

SPECIAL ISSUE

AAI NEWSLETTER

IMMUNOLOGY 2014™

PROGRAM PREVIEW



MARCH/APRIL 2014



The American Association
of Immunologists

AAI Annual Meeting
May 2–6, 2014
Pittsburgh, Pennsylvania
www.immunology2014.org

Non-Profit
Organization
U.S. Postage
Paid
Permit No. 356
York, PA

DISCOVER A NEW CELL SORTING EXPERIENCE.

(AUTOMATED SETUP + AFFORDABILITY = REVOLUTIONARY)



S3™ Cell Sorter

Visit us at Booth 508 at AAI

Imagine a cell sorter that costs up to 50% less than traditional systems. A cell sorter so easy to use that it doesn't require a dedicated flow operator. Introducing the S3™ Cell Sorter. This state-of-the-art benchtop solution is packed with automated features, making it ideal for handling everyday jobs. Which means the instruments you already have are freed up to focus on more complex experiments. This is cell sorting like you've never seen it.

Watch the Video at www.bio-rad.com/info/sortcells

BIO-RAD

AAI President's Invitation to IMMUNOLOGY 2014™



Marc K. Jenkins, Ph.D.
AAI President

Dear AAI Members, Guest Society Members, and Colleagues,

It is my pleasure to invite you to IMMUNOLOGY 2014™, to be held May 2–6 in Pittsburgh, Pennsylvania. With its beautiful downtown, great bluff-top restaurants, art museums, and sports venues, Pittsburgh will be

a great setting for our meeting. I hope to take in a Pirates game myself and reminisce about Roberto Clemente, Willie Stargell, and Manny Sanguillén—the great Pirates of my boyhood.

The magnificent David L. Lawrence Convention Center will provide spectacular space and cutting-edge technology for our meeting. And we can feel good about meeting there because the Lawrence Center is a LEEDS-certified “green” convention center—the first in the world, in fact. Its graceful roof and terrace gardens serve more than an aesthetic function. The “living roof” combats urban heat effects, and the gardens supply the heirloom vegetables and herbs served there. The center’s well-designed layout will enable you to move from one session to another without missing a slide. This monument to scientific and technical innovation is a particularly fitting venue for the AAI meeting, where our own field’s innovators will discuss the many current breakthroughs and advances underway.

It’s a great time to be an immunologist. Cancer immunotherapy was picked by *Science* magazine as “Breakthrough of the Year 2013,” and innate immunity

research is exploding. And, as the most comprehensive and affordable immunology meeting in the world, IMMUNOLOGY 2014™ will be THE place to keep abreast of current developments in our exciting field. It will offer Major Symposia, Distinguished Lectures and Awards Lectures, Guest Society Symposia, NIH Institute-sponsored Symposia, 74 Block Symposia, and more than 1,700 poster presentations.

Of course, I am especially excited about the President’s Symposium, which I had the privilege of organizing this year: The Anatomy of the Immune Response. An all-star line-up, including Ron Germain, Michel Nussenzweig, Ellen Robey, and Jason Cyster, will take us on the immunologists’ “Fantastic Voyage.” This special event will be dedicated to the memory of our friend and colleague Leo Lefrançois, a leader in this field, whom we lost in 2013.

And, thanks to our corporate sponsors, we have many exciting social events in store for you to meet and greet your colleagues from far and near.

IMMUNOLOGY 2014™ will be the culmination of the hard work of the AAI Council, Program Committee, and AAI staff. Their efforts have set us up for a scientifically exciting and professionally rewarding meeting. So, like the Ohio, Monongahela, and Allegheny Rivers, let’s converge on Pittsburgh and celebrate our field.

See you in Pittsburgh!

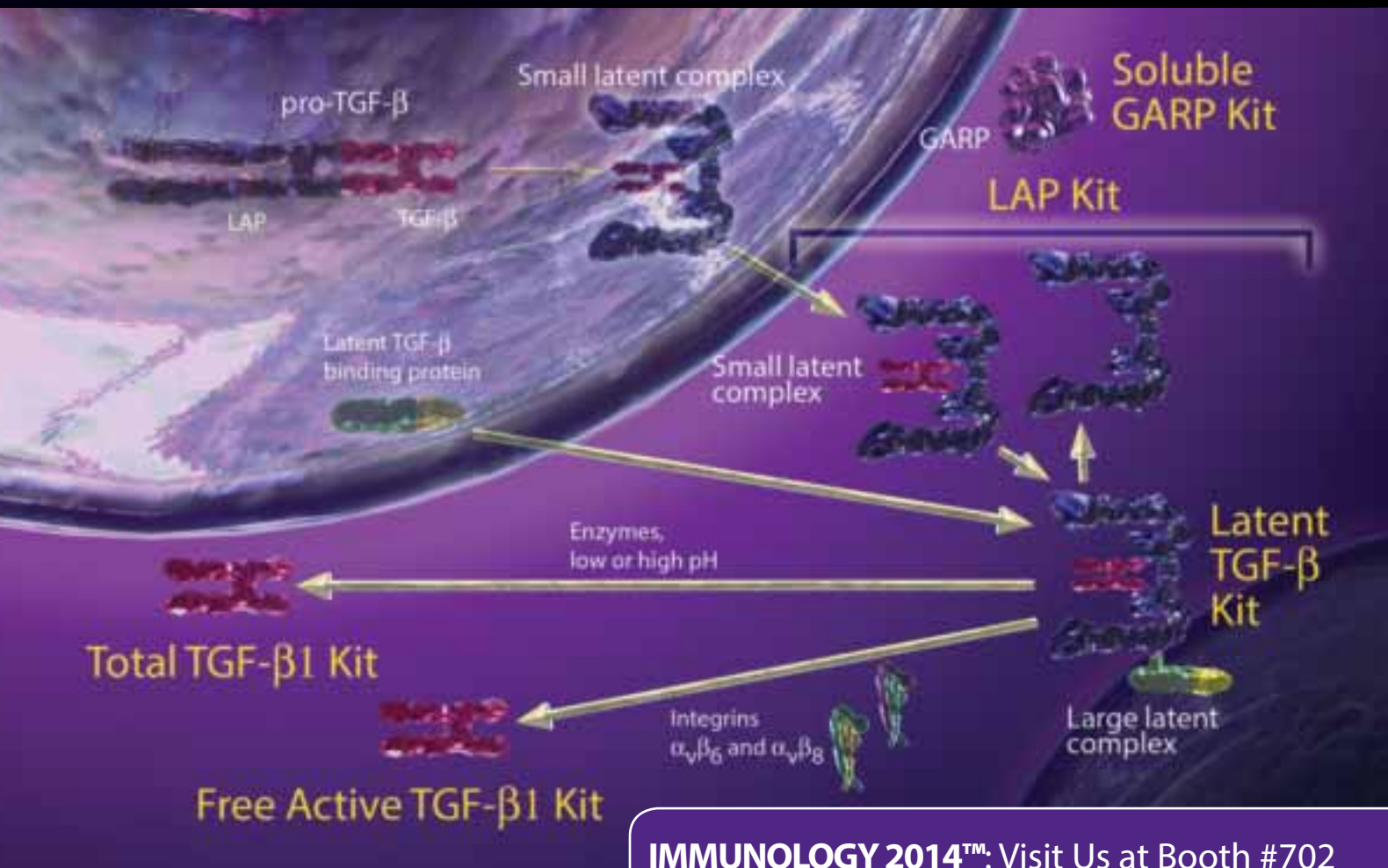
Marc K. Jenkins, Ph.D.

AAI President

In This Issue

- | | | | |
|--|--|---|--------------------------------|
| 3 AAI President's Invitation Letter | 13 In Memoriam: Donald L. Morton | 39 2014 Meeting Sponsors | 60 AAI Outreach Program Update |
| 5 Focus on Public Affairs | 14 AAI Looks Back: The Emergence of Immunology in Pittsburgh | 50 2014 Meeting Exhibitors | 62 2013 AAI Member Donations |
| 7 2014 AAI Career Awardee Profiles | 21 2014 Annual Meeting Preview | 54 2014 AAI Trainee Abstract, Poster Awardees | 63 Grant and Award Deadlines |
| 12 Members in the News: Wendy Havran Appointed AAI Program Chair | | 58 2014 AAI Introductory Immunology Course Lineup | |
| | | 59 2014 AAI Advanced Immunology Course Lineup | |

The Most Complete TGF- β ELISA Kits



IMMUNOLOGY 2014™: Visit Us at Booth #702

TGF- β Family

Transforming growth factor beta (TGF- β) is a multifunctional cytokine that plays pivotal roles in diverse biological processes, including the regulation of cell growth and survival, cell and tissue differentiation, development, inflammation, immunity, hematopoiesis, and tissue remodeling and repair. Its complex biology requires a diverse set of quantitative assay tools to measure the various components involved in the TGF- β 1 pathway.

LEGEND MAX™ ELISA Kits:



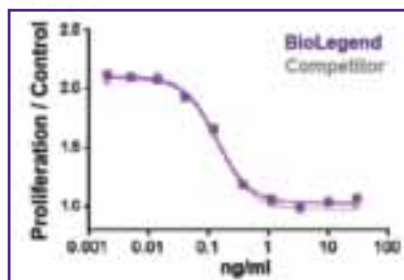
- Free Active TGF- β 1 Kit
- Total TGF- β 1 Kit
- Latent TGF- β Kit
- Soluble GARP Kit
- LAP Kit

View 150+ ELISA Kits & Sets: biolegend.com/elisa



Recombinant Proteins also available.

Compare Quality of Bioactive TGF- β :



Recombinant Human*

- TGF- β 1
- TGF- β 2
- TGF- β 3

*Also reactive with mouse cells.

Human TGF- β 1 effect on HT-2 cell proliferation induced by IL-4.

View 170+ Recombinant Proteins:
biolegend.com/recombinant_proteins

BioLegend is ISO 9001:2008 and ISO 13485:2003 Certified

Toll-Free Tel: (US & Canada): 1.877.BIOLEGEND (246.5343)

Tel: 858.768.5800

biolegend.com

08-0035-03

World-Class Quality | Superior Customer Support | Outstanding Value



*The American Association
of Immunologists*

9650 Rockville Pike
Bethesda, MD 20814-3994
Tel: 301-634-7178
Fax: 301-634-7887
E-mail: infoaai@aai.org
www.aai.org

Member Services

Tel: 301-634-7195
E-mail: members@aai.org

*The Journal
of Immunology*

Tel: 301-634-7197
E-mail: infoji@aai.org
www.jimmunol.org/

Council

President

Marc K. Jenkins, Ph.D.

Vice President

Linda A. Sherman, Ph.D.

Past President

Gail A. Bishop, Ph.D.

Secretary-Treasurer

Mitchell Kronenberg, Ph.D.

Councillors

Dan R. Littman, M.D., Ph.D.
Arlene H. Sharpe, M.D., Ph.D.
Wayne M. Yokoyama, M.D.
JoAnne L. Flynn, Ph.D.

Ex Officio Councillors

Leslie J. Berg, Ph.D.
Pamela J. Fink, Ph.D.
M. Michele Hogan, Ph.D.
Eugene M. Oltz, Ph.D.

Executive Director

M. Michele Hogan, Ph.D.

www.aai.org/

About/Departments-Staff

FOCUS ON PUBLIC AFFAIRS

AAI Submits Testimony on the Value of Government Employee Attendance at Scientific Meetings and Conferences

AAI recently submitted testimony to the Senate Committee on Homeland Security and Governmental Affairs regarding the value of government employee attendance at scientific meetings and conferences.

The testimony became part of the hearing record for the committee's January 14, 2014, hearing entitled, "Examining Conference and Travel Spending Across the Federal Government."

Over the last several years, policy changes within the federal government have limited the ability of federal employees to attend meetings and conferences. In May 2012, the White House Office of Management and Budget issued a memorandum, which, among other things, required agencies to reduce their travel budgets by 30 percent (from the fiscal year 2010 level) and to maintain this reduced level of spending through fiscal year 2016. The U.S. Department of Health and Human Services (HHS), of which the National Institutes of Health is part, responded by giving additional scrutiny to travel requests and implementing a more arduous approval process for travel to meetings where the total expense to HHS is more than \$75,000. Congress also acted, requiring agencies to submit annual reports on all government-run conferences that cost the federal government more than \$100,000. Legislation pending in Congress seeks to impose further restrictions on federal employee travel.

While AAI understands, as stated in its testimony, that these policy changes "were promulgated in an effort to prevent excessive or unnecessary government spending and to prevent abuses," AAI believes that they "have had an unintended and deleterious effect" on scientists and the scientific enterprise and "have made government scientists feel cut off from the rest of the scientific community, wreaked havoc with their ability to fulfill professional commitments, and undermined the morale of some of the government's finest minds."

To read the full AAI testimony, please visit http://aai.org/Public_Affairs/index.html.



MEET THE AAI PUBLIC POLICY FELLOWS AT IMMUNOLOGY 2014™

May 3, 4, and 5
2:30 PM to 3:45 PM
Location: AAI Booth (Booth #705)

NIH Announces New Cross-Sector Partnership to Accelerate Diagnostics and Treatments

The National Institutes of Health (NIH) recently announced a new partnership with 10 biopharmaceutical companies, the U.S. Food and Drug Administration, and eight non-profit organizations that will aim “to transform the current model for developing new diagnostics and treatments by jointly identifying and validating promising biological targets of disease” (<http://www.nih.gov/science/amp/index.htm>). This alliance, formally known as the Accelerating Medicines Partnership (AMP), is slated to be a five-year collaboration with a total cost of about \$230 million. A little more than one-half of that funding will come from NIH.

AMP will focus initially on three disease areas: Alzheimer’s disease, type 2 diabetes, and autoimmune disorders (specifically, rheumatoid arthritis and lupus). According to the NIH news release announcing the partnership, “[t]hree- to five-year, milestone-driven

pilot projects in these disease areas could set the stage for broadening AMP to other diseases and conditions” (<http://www.nih.gov/news/health/feb2014/od-04.htm>).

AMP participants have agreed to share expertise, data, and resources (including blood and tissue samples). Participants may not use any of the discoveries for their own drug research until all of the project data have been made publicly available.

AAI understands that there will be new requests for applications issued for the type 2 diabetes, rheumatoid arthritis, and lupus projects. *ScienceInsider* has reported that “three-disease specific NIH institutes will fund the projects” and that “[l]ater this year, the institutes will release requests for proposals to seek academic partners. The investigators who win the grants will then become part of joint disease steering committees” (<http://news.sciencemag.org/funding/2014/02/nih-10-drug-companies-partner-study-four-diseases>).

IMMUNOLOGY 2014™, Pittsburgh, PA – www.IMMUNOLOGY2014.org

Join the Celebration: 25 Years of AAI Public Affairs!!!

Saturday, May 3, 2014 • 7:00 PM – 9:00 PM • David L. Lawrence Convention Center, Room 413 - 415

with great food, fantastic company, and

The Capitol Steps

Winner, Washington City Paper’s annual Reader’s Choice poll for “Best Place to Take an Out-of-Towner 2013”

“The Capitol Steps make it easier to leave public life.”
Former President George Bush

“Some people in Washington are confused...the Capitol Steps are not.”
Vice President Al Gore

“I like it better when they make fun of Clinton.”
Newt Gingrich

“The Capitol Steps are what Washington would be like if everyone were funnier and could sing.”
P.J. O'Rourke, humorist



Tickets available when registering for the meeting. \$20 for students, \$35 for all other meeting attendees, \$50 for guests

2014 AAI Career Award Recipients

AAI proudly presents the 2014 AAI Awards for outstanding research and career achievements.

Emil R. Unanue Honored with AAI Lifetime Achievement Award

Emil R. Unanue, M.D., Washington University School of Medicine, is the recipient of the 2014 AAI Lifetime Achievement Award in recognition of a career of extraordinary scientific achievement coupled with exceptional leadership and service to AAI. This award is the highest honor bestowed by the AAI Council upon an AAI member.



Dr. Unanue has pioneered fundamental advances in the field of antigen processing and presentation, elucidating the biochemical basis of T cell recognition of antigen. His work was the first to controvert dogma that macrophages served only to destroy dead cells and pathogens, showing that these cells can actually present antigen to T cells. Unanue also made strides in the field to show that proteins need to be processed intracellularly before being recognized by T cells. In 1985, members of his lab published one of the most highly cited, pivotal immunology articles of all time, which demonstrated that major histocompatibility complex (MHC) molecules are able to bind peptides and that these MHC-peptide complexes activate T cells. Unanue's current work continues to build on these ground-breaking antigen processing and presentation studies in the context of mouse models of autoimmune diabetes and *Listeria monocytogenes* infection.

Unanue has been an AAI member since 1966 and has shown his dedication to serving his fellow AAI members over a span of 30 years. He has served as both associate editor and section editor of *The Journal of Immunology (The JI)*, as well as member and chair of the editorial board. Unanue has also served as member and chair of the Travel Awards, Publications, and Nominating Committees and as a member of the Education Committee. He has spoken at AAI annual meetings as an AAI Distinguished Lecturer and delivered the Minority Affairs Guest Lecture.

Unanue's commitment to scientific service has been wide-reaching. He has held positions on scientific advisory boards for the Lupus Research Institute, Howard Hughes Medical Institute, the National Institute of Allergy and Infectious Diseases, the Pew National Advisory Council, and the National Advisory Allergy and Infectious Diseases Council. In addition to his service to *The JI*, Unanue has served on editorial boards for numerous other scientific journals.

Unanue received his medical degree from the University of Havana School of Medicine in 1960, before serving as a research fellow consecutively at the Scripps Clinic and Research Foundation in La Jolla, California, and the National Institute for Medical Research in London, England. In 1970, he became a

faculty member of Harvard Medical School, where he attained and held the position of Mallinckrodt Professor of Immunopathology from 1974-1984. In 1985, Unanue relocated to the Washington University School of Medicine in St. Louis, Missouri, where he resided as chairman of the Department of Pathology and Immunology and Pathologist-in-Chief of Barnes-Jewish Hospital until 2006 and now acts as the Paul and Ellen Lacy Professor of Pathology and Immunology in the Department of Pathology and Immunology.

Unanue has received many accolades for his scientific contributions to basic science and immunology. He is a member of the National Academy of Sciences, the Institute of Medicine, and the Alpha Omega Alpha Honorary Medical Society. He is also a fellow of the American Academy of Arts and Sciences. Unanue is a recipient of the Albert Lasker Basic Medical Research and William B. Coley awards, the Robert Koch Gold Medal, and the Gairdner Foundation International Award, in addition to many others.

Unanue's dedication to science and service epitomizes the spirit of giving and accomplishment honored by the AAI Lifetime Achievement Award.

The AAI Lifetime Achievement Award is given annually in recognition of distinguished scientific accomplishment and extraordinary service to AAI.

AAI Excellence in Mentoring Award Bestowed upon William E. Paul

William E. Paul, M.D., National Institute of Allergy and Infectious Diseases (NIAID), National Institutes of Health (NIH), is the recipient of the 2014 AAI Excellence in Mentoring Award in recognition of his contributions to a future generation of scientists.



Dr. Paul, a highly productive researcher in the field of cytokine biology, is well known for the discovery of interleukin-4 (IL-4) and his demonstration of its functions in T helper cell differentiation. His investigations of almost every aspect of IL-4—cellular, genomic, regulatory, and signaling—have greatly enhanced our understanding of this molecule.

His other legacy is the impressive number of successful scientists who have trained in his lab. Of the more than 75 postdoctoral trainees he has mentored, many have gone on to occupy posts as professors at universities in the United States, Europe, and Asia; NIH senior investigators; high office-holders at universities and scientific foundations; or high officers at scientific corporations. Three are members of the National Academy of Sciences.

His past trainees laud Paul for his scholarly knowledge, his rigor in evaluating experimental data, and his open-mindedness to new ideas. "He liked ideas and considered those from junior fellows, including ideas that contradicted his own (especially those that contradicted his own), with great respect," says a former fellow, Fred Finkelman, McDonald Professor of Medicine and professor of pediatrics at the University of Cincinnati School of Medicine. "I learned that a hypothesis was an idea to test, not something to prove; that data take precedence over theories, which are usually wrong; and that results have to be reproducible and to make sense." Another past trainee, Anthony DeFranco, professor, Department of Microbiology and Immunology, University of California, San Francisco, expands, recalling when early experiments in the laboratory suggested that B cell activation was MHC-restricted: "I remember his saying, 'This experiment may convince reviewers, but does it convince us?' I think that statement fully encapsulates Bill's view. He wants to get the right answer; publishing papers and being an author isn't what is important, getting the right answer is what is important. [We] then went back to the drawing board and came up with an experimental setup that Bill now agreed would test the question without leaving uncertainty....When this experiment was done, we convincingly got the opposite answer, which agrees well with understanding 30 years later."

Paul's past fellows commend his generosity and selflessness, describing how Paul shifted his own research efforts to give former trainees room to grow their independent research programs. He is described as not taking credit of authorship on publications resulting from projects he had guided or encouraged, including discoveries of enormous impact to the field. Former fellow Mark M. Davis, Burt and Marion Avery Family Professor of Immunology, Stanford University School of Medicine, refers to his work on T cell receptor cloning as an example. "When this ultimately worked, in the early summer of 1983, Bill did another extraordinary thing, which was that he never asked for any credit of authorship, but was entirely content to stay in the background. This was incredibly selfless of Bill, and I can think of no other scientist I could be sure would act the same way."

Further exemplifying Dr. Paul's generosity is his orchestrated campaign to arrange the return of a Taiwanese fellow, who, because he had not yet fulfilled his military service requirement as a citizen of Taiwan, was denied permission to return from visiting his parents there. Paul's prodigious efforts resulted in the former trainee's return to report to his first faculty post within months, not years.

It is most fitting that Dr. Paul be recognized for his remarkable record of mentorship with the 2014 AAI Excellence in Mentoring Award.

Paul obtained his M.D. from the State University of New York in 1960. Following internship and residency at Massachusetts Memorial Hospitals (Boston Medical Center), he served as a clinical associate in the Endocrinology Branch at the National Cancer Institute and then as a research fellow and instructor at the New York University School of Medicine. He moved to the Laboratory of Immunology, NIAID, NIH, as a principal investigator in 1968. He was appointed to his current position of chief of the Laboratory of Immunology in 1970. In 2007, Paul was accorded the honor of being named an NIH Distinguished Investigator.

Dr. Paul is a member of the National Academy of Sciences and the Institute of Medicine and a fellow of the American Academy of Arts and Sciences. Among other prestigious honors received in recognition of his scientific accomplishment are the AAI Lifetime Achievement Award, the International Cytokine Society Honorary Lifetime Achievement Award, the Max Delbrück Medal, the Abbott Laboratories Award in Clinical and Diagnostic Immunology from the American Academy of Microbiology, and the Life Sciences Award from the Federation of American Societies for Experimental Biology (FASEB).

A member of AAI since 1967, Paul was elected to AAI Council in 1981 and served as AAI president from 1986 to 1987. He has also served as a member and chair of the AAI Nominating and Program Committees, a member of the AAI Awards and Finance Committees, an AAI representative to the FASEB Board and IUIS General Assembly, a Distinguished Lecturer at the AAI annual meeting, a faculty member at the AAI Introductory Course, and an editor for *The Journal of Immunology*.

The AAI Excellence in Mentoring Award is presented annually in recognition of exemplary career contributions to a future generation of scientists.

Carl H. June Presented with the AAI-Steinman Award for Human Immunology Research



Carl H. June, M.D., University of Pennsylvania, Perelman School of Medicine, is the recipient of the 2014 AAI-Steinman Award for Human Immunology Research. This award is given in recognition of his groundbreaking research on the control of T cell responses and the development of adoptive T cell transfer therapies.

In the 1980s, before the term "costimulation" was widely used, Dr. June showed that CD28 induced T cell activation and proliferation by a pathway independent of T cell receptor signaling. He and his colleagues then elaborated on the signaling pathway, showing its role in the survival of activated T cells and its induction by the B7 family of ligands.

For nearly two decades, June has also been dedicated to applying his knowledge of T cell costimulation to the development of new T cell therapies for HIV infection and human malignancies. His laboratory developed a cell culture system to generate large numbers of HIV-specific chimeric antigen receptor (CAR) T cells rapidly using gamma retroviruses that were tested in clinical trials of HIV patients. He also conducted a clinical evaluation of lentiviral vectors to modify T cells, initially in HIV. In 2011, June and his colleagues reported the first successful use of CD19-targeted CAR T cells in patients with advanced chronic lymphocytic leukemia (CLL), with two of three patients undergoing complete remission and one partial remission. The modified T cells were termed "serial killers" because each infused T cell was able to kill at least 1,000 tumor cells. These effects have since been shown to be durable, and

the team has reported similar antitumor responses in more CLL patients, as well as patients with B cell acute lymphoblastic leukemia. Work is underway to use the same strategy to treat other malignancies. The successful application of CAR T cells to treat cancer has generated much recent excitement and offered new hope to the cancer patient community.

“Dr. June brought several unique things to this work that made it successful,” says Kenneth M. Murphy, professor and HHMI investigator, Washington University School of Medicine. “It required Dr. June’s understanding of the detailed signaling properties of T cells and costimulatory pathways in order to engineer into the CAR constructs the appropriate type of signaling properties that made the chimeric receptors work in the proper type and quality of activation. But well beyond this, it took an ever greater (in my opinion) degree of personal dedication to the real application of this to human problems... Dr. June took enormous personal effort to organize the clinical translational side, which is far beyond the typical challenge of basic research in immunology.”

June earned his M.D. from Baylor College of Medicine in 1979. Following a research fellowship at the World Health Organization, he completed his internship and residency at the National Naval Medical Center and then a fellowship in oncology at the University of Washington and Fred Hutchinson Cancer Research Center. In 1986, he joined the faculty of Uniformed Services University of the Health Sciences, holding the rank of full professor at his departure in 1999. He currently serves as professor of pathology and laboratory medicine and professor of medicine at the University of Pennsylvania, Perelman School of Medicine.

Dr. June is a member of the Institute of Medicine of the National Academy of Sciences and the American Association of Physicians. In addition to these honors, June has received the Ernest Beutler Prize from the American Society of Hematology, the William B. Coley Award in Tumor Immunology from the Cancer Research Institute, the Philadelphia Award, the Bristol-Myers Squibb Freedom to Discover Award, the Federal Laboratory Award for Excellence in Technology Transfer, the Lifetime Achievement Award from the Leukemia and Lymphoma Society of America, and the Dexter Conrad Award from the Office of Naval Research.

June has been an AAI member since 1987 and has served AAI as a faculty member at the AAI Introductory Course in Immunology, a Major Symposium chair and speaker at the AAI annual meeting, and an associate editor for *The Journal of Immunology*.

The AAI-Steinman Award for Human Immunology Research is presented annually for significant, sustained achievement in immunology research pertinent to human disease pathogenesis, prevention, or therapy.

AAI-Life Technologies Meritorious Career Award Conferred upon Timothy A. Springer



Timothy A. Springer, Ph.D., Harvard Medical School, was chosen to receive the 2014 AAI-Life Technologies Meritorious Career Award for his seminal contributions to the discovery of immune cell adhesion molecules and the determination of how these proteins mediate cell–cell interactions and extravasation of hematopoietic cells into tissues. He has published well over 500 articles, several of which have been cited more than 1,000 times, making his “scientific impact” nearly immeasurable.

Early in his career, Dr. Springer’s lab discovered the first known adhesion molecules—integrins—including family members lymphocyte function-associated antigen-1 (LFA-1), LFA-2, and LFA-3, and their corresponding ligands, intercellular adhesion molecule-1 (ICAM-1), ICAM-2, and ICAM-3. The discovery of these molecules altered paradigms regarding cell–cell interactions, which, at that time, were thought to be regulated solely by specific receptors for antigen, complement, and Fc. Springer’s lab also defined other adhesion molecules and chemoattractants, including selectins and SDF-1.

These initial studies led to other dogma-shifting discoveries; notably, his lab demonstrated that inside-out signaling regulates adhesion molecule dynamics and helped define the mechanism of extravasation. His work also defined the structural basis for integrin activation, showing how conformational changes can be communicated across membranes to regulate ligand binding.

Springer’s work has spanned the bounds from basic research to clinical applications. He was instrumental in the discovery of mutations in adhesion molecule genes that caused leukocyte adhesion deficiency, a life-threatening disorder. Springer’s lab defined molecules important to the understanding of human viral immunology, characterizing cell surface receptors that are used for HIV and rhinovirus entry to the cell. His research has also led to the development of several therapeutics targeting adhesion molecules that have been applied to autoimmune diseases, including alefacept, efalizumab, and natalizumab. Springer has also founded biological companies, including Scholar Rock and Leukocyte, Inc., which was later purchased by Millennium Pharmaceuticals.

Michael Dustin, Muriel G. and George W. Singer Professor of Molecular Immunology at New York University School of Medicine, a former trainee of Springer’s, describes Springer as “a creative force with great insights and determination to get things done. I found him an inspirational leader as a student and continue to look to him as a leader in the field of cell adhesion.”

Springer received his Ph.D. from Harvard University in biochemistry and molecular biology in 1976 and continued his training as a postdoctoral fellow in Cesar Milstein’s lab at the University of Cambridge, England. He then returned to Harvard University as an assistant professor in 1977 and has remained a faculty member there ever since, holding appointments from the chief of the Laboratory of Membrane Immunochimistry

at Dana Farber Cancer Institute to his current positions as Latham Family Professor and professor of biological chemistry and molecular pharmacology at Harvard Medical School and professor of medicine and senior investigator of the Program in Cellular and Molecular Medicine at Children's Hospital Boston. He also holds honorary professorships at several international universities and advises a number of pharmaceutical companies.

