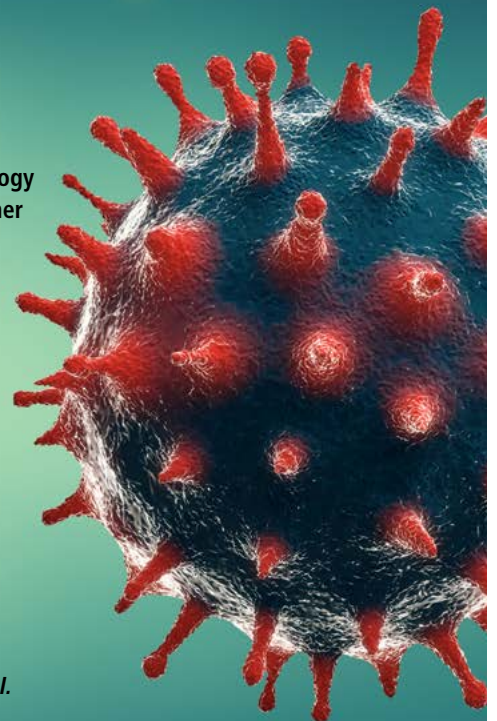
Resources and information that can be found include:

- Links to WHO and CDC websites
- AAI response to the crisis
- AAI members making news
- NIH alerts, clinical trials, and initiatives
- selected references and studies
- a global COVID-19 daily tracker
- and more

Visit the *COVID-19 Resources and Information* web page at www.aai.org/COVID-19-Resources.

AAI members are invited to submit stories of their research and other efforts related to COVID-19 for inclusion on this page.

Please send your stories to bcoulter@aai.org. Inclusion will be at the discretion of AAI.



Hero Horses in the Fight Against Disease

German technicians drawing blood from horses for diphtheria serum, c. 1895
National Library of Medicine

In the December 10, 1894, edition of the *New York Herald*, a headline announced: “ANTI-TOXINE FOR THE POOR.” After three years of rising death tolls among the city’s children due to diphtheria, the newspaper was making an appeal to its readers for donations to support a new and exciting medical treatment: antitoxin serum.¹

The publishers of the *Herald* pledged \$1,000 to begin the fund drive, and the money began coming in rapidly, doubling the initial pledge in only four days. In daily updates, readers were informed about the science behind the new treatment and the scientists at the Pasteur Institute and the New York City Department of Health who created it. Readers also learned about the crucial role of horses in serum production, beginning a long tradition of recognizing hero horses in the biologics industry.

Diphtheria

Death caused by diphtheria was not uncommon in late 19th century New York City. In the century’s next-to-last decade, two spasms of epidemic diphtheria had ripped through the city, claiming 4,894 and 4,509 citizens in 1881 and 1887 respectively.²

Diphtheria is caused by the *Corynebacterium diphtheriae* bacteria, identified in 1883 by Edwin Klebs, and typically transmitted human to human via respiratory droplets. The bacteria secrete a powerful toxin that damages body tissue, predominantly in the mucosal membranes. Early symptoms are indistinguishable from other infections: sore throat, low-grade fever, malaise, and loss of appetite. But as the disease progresses, the most identifiable symptom of diphtheria appears—first a bluish-white membrane on the tonsils, soon followed by a thick gray-green substance spread over the tonsils, larynx, and nasal tissue. Known as a pseudomembrane, it adheres to tissue and is caused by the release of toxins that increase waste products and proteins.

For patients who do not experience early recovery, the disease progresses to a more critical stage. Toxins can travel to and damage internal organs, including the heart, kidney, and liver, causing neuritis, and obstructing the airway (giving diphtheria its nickname of “the strangling angel of children”). If enough toxin is absorbed, the patient can lapse into a coma. Death can occur in six to ten days.³

Diphtheria was a major cause of illness and death in children, and in 1890 “about one half” of the deaths caused by diphtheria and croup occurred in children under the age of five.⁴ In the 1890 census, diphtheria was the sixth-highest cause of death in the United States for the previous year, behind only consumption (tuberculosis), pneumonia, diarrheal diseases, heart disease, and stillbirth. If deaths caused from diphtheria (27,815) and croup (13,862) are combined (97.75 per 100,000 of population), diphtheria becomes the number four known cause of death.⁵ (In the late 19th century “the majority of cases of death attributed to croup are due to diphtheria of the upper air passages.”⁶)

For comparison, the corresponding death rate in 1890 from diphtheria and croup was, in England and Wales, 28.8; in Ireland, 21.3; in Scotland, 44.0; in Belgium, 56.5; in Prussia, 145.4; in Austria, 120.0; and in Italy, 50.0.⁷



Painting by Richard Tennant Cooper depicting diphtheria in the form of a ghostly skeleton strangling a child, c. 1912.

