

# 11th Annual Immunology Symposium

## Immunology in Precision Medicine

October 25, 2017

Blood Research Institute  
Milwaukee, WI



# BloodCenter and Blood Research Institute: Discovery, Diagnosis, Treatment and Cure

## A Brief History

BloodCenter of Wisconsin (BCW) is a private, not-for-profit organization that provides blood, blood products, and specialized transfusion medicine services to hospitals in Wisconsin, Michigan, northern Illinois, and parts of Indiana. A commitment to pursue research and advance the understanding of blood and blood transfusions was written into the articles of incorporation by visionary members of the board of directors when BCW was founded. The current mission statement calls for BCW to “Advance patient care by providing life-saving solutions grounded in unparalleled medical and scientific expertise.”

The Junior League of Milwaukee founded the Junior League Blood Center in 1947 as a community blood bank with five paid staff and 70 regular volunteers. In its near 70 years of operation, the organization's name has changed three times and it now employs over 1,000 people; showcasing the growth of BCW's services. An active research focus was initiated in the early 1950s, and shortly thereafter the first federal grant was received. With the success of life-saving discoveries, increased research funding and committed scientific staff, BCW built the Blood Research Institute (BRI) on the grounds of the Milwaukee Regional Medical Center in 1991.

Over the years, the contributions of BCW investigators have made a lasting impact on the fields of Transfusion Medicine, Vascular Biology, Stem Cell Biology and Immunology. Research at BCW extends from basic cellular, molecular and genetic studies, to participation in NIH clinical trial networks such as the Recipient Epidemiology and Donor Evaluation Study (REDS) III and the Transfusion Medicine-Hemostasis (TMH) Clinical Trials Network. Research activities are also strengthened by physical proximity of the BRI to the immediately adjacent Medical College of Wisconsin (MCW) and Children's Hospital of Wisconsin (CHW). BRI investigators hold faculty appointments at MCW and participate actively in their teaching, mentoring and research activities.

## Immunology: Then and Now

Immunology at BCW has an extensive history starting in 1959 when it was selected as the national depository for rare bone marrow donor files, which evolved into the National Marrow Donor program. BCW today continues to provide HLA typing for bone marrow transplantation. In 1979, BCW investigators discovered a new HLA histocompatibility system now known as HLA-DQ. With its expertise in HLA, BCW was able to facilitate the first unrelated bone marrow transplant in 1981.

Today, BCW immunologists at the BRI continue to conduct cutting edge research in cancer, infectious disease and autoimmunity. Investigators are developing new methods by which to eradicate cancer by using novel immunotherapies. In infectious disease, the work by BRI immunologists studying how the immune system recognizes and responds to viruses is opening new avenues for the treatment and prevention of viral infections. Studies in autoimmunity include how B and T lymphocytes contribute to and regulate autoimmunity.

The immunology community at BRI/MCW is well organized and in addition to the yearly Immunology Symposium, now in its 11th year, offers a variety of training opportunities for its trainees. These include both predoctoral graduate courses and advanced training in clinical immunology. The immunology faculty also facilitate a weekly journal club, a weekly work-in-progress and a yearly internal conference/retreat.



# Immunology in Precision Medicine

## Schedule

<b>8:30 - 9:00 am</b>	Registration	
<b>9:00 - 9:05 am</b>	Welcome	<b>Chris Miskel</b> CEO and President, Versiti and BloodCenter of Wisconsin
<b>9:05 - 9:10 am</b>	Opening Remarks	<b>Gilbert C. White II, MD</b> Director and Executive Vice President, BRI Versiti Chief Scientific Officer BloodCenter of Wisconsin
<b>9:10 - 9:55 am</b>	Speaker Introduction by Ashley Ciecko Graduate Student, MCW	<b>Mark M. Davis, PhD</b> Stanford University School of Medicine <b>New Tools for T cells: A Window on Many Human Diseases</b>
<b>9:55 - 10:20 am</b>	Coffee Break	Visit our sponsors
<b>10:20 - 11:05 am</b>	Speaker Introduction by Philip Lange Graduate Student, MCW	<b>Ming Li, PhD</b> Memorial Sloan Kettering Cancer Center <b>Tolerance and Immunity in Health and Cancer</b>
<b>11:05 - 11:50 am</b>	Speaker Introduction by Tiffany Claeys Graduate Student, MCW	<b>Edward M. Behrens, MD</b> Perelman School of Medicine at The University of Pennsylvania <b>Toward Developing a Precision Approach to the Cytokine Storm</b>
<b>11:50 am - 1:10 pm</b>	Lunch	Vendor Workshops presented by Taconic and Metabolon (occur simultaneously)
<b>1:10 - 1:55 pm</b>	Speaker Introduction by Jason Siebert Graduate Student, MCW	<b>Yi-Guang Chen, PhD</b> Medical College of Wisconsin <b>Genetic Control of Type 1 Diabetes: Learning From the NOD Mouse</b>
<b>1:55 - 2:20 pm</b>	Break	Visit our Sponsors
<b>2:20 - 3:05 pm</b>	Speaker Introduction by Emily Vonderhaar Graduate Student, MCW	<b>Gail Bishop, PhD</b> The University of Iowa <b>TRAF3 &amp; B Cells: Understanding Biology to Inform Treatment of B Cell Malignancies</b>
<b>3:05 - 3:50 pm</b>	Speaker Introduction by Chao Yang Graduate Student, MCW	<b>Arup Chakraborty, PhD</b> Massachusetts Institute of Technology <b>How to Hit HIV Where it Hurts</b>





