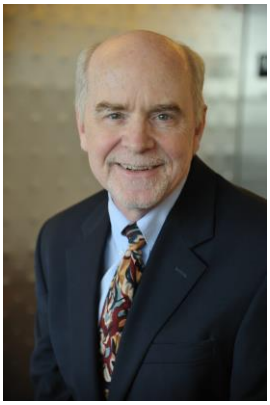
2016 Milstein Award

Dr. John O'Shea



John J. O'Shea, M.D., graduated Phi Beta Kappa with a Bachelor of Science degree from St. Lawrence University, and received a Doctor of Medicine degree from the University of Cincinnati. He then served as an intern and resident in Internal Medicine at the State University of New York Upstate Medical University in Syracuse, NY. He came to the National Institutes of Health (NIH) in 1981 for subspecialty training in Allergy and Immunology in the National Institute of Allergy and Infectious Diseases. He did additional postdoctoral work in the Cell Biology and Metabolism Branch in the National Institute of Child Health and Human Development. Dr. O'Shea is board certified in Internal Medicine and Allergy and Immunology.

He started his own group in the National Cancer Institute in 1989, and then moved to the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) in 1994 as Chief of the Lymphocyte Cell Biology Section of the Arthritis and Rheumatism Branch. He was appointed Chief of the Molecular Immunology and Inflammation Branch in 2002, and became Scientific Director and Director of the NIAMS Intramural Research Program in 2005. Dr. O'Shea also served as Acting Director of the NIH Center for Regenerative Medicine from 2009-2011. Dr. O'Shea is also an adjunct Professor in the Department of Pathology at the University of Pennsylvania.

Dr. O'Shea has received a number of awards, including: the U.S. Public Health Service Physician Researcher of the Year Award; the Paul Bunn Award in Infectious Disease; the Lee C. Howley Prize in Arthritis Research; the Irish Society for Immunology Public Lecture Award; a St. Lawrence University honorary degree; and the Ross Prize in Molecular Medicine. He has been the recipient of the National Institutes of Health Director's Award four times (1998, 2008, 2010, 2013). He was elected to the American Association of Physicians, the American Society for Clinical Investigation, and the Institute of Medicine/National Academy of Medicine. He is also an ISI Web of Knowledge "Highly Cited Researcher". He received the NIAMS Mentoring Award in 2003, and the NIH "Make a Difference" Office of Equal Opportunity Award in 2006. He was selected for the NYU Honors Lectureship, the Danny Thomas Lecture and more, and in 2015 delivered a Nobel Forum Lecture.

Dr. O'Shea has served on the editorial boards of multiple journals, including: *Immunity, Journal of Experimental Medicine, Journal of Biological Chemistry, Journal of Immunology,* and *Blood*. He has been an invited lecturer at numerous universities and international meetings in the U.S., Canada, Europe and Asia.

Dr. O'Shea is one of the co-founders of the NIH/Oxford/Cambridge program in Biomedical Science, is a member of NIH-UPENN Immunology Program, and has served as a Howard Hughes Medical Institute Scholars Advisor.

Dr. O'Shea was selected for the Milstein Award based on his work on how cytokines transmit signals to the cell interior to invoke and direct subsequent immune responses, with a particular emphasis on T lymphocytes.