Wellcome Collection

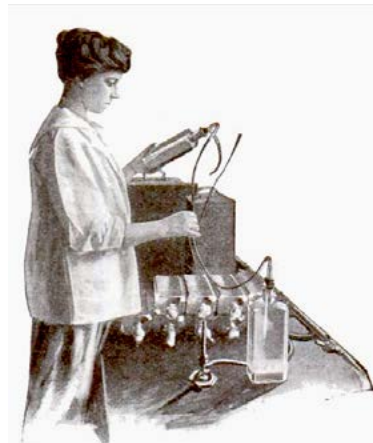


TAKING THE SERUM FROM A HORSE.

Bleeding a Horse for Serum, 1894
New York Herald

Antitoxin

The first successful treatment for diphtheria was the administration of an antitoxin. An antitoxin serum was produced by inoculating horses with small amounts of the diphtheria toxin—enough to immunize without harming the animals. The horses would then be bled periodically. The technician would cool the blood and separate the antitoxin-rich serum from the clotted red blood cells using mouth or mechanical suction. Emil von Behring had discovered this process in 1890, and diphtheria antitoxin produced via a methodology created by Émile Roux at the Pasteur Institute was being used with great success in Europe. The small amounts of antitoxin brought to the United States by individual scientists saved a few lives but could not put a dent in the growing diphtheria problem here.



Preparing the Serum
Popular Science

Diphtheria Antitoxin in New York

At the New York City Department of Health, pathologist Hermann R. Biggs and laboratory director William H. Park (AAI 1916, AAI president 1918–1919) were following the news from Europe about the successes of antitoxin treatment, and along with several other leading physicians and scientists, appealed to the *Herald* to start the fund drive. Their backing prompted many New Yorkers, rich and poor, to make contributions. Nathan Strauss, owner of Macy's, gave \$500, while others gave a dollar or took up small collections at their offices.⁸ World-famous opera singers and actors made significant donations as well.

Just five days after the initial announcement, Biggs, Park, and T. Mitchell Prudden began inoculation of the first horses at the Department of Health, and quickly expanded the antitoxin production facility into new stables that they called the "Herald Annex."⁹ Park and his new colleague Anna Wessels Williams (AAI 1918) were able to improve upon Roux's method for making diphtheria toxin with

which to inoculate the horses. Williams had compared several different strains and found one that produced as much toxin *in vitro* in one week as Roux's had in a month.¹⁰

By Christmas 1894, 30 horses were busy producing antitoxin. On the first day of the new year, Park administered the first doses of serum treatment to two children at the Willard Parker Hospital, with "favorable reactions," even though one of the children had not been expected to survive.¹¹

Park immediately began a six-week trial of the antitoxin and demonstrated that when given to patients early in the disease's course, it was effective in stopping further

progression.¹² This success led to the widespread adoption of serum production by municipal health departments in many other American cities.

A year after the initial fundraising appeal went out, the Department of Health passed a resolution acknowledging the contributions of the *Herald* Anti-Toxine Fund, which eventually totaled \$7,496.82, to help begin the production of antitoxin and make it available to the poor of the city.¹³

ANIMAL No. 299		Color, Roan					
Bred by [illegible]		Age, 8					
Purchased Sept 11/11		No. of S Cost, \$100.00					
		Final Disposition, Delivered Dec 25/11					
PRODUCTION				FORWARDED		DESTROYED	
Date	Time	Amount	Color	No. of Bottles	Quantity C.C.	No. of Bottles	Quantity C.C.
1906							
Jan 14	10:00	2	500.00	5/15	0.6	2	800.00
Feb 1	11:00	3	740.00	2/20	0.6	3	740.00
Feb 10	10:00	4	710.00	4/27	0.6	4	710.00
Feb 15	10:00	3	650.00	5/27	0.6	3	650.00
Feb 24	10:00	2	670.00	5/19	0.6	2	670.00
Mar 1	10:00	2	470.00	5/22	0.6	2	470.00
Mar 10	10:00	2	480.00	5/22	0.6	2	480.00
Mar 18	10:00	3	720.00	5/28	0.6	2	720.00
Mar 25	10:00	3	750.00	4/6	0.6	3	750.00
April 1	10:00	2	740.00	4/12	0.6	2	740.00
Apr 7	10:00	2	740.00	4/26	0.6	2	740.00
Apr 15	10:00	2	770.00	4/30	0.6	2	770.00

