Speakers

Ronald W. Davis, PhD

Dr. Davis, Symposium Chair, is Professor of Biochemistry and Genetics at Stanford University School of Medicine, Director of the Stanford Genome Technology Center, Director of the Chronic Fatigue Syndrome Research Center at Stanford University, and Director of the Open Medicine Foundation ME/CFS Scientific Advisory Board. Dr. Davis holds a PhD in chemistry from Caltech and is a member of the National Academy of Sciences. Throughout his career he has made numerous seminal discoveries that have accelerated genetics, genomics, and bioengineering, including over 70 patented technologies that have launched numerous successful companies. His contributions have been recognized by the Gruber Genetics Prize, the Genetics Society of America Medal, the Warren Alpert Prize, and the Personalized Medicine World Conference Luminary Award. In 2013, he was named one of the 7 World’s Greatest Inventors by The Atlantic.

Chris Armstrong

Chris Armstrong is a biochemistry researcher at the University of Melbourne. He began research into ME/CFS in 2010 as an honours student. In 2011 he began a PhD to pioneer the applications of metabolomics to study ME/CFS. He published the first comprehensive ME/CFS metabolomics study on blood and urine in 2015. These studies were first to recognise an alteration in energy, amino acid and purine metabolism in ME/CFS patients. Overall, his research has led to biochemical findings that represent the cellular reaction to a chronic stressor in ME/CFS patients. Currently, Chris is monitoring ME/CFS patients longitudinally to determine how metabolism alters with symptom severity on a case-by-case basis.
Jonas Bergquist, MD, PhD

Dr. Bergquist is a Full Chair Professor in Analytical Chemistry and Neurochemistry at the Department of Chemistry at Uppsala University, Adjunct Professor in Pathology at the University of Utah School of Medicine, and Distinguished Professor in Precision Medicine at Binzhou Medical University in Yantai, China. His group is continuously developing general analytical tools for screening and discovery of biomarkers of pathological states. These approaches include identifying relevant clinical applications, advanced sample pretreatment, multidimensional liquid based separation, high resolution mass spectrometry, and multivariate data analysis. Dr. Bergquist studies numerous conditions, including neurodegenerative disorders. His research into ME/CFS is focused on characterizing the neuroimmunological aspects of the disease using proteomics and metabolomics, with a special interest in cerebrospinal fluid studies.

Mario Capecchi, PhD

Dr. Capecchi was awarded the 2007 Nobel Prize in Physiology or Medicine for his pioneering work in developing a gene-targeting technology in mice, which has been used to create mouse models for hundreds of diseases including cancer, revolutionizing mammalian biology and our understanding of disease genetics. He is a Distinguished Professor of Human Genetics and Biology at the University of Utah School of Medicine and a Howard Hughes Medical Institute Investigator. Dr. Capecchi holds a PhD in biophysics from Harvard University, which he carried out in Dr. James Watson’s laboratory studying the mechanisms of gene and protein expression. His current research involves investigating the molecular genetic causes underlying human disorders involving the immune system and the brain. In addition to numerous honors and awards, Dr. Capecchi is a member of the National Academy of Sciences, the European Academy of Sciences, the American Academy of Arts and Sciences, and the National Academy of Medicine. He is also a member of the OMF Scientific Advisory Board.
Dr. Mark M. Davis is the Director of the Stanford Institute for Immunology, Transplantation and Infection (ITI), a Professor of Microbiology and Immunology, and a Howard Hughes Medical Institute Investigator. He received a B.A. from Johns Hopkins University and a Ph.D. from the California Institute of Technology. Dr. Davis is well known for identifying many of the T-cell receptor genes, which are responsible for the ability of these cells to recognize a diverse repertoire of antigens. His current research interests involve understanding the molecular interactions that underlie T cell recognition and the challenges of human immunology, specifically a “systems level” understanding of an immune response to vaccination or infection. He has received many honors and awards, including memberships in the National Academy of Sciences and the Institute of Medicine, The Paul Ehrlich Prize, The Gairdner Foundation Prize, The King Faisal Prize, the General Motors Alfred P. Sloan Prize, and being elected as Foreign Member to the Royal Society of London. Dr. Davis is a member of the OMF Scientific Advisory Board.