Dr. Carl Nathan

Carl Nathan, MD is R.A. Rees Pritchett Professor and chairman of the Department of Microbiology and Immunology at Weill Cornell Medical College and co-chair of the Program in Immunology and Microbial Pathogenesis at Weill Graduate School of Medical Sciences of Cornell University. After graduation from Harvard College and Harvard Medical School, he trained in internal medicine and oncology at Massachusetts General Hospital, the National Cancer Institute and Yale before joining the faculty of The Rockefeller University from 1977-1986. At Cornell since 1986, he has served as Stanton Griffis Distinguished Professor of Medicine, founding director of the Tri-Institutional MD-PhD Program, senior associate dean for research, acting dean, and leader of the planning team for and member of the Board of Directors of the Tri-Institutional Therapeutics Discovery Institute, a not-for-profit corporation owned by Weill Cornell Medical College, Memorial Sloan Kettering Cancer Center and The Rockefeller University. Nathan is a member of the National Academy of Sciences, the National Academy of Medicine and the American Academy of Arts and Sciences, a Fellow of the American Academy of Microbiology, associate scientific director of the Cancer Research Institute, a governor of the Tres Cantos Open Lab Foundation and on the scientific advisory boards of the Global Alliance for TB Drug Development, the American Asthma Foundation and the Rita Allen Foundation. He is a member of the national Pfizer Therapeutic Areas Scientific Advisory Panel and the Lurie Prize jury. He served for ten years on the SAB of the Cambridge Institute for Medical Research and the Board of Trustees of the Hospital for Special Surgery, where he chaired the Research Committee. He has been an editor of the Journal of Experimental Medicine since 1981 and joined the editorial board of the Proceedings of the National Academy of Sciences in 2014. He was awarded the Robert Koch Prize in 2009 for his work on tuberculosis and the Anthony Cerami Award in Translational Medicine in 2013.

Nathan is a member of the Bill and Melinda Gates Foundation's TB Drug Accelerator and Principal Investigator of the NIH-funded Tri-Institutional TB Research Unit. His research deals with the immunological and biochemical basis of host defense. He established that lymphocyte products activate macrophages, that interferon-gamma is a major macrophage activating factor, and that mechanisms of macrophage antimicrobial activity include induction of the respiratory burst and inducible nitric oxide synthase (iNOS). He and his colleagues purified, cloned, knocked out and characterized iNOS biochemically and functionally, discovered the cofactor role of tetrahydrobiopterin in NOS's and introduced iNOS as a therapeutic target. Although iNOS helps the host control *Mycobacterium tuberculosis* (Mtb), the leading cause of death from bacterial infection, Mtb resists sterilization by host immunity. Nathan's lab now focuses on the biochemical basis of this resistance. Genetic and chemical screens have identified enzymes that Mtb requires to survive during non-replicative states, including the mycobacterial proteasome. His group is identifying compounds that kill non-replicating bacteria while exploring new collaborative models between academia and industry to help invigorate antibiotic research and development.

See more at: www.nathanlab.org

Dr. Jan Vilcek

Dr. Jan T. Vilcek, research professor at New York University School of Medicine, was born in Bratislava, Czechoslovakia (now Slovakia), where he also received his M.D. and Ph.D. degrees. In 1964 he and his wife, Marica Vilcek, an art historian, defected from what was then communist Czechoslovakia. Upon immigrating to the United States in 1965, Dr. Vilcek joined the faculty of NYU School of Medicine.

Dr. Vilcek has devoted his scientific career to the study of cytokines. He was among the first scientists to investigate interferon. Subsequently, Dr. Vilcek focused his studies on another cytokine, called tumor necrosis factor (TNF). Dr. Vilcek's contributions to the understanding of proteins that control the body's defenses were instrumental in the development of the anti-inflammatory drug Remicade®, the first member of a new class of therapeutics called TNF blockers that are now widely used for the treatment of Crohn's disease, ulcerative colitis, rheumatoid arthritis, ankylosing spondylitis, psoriasis, and other chronic inflammatory disorders. Dr. Vilcek has published more than 350 papers in scholarly journals, and he holds 46 U.S. patents. His honors include the Albert Gallatin Medal from NYU, and honorary degrees from Comenius University in Bratislava, the CUNY Graduate Center in New York City, and NYU. He received the J. E. Purkyně Honorary Medal from the Czech Academy of Sciences, and the Outstanding American by Choice Award from the U.S. Citizenship and Immigration Services. In 2013, President Barack Obama named Dr. Vilcek a recipient of the National Medal of Technology and Innovation.
In 2000 Dr. Vilcek and his wife established the Vilcek Foundation, whose mission is to raise awareness of immigrant contributions in the United States and foster appreciation of the arts and sciences.