Serum Horse Record Book, New York City Department of Health, 1909
National Museum of American History

The St. Louis Antitoxin Tragedy

Following New York's success, St. Louis, MO, set up a municipal diphtheria antitoxin production facility, but lack of careful oversight led to tragedy. A retired milk-wagon horse named Jim provided the serum for the city's antitoxin, which initially proved effective. But at the end of October 1901, May and Bessie Baker, two sisters aged four and six, died after being given diphtheria antitoxin. Their two-year-old brother died a few days later, also after receiving antitoxin treatment. Diphtheria did not kill them, though; they all died of tetanus.¹⁴



Separating the serum from blood by mouth, 1894
New York Herald

The children's doctor, R. C. Harris, had been called to treat Bessie, who was suffering a severe case of diphtheria. He gave the antitoxin to all three children as a precaution. Harris reported the deaths to the St. Louis Health Department and discovered that at least two other children who had received antitoxin from the city supply had also been killed by otherwise unexplained tetanus.¹⁵

Inquest

Officials at the Health Department began an investigation and within days announced that the serum had come from a horse named Jim. The old horse had been inoculated on September 22 and bled on September 30. His handlers recognized signs of tetanus the very next day and euthanized Jim on October 2. According to the Health Department's records, none of the serum from the September 30 blood draw had been distributed or used. Jim had also provided serum on August 24, but at that time he had been in perfect health. All of the serum had been prepared under the supervision of the city bacteriologist, Amand Ravold.¹⁶

By November 5, 11 St. Louis children had succumbed to a painful death from tetanus, and a legal inquest had begun taking testimony. A veterinarian testified that Jim should have been immunized against tetanus, a practice that was "in vogue" at east coast antitoxin facilities. Robert Funkhouser, the city coroner, determined that serum from the September 30 blood draw had in fact been used to produce serum, and furthermore that some of that serum had been mislabeled as part of the August 24 batch. He confirmed through testing that this serum was tainted with tetanus toxin.¹⁷

Surprise Testimony

On November 30, assistant bacteriologist Martin Schmidt finally broke his silence, testifying that Ravold had not tested the serum on guinea pigs before its release. He had kept quiet about this because of his personal friendship with Ravold. Schmidt also implicated Henry Taylor, an African American janitor in the Department of Health, who had been given unlabeled flasks of serum from both blood draws and directed to bring them to Schmidt, with no way to distinguish them but reliance on his own memory. Taylor, of course, had no idea that any of the serum was tainted.¹⁸

The final outcome of the inquest was the dismissal of both Ravold and Taylor. Officially, responsibility for the deaths of 13 children was judged to be Ravold's. Taylor bore no blame for the tragedy, but the inquest commission decided he had obstructed the investigation with contradictory statements during his testimony. No criminal proceedings were recommended.¹⁹

Federal Regulation of Biologics

The tragedy in St. Louis could have been a disaster for the future use of antitoxin, but the inquest clearly showed that the serum itself was not the culprit. Diphtheria remained a dreadful threat to children, and antitoxin was so far the only reliable treatment or preventative. To preserve both safety and public confidence in antitoxins and vaccines, Congress passed the Biological Products Act of 1902, also known as the "Virus-Toxin Law." The Act required federal licensing of facilities producing biologics for interstate shipment, and established safety reviews and approvals before products could be released. Authority to enforce the Act was given to the Hygienic Laboratory of the Marine Hospital Service, which evolved into the National Institutes of Health in 1930.²⁰



DOCTOR AMAND RAVOLD.
Dr. Amand Ravold, St. Louis City
Bacteriologist, 1901
St. Louis Republic

Horses as Heroes

With new national standards for biologics, serum production expanded rapidly to fight not only diphtheria but a host of other diseases. The advances in treatment and immunization could not have happened without the quiet work of the horses who provided serum. They are largely forgotten now, but in their day, many became famous and widely adored for their contributions to health science. Even into the 1930s, only about half of the horses inoculated would produce antitoxin.²¹ Individual horses became heroes for their ability to reliably produce large amounts of potent serum.