Dr. Springer is a member of the National Academy of Sciences and a fellow of the American Academy of Arts and Sciences and the American Association for the Advancement of Science. In addition to these honors, he has received NIH MERIT Grant Awards, the Basic Research Prize from the American Heart Association, the Crafoord Prize in Polyarthritis from the Royal Swedish Academy of Sciences, and many other awards. He has served on a number of journal editorial boards, including *Cellular Immunology*, *Journal of Clinical Immunology*, and *Immunological Reviews*. Springer has also acted as a member of NIH study sections, the Howard Hughes Medical Institute Scientific Review Board, a National Research Council Committee, and the Board of Trustees at Children's Hospital Boston.

An AAI member since 1979, Springer has served as a block symposium chair for the AAI annual meeting, a member of the Nominating Committee, and an associate editor for *The Journal of Immunology*.

The AAI-Life Technologies Meritorious Career Award is given annually for outstanding research contributions to the field of immunology.

Katherine A. Fitzgerald Receives the AAI- BD Biosciences Investigator Award

Katherine A. Fitzgerald, Ph.D., University of Massachusetts Medical School, was chosen to receive the 2014 AAI-BD Biosciences Investigator Award. She has made fundamental contributions to our understanding of innate immune signaling and function. This trajectory began with her early discovery of the Toll-like receptor (TLR) adapter molecule known as Mal (or TIRAP), as a fellow in the laboratory of Luke O'Neill at Trinity College Dublin. Upon moving to the University of Massachusetts in 2002, she has expanded her research into new areas and has continued to make high-profile discoveries, first in the laboratory of Douglas Golenbock and then as an independent investigator. These include the discovery of another TLR adapter, TRAM; identification of TBK1 and IKK-epsilon as kinases that phosphorylate and activate the transcription factors IRF3 and IRF7; discovery of the AIM2 inflammasome and its role in recognition of microbial DNA; and demonstration that TRIF-dependent signaling by TLR4 licenses NLRP3 inflammasome activation by Gram-negative bacteria. In addition, recent studies in the Fitzgerald laboratory have provided new



evidence for the importance of regulatory long-coding RNAs in innate immune cells.

"Dr. Fitzgerald is an extremely talented, creative, and productive investigator whose contributions are exceptional both for their scope and overall impact on the field of innate immunity," says Kenneth L. Rock, professor and chair, Department of Pathology, University of Massachusetts Medical School. "Over the past five years, she has fearlessly expanded her research program into new arenas, and, in each case, her innovative approach and clever insights have rapidly identified her as a true super-star in that discipline," adds Ann Marshak-Rothstein, professor, Department of Medicine, University of Massachusetts Medical School.

Fitzgerald earned her Ph.D. in biochemistry from Trinity College Dublin in Ireland in 1999. Following a postdoctoral fellowship at Trinity, she joined the Division of Infectious Diseases at the University of Massachusetts Medical School as a recipient of a Wellcome Trust International Research Award in 2002. In 2004, she joined the faculty as an assistant professor and is currently professor of medicine and co-director of the Program in Innate Immunity.

Other prestigious awards and honors received by Fitzgerald include the Eli Lilly and Company-Elanco Research Award from the American Society for Microbiology, the International Cytokine Society Young Investigator Award, the Milstein Young Investigator Award, and the Donegan Medal from the Irish Royal Academy of Medicine.

An AAI member since 2006, Dr. Fitzgerald currently serves as a section editor for *The Journal of Immunology (The JI)*. She previously was an associate editor for *The JI* and a Major Symposium chair and speaker at the AAI annual meeting. Dr. Fitzgerald has assumed numerous leadership positions at the University of Massachusetts, coordinating a scientific writing course and vice-chairing the immunology and virology graduate program, among others. She also has served the international innate immunity community by serving on NIH study sections and helping to organize various international scientific meetings.

The AAI-BD Biosciences Investigator Award is presented annually for outstanding, early-career research contributions to the field of immunology.

2014 AWARD PRESENTATIONS AND LECTURES

For details on this year's AAI Awards Presentations and Lectures at IMMUNOLOGY 2014™, see pages 23 and 25.

2014 AAI Distinguished Service Award Recipients

For their outstanding service to the AAI community and the immunology field as a whole, AAI is pleased to present Jeremy Boss and Kristin Hogquist with the 2014 AAI Distinguished Service Award.



Jeremy M. Boss, Ph.D.
Emory University School
of Medicine

Jeremy M. Boss, AAI '94, has provided crucial leadership to AAI in his service as editor-in-chief of *The Journal of Immunology* (*The JI*) from 2008 to 2013. During his tenure, Dr. Boss worked continuously to maintain

and improve the quality of peer review in *The JI*. He also spearheaded efforts to ensure that *The JI* continues to evolve and keep pace with available technology in the digital media age, implementing multiple technological advancements to enhance user-friendliness and accessibility of *The JI*. These included launching "Next in *The JI*," a feature that allows subscribers online access to the author-approved version of the article about three weeks earlier than publication in the journal issue; creating a podcast version of the "In This Issue" section of *The JI*, called "ImmunoCasts;" implementing RSS feeds; and adding online usage metrics for articles published in *The JI*. Boss was also instrumental in the creation of *The JI* site for mobile devices to improve ease of readability for users accessing *The JI* from handheld mobile devices.

Boss has led several other significant developments in *The JI* during his term. He oversaw improvements to the online manuscript-submission system and worked with reviewers, editors, and staff to reduce the average time from submission to decision for manuscripts submitted to *The JI*. He also introduced the "Translating Immunology" section, which explains, in general and historical terms, immunological discoveries that have led to advances in treatment, drugs, or diagnostic devices. In addition, "Author Choice," an optional, fee-based feature that allows authors to make their article freely available immediately upon publication, was launched.

In addition to his appointment as editor-in-chief, Boss has served as a deputy editor and associate editor of *The JI*. He is also a past invited symposium speaker and presenter in scientific writing and mentoring workshops at AAI annual meetings.

Dr. Boss received his Ph.D. (biology) from the State University of New York at Albany in 1982, before becoming a postdoctoral fellow in Jack Strominger's lab in the Department of Biochemistry and Molecular Biology at Harvard University. In 1986, he joined Emory University's faculty, where he currently holds appointments as professor and chair of the Department of Microbiology and Immunology in the School of Medicine.



Kristin A. Hogquist, Ph.D.
University of Minnesota

Kristin A. Hogquist, AAI '95, has provided exemplary leadership and outstanding dedication as chair of the AAI Program Committee from 2009 to 2012. Her efforts sustained and enhanced the standard for excellence in scientific and social programming that characterizes

the AAI annual meetings and advances the interests of AAI members at every career stage. She oversaw the development of the scientific program of the AAI annual meetings, from the designation of AAI Distinguished Lecturers and Major Symposia chairs to the organization of abstract sessions and the participation of guest societies and NIH institutes. During her tenure, Dr. Hogquist displayed exemplary commitment to ensuring that all facets of immunology are represented at the AAI annual meetings and helped facilitate the restructuring of abstract submission topics to better reflect the expanding continuum of immunology research. AAI annual meeting attendance reached near-record levels during Hogquist's term, a reflection, at least in part, of her dedication to providing extensive, current, and relevant scientific programming at the AAI annual meetings.

Beyond her extensive contributions as chair of the AAI Program Committee, Hogquist has provided other immeasurable service to the AAI organization. She has acted as section editor of *The Journal of Immunology* (*The JI*), chair of the AAI Nominating Committee, member of the AAI Committee on the Status of Women, and mentor for the AAI High School Teachers Summer Research Program. Hogquist also served as course instructor for the AAI Advanced Course in Immunology for a number of years and as course director from 2008 to 2009. She is currently deputy editor of *The JI* and will speak as an AAI Distinguished Lecturer at IMMUNOLOGY 2014™. Her service to AAI exemplifies the attributes honored by the AAI Distinguished Service Award.

Dr. Hogquist received her Ph.D. from Washington University in St. Louis in 1991 before accepting a position as postdoctoral fellow in Michael Bevan's lab at the University of Washington. In 1995, she joined the faculty at the University of Minnesota as assistant professor in the Department of Laboratory Medicine and Pathology, where she is now professor and associate director of the Center for Immunology.

Members in the News

Wendy Havran Appointed AAI Program Chair

Wendy L. Havran, Ph.D., AAI '85, has been named to chair the AAI Program Committee for a three-year term beginning on July 1 of this year. Havran, who served on the Program Committee from 2005 to 2008, will succeed interim program chair and past AAI president Leslie Berg, who assumed leadership of the committee last summer following the death of Leo Lefrançois.

Havran is a professor in the Department of Immunology and Microbial Science at The Scripps Research Institute (TSRI) in La Jolla, California. Her research has pursued a long-term interest in interactions between intraepithelial $\gamma\delta$ T cells and their neighboring epithelial cells. Findings on the part of Havran and her colleagues have defined unique properties of these cells and support a specialized role for epithelial $\gamma\delta$ T cells in immune surveillance, wound repair, inflammation, and protection from malignancy. The group's identification of cell surface molecules and growth factors regulating epithelial T cell functional responses has increased understanding of the role that these cells play in epithelial and mucosal diseases such as inflammatory bowel disease, asthma, malignancies, and wound healing. Their studies continue to address the debilitating problem of chronic wounds; new information gained is utilized to modulate $\gamma\delta$ T cell responses and develop new strategies to accelerate healing.

In addition to her past service on the AAI Program Committee, Havran served as an annual meeting abstract programming chair and, on multiple occasions, as a Major Symposium chair and speaker at the AAI meeting. She has also served on the AAI Publications Committee, AAI Nominating Committee, AAI Awards Committee, and AAI Committee on the Status of Women. She is a past associate and section editor for *The Journal of Immunology* and past AAI Advanced Course in Immunology instructor.

Her additional service appointments include participation on multiple review panels at NIH – including at NIAID (ad hoc consultant, Board of Scientific Counselors), NIDDK, and NIGMS – as well as for other organizations including the European Research Council, Institut National du Cancer (France), Scripps Translational Science Institute, U.S. Department of Defense Medical Research Program, Cancer Research UK, Leukemia and Lymphoma Society, Wellcome Trust, and American Heart Association. She has served



Wendy L. Havran, Ph.D.

on the editorial board for *Immunological Reviews*, as chair and scientific committee member in organizing the International $\gamma\delta$ T Cell Conference (multiple occasions), and as co-chair and council member in organizing the Midwinter Conference of Immunologists (multiple occasions).

Her career honors include: honorary doctorate, University of Copenhagen, Denmark; Stohlman Scholar Award, Leukemia & Lymphoma Society; Leukemia Society of America Scholar; Lucille P. Markey Scholar in Biomedical Science; NIH Postdoctoral Training Grant Fellowship; NIH

Predocutorial Training Grant Fellowship; University of Chicago Fellowship; Conrad and Marcel Schlumberger Scholarship; and Mary Gibbs Jones Scholarship.

A native of Houston, Havran is a zoology graduate of Duke University. After serving as a research analyst at Duke, she received her Ph.D. in immunology from the University of Chicago (advisor: Frank Fitch, AAI '61). Havran then trained as a postdoctoral fellow at the University of California, Berkeley, (mentor: Jim Allison, AAI '78) before joining the Department of Immunology at The Scripps Research Institute (TSRI) as an assistant member in 1991. She was appointed TSRI associate professor in 1995 and full professor in 2006. She holds additional faculty appointments with TSRI's Kellogg School of Science and Technology; Strohm Inflammatory Bowel Disease Center, Scripps Clinic; Markey Trust Graduate Program, University of California, San Diego; and the Division of Dermatology, University of California, San Diego.

AAI PROGRAM COMMITTEE AAI ABSTRACT PROGRAMMING CHAIRS

The members of the current AAI Program Committee (2013-2014), together with the IMMUNOLOGY 2014™ AAI Abstract Programming Chairs, are listed on page 47.

Donald L. Morton (AAI '70 – Emeritus)

1934 – 2014

The following tribute to AAI member Donald Morton, M.D., who died on January 10, was published on the Cancer Research Institute (CRI) blog and authored by CRI Science Writer Matthew Tontonoz. It is reprinted here with the permission of CRI.

Remembering Donald Morton, a Medical Pioneer

CRI lost a devoted member of its community this month, 79-year-old Donald Morton, M.D., who died of heart failure. Morton was a longtime member of CRI's Scientific Advisory Council, and a world expert on melanoma—a disease for which he revolutionized diagnosis and treatment.

In the 1970s, when Dr. Morton was a young surgeon, the established way of determining whether melanoma had spread to the lymph nodes was to remove a large number of surrounding nodes. The procedure was invasive, and often proved unnecessary since the nodes turned out to be clean. Dr. Morton pioneered a new approach, which involved removing only the closest lymph node and testing it for signs of cancer. If no cancer was found, then this could be taken as a sign that the cancer had not spread further. This “sentinel node” (Dr. Morton's term) was identified by injecting the tumor with dye, which would then spread via lymphatic vessels to each node in the chain. The technique proved to be a reliable method of diagnosis, and quickly became established medical practice—not only for melanoma but also for breast cancer and other cancers that spread via the lymphatic system.

In addition to being a skilled surgeon, Dr. Morton was also a forward thinking tumor immunologist. He was an early proponent of cancer vaccines and of using immune-stimulating chemicals to boost the immune system's power to fight cancer. His strategy of injecting bacille Calmette-Guérin (BCG) directly into tumors represented the first successful clinical use of immunotherapy against a metastatic human cancer. Dr. Morton later had melanoma himself, but it was caught early enough to be completely removed by surgery.

Students and colleagues remember Dr. Morton as an intellectual force to be reckoned with, a kind of cowboy in the Wild West of cancer. “I'll never forget when I walked into his office for my interview and the first thing I saw were two big guns that belonged to John Wayne nicely hung in a display case on the wall! They didn't point at anyone, but I still



promised myself to be as nice as possible,” recalls Rodica Stan, Ph.D., a former student. Dr. Morton acquired the guns after treating the famous actor for stomach cancer.

John Kirkwood, M.D., a former colleague and now a melanoma expert at the University of Pittsburgh and a CRI scientific advisor, calls Morton's knowledge of cancer immunology and melanoma “encyclopedic.” “We have lost a giant in our field,” he says.

As aggressive as Dr. Morton was in the operating room, he was the exact opposite in his personal life. “Dr. Morton was gentle and respectful, a cowboy hunting down only melanomas,” says Stan.

Donald Lee Morton was born on September 12, 1934, in Richwood, West Virginia. His father was a coal miner, and young Donald grew up without electricity or running water. He attended Berea College in Kentucky on scholarship before transferring to the University of California, Berkeley. He received his medical degree from the University of California, San Francisco, in 1958. He did postgraduate work at the National Cancer Institute and was for many years chief of the Division of Surgical Oncology at UCLA before establishing the John Wayne Cancer Institute at Saint John's Health Center in Santa Monica, where he served as chief of the melanoma program. Dr. Morton served as president of the International Sentinel Node Society, the Society of Surgical Oncology, and the World Federation of Surgical Oncology Societies. He was a member of the CRI Scientific Advisory Council for more than 40 years.

See also:

“Dr. Donald Morton Dies at 79; Melanoma Expert Pioneered a Cancer Technique,” *New York Times* (William Yardley, January 20, 2014): http://www.nytimes.com/2014/01/20/health/dr-donald-morton-melanoma-expert-who-pioneered-a-cancer-technique-dies-at-79.html?_r=3

“In Remembrance: Donald L. Morton – The Legacy of a Cancer Researcher,” John Wayne Cancer Institute: http://www.newsaintjohns.org/In_Remembrance__Donald_L__Morton,_MD.aspx

“Donald L. Morton, M.D., Melanoma Research Program to Preserve His Legacy,” John Wayne Cancer Institute: http://www.newsaintjohns.org/Oncology/JWCI/About/Press_Releases/Donald_L__Morton,_MD,_Melanoma_Research_Program_to_Preserve_His_Legacy.aspx

The Emergence of Immunology in Pittsburgh

by Bryan Peery and John Emrich

With IMMUNOLOGY 2014™ taking place in Pittsburgh, Pennsylvania, May 2–6, AAI salutes the current prominence of this city in biomedical research and reflects on the individuals and events contributing to its emergence as an international center for immunology.

Pittsburgh, a major center for immunological research, began its steep ascent to that acclaim just 60 years ago when it attracted a few ambitious, young immunologists to the University of Pittsburgh (Pitt). Among the scientists who arrived in the late 1940s and 1950s were several distinguished members of the American Association of Immunologists (AAI), including Jonas Salk (AAI '47), Frank Dixon (AAI '50, president 1971–72), F. Sargent Cheever (AAI '50, president 1963–64), and Niels Jerne (AAI '65). We chronicle below the achievements of these and other leading immunologists and their roles in shaping the history of immunology in Pittsburgh.

Early Medical Research in Pittsburgh

The discovery of large coal veins in 1833 brought rapid industrialization to Pittsburgh. The transformation of Pittsburgh from a small frontier city to an industrial center was accelerated by the mass production of steel and the heightened demand for that product during the American Civil War.

The city's prominence in higher education and medicine, however, experienced a slower emergence. Western University of Pittsburgh was incorporated in 1813¹ but lacked a sizable enrollment until the turn of the twentieth century. It was not until 1853, following a decade that witnessed endemic typhoid and tuberculosis, as well as multiple outbreaks of smallpox and cholera, that the first chartered public hospital, Western Pennsylvania Hospital, opened its doors.² A group of local physicians chartered the first medical school in 1883, and construction began after 250 shares of stock were sold for \$100 each.³ Western Pennsylvania Medical College opened



Pittsburgh Municipal Hospital, 1939
Pittsburgh City Photographer Collection, University of Pittsburgh

its doors to the first class in 1886. Initially, the college was completely autonomous, but in 1892, it entered into a formal relationship with Western University, officially becoming the Medical Department of Western University, although it was the stockholders, not the university, who had ownership and authority over the department.

Western University underwent dramatic changes in 1908 to raise both the standards and prominence of the school. A new name—the University of Pittsburgh—was adopted, the campus was relocated from its

site in Pittsburgh's North Side section to the Oakland area of the city; and the university formally acquired the medical college. With full control of what was now the University of Pittsburgh School of Medicine, the administration of Pitt hired a new chancellor, Samuel McCormick, who, modeling the institution on the top medical schools in the country, began recruiting accomplished researchers for faculty positions and raising the standards for enrollment and graduation. Facilities and opportunities for clinical research followed, as a new medical school building was opened in 1911, and formal relationships were forged with St. Francis and Mercy hospitals in 1912.

The University of Pittsburgh School of Medicine was not the only medical research institution in the city in these years. The William H. Singer Memorial Research Laboratory was founded at Allegheny General Hospital in 1914 as a research laboratory dedicated to the study of medical and surgical problems. Its staff included Oscar M. Teague (AAI '20), a noted bacteriologist and the first active AAI member in Pittsburgh,⁴ as well as other researchers, who, although not AAI members, published early articles in *The Journal of Immunology (The JI)*.⁵ Western Pennsylvania Hospital also attracted talented immunologists

¹ The Pittsburgh Academy was founded in 1787 as a preparatory school and reincorporated as an institution of higher learning by the Commonwealth of Pennsylvania in 1813.

² Barbara I. Paull, *A Century of Medical Excellence* (Pittsburgh: University of Pittsburgh Medical Alumni Association, 1986), 5–6, 26.

³ *Ibid.*, 11. The price of each share was approximately \$2,400 in today's dollars.

⁴ "Oscar Teague," *The Journal of Immunology* 9, no. 1 (1924): 1–5.

⁵ See, for example, G. R. Lacy and C. C. Hartman, "Specific Reactions of the Body Fluids in Pneumococcal Infections," *The Journal of Immunology* 3, no. 1 (1918): 43–49.

beginning in the 1910s: Jacques J. Bronfenbrenner (AAI '20, president 1942–46) was director of research and diagnostic laboratories at Western Penn from 1913 to 1917, and Arthur P. Locke (AAI '26) and Ralph R. Mellon (AAI '22) were researchers in the laboratories from the 1930s until the 1950s.

The stature of the medical research in Pittsburgh steadily increased from the 1910s through the mid-1940s, but a series of events—the First World War, the Great Depression, and the Second World War—delayed more rapid progress until the end of the 1940s.

Post-War Pittsburgh Renaissance

Turning the University of Pittsburgh School of Medicine into a first-rate research institution had been William S. McEllroy's aspiration since his election as dean by the medical school faculty in 1938.⁶ Born into an affluent Pittsburgh family, McEllroy had personal connections to Pittsburgh's private donors who might turn his dream into a reality.

Resources and focus for McEllroy's plan were soon diverted to the U.S. war effort following the December 7, 1941, attack on Pearl Harbor. With the war's end in 1945, however, McEllroy and Pitt benefitted from the financing and enthusiasm of industrialists and philanthropists united in efforts to usher in "the Pittsburgh Renaissance." Their plan for revitalizing the city included drastically improving public health. McEllroy encouraged the university chancellor to use a portion of the new endowment to fund a university-wide interdisciplinary research program known as the Division of Research in the Natural Sciences.⁷ Furthermore, in 1948, the Graduate School of Public Health was founded at Pitt with a \$13.6 million endowment from the Andrew W. Mellon Education and Charitable Trust.⁸ McEllroy sought to make sure the medical and public health schools' interests were closely aligned. He found an ally in the dean of the new public health program, former U.S. Surgeon General Thomas Parran, Jr.,⁹ who argued that the success of the Graduate School of Public Health would depend on the School of Medicine's receiving the investment necessary to become a top-flight institution.¹⁰

With financial backing and the new Division of Research serving as an indicator of the direction in which Pitt was heading, McEllroy began recruiting researchers from around the country. Convincing established scientists to tie their fates to the nascent program proved difficult because the

appointments lacked status. Younger scientists, however, could be attracted by the promise of independence and a unique opportunity to expedite their advancement through the academic ranks.¹¹ One researcher who was looking for just such an opportunity was Jonas Salk.

Jonas Salk and Polio Research at Pitt

After the war, McEllroy, recognizing virology as a young but promising field that might soon put Pitt on the map, began fundraising for virus research. In 1946, he secured funds from the National Foundation for Infantile Paralysis (NFIP) to start a Virus Research Laboratory.¹² His search for a director of the new laboratory led him to an assistant professor of epidemiology at the University of Michigan School of Public Health, Jonas E. Salk.

Although Salk's credentials were respectable, he was hardly a luminary in 1947, and there was little to indicate that he would become the legend that he is today.¹³ The eldest son of working-class Russian immigrants, Salk grew up in the Bronx, New York, and attended City College of New York during the Great Depression before earning his M.D. from the New York University (NYU) College of Medicine in 1939. At NYU, he studied under William H. Park (AAI '16, president 1918–19) and Thomas Francis, Jr. (AAI '30, president 1949–50), who



Jonas Salk and Julius S. Youngner, ca. 1954
University of Pittsburgh News Services

⁶ Paull, *A Century of Medical Excellence*, 141.

⁷ *Ibid.*, 176.

⁸ *Ibid.*, 165–67; "About," Graduate School of Public Health, University of Pittsburgh, <http://www.publichealth.pitt.edu/home/about>.

⁹ Parran was the sixth surgeon general of the United States, serving under Presidents Franklin Roosevelt and Harry Truman from 1936 to 1948.

¹⁰ Paull, *A Century of Medical Excellence*, 167.

¹¹ *Ibid.*, 176.

¹² *Ibid.*, 178; David M. Oshinsky, *Polio: An American Story* (New York: Oxford University Press, 2005), 109.

¹³ Daniel S. Greenberg, "The Vanishing Heroes of Science," *New York Times*, July 4, 1995, 31.

was then experimenting with using ultraviolet light to produce killed-virus vaccines.¹⁴ After completing a two-year medical internship at Mount Sinai Hospital in New York, Salk contacted Francis in 1942 about a job. The previous year, Francis had become chair of the Department of Epidemiology at the University of Michigan School of Public Health and director of the Influenza Commission of the Armed Forces Epidemiological Board. Francis brought Salk to Michigan, helping Salk secure both a National Research Council Fellowship and a draft deferment.¹⁵

After five years under Francis, Salk grew restless, desiring a promotion and more independence. He and Francis had a cordial relationship, but Francis could offer only an assistant professorship. When McEllroy promised to make Salk an associate professor and head of the Virus Research Laboratory at Pitt in 1947, he immediately accepted the offer.¹⁶

At the time of Salk's arrival in Pittsburgh, the medical school's transition to major research institution was far from complete. Salk soon realized that it fell upon him to be an impetus for change. He later recalled the shock of learning that most of his colleagues "were part-time instructors who earned their living in private practice and had neither the time nor inclination for basic research."¹⁷ He would have to build his laboratory from the ground up—literally. Starting with two rooms and a technician in the basement of Municipal Hospital, he waged what one colleague recalled as "a kind of guerilla war" for space and funding.¹⁸

He continued his investigations into influenza virus but increasingly turned to poliomyelitis virus, at least in part because he knew this research would attract funding.¹⁹ When NFIP approached him in late 1947 about doing the tedious technical work of typing poliovirus, Salk readily agreed to do what senior researchers had shunned. In return, he received large research grants, beginning in 1948, to help him build his laboratory.²⁰ By 1949, his laboratory and

offices had expanded to two floors in Municipal Hospital, he had been promoted to full professor, and he was hiring his own research faculty. One of the scientists whom he brought into his laboratory was Julius S. Youngner (AAI '50) from the University of Michigan, who, as a senior assistant research scientist at the National Cancer Institute, had specialized in cell culture techniques. Youngner would remain an active member of the Pitt faculty for the next 50 years.



Jonas Salk inoculating a young girl

*History of Medicine Division,
National Library of Medicine*



William M. Hammon, ca. 1955

© University of Pittsburgh

By 1951, Salk's laboratory had completed its typing project, concluding that there were three distinct types of poliovirus. The lab shifted its efforts to producing a vaccine. Based on the success that his mentor Francis had had with a killed-virus flu vaccine, Salk chose to pursue a killed-poliovirus vaccine over the attenuated-virus vaccine that the majority of other scientists, including his rivals Albert B. Sabin (AAI '46) and Hilary Koprowski (AAI '46), preferred.

Even within the small community of researchers at Pitt, Salk had competition. In 1950, Parran recruited William McDowall Hammon (AAI '46) to chair the Department of Epidemiology and Microbiology at the Graduate School of Public Health. Unlike Salk, who had no experience with polio research when he was hired to head the Virus Research Laboratory, Hammon had already established himself in the field when Parran convinced him to leave his position as dean of the School of Public Health at the University of California, Berkeley, for Pittsburgh. Wary of both killed-virus and attenuated-virus vaccines, Hammon preferred passive immunization through gamma-globulin injections containing polio-resistant antibodies. He conceded that passive immunization would not prevent infection, but he argued that it could prevent the worst symptom of infection—paralysis. NFIP-funded, double-blind trials involving more than 50,000 children in 1951 and 1952 yielded compelling evidence that passive immunization was a major step in the war against

¹⁴ Oshinsky, *Polio*, 98.

¹⁵ *Ibid.*, 100–101.

¹⁶ *Ibid.*, 107.

¹⁷ Salk quoted in *ibid.*, 109.

¹⁸ *Ibid.*, 110.

¹⁹ *Ibid.*, 110–11.

²⁰ *Ibid.*, 116.

polio. Unfortunately, as Hammon himself pointed out, the immunity produced was only temporary, and the gamma-globulin was in short supply.²¹

Meanwhile, Hammon's passive immunization approach was eclipsed by Salk's March 1953 announcement of the successful completion of the first human trials of his group's killed-virus vaccine.²² The national field trial, which involved more than 1.8 million children and was overseen by Thomas Francis, commenced in June 1954, and, on April 12, 1955, Francis pronounced the vaccine safe and effective.²³ Salk instantly became a celebrity scientist, receiving a Presidential Citation and the Congressional Gold Medal in 1955 and the Albert Lasker Clinical Medical Research Award the following year. Although Salk left Pitt to head the Salk Institute in 1963, his accomplishments of the 1950s cemented Pitt's reputation as a major research center for medical sciences.

Frank Dixon and the "Pittsburgh Five"

In addition to attracting national attention through his own laboratory studies, Salk's administrative work helped contribute to the effort to transform Pitt into a major research institution. As the head of the search committee for a chair of the Department of Pathology in the medical school in 1951, Salk selected a scientist who shared several key characteristics with him: Frank J. Dixon was young, ambitious, and not yet well-known.²⁴

Dixon had grown up in St. Paul, Minnesota, and had attended the University of Minnesota, where he earned his M.D. in 1942 before entering the medical corps of the U.S. Marine Corps and serving in the Pacific Theater. Upon his return to the United States in 1946, Dixon became a research assistant in the Department of Pathology at Harvard. He moved to St. Louis, Missouri, in 1948, where he was an instructor in the Department of

Pathology at Washington University for two years before being promoted to assistant professor in 1950. The following year, Salk and his search committee offered a full professorship and the chair of the Department of Pathology to Dixon, who, at age 31, became the youngest department head at Pitt.²⁵

As a research assistant at Harvard in 1946, Dixon had developed a new technique for labeling and tracking the location of proteins in the body using radioactive iodine.²⁶ At Pitt, he used this procedure to study serum sickness and soon discovered that the host's antibody immune response to foreign proteins in the injected serum caused deposition of immune complexes in tissues that led to tissue destruction.²⁷ From these results, Dixon made a novel and important conclusion—the body's immune response could have deleterious effects on the health of the host. Dixon's careful methodology in the study of serum sickness and kidney disease served as a paradigm for immune complex-

mediated disease pathogenesis and established the field of immunopathology, a discipline critical to the understanding of autoimmune diseases, such as lupus erythematosus and rheumatoid arthritis.