# Featured Speakers 2017



## **Mark M. Davis, PhD**

Investigator, Howard Hughes Medical Institute; Professor, Department of Microbiology and Immunology; Director, Stanford Institute for Immunity, Transplantation, and Infection; Member of the National Academy of Sciences (NAS); Stanford University School of Medicine

Dr. Davis is Director of the Stanford Institute for Immunology, Transplantation and Infection (ITI) and a Howard Hughes Medical Institute investigator. Mark received his BA from Johns Hopkins University and his PhD in molecular biology from the California Institute of Technology. He spent three years as a postdoctoral fellow at the National Institutes of Health before going to Stanford in 1983. He is well known for identification in the 1980s of the elusive T-Cell receptor genes and his group has made many subsequent discoveries about T-cell receptors and how they function, at both biochemically and on the surface of living cells. Mark pioneered diagnostic assays for immune function, particularly with the development of peptide-MHC tetramers. In the past ten years, he has focused on developing methods to advance our understanding of human immunology. Mark's great contributions to immunology have been recognized with many honors and awards, including his election to membership in the Royal Society of London, the National Academy of Sciences, and the National Academy of Medicine. In 2000-2001, he was the Newton-Abraham visiting Professor at Oxford.



## **Ming Li, PhD**

Professor, Gerstner Sloan Kettering Graduate School; Professor, Weill Cornell Graduate School of Medical Sciences; Principal Investigator/Member, Immunology Program; Faculty Scholar, Howard Hughes Medical Institute/Memorial Sloan Kettering Cancer Center

Dr. Li is a Member of the Immunology program at Memorial Sloan Kettering Cancer Center, and a Professor at Weill Graduate School of Medical Sciences, Cornell University. Dr. Li is an internationally-recognized leader in fields of immune regulation and tumor immunology, where he has made seminal contributions in defining the regulatory mechanisms of T cell development, homeostasis, tolerance, and memory as well as elucidating the nature of tumor-elicited innate and adaptive immune responses. Dr. Li is a Rita Allen Foundation Scholar and a Howard Hughes Medical Institute Faculty Scholar, and is a recipient of the Louise and Allston Boyer Award in Basic Research and the AAI-BD Bioscience Investigator Award.

# Featured Speakers 2017

## Edward M. Behrens, MD

Joseph Lee Hollander Associate Professor in Pediatric Rheumatology, Perelman School of Medicine at the University of Pennsylvania; Division Chief of Rheumatology, Children's Hospital of Philadelphia

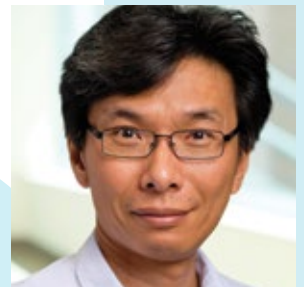
Dr. Behrens received his undergraduate education at Johns Hopkins earning a BA in Biology. He subsequently received his MD at the University of Pennsylvania. He went on to complete a clinical pediatric residency and fellowship in pediatric rheumatology at Children's Hospital of Philadelphia and completed a post-doctoral fellowship at the University of Pennsylvania. He joined the faculty of the University of Pennsylvania in 2009. Dr. Behrens's research focuses on the pathophysiology of cytokine storm syndromes using animal models and translational patient investigations to understand the cellular and humoral determinant of disease progression. His work has uncovered novel mediators of disease in many different contexts, some of which are currently being translated to the clinic as novel therapeutics. Ultimately, he hopes to use data generated from the laboratory and the clinic to construct a model that would allow for the prediction of therapeutic response to different immunomodulatory drugs based on immunologic parameters, providing a truly personalized approach to cytokine storm.