References

- ¹ NYC deaths from diphtheria: 1891, 1,361; 1892, 1,436; 1893, 1,970. "All Eager for Anti-Toxine," *New York Herald*, December 11, 1894.
- ² Gretchen A. Condran, "Changing patterns of epidemic disease in New York City," in *Hives of Sickness: Public Health and Epidemics in New York City*, 31.
- ³ Anna M. Acosta, et al. "Diphtheria," Centers for Disease Control and Prevention, p. 107–8, accessed July 2, 2021, <https://www.cdc.gov/vaccines/Pubs/pinkbook/downloads/dip.pdf>.
- ⁴ U.S. Department of Commerce, Bureau of the Census. *Report on the Vital and Social Statistics in the United States at the Eleventh Census: 1890; Part I—Analysis and Rate Tables* (Washington, DC: Government Printing Office, 1896), 254.
- ⁵ *Report on the Vital and Social Statistics*, 223, 245.
- ⁶ *Report on the Vital and Social Statistics*, 245
- ⁷ *Report on the Vital and Social Statistics*, 246.
- ⁸ "Anti-Toxine Grows in Favor," *New York Herald*, December 13, 1894. Strauss was uncle-in-law to Richard Weil (AAI 1914, president 1916–17). See "The Short and Influential Life of Richard Weil" in the December 2019 issue of *The AAI Newsletter*.
- ⁹ "Remedy for Diphtheria," *New York Herald*, January 2, 1895.
- ¹⁰ William H. Park, "The First Production of Diphtheria Antitoxin in the United States," *Canadian Public Health Journal* 27, no. 3 (March 1936), 111. The Park-Williams No. 8 strain was also known as "American strain #8."
- ¹¹ Park, 111.
- ¹² Park, 112.
- ¹³ "Its Fund a Success," *New York Herald*, December 1, 1895.
- ¹⁴ "City Anti-Toxin Given to Babies Caused Deaths," *St. Louis Post-Dispatch*, October 30, 1901; "Coroner Will Make an Investigation," *St. Louis Republic*, October 31, 1901.
- ¹⁵ "Coroner Will Make an Investigation," *St. Louis Republic*.
- ¹⁶ "Coroner Will Make an Investigation," *St. Louis Republic*; "Antitoxin Inquest," *St. Louis Globe-Democrat*, November 3, 1901.
- ¹⁷ "Emma Mary Ernst is the Eleventh Tetanus Victim," *St. Louis Republic*, November 5, 1901; "Veterinarian's View of City's Antitoxin," *St. Louis Republic*, November 12, 1901.
- ¹⁸ "Ravold's Helper in Serum Work Tells New Story," *St. Louis Post-Dispatch*, November 30, 1901.
- ¹⁹ "I Propose to Fix the Responsibility Specifically,' Mayor Wells at Tetanus Inquiry," *St. Louis Republic*, December 13, 1901.
- ²⁰ Peter B. Hunt, "The Evolution of Federal Regulation of Human Drugs in the United States: An Historical Essay," *American Journal of Law & Medicine* 44, 407.
- ²¹ "One Animal at Michigan Laboratory Credited with Saving 75 Human Lives," *Detroit Free Press*, August 13, 1933.

Hero Horses

Throughout the 20th century, horses remained on the front lines as indispensable sources of antitoxin serum against a wide array of diseases. Many of them became well known for their exceptional service. Here we present profiles of a few of these hero horses.



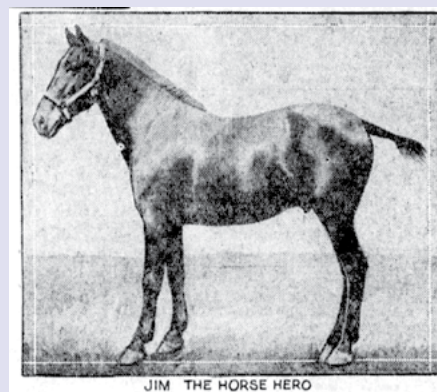
Old Faithful, the "\$175,000 Horse"
Who's Who Among the Microbes

Old Faithful

At the New York City Department of Health, meticulous records were kept on all the horses and other animals used in serum production. Because there were so many, most were officially identified only by a number. Occasionally, however, one would earn a name, like Old Faithful, the "\$175,000 horse" that Park and Wessels featured in *Who's Who Among the Microbes*. While many horses gave blood for only a few years, this former firetruck horse earned his name by supplying enough serum over his long second career to treat more than 20,000 children.