In his second year at Pitt, Dixon received the Theobald Smith Award of the American Association for the Advancement of Science, an honor bestowed upon the most outstanding medical researcher under the age of 35. As chair of the pathology department, he sought to change the culture of the department



Frank J. Dixon

The American Association of Immunologists Records, Center for Biological Sciences Archives, University of Maryland, Baltimore County



The "Pittsburgh Five," from left to right, Charles G. Cochrane, Joseph D. Feldman, Frank J. Dixon, Jacinto J. Vazquez, and William O. Weigle

The Scripps Research Institute

²¹ Charles R. Rinaldo, Jr., "Passive Immunization against Poliomyelitis: The Hammon Gamma Globulin Field Trials, 1951–1953," *American Journal of Public Health* 95, no. 5 (2005): 790–99.

²² Jonas E. Salk, "Studies in Human Subjects on Active Immunization against Poliomyelitis. 1. A Preliminary Report of Experiments in Progress," *Journal of the American Medical Association* 151, no. 13 (1953): 1081–98.

²³ "Text of the Statements on Dr. Salk's Vaccine Evaluation," *New York Times*, April 13, 1955, 22.

²⁴ Paull, *A Century of Medical Excellence*, 180; Leah Kauffman, "California Dreaming: Frank Dixon Dreams Immunopathology and White Sand Beaches," *Pitt Med*, January 2002, 27, http://pittmed.health.pitt.edu/jan_2002/ca_dreaming.pdf.

²⁵ Michael B. A. Oldstone, "Frank James Dixon, 1920–2008," *Biographical Memoirs* (Washington, DC: National Academy of Sciences, 2009), 4–5.

²⁶ Shields Warren and Frank J. Dixon, "Antigen Tracer Studies and Histologic Observations in Anaphylactic Shock in the Guinea Pig," *American Journal of the Medical Sciences* 216, no. 2 (1948): 136–45.

²⁷ Frank J. Dixon, Jacinto J. Vazquez, William O. Weigle, and Charles G. Cochrane, "Pathogenesis of Serum Sickness," *A.M.A. Archives of Pathology* 65, no. 1 (1958): 18–28; William O. Weigle and Frank J. Dixon, "Relationship of Circulating Antigen-Antibody Complexes, Antigen Elimination, and Complement Fixation in Serum Sickness," *Proceedings of the Society for Experimental Biology and Medicine* 99, no. 1 (1958): 226–31.

so that it reflected both his youth and his interest in research. He brought in young scientists as fellows and assistant professors and allowed them to devote themselves to laboratory research by hiring part-time faculty to take care of many of the teaching and clinical responsibilities.²⁸ Dixon believed that enthusiasm for research was contagious, explaining, “Nothing is more valuable than for a student to sit down and talk to a young researcher, six or seven years his senior, and feel the excitement that comes from scientific inquiry.”²⁹ One instance in which Dixon’s teaching philosophy bore fruit was in the case of William O. Weigle (AAI ’57), a laboratory technician from a working-class family, whom Dixon encouraged to pursue a Ph.D. at Pitt.³⁰

In 1960, Dixon received an offer from Edmund Keeney, director of the then relatively unknown Scripps Clinic in La Jolla, California, to establish a Division of Experimental Pathology. As long as Dixon could secure outside funding, he and his researchers would be free of administrative and teaching responsibilities and devote themselves to full-time research. Dixon, Weigle, Charles G. Cochrane (AAI ’61), Joseph D. Feldman (AAI ’63), and Jacinto “Joe” Vazquez (AAI ’59)—known as the “Pittsburgh Five”—left Pitt for the Scripps Clinic in 1961, taking with them six post-docs and several members of the support staff.³¹ Together, they laid the foundation for the world-renowned Scripps Research Institute. Dixon’s pioneering achievements in immunopathology were formally recognized when he was awarded the Gairdner Foundation International Award in 1969 and the Albert Lasker Basic Medical Research Award in 1975.

F. Sargent Cheever

When William McEllroy retired in 1958, he was succeeded as dean of the School of Medicine by Francis Sargent Cheever. A fourth-generation Boston physician, Cheever attended the prestigious Groton School and received both his B.A. and M.D. from Harvard University.³² Following a two-year medical internship at Presbyterian Hospital in New York, he returned to Harvard in 1939 as a research fellow in

bacteriology, rising to the rank of assistant professor by 1946. In 1950, acceding to an invitation from his Harvard classmate William Hammon to join him at Pitt, Cheever became a professor of epidemiology and microbiology in the Graduate School of Public Health.³³

Shortly after arriving at Pitt, Cheever sought a second appointment in the Department of Bacteriology in the School of Medicine. Eager to add another first-rate researcher to the medical school faculty and to further the relationship between the medical and public health schools, McEllroy made Cheever a lecturer in the Department of Bacteriology in 1951. Cheever was well-liked by his colleagues in both schools, and his patrician background allowed him to run in the same social circles as wealthy Pittsburgh donors who soon looked to Cheever as a spokesman for the university. These qualities led Parran to encourage Cheever to prepare for a role in administration, so when McEllroy announced in January 1958 that he would retire at the end of the term, Cheever was a natural choice as his successor.³⁴

Cheever excelled in the position and oversaw the expansion of the medical school during his 11-year tenure. The highlight of these years was the formal integration of the medical and public health schools with several Pittsburgh hospitals into the University Health Center [now the University of Pittsburgh Medical Center (UPMC)]. From 1970 to 1974, Cheever served as president of the new medical center.

Niels Jerne

As dean of the School of Medicine, Cheever succeeded in attracting stellar faculty to Pitt, including Niels K. Jerne, who became chair of the Department of Microbiology in the School of Medicine in 1962. Jerne had already established himself as a preeminent immunologist at the time of his arrival. He had been a researcher at the State Serum Institute in Copenhagen for 10 years before joining Max Delbrück’s laboratory at the California Institute of Technology in 1954, where he published



F. Sargent Cheever, ca. 1962

FASEB Archives



Niels K. Jerne

FASEB Archives

²⁸ Paull, *A Century of Medical Excellence*, 180; Oldstone, “Frank James Dixon, 1920–2008,” 5.

²⁹ Dixon quoted in Paull, *A Century of Medical Excellence*, 181.

³⁰ Oldstone, “Frank James Dixon, 1920–2008,” 5.

³¹ Kauffman, “California Dreaming,” 29; Jenelle Pifer, “We Knew You When: Charles Cochrane and the Pittsburgh Five,” *Pitt Med*, Fall 2012, 39, http://pittmed.health.pitt.edu/Fall_2012/alumni.pdf.

³² “Pitt Names New Dean of Medicine,” Press Release, January 30, 1958, *Documenting Pitt*, University of Pittsburgh, <http://digital.library.pitt.edu/cgi-bin/t/text/text-idx?c=pitt-pressreleases;view=toc;idno=pittpressreleases19580018>.

³³ Paull, *A Century of Medical Excellence*, 208; “Cheever, Francis Sargent,” *American Men and Women of Science*, 14th ed. (1979), 2:801.

³⁴ Paull, *A Century of Medical Excellence*, 208–10.

the landmark paper, “The Natural-Selection Theory of Antibody Formation”³⁵ in 1955. Jerne next headed the Biological Standards and Immunology sections of the World Health Organization in Geneva from 1956 to 1962, but, wishing to return to academic life and his immunological research, he seized the opportunity to chair the Department of Microbiology at Pitt when it arose in 1962.

The change of venues paid immediate dividends. Jerne, regarded as one of immunology’s greatest theorists, returned to the laboratory and made an important technical innovation. With Albert A. Nordin (AAI ’72), a post-doc at Pitt, he developed the plaque-forming cell assay—often called the Jerne plaque assay—which advanced the study of immunology at the cellular level by allowing researchers to see and enumerate antibody-producing cells in an agar plate.³⁶

Jerne left Pittsburgh in 1966, succeeded at Pitt by Julius Youngner, who chaired the Department of Microbiology from 1966 to 1989. Jerne returned to Europe and directed the Paul Ehrlich Institute before becoming the founding director of the Basel Institute for Immunology in 1969. In recognition of his major contributions to the field of immunology, he was awarded the 1984 Nobel Prize in Physiology or Medicine.

New Directions: 1980s–Present

Neither the growth of the medical sciences at Pitt nor the role of AAI members in advancing it ended in the 1960s. Donald N. Medearis (AAI ’65) succeeded Cheever as dean of the medical school, serving from 1969 to 1974. One of his most significant acts as dean was recruiting Thomas Detre to head the Department of Psychiatry in 1974.³⁷

As senior vice chancellor of the health sciences from 1984 to 1998, Detre left a lasting legacy on UPMC. He oversaw the transformation of UPMC into a research hub of international renown by establishing several research institutes, including the Pittsburgh Transplantation Institute (renamed the Thomas E. Starzl Transplantation Institute in 1996) and the University of Pittsburgh Cancer Institute (UPCI) in 1985.³⁸

Under the direction of Ronald B. Herberman (AAI ’69), UPCI was designated a Comprehensive Cancer Center by the National Cancer Institute, five years after its establishment, making it the youngest center to receive such a distinction.³⁹ Moreover, it was at UPCI that immunology began to emerge as one of the more significant areas of basic research at Pitt in the late 1980s. By

1997, the interdepartmental Graduate Program in Immunology had received accreditation and was authorized to award Ph.D. degrees.⁴⁰ In January 2002, the School of Medicine established the Department of Immunology and appointed Olivera J. Finn (AAI ’83, president 2007–2008) its founding chair.⁴¹



Olivera J. Finn, 2009
AAI Archives

Although there is now a permanent home for the study of immunology at Pitt, studies in the field and AAI members remain ensconced in several departments and institutes across the university. Since 1997, Charles R. Rinaldo, Jr. (AAI ’78), has served as chair of the Department of Infectious Diseases and Microbiology in the Graduate School of Public Health, the position once held by William Hammon. Recognizing parallels between the mid-century work on polio carried out by his predecessors at Pitt and his own research on HIV and AIDS, Rinaldo declared in a 2004 interview, “I look to history to help me look to the future.”⁴²

Salk, Dixon, Cheever, Jerne, and the many other AAI members who have called Pittsburgh home helped to establish the city as a major center for immunological research. In turn, Pittsburgh has contributed much to AAI. Five past presidents and one current councillor, Joanne L. Flynn (AAI ’96, councillor 2013–present), have spent at least some of their professional years in Pittsburgh. Beginning with Arthur Locke, who became an associate editor of *The JI* in 1936, Pittsburgh immunologists have worked to ensure that *The JI* remains the preeminent journal in the field, most notably Joseph Feldman, who served as editor-in-chief from 1971 to 1987. Together, these immunologists have left behind an enduring legacy that continues to inform the work of immunologists the world over. ■

Bryan D. Peery, Ph.D., AAI Assistant Historian
John S. Emrich, Ph.D., AAI Historian

To learn more about immunology in Pittsburgh, visit the History Lounge at IMMUNOLOGY 2014™.

³⁵ Niels K. Jerne, “The Natural-Selection Theory of Antibody Formation,” *Proceedings of the National Academy of Sciences of the United States of America* 41, no. 11 (1955): 849–57.

³⁶ Niels K. Jerne and Albert A. Nordin, “Plaque Formation in Agar by Single Antibody-Producing Cells,” *Science* 140, no. 3565 (1963): 405; Brigitte A. Askonas and James G. Howard, “Niels Kaj Jerne, 23 December 1911–7 October 1994,” *Biographical Memoirs of Fellows of the Royal Society* 43 (1997): 242–43; Erica Lloyd, “Challenging Cowboys: An Immunologist Rides into the Sunset,” *Pitt Med*, October 2001, 24–25, http://pittmed.health.pitt.edu/oct_2001/Oct01_Cowboy.pdf.

³⁷ Paull, *A Century of Medical Excellence*, 243.

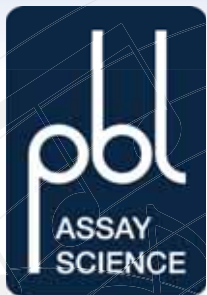
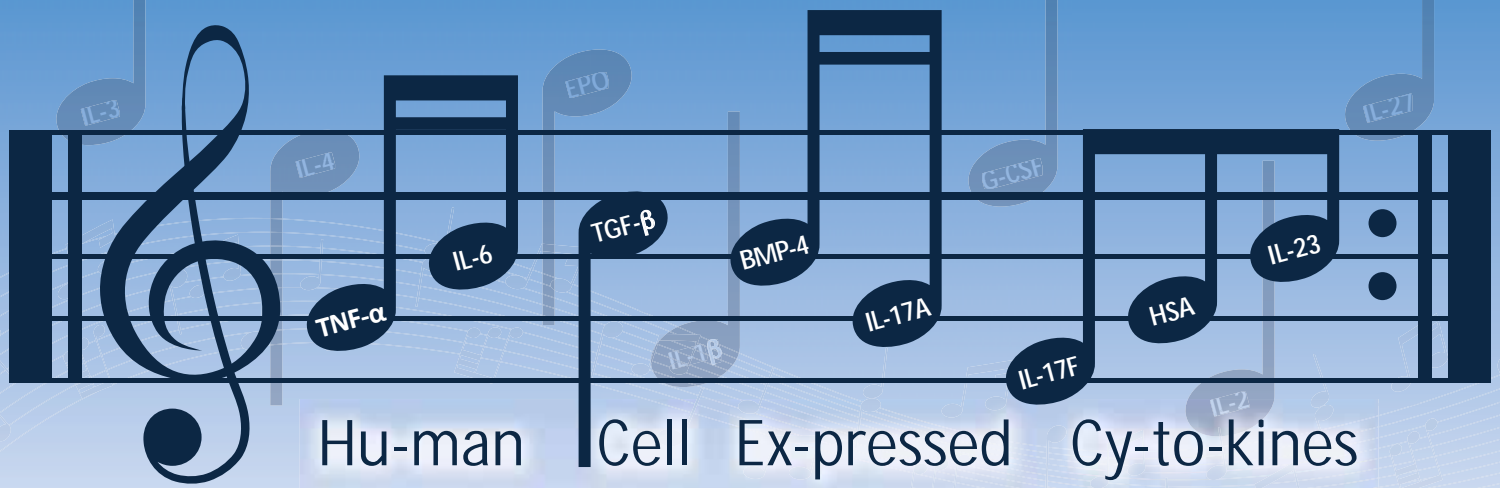
³⁸ Peter Hart, “Obituary: Thomas P. Detre,” *University Times* [University of Pittsburgh], October 14, 2010, <http://www.utimes.pitt.edu/?p=13669>.

³⁹ Mary Brignano, *Beyond the Bounds: A History of UPMC* (Pittsburgh: UPMC, 2009), 66.

⁴⁰ Olivera J. Finn and Russell D. Salter, “Immunology in Pittsburgh,” *Immunologic Research* 36, nos. 1–3 (2006): 2.

⁴¹ *Ibid.*, 1.

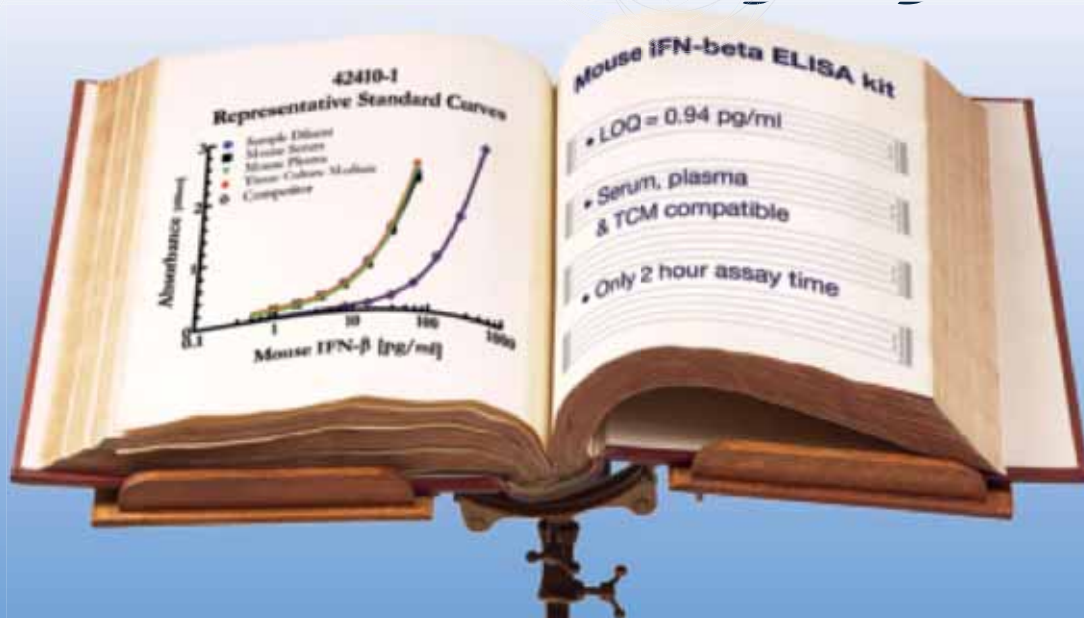
⁴² Rinaldo quoted in “Unsung Hero of the War on Polio,” *Public Health* [University of Pittsburgh Graduate School of Public Health], Spring 2004, 7, http://www.publichealth.pitt.edu/Portals/0/Main/News/Publications/Public_Health_Spring_2004.pdf.



Are your cytokines “as human as you can get?” Check out PBL’s Human Cell Expressed (HCE) cytokines in your model system.

PBL Assay Science is a recognized leader in single-analyte ELISAs, cytokine multiplex ELISAs, proteins, antibodies, and assay services. Visit **AAI booth 628** to discover how our latest Human Cell Expressed proteins, High Sensitive Mouse IFN beta ELISA kit and other offerings can help you in your research. **And while you’re visiting, enter our drawing for a chance to win \$2000 PBL product credits!**

Conduct Your Experimental Symphony



with PBL’s assay solutions!

IMMUNOLOGY 2014™

The American Association of Immunologists

AAI Annual Meeting | May 2–6, 2014 | Pittsburgh, Pennsylvania

David L. Lawrence Convention Center

Visit www.IMMUNOLOGY2014.org to view the full program

AAI PRESIDENT'S PROGRAM

AAI President's Address

FRIDAY, MAY 2, 5:00 PM – 6:00 PM

Marc K. Jenkins

University of Minnesota Medical School, AAI President

The in vivo response of naive CD4⁺ T cells

Stephen D. Miller

Northwestern University Feinberg School of Medicine

Introduction



Marc K. Jenkins
AAI President

AAI President's Symposium: Anatomy of the Immune Response

Dedicated to the Memory of our Colleague and Friend, Leo Lefrançois, Jr., Ph.D.

MONDAY, MAY 5, 12:30 PM – 2:30 PM

Spirit of Pittsburgh Ballroom

Chair:

Marc K. Jenkins, University of Minnesota Medical School, AAI President

Speakers:

Ronald N. Germain, NIAID, NIH

*Visualizing the dynamics and micro-anatomy of the immune system:
how this complex machine really works*

Michel C. Nussenzweig, HHMI, Rockefeller University
Antibodies in HIV vaccine and therapy

Ellen A. Robey, University of California, Berkeley
Visualizing T cell selection in the thymus

Jason G. Cyster, HHMI, University of California, San Francisco
Deciphering the guidance cue code for B cell immunity



Ronald N.
Germain



Michel C.
Nussenzweig



Ellen A. Robey



Jason G. Cyster

AAI President's Symposium

Anatomy of the Immune Response



Marc K. Jenkins
AAI President

During my postdoctoral years at the NIH as a self-respecting 96-well plate immunologist, I was amazed by the work of Ian MacLennan and Garnet Kelsoe, who were using immunohistology to study germinal centers. Their efforts convinced me that in vivo and, even better, in situ approaches were the best ways to study the immune response, especially if antigen-specific lymphocytes could be mapped onto the body's geography. Research in this area blossomed in the last two decades, revealing fundamental information about how lymphocytes enter, exit, and move within lymphoid organs and how antigen-specific T and B cells, and dendritic cells, initially find each other, become activated, enter germinal centers, and migrate to non-lymphoid organs during immune responses.

The President's Symposium this year features leaders who made many of the discoveries mentioned above.

Ronald Germain was one of the first to produce dynamic images of T cells interacting with antigen-bearing dendritic cells in lymph nodes. Imaging studies from his group have shown how T cells and dendritic cells sense chemokines to facilitate their interactions before and after foreign antigens enter the body. His recent work is producing insights into how effector T cells become activated in the non-lymphoid organs.

Ellen Robey used real-time two-photon microscopy to study the cellular dynamics of CD8⁺ T cells and dendritic cells in lymph nodes. She revealed that T cells scan many dendritic cells in the absence of antigen but stop on antigen-bearing dendritic cells for hours. Her group has also characterized the dynamic interactions of thymocytes and thymic epithelial cells during positive and negative selection.

Michel Nussenzweig discovered that dendritic cells can induce tolerance and that self-reactive B cells are abundant in the repertoire. His work has also been essential to the current understanding of somatic mutation, class-switch recombination, and formation of neutralizing antibodies to HIV. His dynamic imaging studies have identified many of the important events in affinity maturation in germinal centers.

Jason Cyster revealed the key role that S1PR plays in lymphocyte egress from lymphoid organs and how chemokines direct the migration and positioning of B cells in the body. He discovered that CXCR5 directs the migration of activated T cells to follicles, setting the stage for much later work on follicular helper T cell–B cell interactions.

Please join me at the IMMUNOLOGY 2014™ President's Symposium to see the latest discoveries by these outstanding investigators. The science should be enlightening and the presentations entertaining, with lots of colorful cells scurrying about. Someone bring the popcorn!



AAI DISTINGUISHED LECTURERS

SATURDAY, MAY 3

6:00 PM – 6:45 PM

**Kristin A. Hogquist**

University of Minnesota Center for Immunology
Self reactivity in T cell selection and homeostasis

SUNDAY, MAY 4

6:00 PM – 6:45 PM

**Ellen V. Rothenberg**

California Institute of Technology
Gene regulatory pathways to T cell identity

MONDAY, MAY 5

6:00 PM – 6:45 PM

**Mark J. Shlomchik**

University of Pittsburgh School of Medicine
NETworks in lupus: T-B or not T-B, DC is the question

AAI Lifetime Achievement Award Presentation

FRIDAY, MAY 2, 5:00 PM

*Spirit of Pittsburgh Ballroom***Chair:**

Marc K. Jenkins, University of Minnesota Medical School
AAI President

**Award Recipient:**

Emil R. Unanue, Washington University
School of Medicine

AAI President Marc K. Jenkins will introduce the awardee and present the award prior to the start of the President's Address.

The AAI Lifetime Achievement Award is the highest honor bestowed by the AAI Council upon an AAI member. This award recognizes a deserving member for a career of scientific achievement and for contributions to AAI and fellow immunologists.

AAI Excellence in Mentoring Award Presentation

MONDAY, MAY 5, 12:30 PM

*Spirit of Pittsburgh Ballroom***Chair:**

Marc K. Jenkins, University of Minnesota Medical School
AAI President

**Award Recipient:**

William E. Paul, NIAID, NIH

AAI President Marc K. Jenkins and Anthony L. DeFranco, University of California, San Francisco, will introduce the awardee and present the award prior to the start of the President's Symposium.

The AAI Excellence in Mentoring Award Award recognizes exemplary career contributions to a future generation of scientists.



Join us for the

IMMUNOLOGY 2014™

Opening Night Welcome Reception

Generously Sponsored by eBioscience, An Affymetrix Company



David L. Lawrence Convention Center • Pittsburgh, Pennsylvania

Friday, May 2, 2014 • 6:00 PM – 8:00 PM

Come directly from the President's Address to the Lawrence Center Terraces overlooking the Allegheny River and the Pittsburgh skyline. Enjoy drinks, hors d'oeuvres, and the Boilermaker Jazz Band as you visit with colleagues and plan your week.



Open to all IMMUNOLOGY 2014™ attendees. Meeting badge required for entrance. Attendees must be at least 21 years of age.

AWARD LECTURES & PRESENTATIONS

AAI-BD Biosciences Investigator Award Presentation and Lecture

Generously supported by BD Biosciences

SATURDAY, MAY 3, 4:00 PM – 5:00 PM

Spirit of Pittsburgh Ballroom

Chair:

Marc K. Jenkins, University of Minnesota Medical School
AAI President

**Award Recipient:**

Katherine A. Fitzgerald, University of Massachusetts Medical School

Molecular basis of recognition and gene regulation in innate immunity

AAI President Marc K. Jenkins and BD Biosciences Vice President of Market

Development Robert Balderas will introduce the awardee and present the award immediately prior to Dr. Fitzgerald's lecture.

AAI-Life Technologies Meritorious Career Award Presentation and Lecture

Generously supported by Life Technologies Corporation

SUNDAY, MAY 4, 4:00 PM – 5:00 PM

Spirit of Pittsburgh Ballroom

Chair:

Marc K. Jenkins, University of Minnesota Medical School
AAI President

**Award Recipient:**

Timothy A. Springer, Boston Children's Hospital and Harvard Medical School

Integrins, gliding adhesins, and malaria vaccines

AAI President Marc K. Jenkins and a representative of Life Technologies Corporation will introduce the awardee and present the award immediately prior to Dr. Springer's lecture.

AAI-Steinman Award for Human Immunology Research Presentation and Lecture

MONDAY, MAY 5, 4:00 PM – 5:00 PM

Spirit of Pittsburgh Ballroom

Chair:

Marc K. Jenkins, University of Minnesota Medical School
AAI President

**Award Recipient:**

Carl H. June, University of Pennsylvania Perelman School of Medicine

Adventures with CARs for cancer

AAI President Marc K. Jenkins will introduce the awardee and present the award immediately prior to Dr. June's lecture.

AAI BUSINESS MEETING & AWARDS PRESENTATIONS

SATURDAY, MAY 3, 1:30 PM - 2:30 PM

This session will include the annual report to AAI members on AAI and *The Journal of Immunology* business affairs and will feature special 2014 AAI award presentations and acknowledgments. Refreshments will be provided.

AAI Distinguished Service Award Presentations

Kristin A. Hogquist, University of Minnesota Center for Immunology

For outstanding service to AAI and the immunology community as Chair of the AAI Program Committee, 2009–2012



Jeremy M. Boss, Emory University School of Medicine

For outstanding service to AAI and the immunology community as Editor-in-Chief of The Journal of Immunology, 2008–2013

AAI annually provides travel awards and grants to recognize the promise and bolster the professional development of early- and mid-career investigators, including under-represented minority scientists and trainees. Travel award and grant presentations and acknowledgments will include:

Presentations

- AAI-Life Technologies Trainee Achievement Awards
- Lefrançois-BioLegend Memorial Award
- Chambers-eBioscience Memorial Award
- Lustgarten-eBioscience Memorial Award
- Pfizer-Showell Travel Award

Acknowledgments

- AAI Early Career Faculty Travel Grants
Supported, in part, by BD Biosciences
- AAI Laboratory Travel Grants
Supported, in part, by BD Biosciences
- AAI Minority Scientist Travel Awards
Sponsored by FASEB MARC Program under a grant from NIGMS, NIH [FASEB MARC Program: T36-GM08059-31]
- AAI Trainee Abstract Awards
Supported, in part, by Ansell Corporation and BD Biosciences
- AAI Trainee Poster Awards
Supported, in part, by Ansell Corporation and Immudex
- AAI Undergraduate Faculty Travel Grants

SATURDAY, MAY 3, 8:00 AM – 11:30 AM

Major Symposium A: Underlying Mechanisms of Autoimmunity**Chairs:**

Ann Marshak-Rothstein, University of Massachusetts Medical School

Daniel B. Stetson, University of Washington

Speakers:

Daniel B. Stetson, University of Washington
Endogenous retroelements and autoimmune disease

Virginia Pascual, Baylor Institute for Immunology Research
Novel innate immunity pathways contribute to human lupus pathogenesis

Amit Bar-Or, Montreal Neurological Institute, McGill University
B cell: T cell interactions in autoimmunity

Ann Marshak-Rothstein, University of Massachusetts Medical School
Systemic autoimmune disease – Why TLR7?