Dr. Vilcek's memoir *Love and Science* was published by Seven Stories Press in 2016. In it, Dr. Vilcek tells the story of his two intertwined journeys—one personal, the other scientific. The personal story is about his and his parents' survival during the Second World War, growing up in Communist Czechoslovakia, and arriving as a penniless immigrant in the U.S. The scientific story recounts how the vaunted cures for cancer that many saw in interferon and TNF never materialized, and how out of the ashes of that hope emerged treatments that revolutionized medicine and alleviated much suffering.

ISCIS-BioLegend William Paul Award for Cytokine Research

Dr. Richard Locksley

Dr. Locksley is the Director of the Sandler Asthma Basic Research Center (SABRE) and a Howard Hughes Medical Institute Investigator. He is a Professor in the Departments of Medicine and Microbiology & Immunology. He received his undergraduate degree in biochemistry from Harvard and his M.D. from the University of Rochester. After completing his residency at UCSF, he trained in infectious diseases at the University of Washington. Prior to his position as director of the SABRE Center, Dr. Locksley served 18 years as the Chief of the Division of Infectious Diseases at UCSF Medical Center. Dr. Locksley is a fellow of the American Academy of Arts and Sciences.

Dr. Locksley's laboratory focuses on mechanisms by which the immune system becomes organized in stereotyped ways against discrete types of challenges. This involves the differentiation of naïve helper T cells to subsets that produce different kinds of cytokines, key effector molecules of the immune system. In turn, these different T cells subsets work with different kinds of innate cells, including neutrophils, eosinophils, macrophages and others, to mediate immunity. Properly executed, such responses mediate protection against infectious organisms or repair of damaged tissues, but, when dysregulated, these immune responses lead to disease, including asthma. Dr. Locksley's laboratory investigates immunity using mice genetically engineered to report cytokines expressed during allergic immune responses. This approach reveals the shared expression of important cytokines by innate and adaptive immune cells.

Using these methods, the laboratory participated in the discovery of Group 2 innate lymphoid cells, or ILC2s, which represent a previously unknown cell now implicated in allergic immunity. The ability to study the activation and organization of innate ILC2s uncovered a role for cells associated with allergy and asthma, such as eosinophils, in processes involved with basal metabolism and tissue homeostasis. Activation of ILC2s in the small intestine was implicated in alteration of the mucosa to a secretory phenotype characterized by high numbers of goblet cells and tuft cells. The latter, a previously mysterious epithelial cell of unknown function, was shown to be the source of IL-25, a cytokine capable of activating ILC2s and other immune cells associated with allergy and asthma, thus opening up entirely new avenues for discovery.

Honorary Lifetime Membership Award

Dr. Howard Young

Howard Young joined the National Cancer Institute in 1983 as an independent investigator and is now a Senior Investigator in the Cancer and Inflammation Program, Center for Cancer Research at the National Cancer Institute at Frederick, in Frederick, MD. He is a Past President of the International Society for Interferon and Cytokine Research, has served on the ICIS Council for the last 3 years and for over 15 years has been on the ICIS Membership Committee. He founded and currently edits the ICIS newsletter. He is a member of the American Academy of Microbiology, the Faculty of 1000 and he has also served as Chair of the Immunology Division of the American Society for Microbiology. He was co-founder and Chair of the NIH Cytokine Interest Group (2 times) and is now an elected member of the NIH Immunology Interest Group steering committee and the NIH Assembly of Scientists. He is a two-time Recipient - National Cancer Institute - of the NIH Director's Award for Mentoring and a Recipient - National Public Service Award from the American Society for Public Administration and the National Academy of Public Administration. He has established an NIH Interferon Club and an NIH Microbiome Working Group, both designed to bring together investigators involved in interferon research or microbiome research in order to promote interactions and collaborations across the NIH.