Jim (Mulford)

Not to be confused with the unfortunate Jim of St. Louis, Mulford's Jim assisted Frank M. Huntoon (AAI 1918) with the production of antipneumococcic serum in the 1920s. After pneumonia killed so many during the First World War and the influenza pandemic, an effective treatment for pneumonia was a high priority. Huntoon inoculated Jim with killed pneumococcus bacteria to immunize the horse, and then again with live bacteria to stimulate increased antibody production. Before the era of antibiotics, serum treatment for pneumonia was a revolutionary innovation, reducing mortality by up to two thirds.¹ Huntoon published some of the results of his collaboration with Jim in *The Journal of Immunology*.²



Jim, Mulford's Pneumonia Serum Horse, 1923
Coshocton Tribune

King Hi

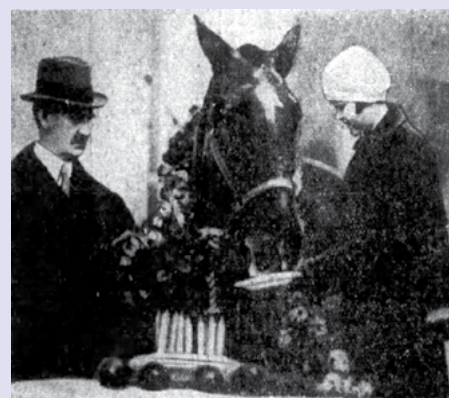
King Hi started life as a racehorse and show jumper. When he developed fistulous withers following an injury in 1930, he entered semi-retirement on the health farm at Michigan State University. There, King Hi was inoculated with both diphtheria and influenza. He produced serum for a few years before he recovered enough to return to athletics. In 1938, King Hi was a champion show jumper for the U.S. Army equestrian team and even qualified for the U.S. Olympic team. Unfortunately, he was never able to compete on the world stage because the 1940 and 1944 summer Olympics were cancelled due to the Second World War.³



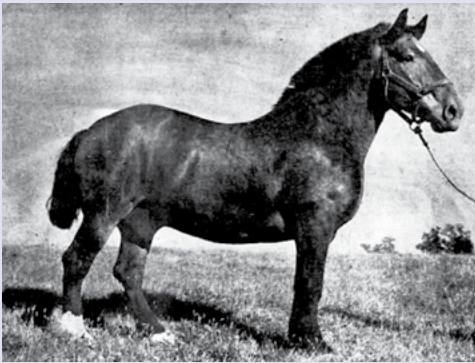
King Hi, ridden by Capt. Royce Drake
Horse Forum

Old Doc Dobbin

The star at pharmaceutical company E. R. Squibb & Sons was a large black Percheron draft horse named Doc Dobbin, who produced over 41,000 doses of diphtheria antitoxin. To celebrate the role of animals in the fight against disease, Squibb Vice President John F. Anderson (AAI 1918) hosted a birthday party for Old Doc on November 9, 1930, attended by children from a local school. In his copious free time, Old Doc "had nothing to do but gallop around the pastures provided for him." When the horse passed away in 1932 at the age of 21, he received glowing obituaries in newspapers across the country, including the *New York Times*.⁴



Old Doc Dobbin at his birthday party, with John F. Anderson
Ridgewood Herald



Jumbo, 1942
Popular Science

'Jumbo' Donated 450 Gallons of Blood in His Lifetime



Likeness of Famous Horse Preserved for Posterity in Plaque of Barre Granite

Jumbo, 1951
Burlington Free Press

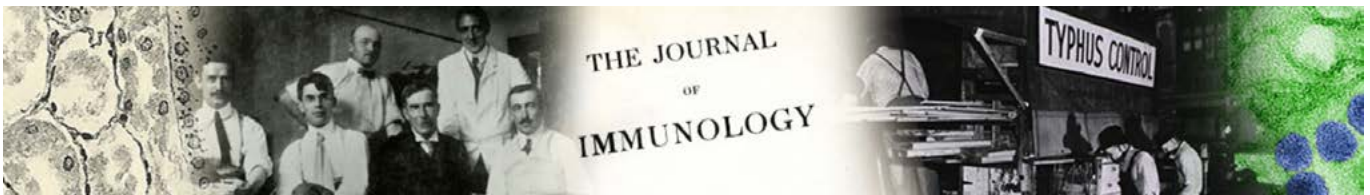
Jumbo

During the First World War, gas gangrene was a serious problem for soldiers in the trenches, and antitoxin would be needed in the next war. At Lederle Laboratories, Jumbo served for 11 years producing antitoxin to treat gas gangrene, as well as for pneumonia and tetanus. Twice a month, his caretakers drew up to two-and-a-half gallons of blood; the rest of his time was spent in leisure. In 1940, the one-ton Belgian draft horse retired to become a pet of the laboratory, and after his death the local stoneworkers' guild presented Lederle with a granite plaque honoring his service.⁵

Next page: See our new history feature, "Material Culture of Immunology," to learn about First Flight, another hero horse.