Alexander V. Chervonsky, University of Chicago
Microbial contribution to autoimmunity

Jayne Danska, Hospital for Sick Children, University of Toronto
Ménage à trois: genes, sex, and microbes in autoimmunity

Major Symposium B: Cytokines: In Sickness and in Health**Chairs:**

Sarah L. Gaffen, University of Pittsburgh

Achsah D. Keegan, University of Maryland School of Medicine

Speakers:

Georgia Perona-Wright, University of British Columbia
The impact of indiscriminate cytokine signaling in infection

Achsah D. Keegan, University of Maryland School of Medicine
Alternative activation of macrophages by IL-4 and IL-13: contribution to severity of allergic lung inflammation

Sharon S. Evans, Roswell Park Cancer Institute
The two faces of IL-6 in the tumor microenvironment

Sandip K. Datta, NIAID, NIH
Cytokine regulation of Staphylococcus aureus infections

Sarah L. Gaffen, University of Pittsburgh
Straight from the mouse's mouth: IL-17 signaling and oral immunity to fungi

Jean-Laurent Casanova, HHMI, Rockefeller University
Toward a genetic theory of childhood infectious diseases

SUNDAY, MAY 4, 8:00 AM – 11:30 AM

Major Symposium C: The Female Reproductive Tract: From Infection to Pregnancy**Chairs:**

Adrian Erlebacher, New York University School of Medicine

Akiko Iwasaki, Yale School of Medicine

Speakers:

Michael N. Starnbach, Harvard Medical School
Chlamydia trachomatis manipulates immunity in the genital tract

Ashley T. Haase, University of Minnesota
Vaccine strategies to concentrate immune defenses at mucosal frontlines

Akiko Iwasaki, Yale School of Medicine
Tissue-resident memory T cell protection against HSV-2

Sing Sing Way, Cincinnati Children's Hospital
Immune pathogenesis of prenatal infection

Adrian Erlebacher, New York University School of Medicine
Epigenetics of immune privilege in the pregnant uterus

Francesco Colucci*, University of Cambridge
Maternal immune cells and fetal compatibility genes
**Supported by the British Society for Immunology*

Major Symposium D: Regulation of Gene Expression and Immunity**Chairs:**

Peter D. Katsikis, Drexel University College of Medicine

Carola G. Vinuesa, Australian National University

Speakers:

Peter D. Katsikis, Drexel University College of Medicine
miRNA and CTL responses

Karla Kirkegaard, Stanford University School of Medicine
Function of a long noncoding RNA in pathogen susceptibility and IFN-gamma synthesis

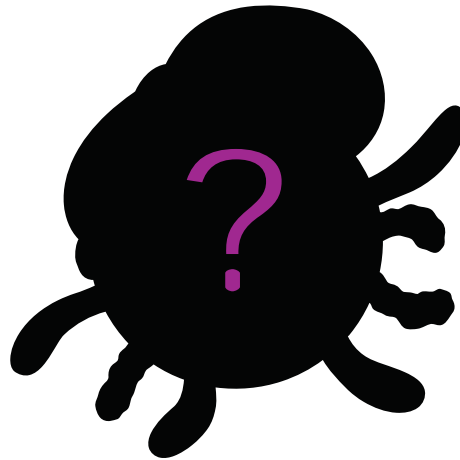
Rafael Casellas, NIAMS, NIH
The nature of AID off-targeting activity

Alexander Tarakhovskiy, Rockefeller University
Epigenetic control of antiviral response

Martin Turner, Babraham Institute
The regulation of lymphocyte development by RNA binding proteins

Carola G. Vinuesa, Australian National University
miRNA-mediated control of Tfh cells and germinal center responses

Cells wanted for interrogation



Discover immunology's prime suspects

AAI 2014 - **Booth #511**

Biology for a better world.

NORTH AMERICA: 888.999.1371 ■ EUROPE: +43 1 796 40 40-304 ■ JAPAN: +81 (0)3 6430 4020 ■ INQUIRIES: info@ebioscience.com

MAJOR SYMPOSIA

MONDAY, MAY 5, 8:00 AM – 11:30 AM

Major Symposium E: Fueling Immunity: Metabolic Effects in and on the Immune System

Chairs:

Douglas R. Green, St. Jude Children's Research Hospital
Barbara S. Nikolajczyk, Boston University School of Medicine

Speakers:

Douglas R. Green, St. Jude Children's Research Hospital
Metabolic reprogramming in activated T cells

Steven J. Bensinger, University of California, Los Angeles
SREBPs are required for metabolic reprogramming of effector T cells

Erika L. Pearce, Washington University School of Medicine
Metabolic regulation of T cell function and fate

Barbara S. Nikolajczyk, Boston University School of Medicine
Lymphocytes regulate inflammation in human type 2 diabetes

Vishwa Deep Dixit, Yale School of Medicine
Immunometabolic control of age-related inflammation

Myriam Aouadi, University of Massachusetts Medical School
Role of adipose tissue macrophages in the regulation of whole body metabolism

Major Symposium F: Progress and Challenges in Vaccines for the Major Killers: Malaria, Tuberculosis, and HIV/AIDS

Chairs:

John T. Harty, University of Iowa
JoAnne L. Flynn, University of Pittsburgh School of Medicine

Speakers:

Robert A. Seder, NIAID, NIH
Translational development of a malaria vaccine from bench to bedside: is it prime time for T cells?

John T. Harty, University of Iowa
Breaking, making, and breaking immunity during malaria infection

Willem Hanekom, University of Cape Town and Gates Foundation
Toward understanding vaccination-induced protection against tuberculosis

JoAnne L. Flynn, University of Pittsburgh School of Medicine
Variability among and within hosts in tuberculosis

Pamela J. Bjorkman, HHMI, California Institute of Technology
Engineering improved antibodies against HIV

Dan Barouch, Beth Israel Deaconess Medical Center
Novel HIV vaccine strategies

TUESDAY, MAY 6, 8:00 AM – 11:30 AM

Major Symposium G: Deciphering the Roles for Innate Lymphoid Cells in Health and Disease

Chairs:

James P. Di Santo, Institut Pasteur
Fumio Takei, University of British Columbia

Speakers:

James P. Di Santo, Institut Pasteur
Transcriptional regulation of innate lymphoid cell differentiation

Nadine Cerf-Bensussan, Institut IMAGINE and Université Paris Descartes-Sorbonne Paris Cité
Gut innate lymphoid cells and intestinal lymphomagenesis

Michael A. Caligiuri, Ohio State University
Human NK cell development: sorting out the ILCs

Gregory F. Sonnenberg, University of Pennsylvania
Innate lymphoid cell regulation of adaptive immunity and intestinal homeostasis

Bruce D. Levy, Brigham & Women's Hospital and Harvard Medical School
Specialized pro-resolving mediators regulate innate lymphoid cells

Fumio Takei, University of British Columbia
ILC2 and allergic lung inflammation

Major Symposium H: Macrophages and DCs in Vascular Inflammation

Chairs:

Klaus Ley, La Jolla Institute for Allergy & Immunology
Eicke Latz, University of Bonn and University of Massachusetts Medical School

Speakers:

Eicke Latz, University of Bonn and University of Massachusetts Medical School
Role of inflammasomes in vascular inflammation

David M. Mosser, University of Maryland, College Park
The regulation of inflammation by macrophages

Filip K. Swirski, Massachusetts General Hospital and Harvard Medical School
Monocyte flux and macrophage proliferation in atherosclerosis

Klaus Ley, La Jolla Institute for Allergy & Immunology
Antigen presentation in the atherosclerotic aorta

Cornelia M. Weyand, Stanford University School of Medicine
Dendritic cell function in large vessel vasculitis

Jacques F. Banchereau, Jackson Laboratory for Genomic Medicine
Harnessing human dendritic cell subsets for next generation vaccines

SONY

See any color you like.

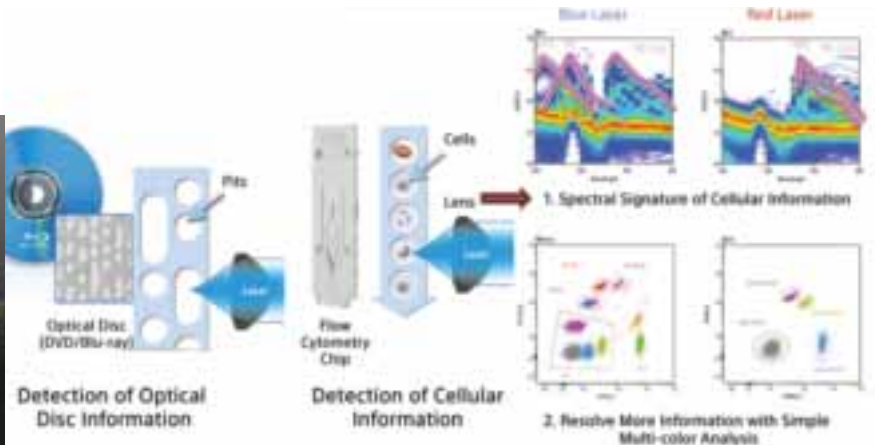
The SP6800 Spectral Analyzer is Sony's newest and most unique flow cytometry-based system which can expand cell and biomarker research.

See and analyze all wavelengths from 500 nm to 800 nm. Spectrally unmix overlapping colors in a single run. Remove interfering autofluorescence or analyze autofluorescence as an independent color.

Operate powerful software providing new tools, analysis techniques and an easy to use interface.

Visit our website or contact a local sales representative for more information.

www.sonybiotechnology.com



Technology for Science.

©2014 Sony Corporation. All rights reserved. For Research Use Only. Not for use in diagnostic or therapeutic procedures. The SP6800 Spectral Analyzer is classified as a Class 1 laser product. Blu-ray Disc™ is a trademark of the Blu-ray Disc Association. All other trademarks are property of their respective owners.

Sony Biotechnology Inc.

AAI COMMITTEE ON PUBLIC AFFAIRS

Rock Talk-ing With Sally Rockey: The Issues, the Blog, and the Woman Behind It All

SUNDAY, MAY 4, 12:30 PM – 2:00 PM

Chair:

Elizabeth J. Kovacs, Chair, AAI Committee on Public Affairs

Speaker:



Sally Rockey

Deputy Director for Extramural Research and Director, Office of Extramural Research, NIH

So you get the blog, and you read it, and you sometimes even comment. The issues raised are important and thought-provoking, and the questions asked can be provocative. But the person who writes this blog is also a senior leader at NIH who has influence over NIH policy, particularly, over many of the key issues that affect you. Who is she and what do you want her to know about you? Come to this session to meet Sally Rockey, to learn about upcoming NIH plans for the extramural research community, and to get answers to the questions you've always wanted to ask.

AAI CLINICAL IMMUNOLOGY COMMITTEE

Personalized Medicine from an Immunologist's Perspective

SATURDAY, MAY 3, 3:45 PM – 5:45 PM

Chairs:

Robert L. Modlin, University of California, Los Angeles

Charles A. Dinarello, University of Colorado Denver

The integration of basic research and clinical knowledge has led to an ever-increasing repertoire of personalized strategies for the treatment and prevention of a variety of infectious and inflammatory diseases. A major focus of this session will be on systems medicine approaches to identify biomarkers and targets for both prevention and intervention in human disease.

Speakers:

Kenneth G. C. Smith, University of Cambridge
Immune-mediated disease: the genomics of clinical outcome

Charles A. Dinarello, University of Colorado Denver
Blocking IL-1 in inherited rare diseases and in common diseases

Denise E. Kirschner, University of Michigan Medical School
A systems biology approach to understanding the immune response to Mycobacterium tuberculosis

Bali Pulendran, Emory University Vaccine Research Center,
Systems vaccinology: enabling rational vaccine design with systems biology

AAI EDUCATION COMMITTEE

AAI High School Teachers Summer Research Program Workshop: Lessons in Immunology

SATURDAY, MAY 3, 8:00 AM – 10:00 AM

Chair:

Clinton B. Mathias, Western New England University

The AAI High School Teachers Summer Research Program brings the excitement of immunology directly to high school students through curricula developed by participating high school teachers. This program pairs high school science teachers with established AAI member immunologists who mentor them in their laboratories in a “hands-on” summer internship. The teachers develop a science project for the classroom based on their summer research experience. In this session, 2013-2014 participating high school teachers will present their experiences and projects.

Speakers:

Robert Aguilar, Western Reserve Academy, Hudson, Ohio

Andrea Cobb, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia

Mark Trice, Frederick High School, Frederick, Maryland

Matthew S. Young, A&M Consolidated High School
College Station, Texas

Careers in Biotech: Panel Discussion and Networking

SATURDAY, MAY 3, 7:00 PM – 9:00 PM

Chair:

Nandita Bose, Biothera

Many opportunities exist in industry for a scientist with advanced degrees. There are positions in laboratory research, program management, business development, regulatory affairs and clinical trials oversight, medical liaison, and more. This panel features scientists employed in a variety of positions in industry, who will share their career paths and highlight the skills required to succeed in these careers. Following the panel discussion, enjoy casual conversation with the speakers and other industry connections at a networking reception.

Panelists:

Elizabeth L. Bachert, Senior Director, Worldwide Business Development, Pfizer

Jane Grogan, Senior Scientist, Genentech

James Huleatt, Deputy Director, Global Clinical Immunology
Sanofi Pasteur

Thomas MacAllister, Chief Development Officer, Besins Healthcare

Jeffrey Rossio, Director, R&D, Immunoassay Development
Life Technologies Corporation

AAI EDUCATION COMMITTEE & AAI COMMITTEE ON THE STATUS OF WOMEN

Careers in Science Roundtable

SUNDAY, MAY 4, 11:30 AM – 1:00 PM

Chair:

Scheherazade Sadegh-Nasseri, Johns Hopkins Medical Institute
Chair, AAI Committee on the Status of Women

Registration Fee: \$20 (Lunch included)

At this always popular session, you'll have the opportunity to meet with scientists at your own career stage and with more experienced scientists to explore specific career issues important to men and women in science today. Learn what others are thinking and gain insights into issues you are confronting in your own situation. New topics this year offer insights into NIH Study Sections and considerations for scientists in M.D.-Ph.D. careers. Choose from these and the other vital topics related to the environment you work in (academic research, biotech industry, governmental agencies, non-profits), the transitions from specific career stages, or issues in balancing career and family in any career path. Don't miss this great networking opportunity!

Discussion topics and table leaders:

Research Careers in Academia

- Graduate Student to Postdoc: finding a postdoc, interviewing
Table Leaders: **Carol F. Webb**, Oklahoma Medical Research Foundation; **Michelle A. Parent**, University of Delaware
- Postdoc to PI: finding a position, interviewing, negotiating, lab start-up
Table Leaders: **Deborah M. Brown**, University of Nebraska, Lincoln; **Shabaana A. Khader**, Washington University
- New PI: attracting students and postdocs, preparing for tenure
Table Leaders: **Akiko Iwasaki**, HHMI, Yale School of Medicine; **Robin Stephens**, University of Texas Medical Branch
- Undergraduate Institutions: finding the balance in teaching, doing research
Table Leaders: **Paula Lutz**, University of Wyoming; **Laurie Shornick**, St. Louis University

- Mentoring Effectively
Table Leaders: **Gail A. Bishop**, University of Iowa; **Laura Haynes**, University of Connecticut Health Center; **Janice S. Blum**, Indiana University School of Medicine

How to Build a Network

Table Leaders: **Sarah L. Gaffen**, University of Pittsburgh; **Paula M. Oliver**, University of Pennsylvania

Career and Family: time management/family leave/professional couples

Table Leaders: **Susan Kovats**, Oklahoma Medical Research Foundation; **Carolina B. Lopez**, University of Pennsylvania School of Veterinary Medicine; **Lisa K. Denzin**, Rutgers Robert Wood Johnson Medical School

Careers in Biotech and Industry: moving from academia to industry and vice versa

Table Leaders: **Jane Grogan**, Genentech; **Mandy J. McGeachy**, University of Pittsburgh; **Theresa Schaub**, eBioscience, an Affymetrix company

Research Careers at Governmental Agencies (FDA/NIH/USDA/CDC)

Table Leaders: **Carol H. Pontzer**, NCCAM, NIH; **David H. Margulies**, NIAID, NIH

NIH Study Section Insights

Table Leaders: **Scheherazade Sadegh-Nasseri**, Johns Hopkins Medical Institute; **Virginia Shapiro**, Mayo Clinic

The Physician Scientist: balancing clinical and research duties

Table Leaders: **Penelope A. Morel**, University of Pittsburgh; **Robert L. Ferris**, University of Pittsburgh

Research from the M.D., Ph.D. Perspective

Table Leaders: **Mary Beth Humphrey**, Oklahoma University Health Sciences Center; **Wayne M. Yokoyama**, HHMI, Washington University School of Medicine

Non-Research Careers for Scientists: careers in scientific journals, public policy, non-profits

Table Leaders: **Mary T. Litzinger**, American Association of Immunologists; **Elizabeth R. Walsh**, American Association of Immunologists (Two Ph.D. immunologists serving the AAI as manager of educational and career development programs, and science liaison, respectively)



AAI Careers Roundtables present great opportunities to explore specific career issues important to men and women today.

AAI MEMBERSHIP COMMITTEE

New Member Reception

FRIDAY, MAY 2, 4:00 PM – 4:45 PM

Chair:

Judith A. Owen, Haverford College; Chair, AAI Membership Committee

AAI wishes to welcome new Regular and Associate members joining AAI for the first time. AAI President Marc Jenkins and other AAI leaders look forward to meeting you personally. Please join us with your invitation in hand for light refreshments and casual conversation.

Event by invitation only.

AAI MINORITY AFFAIRS COMMITTEE

Careers Roundtable and (NEW!) Speed Networking Session

SATURDAY, MAY 3, 11:45 AM – 2:15 PM

Supported in part by a grant to the Federation of American Societies for Experimental Biology (FASEB) from the National Institute of General Medical Sciences (NIGMS), National Institutes of Health [FASEB MARC Program: T36-GM08059-31]

Chair:

Adriana Larregina, University of Pittsburgh; Chair, AAI Minority Affairs Committee

Registration Fee: \$20 (Includes lunch; coffee/cookies during networking hour.)

Networking skills have never been more crucial to ensure success for early/mid-career scientists, including those traditionally under-represented in biomedical research. At the roundtable, take advantage of the opportunity to meet in small-group format with accomplished, senior immunologists to hear how they have handled the career challenges you now face and learn what they believe will work for you today. Then practice networking in a relaxed environment offering a structured networking exercise and personalized feedback on communicating your scientific interests/objectives most effectively.

Roundtable discussion topics and table leaders:

Grad Student: finding a mentor; taking aim at postdoc training
Table Leaders: **Santiago Partida-Sanchez**, Nationwide Children's Hospital; **Eduardo Davila**, University of Maryland Greenebaum Cancer Center

Postdoc: finding a mentor; taking aim at a faculty position
Table Leader: **Jose A. Guevara-Patino**, Loyola University

Junior Faculty: preparing for promotion and tenure
Table Leader: **Adriana T. Larregina**, University of Pittsburgh

Academia or Industry: how to decide (or switch sides)
Table Leaders: **Jonathan A. Deane**, GNF/Novartis;
Karel Otero Gutierrez, Biogen Idec

Government Agency Careers: CDC, FDA, NIH

Table Leaders: **Cherié L. Butts**, Biogen Idec;

Marta Catalfamo, NIAID, NIH

Non-Research Careers: science journalism, patent law, biomedical entrepreneurship

Table Leader: **Maria S. Vanegas**, University of Pittsburgh Office of Technology Management

Minority Affairs Committee Guest Lecture

MONDAY, MAY 5, 11:30 AM – 12:30 PM

Supported in part by a grant to the Federation of American Societies for Experimental Biology (FASEB) from the National Institute of General Medical Sciences (NIGMS), National Institutes of Health [FASEB MARC Program: T36-GM08059-31]

Chair:

Adriana Larregina, University of Pittsburgh; Chair, AAI Minority Affairs Committee



Speaker:

Arturo Casadevall, Albert Einstein College of Medicine, Yeshiva University
A new synthesis for antibody-mediated immunity

AAI PROGRAM COMMITTEE

Back to School: A Review of Four Fast-Moving Fields

FRIDAY, MAY 2, 2:30 PM – 4:30 PM

Chairs:

David Masopust, University of Minnesota

Leslie J. Berg, University of Massachusetts Medical School

This workshop intends to bring a broad audience up-to-date on a few emerging or rapidly changing fields or areas of technological innovation. Expert lecturers will provide an overview of each trending topic with an emphasis on communicating big picture concepts.

Speakers:

David A. Largaespada, University of Minnesota
Engineering cells using transposons and site-specific endonucleases

Richard M. Locksley, HHMI, University of California San Francisco
Innate lymphoid cells

Katherine A. Fitzgerald, University of Massachusetts Medical School
Long non-coding RNA: new players in gene regulation and host defense

Kenneth M. Murphy, HHMI, Washington University School of Medicine
Dendritic cell development and subset function

AAI PUBLICATIONS COMMITTEE

Publishing Your Scientific Work: Tips on Writing, Responding to Reviewers, and Avoiding Ethical Pitfalls

SUNDAY, MAY 4, 12:30 PM – 2:00 PM

Chairs:

Eugene M. Oltz, Washington University School of Medicine

Pamela J. Fink, University of Washington School of Medicine
Editor-in-Chief, *The Journal of Immunology*

Your data may be good and your findings may be significant, but your manuscript will navigate peer review more smoothly if you present your findings well. What steps can an author take to improve data presentation? What is considered an inappropriate, even unethical, presentation of data? What will make the manuscript easier for the reviewer to read and evaluate? How can the author best respond to reviewers? With ample time for questions and answers at the end of the session, experienced editors will address these and other questions about scientific publishing in this session sponsored by the AAI Publications Committee.

Speakers:

Eugene M. Oltz, Washington University School of Medicine
Writing a scientific manuscript: How should I tell my story and to whom should I tell it?

Kristin A. Hogquist, University of Minnesota
Responding to reviewers: What you want to say and what you should say

Pamela J. Fink, University of Washington School of Medicine
Editor-in-Chief, *The Journal of Immunology*
If it feels wrong, it probably is

AAI VETERINARY IMMUNOLOGY COMMITTEE & AMERICAN ASSOCIATION OF VETERINARY IMMUNOLOGISTS (AAVI) JOINT SYMPOSIUM

Vaccines for the Modern Era: Implications for Human and Animal Health

SATURDAY, MAY 3, 12:30 PM – 2:30 PM

Chairs:

Laurel J. Gershwin, University of California, Davis

Carol G. Chitko-McKown, Genetics, Breeding, and Animal Health Research Unit, ARS, USDA

This symposium will feature topics on both human and veterinary vaccines, with emphasis on new technologies and new information for more appropriate targeting of the immune response to achieve protective immunity. Advances in understanding immune responses to veterinary and human pathogens and applications of that information to vaccine design illustrate a commonality that supports the current “one health” concept in medicine.

Speakers:

Mark K. Slifka, Oregon Health and Science University
Hydrogen peroxide-based vaccines: a new approach to an old problem

Tilahun Yilma, University of California, Davis
Strategies for enhancing the safety and efficacy of recombinant vaccines

Ronald D. Schultz, University of Wisconsin
Immunologic memory: what to expect from different types of vaccines!

Anna P. Durbin, Johns Hopkins Bloomberg School of Public Health
Dengue vaccines: from animal models to human challenge



CENTENNIAL TIMELINE – 3RD FLOOR CORRIDOR

Back by Popular Demand!

Travel the **AAI Centennial Timeline** spanning the 3rd floor corridor. The Centennial Timeline depicts important developments for AAI and immunology, science and technology, and U.S. and world history. Even if you viewed this structure in Hawaii at the AAI meeting, you'll find worlds more to explore in this chronicle of the great legacy informing your work today.

Also on Display:

- Profiles of AAI Nobel laureates and Lasker Award recipients
- AAI StoryBooth, featuring attendees' favorite immunology career recollections (Record your own while you are there!)

NIH INSTITUTE-SPONSORED SYMPOSIA

National Institute of Allergy and Infectious Diseases (NIAID) Symposium: *Lymphatic Function and the Immune Response to Microbial or Viral Infection*

SUNDAY, MAY 4, 3:45 PM – 5:45 PM

Chairs:

Michael C. Carroll, Children's Hospital and Harvard Medical School

Lara R. Miller, NIAID, NIH

Speakers:

Melody A. Swartz, Ecole Polytechnique Federale de Lausanne
Immunoregulatory roles of lymphatic endothelial cells

Michael C. Carroll, Children's Hospital and Harvard Medical School
Nodal regulation of humoral immunity to influenza infection by lymphangiogenesis

David C. Zawieja, Texas A&M Health Science Center
Altered lymphatic function in response to inflammation/peritonitis

Nancy H. Ruddle, Yale University
Lymphatics in chronic inflammation

National Institute of Allergy and Infectious Diseases (NIAID) Workshop: *Scavenger Receptor Biology and Nomenclature*

SUNDAY, MAY 4, 12:30 PM – 2:30 PM

Chairs:

Mercy PrabhuDas, NIAID, NIH

Joseph El Khoury, Massachusetts General Hospital and Harvard Medical School

This workshop will serve as a follow-up to a meeting held in November 2012 in Bethesda, Maryland, at which experts in the field came together to establish guidelines and recommendations for standardizing the nomenclature for scavenger receptors (SRs) and to consider strategies for dealing with future discoveries of SRs. The goal of this workshop is to communicate these recommendations and guidelines, which will be published in *The Journal of Immunology* prior to IMMUNOLOGY 2014™, to the wider scientific community, to provide a forum for discussion, and to gather feedback for adopting the recommended nomenclature in the future.

The session will consist of one hour of scientific talks followed by a panel discussion, which will culminate with a vote from the floor to arrive at a decision regarding the proposed recommendations.

Schedule:

Monty Krieger, Massachusetts Institute of Technology
The initial molecular identification and characterization of scavenger receptors

Dawn M. E. Bowdish, McMaster University
Scavenger receptors in host defense against infectious disease

Joseph El Khoury, Massachusetts General Hospital and Harvard Medical School

Scavenger receptors and the neuroimmune system

Joseph El Khoury, Massachusetts General Hospital and Harvard Medical School

Proposed nomenclature

Panel Discussion followed by vote

Monty Krieger, Massachusetts Institute of Technology

Steven R. Post, University of Arkansas for Medical Sciences

Dawn M. E. Bowdish, McMaster University

Joseph El Khoury, Massachusetts General Hospital and Harvard Medical School

Xiang-Yang Wang, Virginia Commonwealth University

National Institute on Aging (NIA) Symposium: *B Cell Regulation of Immunity in Old Age*

SUNDAY, MAY 4, 3:45 PM – 5:45 PM

Chairs:

Rebecca A. Fuldner, NIA, NIH

Michael P. Cancro, University of Pennsylvania School of Medicine

Speakers:

Richard L. Riley, University of Miami
Mechanisms and outcomes of reduced B lymphopoiesis in old age

Michael P. Cancro, University of Pennsylvania School of Medicine
Affinity, effectors, and memory: independent variables in humoral immunosenescence

Laura Haynes, University of Connecticut Health Center
Protective humoral immunity and Tfh function decline with age

M. A. Julie Westerink, University of Toledo Health Science Center
Age-related immune response to pneumococcal polysaccharide vaccination

National Institute of Environmental Health Sciences (NIEHS) Symposium: *Gene Environment Interactions in the Etiology of Asthma*

SUNDAY, MAY 4, 12:30 PM – 2:30 PM

Chairs:

Michael C. Humble, NIEHS, NIH

Donald N. Cook, NIEHS, NIH

Speakers:

Donald N. Cook, NIEHS, NIH
Finding the molecular links between house dust and asthma

Stephanie A. Cormier, University of Tennessee Health Science Center
Exposure to combustion-derived particulate matter enhances influenza severity in infants

John W. Hollingsworth, Duke University
Molecular mechanisms involved in lung airway and immune responses to ozone

Lester Kobzik, Harvard School of Public Health
Prenatal programming of asthma susceptibility by environmental stressors

GUEST SOCIETY SYMPOSIA

American Association of Pharmaceutical Scientists (AAPS) Symposium: *Immunogenicity of Biotherapeutics: Predicting Potential Contributors and Mechanisms*

SUNDAY, MAY 4, 8:00 AM – 10:00 AM

Chairs:

Arunan Kaliyaperumal, Amgen, Inc.

Bonnie Rup, Pfizer

Speakers:

Terry Goletz, Amgen, Inc.

Applications and approaches for immune monitoring in clinical drug development

Jack Ragheb, FDA

Novel in vivo approaches for the study of immune responses

Genhong Cheng, University of California, Los Angeles

Inflammatory responses to PAMPs, DAMPs, and protein aggregates

Scheherazade Sadegh-Nasseri, Johns Hopkins School of Medicine

Use of the immune system's bare essentials for identification of T cell targets

American Association of Veterinary Immunologists (AAVI) and AAI Veterinary Immunology Committee Joint Symposium: *Vaccines for the Modern Era: Implications for Human and Animal Health*

SATURDAY, MAY 3, 12:30 PM – 2:30 PM

Chairs:

Laurel J. Gershwin, University of California, Davis

Carol G. Chitko-McKown, Genetics, Breeding, and Animal Health Research Unit, ARS, USDA

Speakers:

Mark K. Slifka, Oregon Health and Science University

Hydrogen peroxide-based vaccines: a new approach to an old problem

Tilahun Yilma, University of California, Davis

Strategies for enhancing the safety and efficacy of recombinant vaccines

Ronald D. Schultz, University of Wisconsin

Immunologic memory: what to expect from different types of vaccines!

Anna P. Durbin, Johns Hopkins Bloomberg School of Public Health

Dengue vaccines: from animal models to human challenge

American Society for Blood and Marrow Transplantation (ASBMT) Symposium: *Exploiting Immune Responses to Cytomegalovirus Infection after Transplantation*

SATURDAY, MAY 3, 10:15 AM – 12:15 PM

Chairs:

Jeffrey S. Miller, University of Minnesota

Helen E. Heslop, Baylor College of Medicine

Speakers:

Jeffrey S. Miller, University of Minnesota

Human NK cell memory responses shaped by CMV reactivation

William J. Murphy, University of California, Davis School of Medicine

Differential effects of murine NK cell licensing in mediating MCMV resistance and modulating T cell responses

Helen E. Heslop, Baylor College of Medicine

Targeting CMV with multivirus-specific or third party CTLs

Karl Peggs, University College London Cancer Institute

CMV-specific T cell therapies: from proof of concept to standard of care?