He has been working on varying aspects of innate immunity for over 30 years, and has a long history of studying cytokine gene expression and signaling, the biology and molecular biology of NK cells, the generation and analysis of murine macrophage cell lines and immune signaling networks; all of which has resulted in over 300 publications.
His initial studies involved molecular characterization of the transcriptional regulation of Interferon-γ and was the first investigator to demonstrate epigenetic control of IFN-γ expression as mediated by methylation of a core regulatory element in the IFN-γ promoter. Following these studies, his laboratory began to focus on the effects of IFN-γ on the host. Given that the IFN-γ gene has been cloned from many different species, sequence comparisons have revealed that the AU rich element in the 3'UTR of the gene is more conserved than the coding region. Based on this evolutionary conservation, he asked a very basic research question, i.e. what are the consequences to the host if the conserved ARE region is removed. He found that low levels of circulating IFN-γ are observed in this mouse, consistent with levels that are observed in patients who have chronic inflammation. Analysis of the mouse has revealed differences in the phenotype dependent on the mouse genetic background. On the Balb/c background he reported that the mice develop aplastic anemia as well as accumulation of calcium in the liver and kidneys, resulting in death by 8 weeks of age. In contrast, on the BL/6 genetic background, the mice develop a lupus like condition as well as primary biliary cholangitis (PBC). Furthermore, the PBC has a female bias and is the first mouse model to mimic the human disease with respect to gender differences. These findings thus represent a novel mouse model of disease that will be important in developing new therapeutic approaches, as current treatments are inadequate and non-specific.

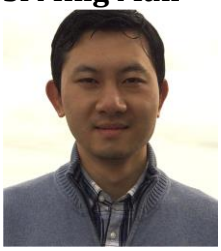
Milstein Young Investigator Awardees

Andreas Bergthaler

Principal Investigator
CeMM Research Center for Molecular Medicine
Austrian Academy of Sciences
Vienna, Austria

Dr. Bergthaler studied veterinary medicine at the University of Veterinary Medicine in Vienna and performed his graduate studies at the Institute of Experimental Immunology at the University/ETH Zurich (Drs. Hans Hengartner and Rolf Zinkernagel). After postdoctoral work in the laboratory of Dr. Alan Aderem's group at the Institute for Systems Biology in Seattle he started his own group at the CeMM Research Center for Molecular Medicine of the Austrian Academy of Sciences in Vienna. Dr. Bergthaler`s major scientific focus rests on the molecular mechanisms that drive virus-induced immunosuppression and immunopathology. This is pursued through an integrative approach which complements mouse infection models with virological, immunological and pathological readouts coupled to systems-level technologies of next-generation sequencing and mass spectrometry. The inclusive perspective at the organ and organism level shall contribute to a better molecular understanding of how viral infections lead to disease.

Si Ming Man



Postdoctoral Fellow
St. Jude Children's Research Hospital
Memphis, Tennessee, USA

Dr. Man received his Ph.D. from the University of Cambridge, UK, for his work on inflammasomes in the host defense against *Salmonella* infection. He is an Australian National Health and Medical Research Council R.G. Menzies Fellow and holds a joint appointment at St. Jude Children's Research Hospital, Memphis, Tennessee, USA, and UNSW Australia, Sydney, Australia. After completing his Ph.D. in 2013, he joined the laboratory of Dr. Thirumala-Devi Kanneganti at the Department of Immunology, St. Jude Children's Research Hospital, where he focused his research on the inflammasomes and type I interferons in the regulation of innate immune responses to microbial infection and cancer.