## Yi-Guang Chen, PhD

Associate Professor of Pediatrics (Endocrinology), Microbiology and Immunology; Medical College of Wisconsin

Dr. Chen received his doctor degree from the University of Rochester in Rochester, New York in 2002 and completed his postdoctoral training at The Jackson Laboratory in 2007. He was a Research Scientist at The Jackson Laboratory before joining the Medical College of Wisconsin in 2010 where he is currently an Associate Professor in the Department of Pediatrics and a faculty member of the Max McGee National Research Center for Juvenile Diabetes. Dr. Chen's research interest is the genetic basis of immune tolerance induction defects in autoimmune type 1 diabetes. Dr. Chen has used mouse genetic approaches to map genes that regulate diabetogenic T cells and the development of iNKT cells. The current focus in Dr. Chen's laboratory is to genetically modify genes within human type 1 diabetes susceptibility loci identified by genome wide association studies in NOD mice and functionally evaluate their roles in diabetes development. Dr. Chen's research is supported by the NIH and the American Diabetes Association.



# Featured Speakers 2017



## Gail Bishop, PhD

Professor of Microbiology and Internal Medicine; Director, Center for Immunology and Immune-Based Diseases; Associate Director for Basic Science Research, Holden Comprehensive Cancer Center; Holden Chair of Cancer Biology, The University of Iowa

Dr. Bishop received her PhD degree in Cellular and Molecular Biology from the University of Michigan, Ann Arbor, MI, in 1983. After post-doctoral work at the University of North Carolina, Chapel Hill, NC, she was appointed Assistant Professor of Microbiology at the University of Iowa in 1989, eventually becoming appointed College of Medicine Distinguished Professor of Microbiology in 2001, and Holden Chair of Cancer Biology in 2004. From 1998-2013, she served as the Director of the PhD granting Immunology Graduate Program. In 2004, she was appointed Associate Director for Basic Science Research of the Holden Comprehensive Cancer Center. Dr. Bishop's research studies molecular mechanisms of lymphocyte activation by investigating how cells communicate with one another and their environment. A major focus is to understand signals delivered to cells by members of the Tumor Necrosis Factor Receptor (TNFR) superfamily. She also studies a protein produced by Epstein-Barr virus, called latent membrane protein 1 (LMP1). Another line of investigation involves understanding how innate immune receptor signals interact with signals via adaptive receptors, such as antigen receptors. She examines such signals and their roles in optimizing the use of immune cells in cellular vaccines to fight and eliminate tumor cells. Dr. Bishop received the University of Iowa Graduate Mentoring Award, and in 2009 was awarded the Iowa Technology Association's "Woman of Innovation" award for academic research innovation and leadership. Dr. Bishop received the Bonazinga Award for excellence in Leukocyte Biology Research from the Society for Leukocyte Biology in 2015, and has served as president of the American Association of Immunologists.



## Arup Chakraborty, PhD

Director of Institute for Medical Engineering and Science (IMES), Robert T. Haslam Professor of Chemical Engineering; Professor of Physics, Chemistry, and Biological Engineering; Member of the National Academy of Sciences (NAS); Massachusetts Institute of Technology (MIT)

Dr. Chakraborty obtained his PhD in chemical engineering at the University of Delaware, and did his postdoctoral studies at the University of Minnesota. He joined the faculty at the University of California at Berkeley in December 1988, eventually earning promotion to become Warren and Katherine Schlinger Distinguished Professor and Chair of Chemical Engineering, Professor of Chemistry, and Professor of Biophysics at Berkeley. He was also Head of Theoretical and Computational Biology at Lawrence Berkeley National Laboratory. In September 2005, Arup moved to MIT. His entire career has been focused on research at the intersection of disciplines. After a successful early career working on molecular engineering of catalysts and polymers, in 2000 Arup turned his attention to immunology. The central theme of his research over the past sixteen years is the development and application of theoretical/computational approaches, rooted in physics and engineering, to aid the quest for mechanistic principles in immunology, and then harness this understanding to aid the design of vaccines against mutable pathogens (e.g., HIV). A characteristic of his work is the impact of his studies on experimental immunology and clinical studies (he collaborates extensively with leading immunologists). Arup's work at the interface of the physical, life, and engineering sciences has been recognized by many honors that include a NIH Director's Pioneer Award and the E.O. Lawrence Memorial Award for Life Sciences. Arup was elected a member of the National Academy of Sciences and the National Academy of Engineering for different bodies of work. He is also a Fellow of the American Academy of Arts & Sciences and the American Association for the Advancement of Science.