American Society of Transplantation (AST) Symposium: *New Paradigms in T Cell Biology and Transplant Immunity*

MONDAY, MAY 5, 10:15 AM – 12:15 PM

Chairs:

Mandy L. Ford, Emory University

Heth R. Turnquist, University of Pittsburgh School of Medicine

Speakers:

Fadi G. Lakkis, University of Pittsburgh School of Medicine

Migration of effector and memory T cells into the transplant

Jordan S. Pober, Yale University

Endothelial cells as antigen presenting cells and regulators of effector T cell transplant infiltration

Qizhi Tang, University of California, San Francisco

Therapeutic applications of Tregs in transplantation

Daniel J. Campbell, Benaroya Research Institute

Roles for Th1 and Th2 "master regulator" transcription factors in regulatory T cells



Visit the History Lounges (Floor 3) for the *Immunology in Popular Culture* exhibit, featuring AAI members' science depicted in general media and society. Also, learn the history of distinguished Pittsburgh leaders in science.

IMMUNOLOGY 2014™ GALA

You are invited to attend
An Evening of Discovery!

Generously Sponsored by BioLegend



AAI attendees all share a commitment to innovation and discovery. At the Heinz History Center, our Gala attendees will be treated not only to a taste of Pittsburgh at a festive reception but also to exhibits and stories of breakthroughs and achievements that originated in Pittsburgh and Western Pennsylvania. From Jonas Salk's discovery of the polio vaccine and the invention of the Big Mac, to the rise of new jazz styles and the nation's first superhighway, guests will experience what made this region a cradle of world-changing ideas.

THE SENATOR JOHN HEINZ HISTORY CENTER
1212 SMALLMAN STREET
MONDAY, MAY 5, 2014
7:00 PM – 9:30 PM

OPEN TO ALL IMMUNOLOGY 2014™ ATTENDEES AND TICKETED GUESTS.
MEETING BADGE OR TICKET REQUIRED FOR ENTRANCE.
ATTENDEES MUST BE AT LEAST 21 YEARS OF AGE.



Canadian Society for Immunology (CSI) Symposium: *Transcriptional Regulation of Hematopoiesis*

SATURDAY, MAY 3, 10:15 AM – 12:15 PM

Chairs:

Michele K. Anderson, Sunnybrook Research Institute, Toronto

Rodney P. DeKoter, Western University, London, Ontario

Speakers:

R. Keith Humphries, Terry Fox Laboratory, Vancouver
The good and bad side of transcription factors in hematopoiesis: Meis1 as a case study

Trang Hoang, IRIC, Montreal
Oncogenic transcription factors, from hematopoietic stem cells to acute leukemias

Rodney P. DeKoter, Western University, London, Ontario
Complementary roles of PU.1 and Spi-B at the pro-B to pre-B cell transition

Michele K. Anderson, Sunnybrook Research Institute, Toronto
Regulation of gamma-delta T cell development and programming by HEB transcription factors

Juan Carlos Zúñiga-Pflücker, Sunnybrook Research Institute Toronto
Requirements for GATA-3 at the initiation of the T-lineage development program in response to Notch signals

Chinese Society of Immunology (ChSI) Symposium: *Cancer Immunotherapy Targeting Chronic Inflammation and Immunosuppression*

SUNDAY, MAY 4, 10:15 AM – 12:15 PM

Chairs:

Xuetao Cao, Chinese Academy of Medical Sciences, Beijing

Olivera J. Finn, University of Pittsburgh School of Medicine

Speakers:

Xuetao Cao, Chinese Academy of Medical Sciences, Beijing
Overview of tumor immunology and immunotherapy in China

Limin Zheng, Sun Yat-sen University, Guangzhou
Macrophage plasticity in distinct microenvironments of human tumor

Xiyun Yan, Institute of Biophysics, Chinese Academy of Sciences, Beijing
Targeting CD146 for cancer immunotherapy

Bo Huang, Chinese Academy of Medical Sciences, Beijing
Macroparticles in cancer immunotherapy

Taoyong Chen, National Key Laboratory of Medical Immunology and Institute of Immunology, Second Military Medical University, Shanghai
New adjuvant and delivery system in cancer immunotherapy

German Society for Immunology (DGfI) Symposium: *Thymic Development and Tolerance*

MONDAY, MAY 5, 3:45 PM– 5:45 PM

Chairs:

Jürgen Wienands, University of Göttingen

Dieter Kabelitz, University of Kiel

Carsten Watzl, Leibniz Research Center, Dortmund

Speakers:

Hans-Martin Jäck, University of Erlangen
Immunology in Germany

Thomas Boehm, MPI for Immunobiology and Epigenetics Freiburg
Evolution of the thymus

Ludger Klein, University of Munich
Functional adaptation of thymic stromal cells for tolerance induction

Bruno Kyewski, German Cancer Research Institute (DKFZ) Heidelberg
Generating intra-thymic self-antigen diversity for central tolerance

Vera Martins, University of Ulm
Cell competition in T cell progenitors

Hans-Reimer Rodewald, German Cancer Research Institute (DKFZ), Heidelberg
Thymus as a source of T cell leukemia

International Complement Society (ICS) Symposium: *Frontiers in Complement Research: Immunity, Autoimmunity, and Cellular Homeostasis*

SUNDAY, MAY 4, 10:15 AM – 12:15 PM

Chairs:

V. Michael Holers, University of Colorado School of Medicine, Denver

Viviana Ferreira, University of Toledo

Speakers:

Wenchao Song, University of Pennsylvania Perelman School of Medicine
Complement, inflammation, and the synergistic intersection of innate immune pathways

Marina Botto, Imperial College London
Complement in humoral immunity and autoimmunity

Piet Gros, Utrecht University, *Elucidating mechanisms of complement function from structural biology*

Daniel Ricklin, University of Pennsylvania Perelman School of Medicine
Regulation of cellular proliferation by complement: roles in cancer and transplantation biology

Andrea J. Tenner, University of California, Irvine
Novel functions of complement proteins and pathway activation in neurological disorders

**Japanese Society for Immunology (JSI)
Symposium: *Highlights of Immunology in Japan:
JSI Awardees Symposium***

MONDAY, MAY 5, 3:45 PM – 5:45 PM

Chairs:

Ichiro Taniuchi, RIKEN Center for Integrative Medical Sciences
Yasunobu Miyake, Kyushu University

Speakers:

Ichiro Taniuchi, RIKEN Center for Integrative Medical Sciences
Transcriptional control of helper/cytotoxic lineage choice in the thymus

Takashi Sekiya, Keio University
Roles of the nuclear orphan receptor Nr4a in CD4⁺ T cell development and functions

Keiji Hirota, Osaka University
T cell-dependent IgA responses by plastic Th17 cells

Yasunobu Miyake, Kyushu University
Mycobacterial recognition by C-type lectin receptors

Hideyuki Yanai, University of Tokyo
Role of HMGB1 in inflammatory diseases and nucleic acid-mediated immune responses

**Korean Association of Immunologists (KAI) and
Association of Korean Immunologists in America
(AKIA) Symposium: *Regulation of Host Immunity
by Immune Cell Receptors and Effectors***

SATURDAY, MAY 3, 3:45 PM – 5:45 PM

Chairs:

Charles D. Surh, Institute for Basic Science, Korea
Mi-La Cho, Catholic University of Korea

Speakers:

Jae U. Jung, University of Southern California
Host and pathogen standoff: host intracellular pattern recognition receptors vs. viral immune modulators

Yong-Soo Bae, Sungkyunkwan University
Positive and negative regulatory factors epigenetically expressed during dendritic cell development control the immunogenicity of dendritic cells

Sungjin Kim, Michigan State University
Memory-like NK cells with potent Fc receptor function and broad-spectrum antiviral activity

Mi-La Cho, Catholic University of Korea
STAT3 licenses AP-1 family to drive Th17 cell differentiation in autoimmune diseases

Hyun Park, NCI, NIH
IL-7 receptor as a new target for immune intervention in inflammation and autoimmunity

**Society for Immunotherapy of Cancer (SITC)
Symposium: *Cancer Immunology and
Immunotherapy: From Basic Science to Clinical
Application***

MONDAY, MAY 5, 12:30 PM – 2:30 PM

Chairs:

Thomas F. Gajewski, University of Chicago
Lisa H. Butterfield, University of Pittsburgh Cancer Institute

Speakers:

Robert H. Vonderheide, University of Pennsylvania
Novel mechanisms of anti-CD40 activity

Nicholas P. Restifo, NCI, NIH
Adoptive T cell therapy: from biology to practice

Suzanne L. Topalian, Johns Hopkins University
Targeting the PD-L1/PD-1 axis for cancer immunotherapy

F. Stephen Hodi, Jr., Dana-Farber Cancer Institute
Anti-CTLA-4 mAb: new directions and combinations

**Society of Mucosal Immunology (SMI)
Symposium: *The Leo Lefrançois Memorial
Symposium on T Cell Memory and Protection from
Infection***

MONDAY, MAY 5, 10:15 AM – 12:15 PM

Chairs:

Joanne L. Viney, Biogen Idec
Stephen M. Hedrick, University of California, San Diego

Speakers:

David Masopust, University of Minnesota
The study of memory T cells that reside within the respiratory, intestinal, and reproductive mucosa

Vaiva Vezys, University of Minnesota
Induction and maintenance of tolerance to intestinal proteins

Kimberly D. Klonowski, University of Georgia
Environmental cues regulating memory CD8⁺ T cell immunity in the respiratory tract

Kamal M. Khanna, University of Connecticut Health Center
Imaging the onset of primary and secondary immune responses to viral and bacterial infection

Kimberly S. Schluns, University of Texas MD Anderson Cancer Center
Regulation of IL-15 by inflammatory signals

Michael J. Bevan, University of Washington
In honor of Leo Lefrançois: advances in our understanding of T cell memory and protection from infection

The American Association of Immunologists thanks the following sponsors for
their generous support of the 2014 AAI Annual Meeting

AAI Annual Meeting | May 2–6, 2014 | Pittsburgh, Pennsylvania | David L. Lawrence Convention Center

Thank you to our Premier Sponsors

PLATINUM SPONSORS



IMMUNOLOGY 2014™ Gala
President's Service Appreciation Reception
Lefrançois-BioLegend Memorial Award
Meeting Lanyards



Opening Night Welcome Reception
Chambers-eBioscience Memorial Award
Lustgarten-eBioscience Memorial Award
Meeting Bags

GOLD SPONSOR



MARC: Maximizing Access to Research Careers

AAI Minority Scientist Travel Awards
Support for Minority Affairs Committee Guest Lecture
Program Support

SILVER SPONSORS



AAI-BD Biosciences
Investigator Award
AAI Early Career Faculty
Travel Grants
AAI Trainee Abstract Awards
AAI Laboratory Travel Grants



AAI-Life Technologies
Meritorious Career Award
AAI-Life Technologies
Trainee Achievement Awards

SUPPORTING SPONSORS



The JI Editorial Board Dinner and Meeting

CONTRIBUTING SPONSORS



OTHER SUPPORT

ANCELL CORPORATION
Support for AAI Trainee Poster
Travel Awards and AAI Trainee
Abstract Travel Awards

IMMUDEX
Support for AAI Trainee Poster
Travel Awards

HENRY J. SHOWELL
Pfizer-Showell Travel Award

Society for Natural Immunity (SNI) Symposium: Current Developments in NK Cell Research

SATURDAY, MAY 3, 12:30 PM – 2:30 PM

Chairs:

Hans-Gustaf Ljunggren, Karolinska Institutet
Chiara Romagnani, German Rheumatism Research Center

Speakers:

Chiara Romagnani, German Rheumatism Research Center
Phenotypic and functional characterization of human NK cell subsets

André Veillette, Institut de Recherches Cliniques De Montréal
Regulation of NK cell activation by SAP family adaptors and SLAM family receptors

Yenan T. Bryceson, Karolinska Institutet and University of Bergen
CMV drives methylation-dependent epigenetic reprogramming of NK cells

Taku Kambayashi, University of Pennsylvania
Proximal signaling events that dictate NK cell tolerance and education

Monika Braun, Karolinska Institutet
Mechanisms of NK cell activation following human hantavirus infection

The Obesity Society (TOS) Symposium: Unresolved, Chronic Inflammation as a Mediator of Diverse Disease Risks in Insulin-Resistant Obesity

SATURDAY, MAY 3, 12:30 PM – 2:30 PM

Chairs:

Gerald V. Denis, Boston University School of Medicine
Jennifer Snyder-Cappione, Boston University Medical Center

Speakers:


Irving L. M. H. Aye, University of Texas Health Science Center San Antonio
Maternal obesity, placental inflammation, and fetal growth

Clara Westwell-Roper, University of British Columbia
Aggregation of islet amyloid polypeptide as a trigger for islet inflammation in type 2 diabetes


Harold S. Sacks, VA Greater Los Angeles Healthcare System
Epicardial adipose tissue as a putative contributor to coronary atherogenesis

Suneil Koliwad, University of California, San Francisco
Microglia as fatty acid sensors in the control of hypothalamic inflammation and metabolic function


Why Sino Biological's antibodies are different from others?




Protein Antigen




Immunotechnologies




Antibody Factory



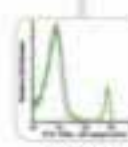
IHC



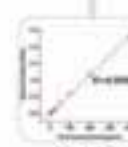
ICC/IF



WB



FCM




ELISA

3500+ Best Antibodies for you

Different=Excellent

- ✓ **Immunogen**
High-Quality Proteins
- ✓ **Unique Antibodies**
2nd Generation RabMAbs
Influenza Antibodies
- ✓ **Validated**
Multiple applications
Rigorous protocols
- ✓ **Affordable**
30%-80% cost savings

3-5 Days Worldwide Shipping



Sino Biological Inc.
Biological Solution Specialist

Make High-Quality Affordable

www.sinobiological.com

CAREER DEVELOPMENT SESSIONS

Through workshops, roundtables, networking opportunities, and one-on-one counseling, IMMUNOLOGY 2014™ provides critical career development programs.

Career sessions and services this year include:

- Careers in Biotech: Panel Discussion and Networking
- Careers in Science and Networking Roundtables (2)
- How to Convert Your CV into a Resumé (followed by one-on-one counseling)
- Interviewing for a Job
- Publishing Your Scientific Work: Tips on Writing, Responding to Reviewers, and Avoiding Ethical Pitfalls
- Secrets for a Successful Postdoctoral Fellowship
- Online and on-site Jobs Board, free to meeting registrants and exhibitors
- New Member Reception (By invitation)

Publishing Your Scientific Work: Tips on Writing, Responding to Reviewers, and Avoiding Ethical Pitfalls

Sponsored by the AAI Publications Committee

SUNDAY, MAY 4, 12:30 PM – 2:00 PM

Chairs:

Eugene M. Oltz, Washington University School of Medicine
Chair, AAI Publications Committee

Pamela J. Fink, University of Washington School of Medicine
Editor-in-Chief, *The Journal of Immunology*

Your data may be good and your findings may be significant, but your manuscript will navigate peer review more smoothly if you present your findings well. What steps can an author take to improve data presentation? What is considered an inappropriate, even unethical, presentation of data? What will make the manuscript easier for the reviewer to read and evaluate? How can the author best respond to reviewers? With ample time for questions and answers at the end of the session, experienced editors will address these and other questions about scientific publishing in this session sponsored by the AAI Publications Committee.

Speakers:

Eugene M. Oltz, Washington University School of Medicine
Chair, AAI Publications Committee

Writing a scientific manuscript: How should I tell my story and to whom should I tell it?

Kristin A. Hogquist, University of Minnesota
Responding to reviewers: What you want to say and what you should say

Pamela J. Fink, University of Washington School of Medicine
Editor-in-Chief, *The Journal of Immunology*
If it feels wrong, it probably is

Careers in Science Roundtable

Sponsored by the AAI Education Committee & AAI Committee on the Status of Women

SUNDAY, MAY 4, 11:30 AM – 1:00 PM

Chair:

Scheherazade Sadegh-Nasseri, Johns Hopkins Medical Institute
Chair, AAI Committee on the Status of Women

Registration Fee: \$20 (Lunch included)

At this always popular session, you'll have the opportunity to meet with scientists at your own career stage and with more experienced scientists to explore specific career issues important to men and women in science today. Learn what others are thinking and gain insights into issues you are confronting in your own situation. New topics this year offer insights into NIH Study Sections and considerations for scientists in M.D.-Ph.D. careers. Choose from these and the other vital topics related to the environment you work in (academic research, biotech industry, governmental agencies, non-profits), the transitions from specific career stages, or issues in balancing career and family in any career path. Don't miss this great networking opportunity!

Discussion topics:

- **Research Careers in Academia**
 - Graduate Student to Postdoc: finding a postdoc, interviewing
 - Postdoc to PI: finding a position, interviewing, negotiating, lab start-up
 - New PI: attracting students and postdocs, preparing for tenure
 - Undergraduate Institutions: finding the balance in teaching, doing research
 - Mentoring Effectively
- **How to Build a Network**
- **Career and Family: time management/family leave/professional couples**
- **Careers in Biotech and Industry: moving from academia to industry and vice versa**
- **Research Careers at Governmental Agencies (FDA/NIH/USDA/CDC)**
- **NIH Study Section Insights**
- **The Physician Scientist: balancing clinical and research duties**
- **Research from the M.D., Ph.D. Perspective**
- **Non-Research Careers for Scientists: careers in scientific journals, public policy, non-profits**

Table leaders: see AAI Committee-sponsored Sessions

Meet the Editor-in-Chief at IMMUNOLOGY 2014™.

New Editor-in-Chief for *The Journal of Immunology* Pamela J. Fink, University of Washington School of Medicine, will be in the AAI Booth (Booth number 705) on Saturday, May 3, during the poster time (2:30 PM -3:45 PM). Be sure to stop by the AAI booth to meet your new EIC!



Careers Roundtable and (NEW!) Speed Networking Session

Sponsored by the AAI Minority Affairs Committee

SATURDAY, MAY 3, 11:45 AM – 2:15 PM

Chair:

Adriana Larregina, University of Pittsburgh; Chair, AAI Minority Affairs Committee

Registration Fee: \$20 (Includes lunch; coffee/cookies during networking hour.)

Networking skills have never been more crucial to ensure success for early/mid-career scientists, including those traditionally under-represented in biomedical research. At the roundtable, take advantage of the opportunity to meet in small-group format with accomplished, senior immunologists to hear how they have handled the career challenges you now face and learn what they believe will work for you today. Then practice networking in a relaxed environment offering a structured networking exercise and personalized feedback on communicating your scientific interests/objectives most effectively.

Discussion topics:

- **Grad Student: finding a mentor; taking aim at postdoc training**
- **Postdoc: finding a mentor; taking aim at a faculty position**
- **Junior Faculty: preparing for promotion and tenure**
- **Academia or Industry: how to decide (or switch sides)**
- **Government Agency Careers: CDC, FDA, NIH**
- **Non-Research Careers: science journalism, patent law, biomedical entrepreneurship**

Table leaders: see AAI Committee-sponsored Sessions

How to Convert Your CV into a Resumé

SATURDAY, MAY 3, 11:00 AM – 12:00 PM

Chair:

Mary Litzinger, AAI

Speaker:

Derek Haseltine, Director, Career Services, George Washington University



For anyone seeking a job outside of academe, how you present yourself on paper is critical. A well-prepared resumé can make all the difference in securing that interview. The focus of this session will be on the important elements of a resumé,

the differences between a resumé and the standard academic curriculum vitae, and the information needed to make a good impression. In this special career development session, attendees will be instructed in how to transform their CVs into professional resúmes.

Small breakout sessions for individual consulting will follow from 12:30 PM to 2:30 PM. Bring your CV!

Careers in Biotech: Panel Discussion and Networking

SATURDAY, MAY 3, 7:00 PM – 9:00 PM

Chair:

Nandita Bose, Biothera

Panelists:

Elizabeth L. Bachert, Senior Director, Worldwide Business Development, Pfizer

Jane Grogan, Senior Scientist, Genentech

James Huleatt, Deputy Director, Global Clinical Immunology Sanofi Pasteur

Thomas MacAllister, Chief Development Officer Besins Healthcare

Jeffrey Rossio, Director, R&D, Immunoassay Development Life Technologies Corporation

Many opportunities exist in industry for a scientist with advanced degrees. There are positions in laboratory research, program management, business development, regulatory affairs and clinical trials oversight, medical liaison, and more. This panel features scientists employed in a variety of positions in industry who will share their career paths and highlight the skills required to succeed in these careers. Following the panel discussion, enjoy casual conversation with the speakers and other industry connections at a networking reception.

Secrets for a Successful Postdoctoral Fellowship

SUNDAY, MAY 4, 1:00 PM – 2:00 PM

Chair:

Mary Litzinger, AAI

Speakers:

Darlene F. Zellers, Director, Office of Academic Career Development, Health Sciences, University of Pittsburgh

Steven K. Wendell, Assistant Director, Postdoctoral Development Office of Academic Career Development, Health Sciences University of Pittsburgh

A postdoctoral fellowship is the time to develop research skills you will need to succeed as an independent scientist. It is, however, just as important to realize that you need to prepare for a career path at the same time. This session will highlight ways of getting the most out of your postdoctoral fellowship, relating successfully with your mentor, and understanding how to use the resources available to you to ensure that your training prepares you adequately for a seamless transition into the next phase of your career.



Interviewing for a Job

SUNDAY, MAY 4, 10:00 AM – 11:00 AM

Chair:

Mary Litzinger, AAI

Speaker:

Derek Haseltine, Director, Career Services, George Washington University

This session will be focused on tips and techniques to help you successfully navigate the interview process. Emphasis will be on how you can present yourself in the best possible light. You will also learn how to respond to unexpected questions. This session is open to anyone but is especially intended for student and postdoctoral attendees.

New Member Reception

Sponsored by the AAI Membership Committee

FRIDAY, MAY 2, 4:00 PM – 4:45 PM

Chair:

Judith Owen, Haverford College; Chair, AAI Membership Committee

AAI wishes to welcome new Regular and Associate members joining AAI for the first time. AAI President Marc Jenkins and other AAI leaders look forward to meeting you personally. Please join us with your invitation in hand for light refreshments and casual conversation. *Event by invitation only.*



AAI STORYBOOTH

VISIT THE STORYBOOTH (ROOM 332) WITH FRIENDS, COLLEAGUES, OR MENTORS TO RECORD YOUR STORIES AND BECOME PART OF AAI HISTORY.

IMMUNOLOGY 2014™

Annual Meeting of The American Association of Immunologists

May 2-6, 2014 | David L. Lawrence Convention Center | Pittsburgh, Pennsylvania

Jobs Board

A Free Recruiting Service for Registrants and Exhibitors
Post Online and Meet Onsite

AAI is offering career services to both job seekers and employers through a Jobs Board free to meeting registrants and exhibitors at www.immunology2014.org/Attendees/jobsboard.html.

Job Seekers! Whatever your career stage, use this career service at IMMUNOLOGY 2014™ to enhance your professional development!

- **Job Postings.** Review the online AAI Jobs Board to identify postings you wish to pursue. (View new Advance Postings through April 23. Watch for On-site Postings, online or on paper in the Exhibit Hall!)
- **Direct Access to Recruiters.** Job postings will include recruiters' e-mail addresses so that you can contact them directly.

Employers! Advertise your position on a virtual Jobs Board located on the IMMUNOLOGY 2014™ website. By including a contact email, you will receive inquiries directly.

- **Advance Postings.** Postings will be accepted as of February 1, 2014, and will remain online until the end of the meeting. To post job listings in advance of the meeting, contact meetings@aai.org. Advance Postings must be submitted to AAI by April 23, 2014.

- **On-site Postings.** After April 23, 2014, employers wishing to advertise a job on the IMMUNOLOGY 2014™ website may still do so by visiting the AAI Office in the David L. Lawrence Convention Center between 9:00 AM and 5:00 PM. You may also post a paper announcement on the bulletin board in the Exhibit Hall.

Save Thousands of Dollars in Recruiting Expenses. Take advantage of this complimentary hiring opportunity at IMMUNOLOGY 2014™. To register for the meeting, visit www.immunology2014.org/Registration/attendee.html.

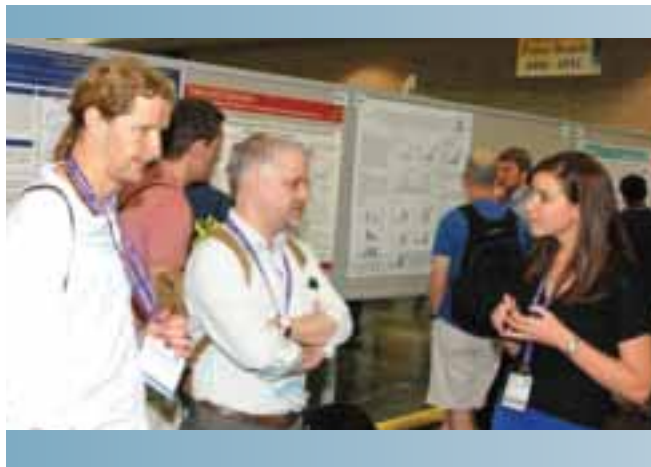
The American Association of Immunologists, Inc.
9650 Rockville Pike
Bethesda, Maryland 20814
Phone: (301) 634-7178
Fax: (301) 634-7887
Email: infoaai@aai.org



www.IMMUNOLOGY2014.org

BLOCK SYMPOSIA

Selected abstracts are programmed into oral sessions called Block Symposia. Each Block Symposium comprises up to eight selected abstracts. For this annual meeting, 74 Block Symposia are programmed.



POSTERS

The most interactive part of the meeting!

Discuss data and research issues firsthand with authors at the Poster Sessions. Posters will be displayed on the one day they are assigned for presentation, Saturday through Monday, in the David L. Lawrence Convention Center Exhibit Halls.

DEDICATED DAILY POSTER PRESENTATION TIME FROM 2:30 PM – 3:45 PM, SATURDAY – MONDAY

No concurrent symposia, presentations, or other sessions will be held during the designated poster presentation time.

EXHIBITOR WORKSHOPS

Be sure to take advantage of the knowledge-building opportunities presented in Exhibitor Workshops. Located on the Exhibit Floor, these workshops explore companies' latest technologies, products, and services through demonstrations and discussions.

Workshops are planned and conducted by exhibitors; the listing of these workshops does not constitute endorsement of any products or services by AAI.



EXHIBITOR HALL PASSPORT PROGRAM

FILL OUT YOUR EXHIBIT HALL PASSPORT FOR A CHANCE TO WIN ONE OF THREE \$250 AMERICAN EXPRESS GIFT CARDS!

The drawing will be held during the Poster Presentations on Monday, May 5, from 2:30 PM – 3:45 PM. You'll find your Passport in your meeting bag or you may pick one up at the AAI Booth.





The American Association of Immunologists

Gratefully Acknowledges the Generous Sponsorship of



for the

IMMUNOLOGY 2014™

Opening Night Welcome Reception

FRIDAY, MAY 2 • 6:00 PM – 8:00 PM

Chambers-eBioscience Memorial Award

Lustgarten-eBioscience Memorial Award

Meeting Bags

IMMUNOLOGY 2014™

May 2 – 6 , 2014 • Pittsburgh, Pennsylvania • David L. Lawrence Convention Center

SCHEDULE OF BLOCK SYMPOSIA**FRIDAY, MAY 2**

2:30 PM – 4:30 PM

Immune Cell Development
 Immunotherapy Vaccines
 Innate Immunity in Autoimmune Disease I
 Regulatory T Cells in Tolerance and Disease
 T Cell Maintenance and Memory
 Veterinary and Comparative Immunology

SATURDAY, MAY 3

8:00 AM – 10:00 AM

Accessory Factors and Antigen Presentation Pathways
 B Cell Development and Function
 Myeloid Cells in Cancer
 T Cell Activation
 The Innate Immune Response in Non-infectious Inflammation

10:15 AM – 12:15 PM

Mechanisms of Asthma and Allergy
 Molecular Decisions During B Cell Activation
 and Differentiation
 Mucosal Immunization
 Novel Innate Immune Mechanisms

12:30 PM – 2:30 PM

Bridging the Interface of Innate and Adaptive Immunity
 Immunotherapeutic Interventions for
 Autoimmune Demyelination
 Inflammasomes and Cytosolic Sensing
 Mast Cell Biology

3:45 PM – 5:45 PM

Adjuvants and Immunotherapy
 Innate Regulation of Type 2 Immunity
 Pathogen Control and Evasion Strategies
 T Cells in Autoimmunity I

SUNDAY, MAY 4

8:00 AM – 10:00 AM

Actions of CD4⁺ T Cells and B Cells During Acute
 and Persistent Viral Infections
 Cytokine and Chemokine Signaling
 Immunosuppression in the Tumor Microenvironment
 T Cell Subsets in Autoimmunity
 Toll-like Receptor Signaling

10:15 AM – 12:15 PM

Cellular Innate Immune Responses in Bacterial
 and Parasitic Infections
 Immunology of the Airway
 Inflammation: Friend or Foe?
 T and NK Cell Development
 T Cells in Autoimmunity II

12:30 PM – 2:30 PM

Adoptive Transfer Therapy
 Cell Subsets, Cytokines, and Disease
 Cellular Innate Immune Responses in Viral Infections
 Targeting Signaling Pathways in Autoimmunity

3:45 PM – 5:45 PM

Cancer Immunobiology
 Infection, Inflammation, and Immunity
 Innate Immunity in Autoimmune Disease II
 Metabolomics and Mucosal Immunity
 Pathways for Regulating Alloimmunity: T Cells and Beyond

MONDAY, MAY 5

8:00 AM – 10:00 AM

Adaptive Immunity in Autoimmune Diseases
 Input Signals Regulating T Cell Responses
 Leukocyte Migration
 Regulation of B Cells and B Cells as Regulators
 Regulation of Immunotherapy Responses

10:15 AM – 12:15 PM

Immune Epitopes and Repertoires
 Innate Immunity at the Microbe-Host Interface
 Innate Immunity in SLE
 T Helper Cell Differentiation and Cytokine Expression
 Technological Innovations in Immunology

12:30 PM – 2:30 PM

Contra-regulation by Coinfection and Cytokines
 Cytokines in the Th17/IL-17 Family
 Genetic, Environmental, and Cellular Risks for Disease
 Molecular Regulation of CD8 T Cell Immunity
 Respiratory Viruses and the Immune Response

3:45 PM – 5:45 PM

CD4 T Cell Differentiation
 Effects of the Microbiota on Mucosal Immunity
 HSCs and B Cell Development
 Influenza
 Myeloid-derived Cells: A Range of Regulatory Possibilities

TUESDAY, MAY 6

8:00 AM – 10:00 AM

Immunopathogenesis of Enteritis and Colitis
 Infectious Diseases Vaccines
 Regulation of the Virus-Specific Immune Response
 T Cell Memory: Generation, Maintenance, and Function
 Topics in Innate Immunity

10:15 AM – 12:15 PM

Cytokines and Chemokines in Immunobiology
 Function and Persistence of Virus-Specific CD8⁺ T Cells
 Harnessing Cellular and Molecular Interactions in Autoimmunity
 Metabolism and Nutrient Sensing Pathways in Innate Immunity
 Regional Immunity
 T Cell Development
 What Do Infections Tell Us about Lymphocyte Function?