Dr. Maureen Hanson is the Liberty Hyde Bailey Professor in the Department of Molecular Biology and Genetics at Cornell University. She previously was on the Biology faculty at the University of Virginia, Charlottesville. She holds a Ph.D. in Cell and Molecular Biology from Harvard University. Her lab is currently carrying out collaborative studies on ME/CFS concerning gene expression in immune cells, mitochondrial DNA variation, dysbiosis of the gut microbiome, and metabolomics, and the effect of exercise on inflammatory markers, metabolism and physiology. She is Director of the Cornell Center for Enervating Neuroimmune Disease. Dr. Hanson is a member of the OMF Scientific Advisory Board.
Dr. Light is a Professor of Anesthesiology and Neurobiology and Anatomy at The University of Utah. He is a member of the University of Utah programs in Neuroscience, the Brain Research Institute, and the Pain Research Center. Dr. Light has published over 120 peer reviewed research articles focused on peripheral and spinal cord mechanisms of pain and fatigue processing (20 recently on ME/CFS). He received a Javits Award from NIH for his research on descending control of pain. His current focus is on the mechanisms of the sensations of muscle pain and fatigue, and the plasticity they undergo following inflammation, injury and in disorders such as ME/CFS and Fibromyalgia Syndromes.

Dr. McGregor is a member of the faculty at the University of Melbourne, Faculty of Medicine, Dentistry and Health Sciences. He gained his PhD at the University of Sydney in 2000 and has published over 60 papers in peer reviewed journals. His area of research is metabolomics, microbiomics and genomics. His interest is in documenting the interactions between the biochemistry identified with in each of these methods of analyses of human tissues and how they may relate to the pathophysiology of the disease being studied. He was a co-editor of “The journal of Chronic Fatigue syndrome” along with Prof Kenny De Meirleir for a period of 6-7 years.

Dr. Moreau is a Professor of Anesthesiology and Neurobiology and Anatomy at The University of Utah. He is a member of the University of Utah programs in Neuroscience, the Brain Research Institute, and the Pain Research Center. Dr. Moreau has published over 120 peer reviewed research articles focused on peripheral and spinal cord mechanisms of pain and fatigue processing (20 recently on ME/CFS). He received a Javits Award from NIH for his research on descending control of pain. His current focus is on the mechanisms of the sensations of muscle pain and fatigue, and the plasticity they undergo following inflammation, injury and in disorders such as ME/CFS and Fibromyalgia Syndromes.
Dr. Moreau is a Full Professor in the Faculty of Dentistry (Stomatology Department), cross-appointed to the Biochemistry and Molecular Medicine Department in the Faculty of Medicine at Université de Montréal. He served as Director of Research and Chief Scientific Officer of Sainte-Justine University Hospital (2013-2016) and was a member and Vice-Chair of the Advisory Board of the Institute of Musculoskeletal Health and Arthritis of the Canadian Institutes of Health Research (2010-2016). More recently, he was appointed Director of Network for Canadian Oral Health Research. He is an internationally recognized expert on molecular genetics of pediatric scoliosis. His discoveries led to multiple peer-reviewed papers, international conferences as a guest speaker, several awards as well as 45 patents covering innovative diagnostic tests and therapeutic molecules. Dr. Moreau’s main research interests also target complex adult diseases such as osteoarthritis, osteoporosis and Myalgic Encephalomyelitis.

**Robert Naviaux, MD, PhD**

Dr. Naviaux is Professor of Medicine, Pediatrics, and Pathology at the University of California, San Diego (UCSD). He is the founder and co-director of the Mitochondrial and Metabolic Disease Center, former President of the Mitochondrial Medicine Society (MMS), and a founding associate editor of the journal *Mitochondrion*. He is an internationally known expert in human genetics, inborn errors of metabolism, metabolomics, and mitochondrial medicine. Dr. Naviaux discovered the genetic basis of Alpers syndrome, the oldest Mendelian form of mitochondrial disease, and developed the first DNA test to diagnose it. He studied biochemistry at Georg-August University in Göttingen, Germany, and received his MD and PhD in Genetics and Virology from the Indiana University School of Medicine. He is currently the director of the first FDA-approved clinical trial to study the safety and test the effects of suramin on behavior and language in children with autism. Dr. Naviaux is a member of the OMF Scientific Advisory Board.
Baldomero Olivera, PhD