References

- ¹ "Dethroning the King of the Men of Death," *Public Opinion*, June 2, 1924; "Frustration and Foundation: Management of Pneumonia Before Antibiotics," Harry F. Dowling, *Journal of the American Medical Association*, 220, no 10, 1341.
- ² F. M. Huntoon and S. Etris, "Antibody Studies: II. The Antigens: Recovery of Antibody from Sensitized Antigens: Technic," *The Journal of Immunology* 6, no. 2: 117–22; F. M. Huntoon, P. Masucci, and E. Hannum, "Antibody Studies: III. Chemical Nature of Antibody," *The Journal of Immunology* 6, no. 2: 185–200; F. M. Huntoon and S. H. Craig, "Polyvalent Antibody Response to Multiple Antigens," *The Journal of Immunology* 6, no. 3: 235–47.
- ³ "Serum Horse Will Be Army's Ace," *Detroit Free Press*, April 25, 1938.
- ⁴ "Doc Dobbin is Dead," *Hope (Arkansas) Star*, May 16, 1932; "Mickey' Succeeds 'Old Doc Dobbin' at E. R. Squibb & Sons Laboratories," *Central New Jersey Home News*, May 12, 1932; "Horse Hero in Fight on Diphtheria is Dead," *The New York Times*, May 12, 1932.
- ⁵ "Animals Contribute Vital Help to Humans," *St. Louis Post-Dispatch*, November 11, 1963; "'Jumbo' Donated 450 Gallons of Blood in His Lifetime," *Burlington Free Press*, June 22, 1951.



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.

HISTORY

Material Culture of Immunology: “First Flight”

This is the first in a new series of features highlighting objects in museums connected to the history of immunology. Material culture consists of the physical objects that help us understand cultural and social relations. These artifacts illustrate the role of immunology throughout history.

The halter and lead pictured at right were worn by First Flight, a horse that was the world's sole source of botulinum antitoxin for more than 10 years.

First Flight was always a difficult horse to lead. Although he was bred as a racehorse, he wasn't cut out for the track. For a time, he found work in the Caisson Platoon at Arlington National Cemetery, but even the quieter crowds there made him nervous. In 1978, First Flight got a transfer to the U.S. Army Medical Research Institute of Infectious Disease (USAMRIID) at Fort Detrick in Frederick, MD, to be a living factory for antitoxin against the most toxic substance in the world.



First Flight's Harness and Lead
National Museum of American History



Botulism antitoxin serum, 1990
National Museum of American History

To produce the first botulinum antitoxin, First Flight was injected with modified toxoids from all seven strains of *Clostridium botulinum*, then with the live bacteria once he developed immunity. From his blood was produced the heptavalent botulinum antitoxin (HBAT) that the Pentagon would eventually issue to troops deployed to Iraq in the Gulf War, reflecting the concern that Iraqi President Saddam Hussein would use biological weapons. First Flight's HBAT has also been used to treat infant botulism and foodborne botulism in adults.

First Flight was known as a spirited horse who would nip at inexperienced technicians, but a quick tug on his lead would remind him of his duty. He would then stand patiently for the blood draw before prancing off to the stable to boss around the other horses. The halter and lead bearing his name helped make this important antitoxin possible.

First Flight's halter and lead are held in the Division of Medicine and Science at the Smithsonian National Museum of American History.

AAI Grants and Awards

October 14

2022 AAI Career Awards

- **Prize/Award:** Recognizing investigators over various career stages, multiple awards honoring scientific achievement in immunology (including achievement specifically related to human immunology), distinguished service to AAI and the field, and excellence in mentoring the next generation of scientists; included are awards conferring prizes ranging from \$5,000 to \$10,000
- **Eligibility:** Any AAI member in good standing nominated by another AAI member in good standing
- **Details:** www.aai.org/Awards/Career
- **Contact:** (301) 634-7178; awards@aai.org

October 15

AAI Travel for Techniques Awards

- **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

December 14

AAI Travel Awards to IMMUNOLOGY2022™, Portland, OR

- **Prize/Award:** Awards in 11 categories recognizing the promise and bolstering the professional development of investigators of all career stages through support for travel to the AAI annual meeting
- **Eligibility:** AAI members in good standing who meet specific conditions for each award (see program details at link below)
- **Details:** www.aai.org/Awards/Travel
- **Contact:** (301) 634-7178; 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.





MEETINGS AND EVENTS



Mark Your Calendar for These Important Dates!

Dear readers, please note that the meetings listed on these pages were still scheduled as shown at press time. However, changes and/or cancellations may occur. Please check an individual meeting's website to confirm the details.