2013–2014 AAI PROGRAM COMMITTEE

AAI gratefully acknowledges the efforts of the Program Committee for IMMUNOLOGY 2014™.

Leslie J. Berg, Chair

University of Massachusetts Medical School

Maria-Luisa Alegre

University of Chicago

Gregory M. Barton

University of California, Berkeley

Marlene Bouvier

University of Illinois at Chicago College of Medicine

Shane Crotty

La Jolla Institute for Allergy and Immunology

James E. Crowe, Jr.

Vanderbilt University Medical Center

Daniel H. Kaplan

University of Minnesota

Frances E. Lund

University of Alabama at Birmingham

J. Rodrigo Mora

Janssen Research & Development LLC, Pharmaceutical Companies of Johnson & Johnson

Erika L. Pearce

Washington University School of Medicine

Mercedes Rincón

University of Vermont

Barbara J. Vilen

University of North Carolina at Chapel Hill

AAI ABSTRACT PROGRAMMING CHAIRS

AAI gratefully acknowledges the efforts of the Abstract Programming Chairs for IMMUNOLOGY 2014™.

Antigen Processing and Presentation

Malini Raghavan

University of Michigan Medical School

Scheherazade Sadegh-Nasseri

Johns Hopkins School of Medicine

Basic Autoimmunity

Jeffrey C. Rathmell

Duke University

Barbara J. Vilen

University of North Carolina at Chapel Hill

Cellular Adhesion, Migration, and Inflammation

Margaret S. Bynoe

Cornell University

Yoji Shimizu

University of Minnesota Medical School

Cytokines and Chemokines and Their Receptors

Ninan Abraham

University of British Columbia

Sarah L. Gaffen

University of Pittsburgh

Hematopoiesis and Immune System Development

Michael A. Farrar

University of Minnesota

Virginia M. Shapiro

Mayo Clinic

Immediate Hypersensitivity, Asthma, and Allergic Responses

Paul J. Bryce

Northwestern University Feinberg School of Medicine

Toshiaki Kawakami

La Jolla Institute for Allergy and Immunology

Immune Mechanisms of Human Disease

Clara Abraham

Yale University

Marcus R. Clark

University of Chicago

Immune System Regulation: Cellular Mechanisms

Daniel J. Campbell

Benaroya Research Institute

Jennifer L. Gommerman

University of Toronto

Immune System Regulation: Molecular Mechanisms

Rachel M. Gerstein

University of Massachusetts Medical School

Mark H. Kaplan

Indiana University School of Medicine

Innate Immune Responses and Host Defense: Cellular Mechanisms

Judith Hellman

University of California, San Francisco

Paige Lacy

University of Alberta

Innate Immune Responses and Host Defense: Molecular Mechanisms

Lee-Ann H. Allen

University of Iowa

Denise M. Monack

Stanford University

Lymphocyte Differentiation and Peripheral Maintenance

Nicole Baumgarth

University of California, Davis

Charles D. Surh

Pohang University of Science and Technology

Microbial, Parasitic, and Fungal Immunology

Andrea M. Cooper

Trudeau Institute, Inc.

George S. Yap

Rutgers New Jersey Medical School

Mucosal and Regional Immunology

Peter B. Ernst

University of California, San Diego

Dana J. Philpott

University of Toronto

Therapeutic Approaches to Autoimmunity

Nitin Karandikar

University of Iowa

Michael K. Racke

Ohio State University Medical Center

Transplantation Immunology

Donna L. Farber

Columbia University Medical Center

Pavan Reddy

University of Michigan Medical Center

Tumor Immunology

José R. Conejo-García

The Wistar Institute

Weiping Zou

University of Michigan

Vaccines and Immunotherapy

Lisa H. Butterfield

University of Pittsburgh

Herman F. Staats

Duke University Medical Center

Veterinary and Comparative Immunology

Cynthia L. Baldwin

University of Massachusetts

Jeffrey A. Yoder

North Carolina State University

Viral Immunology

Julia L. Hurwitz

St. Jude Children's Research Hospital

Steven M. Varga

University of Iowa

SOCIAL EVENTS

New Member Reception *(By invitation only)*

Sponsored by the AAI Membership Committee

FRIDAY, MAY 2, 4:00 PM – 4:45 PM (BADGE AND INVITATION REQUIRED)

AAI wishes to welcome new Regular and Associate members joining AAI for the first time. AAI President Marc Jenkins and other AAI leaders look forward to meeting you personally. Please join us with your invitation in hand for light refreshments and casual conversation.

IMMUNOLOGY 2014™ Opening Night Welcome Reception

Reception generously sponsored by eBioscience, an Affymetrix company

FRIDAY, MAY 2, 6:00 PM – 8:00 PM
NORTH AND SOUTH GARDEN TERRACES
DAVID L. LAWRENCE CONVENTION CENTER



Come directly from the President's Address to the Opening Night Welcome Reception on the convention center terraces overlooking the Allegheny River and the Pittsburgh skyline. Seek out old friends and make new acquaintances with hors d'oeuvres, drinks, and music recalling the rich jazz legacy of Pittsburgh. The reception is generously supported by eBioscience to welcome you and wish you a pleasurable, productive week.

25th Anniversary of AAI Public Affairs, featuring The Capitol Steps

SATURDAY, MAY 3, 7:00 PM – 9:00 PM
ROOM 413/414/415
DAVID L. LAWRENCE CONVENTION CENTER

Join us for a riotously entertaining musical performance by the political satire group, **The Capitol Steps**, preceded by a reception celebrating the 25th anniversary of the AAI Public Affairs Program. Help AAI honor current and past members of the Committee on Public Affairs and attend the uproariously funny performance by the group who "put the MOCK in democracy." This once-in-a-quarter-century event is open to all attendees, but space is limited and tickets are required (Tickets available when registering for the meeting).



\$35 for Attendees and \$50 for Guests.

The Journal of Immunology (The JI) Editorial Board Dinner and Meeting (By invitation only)

Generously sponsored by Dartmouth Journal Services

SATURDAY, MAY 3, 7:00 PM – 10:00 PM

This working dinner is held each year at the annual meeting to provide the Editorial Board members the valuable opportunity to meet in person to discuss items of interest and concern about *The JI*.

President's Service Appreciation Reception *(By invitation only)*

Generously sponsored by BioLegend

SUNDAY, MAY 4, 7:30 PM – 9:30 PM

At this important event, AAI leadership honors the association's dedicated member volunteers—the committee members, editors, mentors, instructors, and others—who work on the membership's behalf throughout the year by giving generously of their time in support of the AAI mission. Open to 2013-2014 AAI volunteers.

IMMUNOLOGY 2014™ Gala

Generously sponsored by BioLegend

MONDAY, MAY 5, 7:00 PM – 9:30 PM
THE SENATOR JOHN HEINZ HISTORY CENTER



At the Heinz History Center, you will be treated not only to a Taste of Pittsburgh at a festive reception but also to an immersion in stories of world-altering innovations tracing their origins to the Pittsburgh and Western Pennsylvania region—among them, Jonas Salk's polio vaccine; George Westinghouse's alternating current; new jazz styles (Bill Strayhorn, George Benson, et al.); the Ferris Wheel; the first wire-cabled suspension bridge; the first commercial radio station; the Big Mac; Klondike bars; and much more. You'll enjoy music, drinks, and hors d'oeuvres as you explore the exhibits throughout the century-old Chautauqua Lake Ice Company Building, an exhibit in itself.



The American Association of Immunologists

Gratefully Acknowledges the Generous Sponsorship of



for the

IMMUNOLOGY 2014™ GALA

MONDAY, MAY 5 • 7:00 PM – 9:30 PM

Lefrançois-BioLegend Memorial Award

President's Service

Appreciation Reception

SUNDAY, MAY 4 • 7:30 PM – 9:30 PM

Meeting Lanyards

IMMUNOLOGY 2014™

May 2 – 6 , 2014 • Pittsburgh, Pennsylvania • David L. Lawrence Convention Center

EXHIBITING COMPANIES (AS OF FEBRUARY 21, 2014)

AAI (The American Association of Immunologists, Inc.)

Abcam

Abpro

ACEA Biosciences, Inc.

Adaptive Biotechnologies Corp.

Advanced Targeting Systems

ALLCELLS

ALPCO

Ancell Corporation

Aptagen, LLC

Astarte Biologics, LLC

Axis-Shield PoC

BD Biosciences—**Silver Sponsor**

Bio X Cell

Biocompare

BioLegend—**Platinum Sponsor**

Bio-Rad Laboratories

BioSpherix, Ltd.

Bioss Antibodies

Bitplane

Boster Biological Technology

BrandTech Scientific

British Society for Immunology

BTX / Harvard Apparatus

Cayman Chemical Company

CEDARLANE

Cell Signaling Technology

Cellular Technology Limited

Chondrex, Inc.

Cloud-Clone Corp.

Cytek Development

CyVek Inc.

DartMouse

Desert King International

DVS Sciences

eBioscience, An Affymetrix Company—**Platinum Sponsor**

Embi Tec

EMD Millipore—**Contributing Sponsor**

Enzo Life Sciences

Essential Pharmaceuticals, LLC

Eureka Therapeutics

FASEB Minority Access for Research Careers (MARC)—**Gold Sponsor**

FiberCell Systems, Inc.

Fluidigm Corporation

FormuMax Scientific, Inc.

Garland Science

Gene Tools, LLC

GL Biochem (Shanghai) Ltd.

handyem Inc.

Hemacare BioResearch Products

Hycult Biotech

IDEXX Bioresearch

ImmPort: Immunology Database and Analysis Portal

Immudex USA

Immune Epitope Database & Analysis Resource (IEDB)

IMMUNOLOGY 2015™ New Orleans

Innova Biosciences

InvivoGen

iRepertoire, Inc.

Jackson ImmunoResearch Laboratories, Inc.

JPT Peptide Technologies GmbH

Life Technologies—**Silver Sponsor**

Logos Biosystems, Inc.

Lonza

Luminex Corporation

Mabtech, Inc.

MBL International Corp.

Miltenyi Biotec—**Contributing Sponsor**

Myriad RBM

Nature Publishing Group

Norgen Biotek

Novus Biologicals, LLC (formerly Imgenex Corporation)

OriGene

PBL Assay Science (formerly PBL InterferonSource)

PEPperPRINT

PeproTech

Phalanx Biotech Group

ProImmune Limited

PromoCell GmbH

ProteinSimple

Quidel Corporation

R & D Systems, Inc.

Randox Laboratories Ltd.

RayBiotech

ReadCube

Research Diets, Inc.

Rockefeller University Press

Rockland Immunochemicals, Inc.

RURO Inc.

Sanofi Pasteur

Sapphire North America, LLC

Science/American Association for the Advancement of Science

Seahorse Bioscience

Shenandoah Biotechnology, Inc.

Society for Immunotherapy of Cancer (SITC)

SomaLogic

Sony Biotechnology Inc.

SouthernBiotech

Springer

St. Jude Children's Research Hospital

STEMCELL Technologies Inc.—**Supporting Sponsor**

Stratedigm

Studylog

SurModics IVD

Taconic

The Jackson Laboratory

Tonbo Biosciences

Tree Star, Inc.

University of Texas Southwestern Medical Center

Verity Software House

Wiley

Worthington Biochemical Corp

ZenBio, Inc.

EXHIBITOR WORKSHOPS

SATURDAY, MAY 3

A New Kit for Assessing NFkB Translocation by Imaging Flow Cytometry

10:15 AM - 11:15 AM EXHIBITOR WORKSHOP ROOM 1

EMD Millipore**Presenters: Haley Pugsley, Ph.D.,** Application Scientist
Bob Smith-McCollum, Director of Marketing

Nuclear factor kappa B (NFkB) transcription factor plays a central role in regulating many key processes in mammalian cells, including proliferation, inflammation, immunity, and stress responses. Classical biochemical techniques are semi-quantitative in nature and do not provide per-cell translocation measurements. Manual microscopy allows visual identification of nuclear translocation on a per-cell basis, but an objective and statistically rigorous assessment is difficult to obtain. To overcome these problems, we use the Amnis ImageStream®X Mk II and FlowSight® imaging flow cytometry platforms, which combine the quantitative power of flow cytometry with the spatial information provided by microscopy in one system. In this workshop, we will present three case studies, demonstrating the Amnis® NFkB translocation kit for the Amnis® imaging flow cytometry platform for the monitoring of NFkB translocation in HL-60 human promyelocytic leukemia cells, THP-1 human acute monocytic leukemia cells, and peripheral blood monocytes.

Innovative Tools and Approaches for Optimizing Multicolor Panel Design

10:15 AM - 11:15 AM EXHIBITOR WORKSHOP ROOM 2

BD Biosciences**Presenters: Jurg Rohrer,** Director, Research & Development

Flow cytometry has been an indispensable tool for immunologists for almost 40 years. Over time, the technology has advanced from two fluorescent parameters to 18 and counting today. These advances have also made multicolor flow cytometry more accessible to researchers worldwide. To take full advantage of these flow cytometry tools, one must consider instrument capabilities, biology and antigen expression levels, the brightness of dyes, and the consequences to spillover. One of the recent advances has been the introduction of the Brilliant Violet and Ultraviolet dyes. These bright dyes offer additional options (other than PE) when a bright reagent is required. The tutorial will highlight why it is important to base one's dye choice not only on instrument capabilities but also on the expression level of the antigen studied and the brightness of the dye. We show that by making the correct choices, one can dramatically improve resolution of the populations studied.

Multicolor Flow Cytometry on Your Benchtop: Introducing the Guava EasyCyte™ 12

11:15 AM - 12:15 PM EXHIBITOR WORKSHOP ROOM 1

EMD Millipore**Presenters: Jessica Reed,** Product Manager
Katherine Gillis, Application Scientist

Multi-laser flow cytometers can dramatically increase the capability of cell analysis. However, traditional multicolor flow cytometers have required deep expertise and exclusive dedication of user resources. In this workshop, you will learn how the simplicity of the new guava easyCyte™ 12 can further your research. The guava easyCyte™ systems are microcapillary flow cytometers that enable you to obtain absolute cell counts and use low sample volumes. Additionally, the violet laser of the guava easyCyte™ 12 system increases the amount of information you can get from each well. For analysis, guava InCyte™ software provides an easy-to-use solution capable of answering complex questions for both tube- and plate-based assays. We will dive into the guava easyCyte™ 12 system performance and examples of multicolor whole-blood immunophenotyping experiments with no compensation.

Genomics Meets Proteomics: Detect Non-coding and Viral RNA Using Flow Cytometry

11:15 AM - 12:15 PM EXHIBITOR WORKSHOP ROOM 2

eBioscience, an Affymetrix Company**Presenters: Susan Reynolds,** Applications Scientist

QuantiGene® FlowRNA enhances the understanding of transcription and gene regulation by advancing RNA detection within a single cell using a standard flow cytometer. This novel assay complements gene expression arrays by deepening the information gathered in heterogeneous cellular environments. Detection of RNA can be supplemented to many existing flow cytometry workflows to recognize transcriptional events in specific cell subsets, label cells expressing proteins for which there are limited or no commercially available antibodies, and potentially identify viral or non-coding RNA molecules. This workshop details the results of QuantiGene® FlowRNA technology currently used in the field and discusses how these approaches allow a more comprehensive look at gene expression inside an individual cell.



SmartFlare™ Probes Enable Live Cell RNA Detection in Monocytes and Macrophages by Flow Cytometry

12:15 PM - 1:15 PM EXHIBITOR WORKSHOP ROOM 1

EMD Millipore

**Presenters: Don S. Weldon, R&D
Victor Koong, Product Manager**

The ability to detect gene expression in live monocytes and macrophages, as opposed to fixed or lysed cells, would uncover far more physiologically relevant information based on the cell's response to given stimuli. Here, we present SmartFlare™ probes, a novel RNA detection technology capable of detecting specific mRNA and miRNA in live cells. This technology also enables the ability to perform downstream assays such as fluorescence-activated cell sorting (FACS) to enrich for a specific subpopulation of live cells based solely on their RNA expression profile. Following RNA detection with SmartFlare™ probes, cells remain viable and fully functional for use in downstream assays. Studying both protein and RNA in the same cells, as opposed to using duplicate wells, provides correlating data while preserving precious samples. SmartFlare™ probes can be used in conjunction with traditional antibody staining techniques to simultaneously detect mRNA and its protein product at the single cell level.

The Benefits of T Cell Immune Monitoring

12:15 PM - 1:15 PM EXHIBITOR WORKSHOP ROOM 2

Immudex USA

Presenters: Stephen T. Haley, Ph.D., Vice President

Cellular immune monitoring assays have become much more reliable and are now an important tool for efficient development of immunotherapeutics. This is particularly pronounced in cancer immunotherapy and HIV research, but immune monitoring is also increasingly being used in the fields of transplantation and autoimmunity. Consequences of poor assay choice, poor assay performance, or misinterpretation of data can be severe. What are the advantages and disadvantages of the various immune monitoring assays? Participation in the proficiency panel programs allows benchmarking, and enables testing of your lab's proficiency in performing the assay. Furthermore, some reagents are better than others. The higher avidity of MHC dextramer reagents, as opposed to conventional multimers such as tetramers, enables more efficient detection of antigen-specific T cells. This workshop will provide examples from cancer immunotherapy, CMV immune monitoring, as well as provide results of previous proficiency panels. The data demonstrates that cellular immune monitoring assays are now standard, robust, and routine.

Simplified Cellular Analysis of Routine Immunology Applications Using the Muse® Cell Analyzer

1:15 PM - 2:15 PM EXHIBITOR WORKSHOP ROOM 1

EMD Millipore

Presenters: Kamala Tyagarajan, Ph.D., Senior R&D Manager

The Muse® cell analyzer is an innovative, highly compact, affordable cell analyzer that enables users of all expertise levels to access flow cytometry data easily. This workshop will focus on a range of research applications of value to the immunologist, including the easy enumeration of PBMC or whole-blood samples, determination of their viability/apoptotic status, and study of proliferation status based on Ki67 expression. Rapid assays that allow for the quick identification and enumeration of CD4 T cells, CD8 T cells, or B cells in whole blood or PBMC samples and assays that allow for the study of lymphocyte activation status based on CD69 or CD25 expression levels will also be discussed. The simple, dynamic interface of the Muse® cell analyzer, coupled with specific assays for whole blood or PBMC samples, makes the platform a valuable tool in immunology research.

High-Throughput Sequencing of T Cell and B Cell Receptors Using immunoSEQ

1:15 PM - 2:15 PM EXHIBITOR WORKSHOP ROOM 2

Adaptive Biotechnologies Corp.

Presenters: Catherine M. Sanders, Ph.D., Senior Research Scientist

Adaptive Biotechnologies' commercial product, immunoSEQ (www.immunoseq.com), combines the capabilities of our proprietary multiplex PCR methodology with ultra-high-throughput sequencing to provide exceptionally deep access to T cell and B cell receptor repertoires. This patented technology is complemented by powerful analytical software tools that facilitate analysis, visualization, comparison, and reporting of TCR or BCR sequence data. This technology is applicable in various fields, including autoimmunity, infectious disease, vaccine development, allergy, oncology, drug development, and transplantation. Come and learn how immune profiling can be applied to your research.



SUNDAY, MAY 4***The Next Generation in Acoustic Cytometry: Attune® NxT Acoustic Focusing Cytometer***

12:15 PM - 1:15 PM EXHIBITOR WORKSHOP ROOM 1

Life Technologies™**Presenters: Gayle Buller**, Senior Product Manager
Greg Kaduchak, Engineering Leader

We will present the latest addition to the Attune® acoustic focusing cytometer family. Designed by Molecular Probes®, the affordable Attune® NxT acoustic focusing cytometer is a high-performance, multidimensional analyzer that makes the detection of rare events easier and faster with a No Wash/No Lyse assay for whole blood and an expeditious sample speed of up to 1 mL/min. The Attune® NxT system can be configured with up to four lasers, enabling the simultaneous detection of 14 fluorescent parameters and providing more flexibility in reagent selection for panel design or fluorescent protein detection. We will show examples that use acoustic focusing to enable the detection of rare events, as demonstrated by hematopoietic stem cells in whole blood, and identification of cellular subsets in whole blood and splenocytes using >10 parameters. Attune® NxT modularity allows the user to customize the system at the time of purchase and can be easily modified or upgraded in the future to meet your research needs. The Attune® NxT software is designed to make understanding your data simpler through its intuitive design, streamlined workflow, top-notch analysis speed, and complete suite of acquisition and analysis tools.

Expanding the Boundaries of Immunology with Imaging Flow Cytometry

12:15 PM - 1:15 PM EXHIBITOR WORKSHOP ROOM 2

EMD Millipore**Presenters: Sherree Friend, Ph.D.**, Applications Scientist
Bob Smith-McCollum, Director of Marketing, Cell Analysis

Imaging flow cytometry combines the speed, sensitivity, and phenotyping abilities of flow cytometry with the detailed imagery and functional insights of microscopy. The features and benefits of the Amnis ImageStreamX® Mark II and FlowSight® imaging flow cytometers will be explored. Both platforms can expand the range of your research exponentially compared with traditional flow cytometers. Amnis® instruments enable greater fluorescence sensitivity, visual verification of cell images, and quantitative image analyses. Important applications of imaging flow cytometry in immunology will also be discussed.

RNA in Cellular Context: Enabling Translational Research

1:15 PM - 2:15 PM EXHIBITOR WORKSHOP ROOM 1

eBioscience, an Affymetrix Company**Presenters: Matthew H. Cato**, Applications Scientist

Quantify and visualize gene expression in tissue lysates, paraffin-embedded tissues, or fixed cells using the power of branched DNA technology, providing signal amplification at the core of the QuantiGene® assay portfolio. Detection of multiple probes within the same sample on a Luminex® platform provides a simplified means to screen relevant RNA transcript(s) and isolate RNA presence within particular cell populations. Confirm data by measuring protein expression levels using advanced immunochemistry or flow cytometry techniques to develop a powerful, translational workflow approach that offers pertinent data in limited sample and shortened project time.

Phenotypic and Functional Characterization of Chemokine Receptors on Cancer Cell Lines Using Novel Antibodies

1:15 PM - 2:15 PM EXHIBITOR WORKSHOP ROOM 2

BioLegend®**Presenters: Kelly Lundsten**, Business Segment Manager, Advanced Cytometry

BioLegend has generated a large library of high-affinity antibody clones against chemokine receptors. Not only is the ability to phenotype receptors important, but the blocking activity of these antibodies would be useful for in vitro studies, as well as having potential in therapeutics. The BioLegend library consists of antibodies against CCR, CXCR, and CX3CR chemokine receptor families. In this application, we screened chemokine receptor expression on 10 different human cancer cell lines. We then designed chemotaxis experiments to assess the potential blocking activity of these anti-chemokine receptor antibodies against appropriate chemokine ligands. Here, we report on unique BioLegend clones with chemotaxis blocking capacity.

MONDAY, MAY 5***High Content Cell Surface Receptor Screening Methods and Applications***

11:15 AM - 12:15 PM EXHIBITOR WORKSHOP ROOM 1

BioLegend®**Presenters: Zach Bjornson**, Graduate Student, Nolan Lab, Stanford University School of Medicine
Ken Lau, Ph.D., Technical Marketing Scientist, BioLegend

Our lab has applied LEGENDScreen™ kits in multicolor flow cytometry screening assays to identify unique markers of new cell populations, characterize and compare staining distributions between species and individuals, and study tolerance of antibody clones to different staining protocols. Additionally, by miniaturizing the protocol from 96- to 384-well plates, we have substantially reduced the number of cells and amount of materials required, allowing a scan of approximately 320 antibodies in less than two hours.

Awarded to AAI Trainee Members (students and postdoctoral fellows) whose first-author abstracts are selected for presentation in AAI Block Symposia. NEW this year: award amounts vary according to recipient's years of consecutive membership.

Support, in part, for these awards has been generously provided by BD Biosciences and Ansell Corporation

THIRD-YEAR (OR LONGER) MEMBERS

Nandini Acharya
University of Connecticut Health Center

Bianca L. Bautista
University of Massachusetts Medical School

Abhisek Bhattacharya, MBBS
Baylor College of Medicine

Davide Botta, Ph.D.
University of Alabama, Birmingham

Lisbeth Boule
University of Rochester Medical Center

Matthew J. Butcher
Eastern Virginia Medical School

Kim Cardenas, Ph.D.
University of Texas Health Science Center at San Antonio

Fei Chen, M.D.
Rutgers University - New Jersey Medical School

Anita Yogendra Chhabra
University of Louisville

Seung-Chul Choi, Ph.D.
University of Florida

H. Hamlet Chu, Ph.D.
University of California, Berkeley

Sara L. Colpitts, Ph.D.
University of Connecticut

Stephanie A. Condotta, Ph.D.
University of Iowa

Glenn Cruse, Ph.D.
National Institute of Allergy and Infectious Diseases, NIH

Vinh A. Dao
University of Texas Health Science Center at San Antonio

Matthew P. DeBerge, Ph.D.
Geisel School of Medicine at Dartmouth

Sarah Natasha Deffit
Indiana University

Gretchen Diehl, Ph.D.
NYU School of Medicine

David J. DiLillo, Ph.D.
Rockefeller University

Justin P. Edwards, Ph.D.
National Institute of Allergy and Infectious Diseases, NIH

Julien Fourcade, Pharm.D.
University of Pittsburgh

Pavlo Gilchuk, D.O., Ph.D.
Vanderbilt University

Amy C. Graham
Montana State University

Kristia S. Hamilton
University of Pittsburgh

David A. Hoekstra, II
Roswell Park Cancer Institute

Jennifer D. Hood
Emory University

Yinghong Hu
University of Connecticut Health Center

Weishan Huang
Cornell University

Rukhsana Jabeen, Ph.D.
Indiana University School of Medicine

Nitya Jain, Ph.D.
Massachusetts General Hospital

Junbae Jee, Ph.D.
Ohio State University

Casey Katerndahl
University of Minnesota

Masayuki Kuraoka, Ph.D.
Duke University

Hao Li
University of Alabama, Birmingham

Lin-Xi Li, Ph.D.
University of California, Davis

Feng Liu, Ph.D.
Centers for Disease Control and Prevention

Houpu Liu
University of Texas Medical Branch

Jianyun Liu, Ph.D.
Indiana University School of Medicine

Yujie Liu, Ph.D.
Children's Hospital of Philadelphia

Carrie L. Lucas, Ph.D.
National Institutes of Allergy and Infectious Diseases, NIH

Kate A. Markey, MBBS, Ph.D.
Queensland Institute of Medical Research

Joel Mathews, D.O., Ph.D.
Harvard School of Public Health

Viveka Mayya, Ph.D.
NYU Rangone Medical Center

Pragnesh Dilipkumar Mistry
University of Maryland, Baltimore

Ribhu Nayar
University of Massachusetts Medical School

Michelle Nelson, Ph.D.
Medical University of South Carolina

Ryan W. Nelson
University of Minnesota Medical School

Michael Opata, Ph.D.
University of Texas Medical Branch

Yfke Pasman
University of Guelph

Kristen E. Pauken, Ph.D.
University of Pennsylvania

Sudesh Pawaria, Ph.D.
University of Massachusetts

Pablo A. Penaloza-MacMaster, Ph.D.
Beth Israel Deaconess Medical Center and Harvard Medical School