Dr. Olivera is a Distinguished Professor of Biology at the University of Utah and a Howard Hughes Medical Institute Investigator. He is also an Adjunct Professor at the Salk Institute, La Jolla, California and at the Marine Science Institute, University of the Philippines. Dr. Olivera researches the ion channels and receptors that mediate signaling in the nervous system. Through his studies of neurotoxins produced by predatory cone snails, Dr. Olivera has been able to develop a number of pain drugs, including one whose synthetic form is now used to treat pain effectively in patients who have become tolerant to morphine. Dr. Olivera is passionate about interdisciplinary science and education. He holds a PhD in biophysical chemistry from Caltech and is a member of the National Academy of Sciences as well as the OMF Scientific Advisory Board.

Wenzhong Xiao, PhD

Dr. Xiao is Director of the Immuno-Metabolic Computational Center at Massachusetts General Hospital, Harvard Medical School. His research is at the interface of computation, genomics and medicine. A major bottleneck of genome medicine today is around data analysis, interpretation, and integration. His research interest is to develop approaches to address these challenges and to help translate genome technologies to better disease diagnosis, prevention and therapeutics, especially in studies of human immune and metabolic diseases. In collaboration with researchers at Stanford Genome Technology Center and Open Medicine Foundation, his lab has been analyzing the Big Data Severely Ill Patient Study and other studies on ME/CFS, and comparing ME/CFS with other diseases. Dr. Xiao is a member of the OMF Scientific Advisory Board.

Participating Scientists
Raeka Aiyar, PhD

Dr. Aiyar is the Director of Scientific Strategy and Communications at the Stanford Genome Technology Center. She is trained in genetics, functional genomics, and bioinformatics. She received her Ph.D. at the European Molecular Biology Laboratory studying yeast models of mitochondrial disease using genomic and biochemical approaches. In her current role, she oversees and implements scientific communications at SGTC, including a heavy focus on fundraising, scientific strategy, program management, and collaboration building.

Lucinda Bateman, MD

Dr. Lucinda Bateman founded the Bateman-Horne Center for ME/CFS and Fibromyalgia in 2015, where she serves as Medical Director, in order to better serve her patients with chronic, fatiguing illnesses. She completed her BS and MS at Brigham Young University (BYU) and graduated with honors from the Johns Hopkins School of Medicine. Dr. Bateman served on the Institute of Medicine Committee to review the ME/CFS evidence-base and recommend clinical diagnostic criteria in 2014-15, provided expert support to the CFSAC, FDA, NIH and CDC, actively supported the IACFS/ME, and was a principal investigator with the Chronic Fatigue Initiative and the CDC multi-site study. Dr. Bateman actively engages the patient community, utilizing multiple platforms to produce videos, articles, and webinars hosted on the Bateman-Horne Institute’s webpage as well as other patient-oriented sites.

David Bell, MD

Dr. Bell is a widely respected clinician (now retired) who cared for ME/CFS patients in one of the well-known cluster outbreaks in the mid-1980s. Dr. Bell earned his MD at Boston University and his undergraduate degree at Harvard University, completing postdoctoral training in pediatrics. Through his practice in Lyndonville, New York, he gained insights into pediatric cases and the course of the disease over many years. He is one of the authors of the 2011 case definition International Consensus Criteria, and known for his book, “The Doctor’s Guide to Chronic Fatigue Syndrome,” that includes a disability scale measurement tool still in use today. He has co-authored studies about ME/CFS immune dysfunction, autonomic dysfunctions, blood vessel abnormalities, difference between ME/CFS and depression, and a longitudinal study of his patients. In 2003, Dr. Bell served as the chairman of the US Chronic Fatigue Syndrome Advisory Committee. In 2011, he also served on the board of the International Association of CFS/ME. He is a member of the OMF Scientific Advisory Board.
Paul Berg, PhD