2021

VIRTUAL MEETINGS

Through October 8

54th Annual Meeting of the Society of Leukocyte Biology (SLB): Immunometabolism—Fueling the Flame of Aging, Cancer and Immunity
www.leukocytebiology.org/meetings

October 13, November 17, and December 15

B Cells in Cancer Consortium (BC3) Free Virtual Seminar Series
Each seminar features three presentations from experts in the field.
<https://bit.ly/3zYImna>

October 17–20

Cytokines 2021 (now fully virtual): 9th Annual Meeting of the International Cytokine and Interferon Society (ICIS)
<https://cardiff.cytokinesociety.org>

November 8–12

15th International Congress of Neuroimmunology, International Society for Neuroimmunology (ISNI), 3rd Global Schools of Neuroimmunology Pre-Course
www.isniweb.org/isni-nice-2020/

December 6–10

28th International Complement Workshop, International Complement Society (ICS)
www.icw2021berlin.de

December 8–9

ASI 2021: 49th Annual Meeting of the Australian and New Zealand Society for Immunology (Virtual)
www.asi2021.org

AAI ANNUAL MEETING
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2021

ON-SITE MEETINGS

October 18–21

Annual Upstate New York Immunology Conference (NYIC)

The Otesaga Resort Hotel, Cooperstown, NY
www.amc.edu/NYIC/

November 19–22

Autumn Immunology Conference

Chicago, IL
<https://autumnimmunologyconference.org>

2022

ON-SITE MEETINGS

January 22–25

60th Midwinter Conference of Immunologists

Asilomar Conference Grounds, Pacific Grove, CA
www.midwconfimmunol.org/

February 19–23

BPS2022, 66th Biophysical Society Annual Meeting

San Francisco, CA
www.biophysics.org/2022meeting

May 6–10

**IMMUNOLOGY2022™
AAI Annual Meeting**

Oregon Convention Center, Portland, OR
www.immunology2022.org



May 14–17

NK2022, 19th Meeting of the Society for Natural Immunity (SNI)

Hyatt Coconut Point, Bonita Springs, FL
www.nk2022.org/

September 20–23

**Special Joint Meeting:
Cytokines 2022 Hybrid and ILC4 2022**

Hilton Waikoloa Village, Big Island, HI

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

2023

ON-SITE MEETINGS

May 11–15

**IMMUNOLOGY2023™
AAI Annual Meeting**

Walter E. Washington Convention Center,
Washington, DC
www.aai.org/FutureMeetings



Fall 2023 (Exact Dates TBD)

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

Jerusalem, Israel
www.lc2021.org

November 27–December 2

IUIS 2023: 18th International Congress of Immunology

Cape Town International Convention Centre
Cape Town, South Africa
<https://iuis2023.org/>

2024

ON-SITE MEETINGS

May 3–7

**IMMUNOLOGY2024™
AAI Annual Meeting**

Phoenix Convention Center, Phoenix, AZ
www.aai.org/FutureMeetings



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*Discounted rates are available through April.
Cut-off dates vary based on hotel.*

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Letter from the *ImmunoHorizons* Editor-in-Chief

The Other AAI Journal



Since 2017, *ImmunoHorizons* (*IH*) has been the little sibling in the AAI journal empire. *IH* was conceived as a destination journal for research that was not quite ready for *The Journal of Immunology* (*The JI*). *IH* is interested in research that lacks mechanism, is of a more limited scope, or that even reports

negative data, as long as the data are scientifically sound and the conclusions appropriate. *IH* has published new mouse models, bioinformatics analyses, and reports on biological variables. A recent *IH* editorial outlined the types of papers we're publishing.¹ In the past couple of years, we have refined the pipeline of transferring papers from *The JI* to *IH* and revitalized the "On the Horizon" feature in which junior immunologists provide review and commentary on current topics. Another editorial highlighted how *IH* is a truly accepting environment.²

There are many reasons to submit to *ImmunoHorizons*. But I'm betting that you haven't yet, have you? That's okay. I can wait. While we're waiting, let me outline a few of the reasons you should consider *IH* as your immunology publication destination.

The most reasonable Editorial Board in the business.

You will never receive an *IH* editor's reply that your work is incremental, or that there's no mechanism, or that your work would be more suited to a specialty journal. We *are* the specialty journal, we love work that is incremental, and if there's no mechanism.... well, we're the journal for you. One author noted that "the revision process [was] straightforward, as there was no guesswork involved in addressing the comments of the reviewers or editor."

Fast turnaround time. Almost freaky fast. *De novo* submission decision times are measured in weeks. If you are transferring your article from *The JI*, and if you do what is requested by the editor, decisions are made in days. Sometimes hours. At other journals, you usually only get rejected within hours, but we specialize in the other kind of decision.