His research identified a role for the transcription factor IRF1 and interferon-inducible cell-autonomous immunity proteins, including guanylate-binding proteins and immunity-related GTPases, in driving activation of the caspase-1 inflammasome and IL-1β and IL-18 release. His work also contributed to the understanding of the spatial orientation of distinct components the inflammasome and the involvement of caspase-8 in the inflammasome. Dr. Man was a recipient of a Thermo Fisher Trainee Achievement Award from the American Association of Immunologists (AAI), a Frank Fenner Early Career Fellowship Award from the National Health and Medical Research Council of Australia, and a Neoma Boadway Endowed Fellowship from St. Jude Children's Research Hospital.

Di Yu

Senior Research Fellow
Head of Laboratory for Molecular Immunomodulation
Department of Biochemistry and Molecular Biology
Department of Medicine (joint)
Monash University
Australia

Dr. Yu came to Australia in 2003 to study Immunology with Prof. Carola Vinuesa and Chris Goodnow in the Australian National University. He was awarded Ph.D. in 2007 and subsequently carried out the postdoctoral training with Prof. Charles Mackay at the Garvan Institute of Medical Research, where he continued the research on the differentiation and function of follicular helper T cells and also initiated new direction of translational research including immunotherapy. In 2011, he was selected as Monash Fellow to establish his own research group of Molecular Immunomodulation in Monash University. He will return to the Australian National University in 2017 to be appointed as A/Prof and lead the lab of T-cell Immune Mechanism, Monitoring and Modulation (TIM3).

Dr. Yu and his team are investigating the molecular mechanisms of T cells that regulate the competence and the balance of immune responses, with the aim to design new strategies to modulate the immune system to treat autoimmune disease, infection and cancer. His research is published in journals including Nature, Nature Immunology, Nature Medicine and Immunity. He is a recipient of the New Investigator Award from the Australasian Society for Immunology, and the International Research Award from the Australian Society for Medical Research, and the Excellence Award from the Australian National Health and Medical Research Council.

Vineet D. Menachery

Post-doctoral Fellow
Laboratory of Ralph Baric
Department of Epidemiology
Gillings School of Global Public Health
University of North Carolina

Dr. Vineet D. Menachery received his *B.S.* in Microbiology from Clemson University in 2004 and his *Ph.D.* in Immunology from Washington University in St. Louis in 2010. His thesis work focused on the immune response in the peripheral and central nervous systems following infection with herpes simplex virus. In 2010, he joined the laboratory of Dr. Ralph Baric in the department of Epidemiology in the Gillings School of Global Public Health. He has since been awarded a Ruth L. Kirschstein National Research Service Award from the National Institute of Allergy and Infectious Disease, and a Pathway to Independence Award (K99/R00), from the National Institute of Aging.

During his time at UNC, Dr. Menachery has explored the host immune response to highly virulent respiratory viruses including Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV), influenza A viruses strains H1N1 and H5N1, as well as the recently emerged Middle East Respiratory Syndrome Coronavirus (MERS-CoV). Utilizing comparative systems biology, Dr. Menachery was able to identify a novel approach utilized by both influenza H5N1 and MERS-CoV to combat the host immune response though histone modification. Importantly, the

research approach may also provide a rapid means to categorize the potential threat posed by current and future emerging respiratory viruses.

In addition to systems biology projects, Dr. Menachery has also advanced new platforms for coronavirus treatments, evaluation of new virus pathogenic potential, and the role of host genetics in respiratory disease outcomes. Together, his research has the potential to produce important findings for the recognition, treatment, and alleviation of emerging virus infections and human disease.

In May 2017 he will begin a position as an Assistant Professor at the University of Texas Medical Branch.

Christina Fleischmann Awardee

Michelle Tate

Senior Research Fellow
Centre for Innate Immunity and Infectious Diseases
Hudson Institute of Medical Research
Melbourne, VIC
Australia

Dr Michelle Tate received her PhD in 2010 from the University of Melbourne, Australia under the supervision of A/Prof Patrick Reading. Her doctoral studies focused on identifying a number of host and virus-encoded factors implicated in modulating disease during IAV infection. For this body of work, Dr Tate received numerous prestigious awards including a Commendation for the Victorian Premier's Award for Health and Medical Research and the University of Melbourne's Chancellor's Prize and Dean of Medicine's Prize.