Courtney R. Plumlee, Ph.D.
University of Connecticut Health Center

Sesquile Ramon
Harvard Medical School

Andrew G. Ramstead
Montana State University

Avijit Ray, Ph.D.
Blood Research Institute, BloodCenter of Wisconsin

Emma C. Reilly, Ph.D.
University of Rochester

Alexander E. Reynolds
Duke University

Martin J. Richer, Ph.D.
University of Iowa

Lorena Rioli, Ph.D.
Harvard University

Pablo A. Romagnoli, Ph.D.
University of Connecticut Health Center

Victoria E. Ruiz, Ph.D.
NYU Rangone Medical Center

Melanie R. Rutkowski, Ph.D.
Wistar Institute

Catherine J. Sanders, Ph.D.
St. Jude Children's Research Hospital

Alan M. Sanfilippo
Albany Medical College

Deepali V. Sawant, Ph.D.
St. Jude Children's Research Hospital

Abigail L. Sedlacek, Ph.D.
University of Pittsburgh

Hillary L. Shane
University of Georgia

Archna Sharma, Ph.D.
Feinstein Institute for Medical Research

HyunMu Shin, Ph.D.
University of Massachusetts Medical School

Noa Simchoni
Mount Sinai School of Medicine

Denise Skrombolas
University of Rochester

Katherine E. Stagliano
National Cancer Institute, NIH

Matthew M. Staron, Ph.D.
Yale University

Tina L. Sumpter, Ph.D.
University of Pittsburgh

Margarite L. Tarrio
Brown University

Melissa Yuwono Tjota
University of Chicago

Smanla Tundup, D.O., Ph.D.
University of Georgia

Stina Lisa Urban
University of Massachusetts Medical School

Kristi J. Warren, Ph.D.
Johns Hopkins Medicine

Cassandra M. Washington Philipson
Virginia Bioinformatics Institute

Alan Michael Watson, Ph.D.
University of Pittsburgh

Brian M. Weist, Ph.D.
University of California, Berkeley

Xiangshu Wen, M.D., Ph.D.
University of Southern California

Joel R. Wilmore, Ph.D.
University of Pennsylvania

Yanping Xiao, D.O., Ph.D.
Dana-Farber Cancer Institute

Guang Yang
Duke University

Wenliang Zhang, Ph.D.
University of Massachusetts Medical School

SECOND-YEAR MEMBERS

Alexander J. Adami
University of Connecticut Health Center

Scott M. Anthony
University of Texas MD Anderson Cancer Center

Olufolakemi Awe
Indiana University School of Medicine

Sonali Bracken
University of Connecticut Health Center

Jeffrey D. Brand, Ph.D.
Harvard School of Public Health

- Derek Clouthier**
University of Toronto
- Angela Crespo**
Harvard University
- Djeneba Koumba Dabita, Pharm.D.**
Johns Hopkins University
- Thomas Duhen, Ph.D.**
Benaroya Research Institute
- Kelsye Paula Fabian**
University of Pittsburgh
- Daniel Frederick**
Tulane University
- Miguel L. Fribourg Casajuana, Ph.D.**
Icahn School of Medicine at Mount Sinai
- Mai Fujiwara**
University of Connecticut Health Center
- Melanie Gasper, Ph.D.**
University of Washington/Seattle Biomedical Research Institute
- Jacob V. Gorman**
University of Iowa
- Matthew D. Hammond**
University of Connecticut Health Center
- Aidan Hancock**
Drexel University
- Jennifer L. Hope**
Drexel University College of Medicine
- Brian Mark Janelsins, Ph.D.**
National Institute of Allergy and Infectious Diseases, NIH
- Zuliang Jie**
University of Texas Medical Branch
- Gil Katz, Ph.D.**
Uniformed Services University of the Health Sciences
- Anupriya Khare, Ph.D.**
University of Pittsburgh
- Kathryn A. Knoop, Ph.D.**
Washington University in St Louis
- Zachary James Kraus, Ph.D.**
National Human Genome Research Institute, NIH
- Mara Lennard Richard, Ph.D.**
Medical University of South Carolina
- Jeff Leong**
Washington University School of Medicine
- Yan Lin, M.D.**
University of Pittsburgh
- Baoyu Liu, Ph.D.**
Georgia Institute of Technology
- Rajakumar Mandraju, Ph.D.**
University of Texas Southwestern Medical Center
- Nathan Mathewson**
University of Michigan Medical School
- Sean Ryan McMaster**
Emory University
- Jonathan P. McNally**
Cincinnati Children's Hospital Medical Center
- Lauren M.F. Merlo, Ph.D.**
Lankenau Institute for Medical Research
- Amina Metidji**
National Institute of Allergy and Infectious Diseases, NIH
- Albanus O. Moguche**
University of Washington
- Patrick Sean Murphy**
University of Rochester
- Abigail E. Overacre**
St. Jude Children's Research Hospital
- Amber M. Papillion**
SUNY Upstate Medical University
- Nicholas M. Provine**
Harvard University
- Michael Quinn**
Thomas Jefferson University
- Brendan Kearney Reed**
Mayo Clinic
- Isaac G. Sakala, Ph.D.**
Saint Louis University School of Medicine
- Louis N. Schoettle**
Arizona State University
- Gail D. Sckisel, Ph.D.**
University of California, Davis
- Sharad K. Sharma, Ph.D.**
Texas Tech University Health Sciences Center
- Mark C. Siracusa, Ph.D.**
University of Pennsylvania
- Corinne Smith**
Thomas Jefferson University
- Ryan Sullivan**
Washington University in St. Louis
- Justin Taylor, Ph.D.**
University of Minnesota
- Puspa Thapa**
Mayo Graduate School
- Sally Trabucco**
University of Massachusetts Medical School
- Adam Utley**
Roswell Park Cancer Institute
- Philip Verhoef, M.D., Ph.D.**
University of Chicago
- Zhao-Yuan Wang, Ph.D.**
Wayne State University
- Masashi Watanabe, Ph.D.**
National Cancer Institute, NIH
- Chi Gidley Weindel**
Tufts University Sackler School of Biomedical Sciences
- Alex W. Wessel**
National Institute of Arthritis and Musculoskeletal and Skin Diseases, NIH
- Jarad J. Wilson, Ph.D.**
Emory University
- Xi Yang**
University of Pittsburgh
- Jiujiu Yu, Ph.D.**
Harvard School of Public Health
- Naomi Yudanin**
Columbia University
- Qianxia Zhang**
St. Jude Children's Research Hospital
- Zemin Zhou**
University of Utah
- FIRST-YEAR MEMBERS**
- Swati Acharya, Ph.D.**
Stanford University
- Didem Agac**
University of Texas Southwestern Medical Center
- Gerard Agbayani**
University of Ottawa
- Dingding An, Ph.D.**
Harvard Medical School
- Jaffre J. Athman**
Case Western Reserve University
- Stefanie R. Bailey**
Medical University of South Carolina
- Scott M. Baliban**
Drexel University College of Medicine
- Anirban Banerjee, Ph.D.**
Medical University of South Carolina
- Eugene J. Becker, Jr.**
University of Alabama, Birmingham
- Kyle Bednar**
University of Cincinnati
- Jean-Christophe Beltra**
CHU Sainte-Justine Research Center
- Michelle L. Bolner**
University of Texas MD Anderson Cancer Center
- S. A. Bora**
Pennsylvania State University
- Jillian Helena Bradley**
Georgia Regents University
- Adam L. Burrack**
University of Colorado
- Kristina Stoermer Burrack**
University of Colorado School of Medicine
- Sandra Cascio, Ph.D.**
University of Pittsburgh
- Cierra Nichole Casson**
University of Pennsylvania
- Pablo Francisco Céspedes Donoso, Sr., D.V.M., Ph.D.**
Pontificia Universidad Católica de Chile
- Krishnendu Chakraborty, Ph.D.**
University of Pittsburgh
- Samantha A. Chalmers**
Albert Einstein College of Medicine
- Kenji Chamoto, Ph.D.**
Ontario Cancer Institute/Princess Margaret Cancer Centre
- Shilpak Chatterjee, Ph.D.**
Medical University of South Carolina
- Nicholas M. Chesarino**
Ohio State University
- Hao-Sen Chiang, Ph.D.**
Massachusetts General Hospital
- Wai Po Chong, Ph.D.**
National Eye Institute, NIH
- Olesya Y. Chornoguz**
Johns Hopkins University
- Michael G. Constantinides**
University of Chicago
- Heather R. Conti, Ph.D.**
University of Pittsburgh
- Alan M. Copenhaver**
University of Pennsylvania
- Christine Morel Coquery**
University of Virginia
- Guoliang Cui, Ph.D.**
Yale University
- Alan Dale Curtis, II**
East Carolina University
- Abhishek Das, Ph.D.**
Children's Hospital Boston
- Mark Dell'Aringa**
Duke University
- Jillian M. Dietzold**
Rutgers University
- Qing Ding, Ph.D.**
University of Pittsburgh Medical Center
- Katherine Doll**
University of Iowa
- Daniel F. Dwyer**
Harvard University
- Jason S. Ellis, Ph.D.**
University of Missouri
- Leonardo Daniel Estrada**
University of Texas Southwestern Medical Center
- Roger Alan Fecher**
University of Cincinnati/Cincinnati Children's Hospital Medical Center
- John R. Ferdinand**
National Institute of Arthritis and Musculoskeletal and Skin Diseases, NIH
- Josephine Giles**
Yale University
- Sarah Ruth Gonzales**
University of Texas Southwestern Medical Center
- Chunqing Guo, Ph.D.**
Virginia Commonwealth University
- Xiaohuan Guo, Ph.D.**
University of Chicago
- Jennie A. Hamilton**
University of Alabama, Birmingham
- Bryan Harris**
Fox Chase Cancer Center
- Lifei Hou, Ph.D.**
Harvard Medical School
- Chia-Lin Hsu**
Northwestern University
- Ruozen Hu, Ph.D.**
University of Utah
- Zhuting Hu**
Dartmouth College
- Matthew Hufford, Ph.D.**
Indiana University School of Medicine

- Makoto Inoue, Ph.D.**
Duke University School of Medicine
- Ejaj Intisar**
University of Southampton
- Jill A. Ippolito**
Loyola University, Chicago
- Yuval Itan, Ph.D.**
Rockefeller University
- Sohyun Sophia Jeon**
University of Pittsburgh
- Hyun-Bae Jie, Ph.D.**
University of Pittsburgh
- Derek D. Jones, Ph.D.**
University of Pennsylvania
- Jessica N. Jones, Ph.D.**
University of Texas at Austin
- Saghar Kaabinejadian, Pharm.D., Ph.D.**
University of Oklahoma Health Sciences Center
- Shannon M. Kahan, Ph.D.**
University of Alabama, Birmingham
- Masashi Kanayama, Ph.D.**
Duke University
- Senta Kapnick**
National Human Genome Research Institute, NIH
- Shilpa Keerthivasan, Ph.D.**
University of Chicago
- Domenick Edward Kennedy**
Loyola University Chicago
- B. Kim, Ph.D.**
Case Western Reserve University
- Marie Kim**
University of Iowa
- Yuthana Kongprachaya**
Chatham University
- Dmitri Ivanovich Kotov**
University of Minnesota
- Akshay T. Krishnamurty, D.M.D.**
University of Washington
- Pawan Kumar, Ph.D.**
University of Pittsburgh
- Brandon Kwong, Ph.D.**
National Cancer Institute, NIH
- Long Kwan Matthew Lam**
University of Pittsburgh
- Tonika Lam**
University of California, Irvine
- Brian Latimer**
Drexel University College of Medicine
- Yelena V. Lerman**
University of Rochester Medical Center
- Guanqiao Li**
University of Pittsburgh
- Davinna L. Ligons, Ph.D.**
National Cancer Institute, NIH
- Jason Jakob Lomueller, Ph.D.**
University of Pittsburgh
- Xiaoming Lu, Ph.D.**
Cincinnati Children's Hospital Medical Center
- Peder J. Lund**
Stanford University
- Ankit Malik**
Michigan State University
- Sarah M. McCormick, Ph.D.**
Johns Hopkins University
- Kaitlin L. McDaniel**
Pennsylvania State University
- Carlos Alberto Mier Aguilar**
Universidad Nacional Autónoma de México
- Zbigniew Mikulski, Ph.D.**
La Jolla Institute for Allergy and Immunology
- Eslam Mohamed**
Georgia Regents University
- Juan Ignacio Moliva**
Ohio State University
- Andrew J. Monteith**
University of North Carolina, Chapel Hill
- Giora I. Morozov, M.D., Ph.D.**
National Institute of Allergy and Infectious Diseases, NIH
- Munir M. Mosaheb**
Boston University
- Gayatri Mukherjee, Ph.D.**
Albert Einstein College of Medicine
- Rithun Mukherjee, Ph.D.**
Fred Hutchinson Cancer Research Center
- Michael Bradford Murphy, Ph.D.**
University of Connecticut Health Center
- Colleen S. Netherby**
Roswell Park Cancer Institute
- Rebecca J. Nusbaum**
University of Texas Medical Branch
- Thomas F. O'Brien, Ph.D.**
Duke University
- Susan A. Olalekan**
Rush University Medical Center
- Claire E. O'Leary**
University of Pennsylvania
- Nandakumar Packiriswamy, D.V.M.**
Michigan State University
- Lindsey E. Padgett**
University of Alabama, Birmingham
- Antonio J. Pagan, Ph.D.**
University of Washington
- Benjamin V. Park**
Johns Hopkins University
- Jihye Park, Ph.D.**
Beth Israel Deaconess Medical Center
- Rhiannon Penkert, Ph.D.**
St. Jude Children's Research Hospital
- Oanh H. Pham**
University of California, Davis
- Binh L. Phong**
University of Pittsburgh
- Erica M. Pimenta**
Rutgers University
- Andrew E. Pincetic, Ph.D.**
Rockefeller University
- Rebecca R. Pompano, D.O., Ph.D.**
University of Chicago
- Dana Michelle Previte**
University of Pittsburgh
- Kamalakaran Rajasekaran, Ph.D.**
Blood Research Institute, BloodCenter of Wisconsin
- Roshni Rao**
University of South Carolina
- Ariane Catherine Richard**
National Institute of Arthritis and Musculoskeletal and Skin Diseases, NIH
- Keven Mara Robinson, M.D.**
University of Pittsburgh Medical Center
- David L. Rose**
University of Georgia
- Carolyn E. Rydyznski**
University of Cincinnati
- Robert P. Sheehan, Jr.**
University of Pittsburgh
- Boyoung Shin**
University of Alabama, Birmingham
- Kim R. Simpfendorfer, Ph.D.**
Feinstein Institute for Medical Research
- Tej Pratap Singh, Ph.D.**
National Institute of Allergy and Infectious Diseases, NIH
- Tripti Singh, M.D.**
University of Pittsburgh
- Samantha R. Slight-Webb, Ph.D.**
Oklahoma Medical Research Foundation
- Chetna Soni, Ph.D.**
Pennsylvania State University College of Medicine
- Emily Y. Spaulding**
Albert Einstein College of Medicine
- Erietta Stelekati, Ph.D.**
University of Pennsylvania
- Nikolaos Svoronos**
University of Pennsylvania
- Elia Dion Tait Wojno, Ph.D.**
University of Pennsylvania
- Connie Tat**
University of Texas Health Science Center at San Antonio
- Katherine G. Taylor**
National Institute of Allergy and Infectious Diseases, NIH
- Roslyn Ann Taylor**
University of Connecticut Health Center
- Patsharaporn Techasintana, M.D.**
University of Missouri
- Jeffrey Teoh**
University of Virginia
- Maria Themeli, M.D., Ph.D.**
Memorial Sloan-Kettering Cancer Center
- Emily A. Thompson**
University of Minnesota
- Lance R. Thurlow, Ph.D.**
University of North Carolina, Chapel Hill
- Jie Tian, Ph.D.**
Jiangsu University
- Giralдина Trevejo-Nunez, M.D.**
University of Pittsburgh
- Noah J. Tubo, Ph.D.**
University of Minnesota - Twin Cities
- Héctor Francisco Valderrama-Carvajal, Ph.D.**
Universidad Nacional Autónoma de México
- Nicholas J. van Panhuys, Ph.D.**
National Institute of Allergy and Infectious Diseases, NIH
- Asha Purnima Veerappan Ganesan, Ph.D.**
Thomas Jefferson University
- Nekeitha S. Wade, Ph.D.**
University of Virginia
- Jia C. Wang**
University of British Columbia
- Xinxin Wang**
Washington University in St. Louis
- Clara Y. Westwell-Roper**
University of British Columbia
- Natasha Whibley, Ph.D.**
University of Pittsburgh
- Jeffrey L. Wong**
University of Pittsburgh
- Weiwei Wu**
Institute of Biophysics, Chinese Academy of Sciences
- Yumin Xia, M.D., Ph.D.**
Albert Einstein College of Medicine
- Douglas H. Yamada**
University of California, Los Angeles
- Rui Yang, M.B.Ch.B.**
University of Vermont
- Soo Jung Yang, Ph.D.**
University of California, Berkeley
- Shuyu Yao, D.V.M., Ph.D.**
Indiana University School of Medicine
- Karim Yatim, M.D.**
University of Pittsburgh
- Autumn Gabrielle York**
University of California, Los Angeles
- Hongmin Yun, M.D., Ph.D.**
University of Pittsburgh
- Zachary Bestor Zalinger**
University of Pennsylvania
- Kimberly J. Zanotti, Ph.D.**
National Institute on Aging, NIH
- Baojun Zhang, Ph.D.**
Duke University Medical Center
- Fei Zhao**
University of Toronto
- Peilin Zheng, Ph.D.**
Texas Children's Hospital, Baylor College of Medicine
- Jianzhong Zhu, Ph.D.**
University of Pittsburgh
- Haoyang Zhuang, Ph.D.**
University of Florida
- Quan Zhuang**
University of Pittsburgh

2014 AAI TRAINEE POSTER AWARDEES

Awarded to AAI Trainee Members (students and postdoctoral fellows) whose first-author abstracts are deemed exceptional among abstracts selected exclusively for poster presentation

Support, in part, for these awards has been generously provided by *Ancell Corporation and Immudex*

Ethan George Aguilar
University of California, Davis

Katherine J. Bao
Duke University

Kathleen Bartemes
Mayo Clinic

Ian Belle
Duke University

Yihua Cai, Ph.D.
University of Louisville

Tara Capece, M.P.H.
University of Rochester

Eleanor Clancy-Thompson
Dartmouth College

Elizabeth V. Clarke, M.S., M.P.H.
University of California, Irvine

Sherrie J. Divito, M.D., Ph.D.
Harvard Medical School

Rodney Dixon Dorand, Jr.
Case Western Reserve University

Jarrod A. Dudakov, Ph.D.
Memorial Sloan-Kettering Cancer Center

Akinola O. Emmanuel
University of Chicago

Heather Marie Evans
University of Kentucky

Holly Evans
Uniformed Services University of the Health Sciences

Kristen Fantetti, Ph.D.
Duquesne University

Rebecca A. Flitter, M.P.H.
University of Pittsburgh

Brian J. Franz
Albany Medical College

Yaoyao Fu
Pennsylvania State University

Yoichi Furuya, Ph.D.
Albany Medical College

Sara Gibson
University of Alabama, Birmingham

Hannah Priyadarshini Gideon, Ph.D.
University of Pittsburgh School of Medicine

Hongwei Gu, Ph.D.
Nanjing University

Jasmin Herz, Ph.D.
National Institutes of Neurological Disorders and Stroke, NIH

Toshihito Hirai, M.D.
Tokyo Women's Medical University

Shaomin Hu, M.D., Ph.D.
Pennsylvania State University

Matthew B. Huante
University of Texas Medical Branch

Arshad Khan, Ph.D.
University of Texas Health Science Center at San Antonio

Jihye Kim, D.V.M.
Korea Advanced Institute of Science and Technology

Myunghoo Kim
Purdue University

Devesha Hrishikesh Kulkarni, Ph.D.
Washington University in St. Louis

Satyendra Kumar, Ph.D.
University of Illinois College of Medicine

Rafael Assumpção Laroocca, Ph.D.
Beth Israel Deaconess Medical Center

Priscilla Lee
Ohio State University

Michael Levinson
University of Alabama, Birmingham

Junwei Li, Ph.D.
Texas Tech University Health Sciences Center

Stephen K. Li
Western University

Yan Li, M.D.
Cleveland Clinic

Brandon M. Linz
University of North Carolina, Chapel Hill

Ailing Liu, Ph.D.
University of Pittsburgh

Bo Liu
Cincinnati Children's Hospital Medical Center

Jeremy M. Lott, Ph.D.
University of Pittsburgh

Ana Citlali Marquez
University of British Columbia

Payal Mittal, D.O., Ph.D.
University of Connecticut Health Center

Arunesh Pullaniparambil Mohandas
Women and Children's Health Research Institute

Matthew Morris
Virginia Tech University

Jayakumar R. Nair, Ph.D.
Roswell Park Cancer Institute

Somashekarappa Gowda Nanjappa, D.V.M., Ph.D.
University of Wisconsin, Madison

Martin Souren Naradikian
University of Pennsylvania

Quang Tam Nguyen, Ph.D.
Albany Medical College

Patrick Kwadwo Nuro-Gyina
Ohio State University

Megan A. O'Connor
Geisel School of Medicine at Dartmouth

Tej K. Pareek, Ph.D.
Case Western Reserve University

Liliana Perez, Ph.D.
Indiana University School of Medicine

Noe Rodriguez Rodriguez
Beth Israel Deaconess Medical Center

Sean O. Ryan, Ph.D.
Case Western Reserve University

Divya Sagar
Drexel University College of Medicine

Emily-Joy Farah Samli
University of Georgia

Nathan J. Schuldt, Ph.D.
University of Minnesota

Christina Slota
National Institute on Aging, NIH

Carolyn K. Smith
University of Michigan

Marie-Claire B. St. Rose, Ph.D.
University of Connecticut Health Center

Katelyn A. Stafford
Johns Hopkins Bloomberg School of Public Health

Naomi Tsurutani, Ph.D.
University of Connecticut Health Center

Uzodinma N. Uche
University of Pittsburgh

Isaah Vincent, Ph.D.
University of Virginia

Allen M. Vong
University of Massachusetts Medical School

Xuefeng Wang, D.O., Ph.D.
University of Pittsburgh School of Medicine

Yaya Wang, Ph.D.
University of Minnesota

Julie Mikele Ward
Oklahoma Medical Research Foundation

Hayley Warsinske
University of Michigan

Neva B. Watson
SUNY Upstate Medical University

Jiayi Wu
University of Texas Southwestern Medical Center

Linlin Yang, Ph.D.
Pennsylvania State University

Yan Ye
University of North Dakota

Osamu Yoshida, M.D., Ph.D.
University of Pittsburgh

Xiaofei Yu, Ph.D.
Virginia Commonwealth University

Anthony Elston Zamora
University of California, Davis

Monan Angela Zhang
University Health Network/Toronto General Research Institute



2014 Introductory Course in Immunology

July 12–17, 2014 • Long Beach Convention Center, Long Beach, California

Director: Juan Carlos Zuñiga-Pflücker, Ph.D.
University of Toronto and Sunnybrook Research Institute

Don't miss the most comprehensive introduction to immunology available!

This intensive two-part course, taught by world-renowned immunologists, provides a comprehensive overview of the basics of immunology. This course is for students new to the discipline or those seeking more information to complement general biology or science training. **Part I (July 12–14)** is a detailed introduction to the basic principles of immunology and is suitable for students with a general biology background. **Part II (July 15–17)** is a clinically oriented lecture series focusing on specialty areas.

Parts I and II may be taken independently at the discretion of the student.

Faculty

Juan Carlos Zuñiga-Pflücker, *University of Toronto and Sunnybrook Research Institute*
Introduction to the Immune System

Lewis L. Lanier, *University of California, San Francisco*
Innate Immunity: Introduction to the Cells

Andrea J. Tenner, *University of California, Irvine*
Complement

Gregory M. Barton, *University of California, Berkeley*
Innate Immunity: Introduction to Pattern Recognition and Intracellular Signaling

Wendy L. Havran, *The Scripps Research Institute*
Introduction to Adaptive Immunity

Juan Carlos Zuñiga-Pflücker, *University of Toronto and Sunnybrook Research Institute*
MHC Restriction and Thymic Selection

Nilabh Shastri, *University of California, Berkeley*
Antigen Processing and Presentation

A. Karolina Palucka, *Baylor Institute for Immunology Research*
Dendritic Cells: The Bridge Between Innate and Adaptive Immunity

Shane Crotty, *La Jolla Institute for Allergy and Immunology*
B Cell Activation and Humoral Immunity

Arthur Weiss, *University of California, San Francisco*
Signaling in the Immune System

Alessandro Sette, *La Jolla Institute for Allergy and Immunology*
Putting the Pieces Back Together: Epitopes, Cell Responses, and Diseases

Ninan Abraham, *University of British Columbia*
Cytokines

Megan K. Levings, *University of British Columbia*
T and B Cell Tolerance

Linda A. Sherman, *The Scripps Research Institute*
Tumor Immunology

Olivia M. Martinez, *Stanford University School of Medicine*
Transplantation

Hilde Cheroutre, *La Jolla Institute for Allergy and Immunology*
Mucosal Immunology

Steven F. Ziegler, *Benaroya Research Institute*
Type 2 Immunity

Robert L. Modlin, *University of California, Los Angeles, David Geffen School of Medicine*
Immunity to Bacterial Pathogens

Elina Zuniga, *University of California, San Diego*
Immunity to Viruses

Jeffrey A. Bluestone, *University of California, San Francisco*
Autoimmunity

Stephen P. Schoenberger, *La Jolla Institute for Allergy and Immunology*
Immunologic Memory

Jennifer M. Puck, *University of California, San Francisco*
Genetic Approaches to Immune-Mediated Diseases

Andrew C. Chan, *Genentech, Inc.*
Bench to Bedside to Bench: Current Issues in Immunology

Also included will be lectures on:

Effector T Cell Differentiation and Response, and Vaccination

For complete course details and registration, visit: www.aai.org/Education/Courses

For assistance, contact (301) 634-7178 or meetings@aai.org. Overseas applicants are advised to apply early for visas; for details, visit www.aai.org/Education/Courses/Visa.html. Financial support for underrepresented minority scientists is available through the FASEB MARC Program; for details, visit www.faseb.org/MARC-and-Professional-Development.



2014 Advanced Course in Immunology

July 27–August 1, 2014 • Seaport World Trade Center, Boston, Massachusetts

Director: Leslie J. Berg, Ph.D.

University of Massachusetts Medical School

Don't miss the premier course in immunology for research scientists!

This intensive course is directed toward advanced trainees and scientists who wish to expand or update their understanding of the field. Leading experts will present recent advances in the biology of the immune system and address its role in health and disease. This is not an introductory course; attendees will need to have a firm understanding of the principles of immunology.

Faculty

Marc K. Jenkins, *Center for Immunology,
University of Minnesota Medical School
Anatomy of the Immune Response*

Jonathan C. Kagan, *Children's Hospital Boston,
Harvard Medical School
Innate Immunity: Pattern Recognition and
Anti-microbial Mechanisms*

Katherine A. Fitzgerald, *University of
Massachusetts Medical School
Innate Immunity: Gene Regulation*

Albert S. Bendelac, *University of Chicago
Innate Immunity: Cellular Mechanisms*

Wayne M. Yokoyama, *Washington University
School of Medicine
NK Cells—Their Receptors and Function in Health
and Disease*

Elizabeth J. Kovacs, *Loyola University Chicago
Health Sciences Campus
Molecular and Cellular Mediators of Inflammation*

Shannon J. Turley, *Dana Farber Cancer Institute,
Harvard Medical School
Dendritic Cells*

Eugene M. Oltz, *Washington University School
of Medicine
The Generation and Modification of Lymphocyte
Antigen Receptor Genes*

Shiv Pillai, *Massachusetts General Hospital Cancer
Center, Harvard Medical School
B Cell Development*

Avinash Bhandoola, *University of Pennsylvania,
Perelman School of Medicine
T Cell Development*

Kenneth L. Rock, *University of Massachusetts
Medical School
MHC-Restricted Antigen Presentation to T Cells*

Leslie J. Berg, *University of Massachusetts
Medical School
Signaling from Antigen Receptors*

Susan M. Kaech, *Yale School of Medicine
Lymphocyte Memory*

Brian A. Cobb, *Case Western Reserve University
School of Medicine
Glycoimmunology*

Richard S. Blumberg, *Brigham & Women's Hospital,
Harvard Medical School
Mucosal Immunity*

Joanne L. Flynn, *University of Pittsburgh School
of Medicine
Immune Response to Pathogens*

Ann Marshak-Rothstein, *University of Massachusetts
Medical School
B Cell Tolerance and Autoimmunity*

Vijay K. Kuchroo, *Brigham & Women's Hospital,
Harvard Medical School
T Cell Tolerance and Autoimmunity*

TBA
Tumor Immunology

Joanne L. Viney, *Biogen Idec
Immunotherapeutics*

Dennis W. Metzger, *Albany Medical College
Vaccines*

For complete course details and registration, visit: www.aai.org/Education/Courses

For assistance, contact (301) 634-7178 or meetings@aai.org. Overseas applicants are advised to apply early for visas; for details, visit www.aai.org/Education/Courses/Visa.html.

Financial support for underrepresented minority scientists is available through the FASEB MARC Program; for details, visit www.faseb.org/MARC-and-Professional-Development.

AAI Outreach Program

AAI Again Extends Support to Early-Career Scientists at New England and Autumn Immunology Conferences

In its commitment to the cultivation of career opportunities for promising young scientists, AAI was pleased to provide award and session sponsorship at the New England Immunology Conference and Autumn Immunology Conference this past November. AAI congratulates the awardees as well as AAI member organizers of the conferences.

New England Immunology Conference (NEIC)

The 39th Annual NEIC was held November 2–3, 2013, at the Marine Biological Laboratory in Woods Hole, Massachusetts. The conference was organized by Mark Exley (AAI '02), J. Rodrigo Mora (AAI '07), Thorsten Mempel (AAI '07), and Shannon Turley (AAI '05).

For the third year, AAI sponsored awards given at the conference. AAI Young Investigator Awards were presented to four post-doc and student winners: Alexandre Bénéchet (AAI '11), University of Connecticut Health Center; Ribhu Nayar (AAI '11), University of Massachusetts; Anna Gil (AAI '11), University of Massachusetts; and Francois Legoux (AAI '12), Massachusetts General Hospital.