It's an AAI journal. It's open access. What more could you want? Several authors have noted that their desire to support AAI and to have their work readily available to a wide audience

was important in their decisions to submit to *IH*. Dan Campbell, Ph.D. (AAI '08; Chair, AAI Publications Committee), Benaroya Research Institute, said "Another benefit of submitting to *IH* is that you are also supporting activities of AAI. [That support of the] immunology community sometimes gets lost when trying to decide which journal to submit to. I would much rather support the activities of AAI than the bottom line of a for-profit enterprise." Compared to some other online open-access journals, *IH* is a bargain.

Satisfaction. Authors are really happy with the process and the decision times! When was the last time you were happy with the process of getting a paper published? Author satisfaction is so high, even Mick Jagger is tempted to submit. Just look at some of these quotes from our distinguished authors:

Tonya Webb, Ph.D. (AAI '10), University of Maryland, noted "We spent more than 2.5 years re-establishing a mouse model to ensure that we had the appropriate littermate controls and found that it was a mutation that was generated [in the original strain], rather than the gene of interest, that was causing the phenotype. It felt great to get the data out into the public domain and help others avoid our experience."

Nardhy Gomez-Lopez, Ph.D. (AAI '14), Wayne State University, said "Because our [translational] study would not have been a good fit for a purely clinical or immunological journal with a narrower scope and more specific guidelines, we decided to submit it to ImmunoHorizons. Moreover, as a translational science lab, it is important that our work is accessible to both clinicians and scientists alike. Therefore, the fact that ImmunoHorizons is open access made the decision to submit our work here very easy."

So, think about it. Maybe you've got a report that's just not quite complete enough for some of the other journals. Maybe you've got some new analyses or a new model. And maybe, with your decline from *The JI*, you received an invitation to transfer your article to *IH*. Submit today. Submit early. Submit often. And put yourself on a path to finding your own *ImmunoHorizons*.

Sincerely,

Mark K. Kaplan, Ph.D. (AAI '98)
Editor-in-Chief, *ImmunoHorizons*

References

- ¹ Kaplan MH. (2021) *ImmunoHorizons: What We're Publishing*, *ImmunoHorizons*, 5(3):133-134.
- ² Kaplan MH. (2021) *Becoming an ImmunoHorizons Author: Or How I Learned to Accept Myself*, *ImmunoHorizons*, 5(5):336-337.



*Immuno*Horizons: A Unique Purpose

ImmunoHorizons publishes your incremental work—your mice with minimal phenotypes, your technical insights, your detailed bioinformatics analyses—under the supervision of the most progressive editorial board in science publishing.

These studies of a more limited scope are stepping stones that add to the greater knowledge in the field of immunology and can benefit all researchers. **ImmunoHorizons** gives scientists a forum to publish these initial but insightful and potentially important findings!

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IMMUNOLOGY2022™

105TH ANNUAL MEETING OF THE AMERICAN ASSOCIATION OF IMMUNOLOGISTS

OREGON CONVENTION CENTER | PORTLAND, OR

FRIDAY, MAY 6 – TUESDAY, MAY 10



IMPORTANT DATES

AWARDS

Career Awards Nominations	Now Open
Career Awards Nominations Due	October 14, 2021
Travel Award & Grant Applications Open	November 2, 2021
Travel Award & Grant Applications Due	December 14, 2021

HOUSING

Discounted Housing Reservations	Now Open
Discounted Hotel Rates End	April 3-14, 2022 (<i>varies by hotel</i>)

ABSTRACT SUBMISSION

Abstract Submission Opens	November 2, 2021
Abstract Submission Closes	December 14, 2021

REGISTRATION

Registration Opens	December 6, 2021
Early Registration Discount Ends	March 29, 2022

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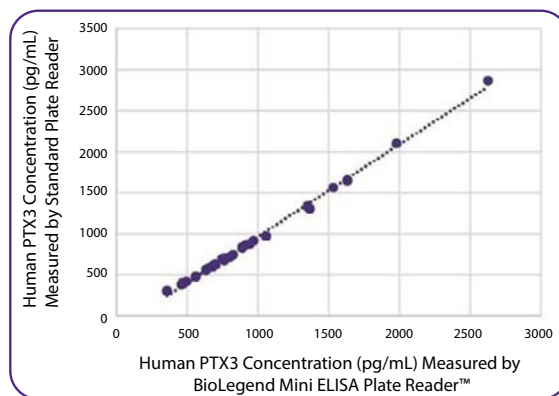
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