# Topics and Speakers of our Past Symposia

## 2007 – Human Immunology

Bill Kwok, PhD, Benaroya Research  
Institute at Virginia Mason  
Martin Hessner, PhD,  
Medical College of Wisconsin  
Karolina Palucka, MD, PhD,  
Baylor University  
Jorg Goronzy, MD, PhD,  
Emory University School of Medicine  
Elena Naumova, PhD,  
Tufts University School of Medicine  
David D. Eckels, PhD,  
University of Utah School of  
Medicine

## 2008 – Integrating Hemostasis and Immunity

Charles Esmon, PhD, University of  
Oklahoma Health Sciences Center  
May Han, MD, Stanford University  
Jay L. Degen, PhD,  
University of Cincinnati  
College of Medicine  
Hartmut Weiler, PhD,  
BloodCenter of Wisconsin

## 2009 – Immune Memory

Rafi Ahmed, PhD, Emory University  
Ignacio Sanz, MD,  
University of Rochester  
Jack Gorski, PhD,  
BloodCenter of Wisconsin  
Anne West, MD, PhD, Duke University  
Medical Center

## 2010 – Systems and Computational Immunology

Tim R. Mosmann, PhD,  
University of Rochester  
Greg E. Lemke, PhD, Salk Institute  
Steven H. Kleinstein, PhD,  
Yale University School of Medicine  
Elena Naumova, PhD,  
Tufts University School of Medicine

## 2011 – Innate Immunity

David Raulet, PhD, University of  
California-Berkeley  
Alejandro Aballay, PhD, Duke University  
Thirumala-Devi Kanneganti, PhD,  
St. Jude Children's Research Hospital

Subramaniam Malarkannan, PhD,  
BloodCenter of Wisconsin  
Dan Wu, PhD, Yale University,  
School of Medicine  
Wendy Havran, PhD,  
The Scripps Research Institute

## 2012 – Interactions Between the Immune and Nervous Systems

Keith Kelley, PhD, University of Illinois  
Alan Lomax, PhD, Queen's University  
Katherine Held, PhD, Allergan  
Bonnie Dittel, PhD,  
BloodCenter of Wisconsin  
Jeannette Marketon, PhD,  
The Wexner Medical Center  
Cecelia Hillard, PhD,  
Medical College of Wisconsin

## 2013 – Cellular Immunotherapy & Hematopoietic Stem Cells

Stuart Orkin, PhD,  
Harvard Medical School  
Stanley Riddell, MD, University of  
Washington School of Medicine  
Crystal Mackall, MD,  
National Cancer Institute  
Linheng Li, PhD, University of Kansas  
School of Medicine  
Pramod Srivastava, PhD,  
University of Connecticut

## 2014 – Immune Cell: Genome, Transcriptome & Signalsome

Ellen Robey, PhD,  
University of California – Berkeley  
David Rawlings, MD,  
University of Washington  
Harvey Lodish, PhD, Massachusetts  
Institute of Technology  
Anjana Rao, PhD, La Jolla Institute for  
Allergy and Immunology  
Cornelis Murre, PhD, University of  
California – San Diego

## 2015 – The Impact of the Microbiome on Immunity

Alexander Chervonsky, MD, PhD,  
The University of Chicago  
Duane Wesemann, MD, PhD,  
Harvard Medical School  
Cathryn Nagler, PhD,  
The University of Chicago  
Veena Taneja, PhD, Mayo Clinic  
Christian Jobin, PhD,  
University of Florida  
Nita Salzman, MD, PhD,  
Medical College of Wisconsin

## 2016 – Host Defense

Ronald Germain, MD, PhD,  
National Institutes of Health  
Vera Tarakanova, PhD,  
Medical College of Wisconsin  
Patrick Wilson, PhD,  
The University of Chicago  
David Brooks, PhD,  
University of Toronto  
Jyothi Rengarajan, PhD,  
Emory University  
Gabriel Núñez, MD,  
University of Michigan

## 2017 Organizing Committee

Weiguo Cui, MD, PhD – Co-Chair  
Matthew Riese, MD, PhD – Co-Chair  
Bonnie Dittel, PhD – Co-Chair  
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Marilyn Lieske – Co-Event Manager  
Sandy Lakric – Co-Event Manager  
Kathy Krueger – Graphic Design

Thank you to our sponsors

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