Also sponsored by AAI were two Janeway Awards, named in honor of the late Charles A. Janeway (AAI '74), AAI president from 1997 to 1998. These were won by Sarah Whelan, Trinity College Dublin, and Pablo Romagnoli (AAI '07), University of Connecticut Health Center.

The broad-ranging program included sessions on lymphocyte biology at the intersection of autoimmunity, immunity, and tolerance; twenty-first century vaccines; and mucosal immunity and tolerance—the last dedicated to the memory of past NEIC organizer and AAI member Leo Lefrançois.

Autumn Immunology Conference (AIC)

Nearly 600 scientists attended the 42nd Annual AIC, held November 22–25, 2013, in Chicago. Conference Chair Maria-Luisa Alegre (AAI '97) welcomed attendees on the opening night and introduced Keynote Speaker and Past AAI President Laurie H. Glimcher (AAI '83). Among Glimcher's career accomplishments, which Alegre highlighted, was the AAI Excellence in Mentoring Award in 2008. In the keynote address, Glimcher spoke on “The ER stress sensor XBP1 in disease.”

AAI, for the third year, sponsored 21 awards in support of talented trainees. Presenting the awards were Alegre, assisted by Virginia Shapiro (AAI '04), AIC awards coordinator. Recipients of the AAI Young Investigator Award were William Bowen (AAI '11), Xiufen Chen, Renee de Pooter, Akinola Emmanuel (AAI '14), Jennifer Heller (AAI '12), Kathryn Hulse (AAI '06), Igal Ifergan, Brandon Lee, Ankit Malik (AAI '12), Jeannette Messer, Mallory Paynich (AAI '14), Kamalakannan Rajasekaran (AAI '13), Justin Spanier, Stefani Spranger, Gabriel Starbeck-Miller (AAI '11), Mariko Takami, Matthew Thompson, Gregory Tietjen, Kayla Weiss (AAI '12), Michelle Xu, and Jilu Zhang (AAI '13).

AAI also continued its sponsorship of the Careers in Immunology Workshop for Undergraduates, directed this year by Heather A. Bruns (AAI '05), who has served as a panelist for the session in past years. This annual workshop provides an opportunity for undergraduate students with a demonstrated interest in immunology to learn about options for research careers in the field. The panel this year featured Calvin B. Williams (AAI '01) from the Medical College of Wisconsin, John R. Hackett (AAI '94) from



Mark Exley (far left) and Thorsten Mempel (far right) with NEIC Awardees (l-r) Ribhu Nayar, Anna Gil, Alexandre Bénéchet, Francois Legoux, Sarah Whelan, and Pablo Romagnoli

Abbott Laboratories, Charlotte M. Vines (AAI '05) from the University of Kansas Medical Center, and Aldo Vacaflores Salinas (AAI '14), a graduate student at the University of Iowa. In this interactive session, the panelists fielded a range of questions, from the most important criteria in choosing a graduate school to whether joint M.D.–Ph.D. programs are required training for physician scientists. The workshop was followed by a meet-and-greet session for graduate program representatives to provide students with additional information about the field and answer questions about their own institutions and programs.

The AIC continued its commitment to career development through its workshop blocks and the AIC John Wallace Diversity Program. The workshop blocks give all presenters the opportunity to speak, providing a valuable training experience for students. The annual Wallace luncheon provides the opportunity for present

Wallace scholars to meet one-on-one with AIC councillors, past Wallace scholars, and the National Institute of Allergy and Infectious Diseases representatives to hear about their scientific career experiences and receive advice on a range of career issues, including research-funding opportunities.

AAI staff hosted a booth in the exhibit and poster hall. There, Jennifer Woods, membership manager, and Mary Litzinger (AAI '11), manager of educational and career development programs, engaged AIC attendees in discussion about the benefits and resources available through AAI.

Next Issue: Recent AAI Outreach Program support extended to the December "CRWAD" and January "Asilomar" meetings. Look for coverage in the May-June AAI Newsletter.



AIC Keynote Lecturer Laurie Glimcher and Conference Chair Maria-Luisa Alegre



AIC Careers in Immunology Workshop for Undergraduates Panelists (l-r, at table) Calvin Williams, Aldo Vacaflores Salinas, John Hackett, and Charlotte Vines, joined by Coordinator Heather Bruns (standing at back)



Virginia Shapiro (far left), Mary Litzinger (fourth from right), and Jennifer Woods (third from right) with AAI Young Investigator Award recipients at AIC



Mary Litzinger and Jennifer Woods at the AAI booth at AIC

All page 61 photos: William Burnett Photography



November 1, 2012 to October 29, 2013
Total Number of Contributors 499

Member donations support the many awards and travel grants, as well as the educational, career, and advocacy programs sponsored by AAI on behalf of its membership.

AAI wishes to thank the following members for their generous donations:

PRESIDENT'S CIRCLE

Contributions \$500 and above

Daniel H. Conway
 Mark M. Davis
 M. Michele Hogan
 Edith M. Lord

C. Michael Jones
 Ilo Jou
 Shelley Melissa Lawrence
 Yee-Shin Lin
 Paul E. Love
 Steven K. Lundy
 Joan K. Lunney
 George B. Naff
 Peter Parham
 Julia M. Phillips-Quagliata
 Gerald B. Pier
 Marshall Plaut
 Robert R. Rich
 Susan S. Rich
 Ellen A. Robey
 Derry C. Roopenian
 Linda A. Sherman
 Raymond A. Sobel
 James W. Thomas
 Motomichi Torisu
 Carl F. Ware
 Stephen R. Turner
 Rudolf Valenta
 David R. Webb
 Mark D. Wewers

COUNCIL'S CIRCLE

Contributions \$250 - \$499

Robert L. Fairchild
 Pamela J. Fink
 Kira R. Gantt
 Myung-Shin Jeon
 Leo Lefrançois
 Clifford M. Snapper
 Wayne M. Yokoyama

CHAIRS' CIRCLE

Contributions \$150 - \$249

Mark H. Kaplan
 Sunil Patel

LEADERS' CIRCLE

Contributions \$100 - \$149

Gail A. Bishop
 Sterling Gaylen Bradley
 Hal E. Broxmeyer
 Robert A. Colbert
 Maria De Sousa
 John J. Donnelly
 George R. Dubyak
 Joel D. Ernst
 Donna L. Farber
 John F. Finerty
 Frank W. Fitch
 Berhane Ghebrehiwet
 Ann Marie Haberman
 Marilyn Halonen
 Wendy L. Havran
 Christopher S. Henney
 Simon P. Hogan
 David A. Hokey
 Hirotsugu Imaeda
 Thereza Imanishi-Kari
 Peter C. Isakson
 Marc K. Jenkins

ADVOCATES' CIRCLE

Contributions \$50 - \$99

Kristina Abel
 Carlos A. Acevedo-Suarez
 Yoshiyuki Adachi
 Raymond F. Adebiji
 Ali Ahmad
 Shizuo Akira
 Ichiro Aoki
 Jose F. Aramburu Beltran
 Robert H. Arch
 Robert F. Ashman
 Philip Ashton-Rickardt
 Thomas M. Aune
 Clare Baecher-Allan
 Suk-Hwan Baek
 Emin Umit Bagriacik
 Michelle L. Baker
 William M. Baldwin, III
 Anil K. Bamezai
 Robert F. Bargatzte

2013 AAI Member Donations

Antony Basten
 María Inés Becker
 Joshua N. Beilke
 Clifford J. Bellone
 Ira Berkower
 Abhisek Bhattacharya
 Nancy J. Bigley
 Kate Blease
 Anna Marie Blom
 Bonnie Blomberg
 Janice S. Blum
 Richard Boismenu
 Ezio Bonvini
 Francisco Borrego
 Lisardo Bosca Gomar
 Apostolos Bossios
 Vassiliki A. Boussiotis
 Prosper N. Boyaka
 Walter E. Brandt
 Jonathan Braun
 Willie J. Brickey
 Elizabeth E. Brown
 Melissa Ann Brown
 Kristine-Ann G. Buela
 Stephen C. Bunnell
 Peter Calabresi
 J. Donald Capra
 Astrid E. Cardona
 Beatriz M. Carreno
 Michael C. Carroll
 Linda S. Cauley
 Andrea Cerutti
 John Chan
 Alexander V. Chervonsky
 Daeho Cho
 Seung-Chul Choi
 Yongwon Choi
 Claire Chougnat
 Yeonseok Chung
 Joanna Cichy
 Edward A. Clark
 Philip L. Cohen
 Richard Coico
 Laura Conforti
 Daniel H. Conrad
 Ronald B. Corley
 Lori R. Covey
 Andrea L. Cox
 Mariano S. Crespo
 Randy Q. Cron
 Julius M. Cruse
 Maria A. Curotto de Lafaille
 Satya Dandekar
 Gary S. David
 Jeffrey R. Dawson
 Noorbibi K. Day-Good
 Jan E. de Vries
 Russell L. Dedrick
 George S. Deepe
 Lisa K. Denzin
 Wilbert A. Derbigny
 W. Dias Da Silva

Claudia Marcela Diaz-Montero
 Thamotharampillai Dileepan
 Yoshitane Dohi
 Lesley Doughty
 Michael Dustin
 Richard W. Dutton
 J. Andrew Duty, II
 Laurel A. Eckhardt
 Suhendan Ekmekcioglu
 Claire L. Emson
 Zelig Eshhar
 Luis R. Espinoza
 Iris Estrada-Garcia
 Sergio Estrada-Parra
 Marilyn R. Fenton
 Andrea Ferrante
 Fred D. Finkelman
 Alison Finnegan
 John V. Forrester
 Mary Helen Foster
 B. J. Fowlkes
 Jeffrey A. Frelinger
 John G. Frelinger
 Tong-Ming Fu
 Shigeyoshi Fujimoto
 Sarah L. Gaffen
 Stefania Gallucci
 Nicholas R. J. Gascoigne
 Martin A. Giedlin
 Grzegorz Bogdan Gmyrek
 Ananda W. Goldrath
 Sidney H. Golub
 Tomomi Gotoh
 Mitchell Grayson
 Frank M. Graziano
 Jeffrey I. Greenstein
 Paul M. Guyre
 Tai-You Ha
 Bevra H. Hahn
 John A. Hansen
 Kevan L. Hartshorn
 Minoru Hasegawa
 Rebecca Hasley
 Abbas Hawwari
 Ellen Heber-Katz
 Barbara Hendrickson
 Curtis J. Henry
 Sachiko Hirose
 Kasper Hoebe
 P. Mark Hogarth
 Sam Hou
 Nobumichi Hozumi
 Millie Hughes-Fulford
 Daeyoung Hur
 Carolyn K. Hurley
 Suh-Young Im
 Kayo Inaba
 Yuko Ishida
 Yoshiaki Ishigatsubo
 Shunji Ishihara
 Kimishige Ishizaka
 Sally T. Ishizaka

Nahed Ismail
 Kouichi Ito
 Yoshinori Ito
 Richard M. Jack
 Stephen Jameson
 Bernard W. Janicki
 M. L. Jelachich
 Carl H. June
 Thomas W. Jungi
 Hyung-Sik Kang
 Joonsoo Kang
 Alan M. Kaplan
 Allen P. Kaplan
 Judith A. Kapp
 Sachiko Karak
 Shailaja Kasibhatla
 Samuel L. Katz
 Dmitry Kazansky
 John F. Kearney
 Laurie Lea Kenney
 Farrah Kheradmand
 Ae Kim
 Yoon B. Kim
 Thomas J. Kindt
 Charles H. Kirkpatrick
 Kenji Kishihara
 Dilip S. Kittur
 Elena N. Kiyushnenkova
 Kathryn A. Knoop
 Irina Kochetkova
 Wolfgang Koenig
 Michael A. Kolber
 Kazuhiro Komura
 Akihiro Kondo
 Alan J. Korman
 Masahiro Koshiba
 Hiroyuki Kotani
 Ellen Kraig
 Michael S. Krangel
 Guido Kroemer
 Gerald Krystal
 Ralph T. Kubo
 Masayuki Kuraoka
 Takashi Kuribayashi
 William P. Lafuse
 Dhafer Laouini
 Tucker W. LeBien
 Inchul Lee
 Janet S. Lee
 Yong Chul Lee
 Christian A. LeGuern
 Robert F. Lemanske, Jr.
 David B. Lewis
 Baiqing Li
 Fang-Ting Liang
 Marilyn Madry Lightfoot
 Joel M. Linden
 Dongfang Liu
 Kui Liu
 Yun-Cai Liu
 Alexandra M. Livingstone
 Richard M. Locksley

Carole A. Long
 Cristina Lopez-Rodriguez
 Martin Lotz
 Xunrong Luo
 Fathia Mami-Chouaib
 David H. Margulies
 Mary A. Marovich
 Christine L. Martens
 Melanie Matheu
 Bonnie J. Mathieson
 Goro Matsuzaki
 Amitabha Mazumder
 Donna-Marie McCafferty
 Robert T. McCalmon, Jr.
 Daniel McDermott
 Janet E. McElhaney
 Marcia F. McInerney
 Laura M. McLane
 Janet M. McNicholl
 Stephen J. McSorley
 Daniel W. McVicar
 Matthew F. Mescher
 Francoise Meylan
 Nagahiro Minato
 Lucia Mincheva-Nilsson
 Michael L. Misfeldt
 Masayuki Miyasaka
 Shoichiro Miyatake
 Yoshiyuki Miyazaki
 Junichiro Mizuguchi
 David R. Moller
 Patricia K. A. Mongini
 Tomohiro Morio
 Herbert C. Morse, III
 Richard F. Mortensen
 Tim R. Mosmann
 Bianca R. Mothe
 Dan V. Mourich
 Luis Muniz-Feliciano
 Takashi Murakami
 Craig A. Murphy
 Michael P. Murtaugh
 Tomas Mikael Mustelin
 Minoru Nakamura
 Yutaka Nakamura
 Kenji Nakanishi
 Masanobu Nanno
 David Nemazee
 Sonia Neron
 Rodney D. Newberry
 Pin Nie
 Tomoyasu Nishimura
 Susumu Nishinaria
 Takashi Nomura
 Rebecca L. O'Brien
 Jung H. Oh
 Sang Kon Oh
 Shinji Okano
 Meredith O'Keefe
 Ko Okumura
 Nancy J. Olsen
 Frank M. Orson

Willem W. Overwijk	Nikolaus Romani	Jeoung-Sook Shin	Linda F. Thompson	Geert Wiegertjes	Garnett Kelseo
Caroline A. Owen	Amy S. Rosenberg	Mark J. Shlomchik	Heather L. Thompson-Ryder	Florence Susan Wong	John Stephen Kenney
Ananta Paine	Helene F. Rosenberg	Venkateswara Rao Simhadri	LuAnn Thompson-Snipes	Henry H. Wortis	Christina M. Kollias
Utpal Pal	Roger D. Rossen	Lawrence R. Smith	Akira Tominaga	Weihoa Xiao	Kary Latham
Se-Ho Park	Jeffrey Rossio	Rex Neal Smith	David J. Topham	Jenny H. Xie	Frances E. Lund
Seong-Hoe Park	Jamie Rossjohn	Sidney R. Smith, Jr.	Leon Toussaint	Sidong Xiong	Irina V. Lyadova
David W. Pascual	Ellen Rothenberg	Mark J. Soloski	Moriya Tsuji	Shizuo Yamamoto	Viveka Mayya
Yvonne Paterson	Nancy H. Ruddle	Gen-Ichiro Soma	Damian L. Turner	Jiabin Yan	Stephen S. Morse
Donald G. Payan	Paul S. Russell	Linda A. Spatz	Heichiro Udonon	Rongcun Yang, Sr.	Heinfried H. Radeke
Kimberly J. Payne	Robert Sabat	Celsa A. Spina	Christel H. Uittenbogaart	Yasuhiro Yasutomi	Troy D. Randall
Josef M. Penninger	Tatsuo Saito-Taki	E. William St. Clair	Luis Ulloa	Hiroki Yoshida	Helen V. Ratajczak - Edmond
Mark T. Pezzano	Nobuo Sakaguchi	Gabriel R. Starbeck-Miller	David M. Underhill	Keiko Yoshimoto	Nathalie Rufer
Winfried F. Pickl	Shimon Sakaguchi	Janet M. Stavnezer	Edward J. Usherwood	Qigui Yu	Duane R. Schultz
Andrew G. Plaut	Angela Santoni	John Kevin Steele	Andrea L. Vergara	Debra Jeske Zack	Nozomu Shirasugi
Aresio Plaza-Lopez	Maria J. Sanz	Mary M. Stevenson	Timo I. Veromaa	Allan J. Zajac	Sue C. Stacy
Roberta Rollene Pollock	Fumitaka Sato	B. David Stollar	Charles S. Via	Maurizio Zanetti	Abram B. Stavitsky
Sicco H. Popma	Ebenezer Satyaraj	Arthur J. L. Strauss	Giuseppe Vicari	Colby Zaph	Joel D. Tauroug
David D. Porter	D. Scott Schmid	Terry B. Strom	Jan T. Vilcek	Ke Zen	Channakeshava Sokke Umeshappa
Joseph F. Porter	John R. Schreiber	Jamie L. Sturgill	Anda Vlad	Jikun Zha	Robert A. Yetter
John J. Priatel	Stephan K. Schwander	Olaf Stuve	Wim Vuist	Jian Zhang	Robert B. Zurier
Ellen Pure	David W. Scott	Keer Sun	Mary Clare Walker		
Chunfeng Qu	Robert Seder	Jill Suttles	Bin Wang	CONTRIBUTORS' CIRCLE	
Anthony Quinn	Tzvia Segal-Abramson	Susan L. Swain	Ruobing Wang	Contributions up to \$49	
Chisei Ra	Shamala Devi Sekaran	Hidemi Takahashi	Marie Wehenkel	George F. Babcock	
Jeffrey C. Rathmell	Shuhji Seki	Satoshi Takaki	Anita Corman Weinblatt	Armand Bensussan	
Jose R. Regueiro	Alessandro Sette	Kiyoshi T. Takatsu	David B. Weiner	Alexander Dent	
Birgit M. Reipert	Nilabh Shastri	Shin-ichi Tamura	John H. Weis	Teizo Fujita	
Ellen R. Richie	Carl Simon Shelley	Toshio Tanaka	Irving L. Weissman	Marie-Claire Gauduin	
Paul F. Robbins	Yufang Shi	Magdalena Tary-Lehmann	Rick A. Wetsel	Neil S. Greenspan	
Sarah A. Robertson	Shin-ichiro Shimada	Luis I. Terrazas	Scott A. Wetzel	Hisae Iinuma	
Stella M. Robertson	Shinji Shimada	Philippe Tessier	Jason K. Whitmire	James F. Jones	

Donations to the Lefrançois Memorial Award Fund are acknowledged on p. 64.

GRANT AND AWARD DEADLINES

March 18

Robert Wood Johnson Foundation: Harold Amos Medical Faculty Development Program

- **Prize/Award:** Up to nine four-year awards to support the postdoctoral research and career development of eligible physicians and dentists; each scholar will receive an annual stipend of up to \$75,000 complemented by a \$30,000 annual grant toward support of research activities
- **Eligibility:** Physicians and dentists from historically disadvantaged backgrounds interested in academic careers in biomedical research, clinical investigation, and health services research and committed to serving as role models for students and faculty of similar background
- **Details:** <http://www.rwjf.org/en/grants/calls-for-proposals/2014/harold-amos-medical-faculty-development-program--amfdp-.html>
- **Contact:** Nina Ardery, Deputy director: (317) 278-0500; amfdp@indiana.edu

March 24

Juvenile Diabetes Research Foundation: Role of Beta Cell Antigen Modifications in Pathogenesis, Diagnosis, Prevention, and Treatment of Human Type 1 Diabetes

- **Prize/Award:** Strategic research agreement funding of up to \$250,000 per year for up to two years for the study of modifications of pancreatic beta cell proteins in the pathogenesis, diagnosis, prevention, and treatment of human type 1 diabetes; multi-center collaborative projects will be considered for variable budgets
- **Eligibility:** Applicants holding an M.D., D.M.D., D.V.M., Ph.D., or equivalent academic degree and a faculty position or equivalent at a college, university, medical school, for-profit research based organization, or other comparable institution
- **Details:** http://cdn.jdrf.org/wp-content/uploads/2012/12/PTM_RFA_v6.pdf
- **Contact:** Jessica Dunne, Ph.D.: (212) 479-7595; jdunne@jdrf.org

GRANT AND AWARD DEADLINES (continued)

April 1

Cancer Research Institute Irvington Postdoctoral Fellowships

- **Prize/Award:** Up to \$164,500 over three years in research and training support per fellow, to cover stipend or salary, insurance, and other research-related expenses such as travel to meetings; each fellow works and continues training under the guidance of a leading immunologist serving as mentor, fostering the fellow's career foundation in cancer immunology
- **Eligibility:** Early-career postdoctoral scientists affiliated with universities and research centers in the United States and abroad who propose studies to directly impact our understanding of the immune system's role in cancer risk, tumor initiation, progression, metastasis, host response to tumors, and/or the treatment of cancer
- **Details:** <http://www.cancerresearch.org/grants-programs/grants-fellowships/cri-irvington-postdoctoral-fellowships>
- **Contact:** Office of Grants Administration: (212) 688-7515; grants@cancerresearch.org

April 15

NIAID Primary Caregiver Technical Assistance Supplements (applications received on rolling basis, reviewed quarterly)

- **Prize/Award:** Grants to support postdoctoral research scientists taking care of a child or sick family member; each grant provides funds for an NIAID grantee to hire and cover salary and fringe benefits for a mid-to-senior-level technician to fill in when the caregiver needs to be away from the lab
- **Eligibility:** Principal investigators with at least two years of NIAID support remaining who seek supplemental funding to assist a postdoctoral researcher in need of primary caregiver technical support; the postdoctoral researcher must have at least one full year's experience at an NIAID-funded laboratory and be a primary caregiver for a child or ailing relative
- **Details:** <http://www.niaid.nih.gov/researchfunding/traincareer/pages/pctas.aspx>
- **Contact:** Raushanah Newman: (301) 451-2691; AITrainingHelpDesk@niaid.nih.gov

May 1

Ferring Research Institute (FRI): Ferring Innovation Grants

- **Prize/Award:** Grants of \$10,000 for exploratory/feasibility studies, \$50,000 for discovery/validation studies, and pre- and post-doctoral fellowships providing \$50,000 in support of research in one of FRI's areas of interest: gastroenterology; reproductive health; urology; hepatology
- **Eligibility:** Scientists and trainees proposing studies that advance basic and preclinical research into novel drug targets addressable with peptides and/or proteins
- **Details:** <http://ferring-research.com/ferring-grants/overview/>
- **Contact:** (858) 657-1400; info@ferring-research.com

May 1

2015 Thomas E. Starzl Prize in Surgery and Immunology

- **Prize/Award:** A crystal award, honorarium of \$10,000, and travel to the University of Pittsburgh to receive the award and present the award lecture
- **Eligibility:** Outstanding national or international leaders in the field of organ transplantation who have made significant contributions to transplantation and immunology research
- **Details:** <http://www.stiresearch.health.pitt.edu/node/332>
- **Contact:** (412) 383-8884; starzlprize@upmc.edu

2013 AAI MEMBER DONATIONS TO THE LEFRANÇOIS MEMORIAL AWARD FUND

In 2013 AAI announced the new Lefrançois-BioLegend Award in honor of late AAI member and Program Chair Dr. Leo Lefrançois, Jr. Funding for the new annual award in Dr. Lefrançois' memory was generously provided by BioLegend and also from donations by friends and colleagues. AAI thanks the following members for their generous donations to the Lefrançois Memorial Award Fund.

Kimberly D. Klonowski
Karen Laky
David Masopust
Courtney R. Plumlee
Pablo A. Romagnoli

Kimberly S. Schluns
Michael J. Turner
Vaiva Vezys
Daqi Xu

AAI also gratefully acknowledges the following non-members for their contributions to the award fund: Barbara L. Fuller; Sung-Kwon Kim; and Naveen Sharma.

The first recipient of the Lefrançois-BioLegend Award will be recognized at IMMUNOLOGY 2014™.



immunogenomics

2014

September 29 - October 1, 2014

HudsonAlpha Biotechnology Campus

Huntsville, Alabama, USA

*Bringing together preeminent leaders and thinkers
at the intersection of genomics and immunology*

This interdisciplinary and international program will feature invited talks on topics such as: genetic and epigenetic regulation of the immune system; genetic regulation of pathogen sensing; the microbiome; the genetics of complex diseases; functional genomics; immunodiversity and individual responses to immune challenge; medical genomics, clinical applications, and immunotherapy; and immune system function in monogenic diseases.

Keynote Speakers:

Christophe Benoist

Professor, Department of Microbiology and Immunobiology,
Harvard Medical School

Mary Ellen Conley

Federal Express Chair of Excellence and Professor, Department
of Pediatrics, *University of Tennessee, College of Medicine, Memphis*

Mark Davis

Investigator, Howard Hughes Medical Institute; Professor, Department
of Microbiology and Immunology; Director, Institute for Immunity,
Transplantation, and Infections, *Stanford University School of Medicine*

Register today at **haig.aaas.org**

presented by



Future AAI Annual Meetings



Mark Your Calendar for the Premier Annual Immunology Event!

2014



IMMUNOLOGY 2014™
May 2–6
Pittsburgh, Pennsylvania

2015



IMMUNOLOGY 2015™
May 8–12
New Orleans, Louisiana

2016



IMMUNOLOGY 2016™
May 13–17
Seattle, Washington

Celebrating 100 Years

Enjoy the history of AAI at
www.aai.org/About/History

Chronicling the AAI Legacy

Commemorative Literature. AAI staff historians and scientists are rigorously researching, archiving, and publishing materials to preserve the proud heritage of the association. Articles posted in the history section of the AAI website, www.aai.org/About/History, include:



- The Founding of AAI
- The Founding of *The Journal of Immunology*
- Immunologists during the First World War: The Experience of Soldier-Scientist Stanhope Bayne-Jones, M.D.
- The 1918–1919 Influenza Pandemic as covered in *The Journal of Immunology*
- The Science at the First AAI Annual Meeting
- Anna Wessels Williams, M.D.: Infectious Disease Pioneer and Public Health Advocate
- Elise Strang L'Esperance, M.D.: Pioneer in Cancer Prevention and Recipient of Lasker Award
- “Studies in Anaphylaxis”: The First Article in *The Journal of Immunology*
- Rebecca Lancefield, Ph.D.: PI in the Scotland Yard of Streptococcal Mysteries
- 100 Years of AAI in Hawaii: A Look Back at Two Early Immunologists on the Islands
- A Legacy of Advocacy Is Born as AAI Confronts McCarthyism
- Creating a Buzz in the Field of Immunology: Mary Hewitt Loveless, M.D., and the Development of Venom Therapy for the Prevention of Sting-Induced Anaphylaxis
- From the Archives: What's Old is New Again: Early Editors of *The JI* Act to Address Perennial Challenges in the Peer-review and Editing Process

AAI Website

The history section of the AAI website continues to evolve as a living archive. Current and future resources include:

- AAI history articles published in the *AAI Newsletter*
- Oral History Project—exclusive interviews offering a rare glimpse into the lives and times of influential immunologists
- Profiles of AAI Nobel and Lasker recipients
- An eBook of commentaries on “Pillars” articles from *The Journal of Immunology*
- AAI Story Booth—attendees’ favorite immunology career recollections, recorded at IMMUNOLOGY 2013™



Keeping a watchful eye
on cytosolic DNA.

Cytosolic dsDNA Sensors

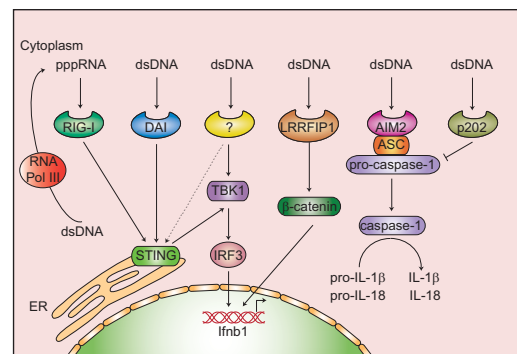
Innate immune detection of intracellular DNA derived from viruses and invasive bacteria is very important to initiate an effective protective response. This crucial step depends on cytosolic DNA sensors (CDSs), which, upon activation, trigger the production of type I interferons (IFNs) and the induction of IFN-responsive genes and proinflammatory chemokines. InvivoGen has developed innovative tools in order to facilitate the study of CDS.

➔ An expanding range of tools

- CDS Ligands
- CDS Reporter Cells
- CDS Inhibitors

➔ Functionally tested ligands

➔ Sterile VacciGrade™ for use *in vivo*



BD Horizon™ Brilliant Ultraviolet™ and the BD LSRFortessa™ X-20

Ultraviolet laser and reagents expand research capabilities and clarify results.



A whole new
spectrum of choice.



BD Horizon Brilliant Ultraviolet reagents open a new world of choice and productivity for scientists who use multicolor flow cytometry in their research. By adding the ultraviolet range to panel design, markers can be spread over more lasers, reducing compensation requirements of the experiment.

Use of these new ultraviolet excitable dyes can reduce setup time because there is less need to adjust for compensation.



Helping all people
live healthy lives

When the dyes are combined with a dedicated ultraviolet laser position, your options and capabilities are further expanded.

Find out how you can add a whole new spectrum of productivity to your research with BD Horizon Brilliant Ultraviolet dyes and the ultraviolet capable BD LSRFortessa X-20 special order analyzer. Tools and information available at bdbiosciences.com/go/ultra.