In 2011, Dr Tate began post-doctoral studies in the Centre for Innate Immunity and Infectious Diseases at the Hudson Institute of Medical Research, Melbourne, Australia under the mentorship of Prof Paul Hertzog and in 2012, she was awarded a Peter Doherty Fellowship from the Australian National Health and Medical Research Council. Her research has made a significant contribution to understanding the role of different aspects of innate immune system in modulating disease, especially during influenza virus infections. Her current research program focuses on understanding inflammasomes and type I interferon responses in the pathogenesis of influenza A virus infections. Recently, Dr Tate's published findings (*Scientific Reports*, 2016) have provided the first evidence that timely therapeutic targeting of the NLRP3 inflammasome may be a clinical option for reducing hyperinflammation associated with severe and fatal IAV infections.

Dr Tate has published 36 papers and in 2016 was the recipient of the Victorian Infection and Immunity Network Career Development Award for her contributions to the innate immunity field. She has been a consultant to the biotechnology industry and is a member of a number of editorial boards.

Sidney and Joan Pestka Awardees

Graduate Award

Rhiannon Werder

PhD Candidate
Phipps Lab
Laboratory for Respiratory Mucosal Immunity
School of Biomedical Sciences
University of Queensland

Rhiannon received her Bachelor of Biomedical Science (Hons) in Pharmacology from The University of Queensland, Australia in 2013. Following this she has pursued postgraduate studies under the mentorship of A/Prof Simon Phipps at the School of Biomedical Science at the University of Queensland. Rhiannon's PhD explores how defective innate immune mechanisms underlie the development of severe lower respiratory viral infections and asthma.
Most recently, Rhiannon published part of her PhD research in the Journal of Allergy and Clinical Immunology, and her work was also featured in Immune Regulation News. This paper highlights a novel function of epithelial-derived interleukin (IL)-33 as a potent suppressor of the response to respiratory virus infection by inhibiting type-I and type-III IFN production and demonstrates that IL-33 contributes to the synergistic interplay between respiratory virus and allergen exposure in the early-life onset and progression of asthma. In 2015, Rhiannon was presented the Peter Doherty Medal for best postgraduate presentation by the Australian Society of Immunology in recognition of this work.

Postgraduate Award

Scott Read

Postdoctoral Fellow
Storr Liver Centre
University of Sydney
Australia

Originally from Winnipeg, Manitoba in Canada, Scott completed his master's degree is Biological Sciences at the University of Manitoba. Following the emergence of West Nile virus in North America, Scott's master's focused on gaining a molecular understanding of virus:pathogen protein interactions in mosquitoes; the vector for West Nile virus, and an annoying pest throughout Winnipeg summers.
Following guidance from his supervisor Dr. Steve Whyard, Scott travelled to Sydney, Australia in 2009 to undertake a PhD at the Storr Liver Centre at the Westmead Institute for Medical Research, University of Sydney. Scott's PhD focused on understanding the molecular basis of hepatitis C virus treatment failure and its association with insulin resistance. Under Drs. Mark Douglas and Jacob George, Scott demonstrated that PPARα agonists sensitized hepatocytes to interferons by modulating negative regulators of interferon signaling, including the receptor tyrosine kinase, AXL.

Following the identification of polymorphisms in the interferon lambda 3/4 gene locus by the Storr Liver group and others, Scott became deeply interested in interferon lambda biology. Following his PhD, Scott moved into a post-doctoral position in the liver immunology group of Dr. Golo Ahlenstiel at Storr Liver Centre. He is now focused on understanding how genetic and environmental factors can drive interferon lambda mediated inflammation and fibrosis in hepatic and gastrointestinal tissues.