Dr. Berg received the Nobel Prize in Chemistry in 1980 for his fundamental studies of the biochemistry of nucleic acids, especially of recombinant DNA. He is a Professor Emeritus of Biochemistry and the Robert W. and Vivian K. Cahill Professor of Cancer Research at Stanford University. Dr. Berg holds a PhD in biochemistry from Case Western Reserve University, and is a member of the National Academy of Sciences. He has been making outstanding contributions to biochemistry and molecular biology for over fifty years, including intermediary metabolism as well as genetics. In addition to the Nobel Prize, Dr. Berg received the National Medal of Science in 1983, the National Library of Medicine Medal in 1986, election to the Royal Society in 1992, and four honorary doctorates. He is an exceptional teacher and has written several books on genetics for non-scientists. Dr. Berg is a member of the OMF Scientific Advisory Board.

Laurel Crosby, PhD

Dr. Crosby is an Engineering Research Associate at the Stanford Genome Technology Center and Director of Innovation at the Chronic Fatigue Syndrome Research Center at Stanford. She holds a Ph.D. in civil and environmental engineering. Her background is in microbial ecology and environmental engineering, with expertise in development of DNA-based microbial diagnostic tools. Dr. Crosby has spent 5 years investigating severely ill patients with ME/CFS with Dr. Davis.

Gozde Durmus, PhD

Dr. Durmus is a postdoctoral research fellow who works with Drs. Ronald W. Davis and Lars Steinmetz at the Stanford Genome Technology Center. She holds a Ph.D. in Biomedical Engineering from Brown University with a minor in Innovation Management and Entrepreneurship. She was recently recognized among the “Top Innovators Under 35” (TR35) by the MIT Technology Review.

Rahim Esfandyarpour, MSc, PhD

Dr. Esfandyarpour is an Engineering Research Associate at the Stanford Genome Technology Center. He holds a Ph.D. in electrical engineering from Stanford University. His research interests span nanoscience, nanofabrication, biomedical device development, nanoelectronics, nanobiotechnology and analog circuit design. He has extensive experience in development of microfluidics-based nanoelectronic platforms for proteomic, genomic, metabolomics and pathogenic analysis, as well as in nanofabrication and CMOS electronic circuit design. Dr. Esfandyarpour is currently working on
developing low-cost, high-throughput diagnostic technologies for molecular and cellular detection.

**Fereshteh Jahaniani, PharmD, PhD**

Dr. Jahaniani is a Research Associate at the Stanford Center for Genomics and Personalized Medicine, and the Director of Genomics at the Chronic Fatigue Syndrome Research Center at Stanford. She holds a Pharm.D. from Tehran University of Medical Sciences and her PhD in Pharmacology from Iran University of Medical Science. She has been working on familial disease studies since 2012, using multi-omics approaches to identify molecular risk factors in the etiology of diseases including ME/CFS. Her current ME/CFS research is focused on generating whole exome data, whole transcriptome data, plasma proteomics, metabolomics, and cytokine profiling, and helping to interpret these data to generate mechanistic hypotheses about the disease.

**Kathleen Light, PhD**

Dr. Light is a Research Professor in the Department of Anesthesiology at the University of Utah School of Medicine. She holds a Ph.D. from Syracuse University in Life-span Developmental Psychology. She works with Dr. Alan Light, researching differences in post-exertional gene expression associated with ME/CFS and fibromyalgia.

**Mohsen Nemat-Gorgani, PhD**

Dr. Nemat-Gorgani is a Life Science Research Scientist in the Stanford Genome Technology Center. He is an experienced biochemist, especially in protein biochemistry and enzymology. He has supervised a number of graduate students and technicians during the 12+ years of his tenure at SGTC, and is now focusing his efforts on ME/CFS.

**Robert Phair, PhD**

Dr. Phair is the Chief Science Officer at Integrative Bioinformatics, Inc.. Dr. Phair is a physiologist with a strong background and publication record in systems biology and biomedical engineering. He holds a Ph.D. in physiology from the University of Michigan. As a faculty researcher at the Johns Hopkins School of Medicine for 16 years, he performed experiments on calcium signaling at levels of biological organization ranging from single cells to isolated tissues to animal models. Dr. Phair also currently serves as an active consultant for the SGTC’s ME/CFS research projects, guiding overall strategy, experimental design, and data interpretation.
**Peidong Shen, PhD**

Dr. Shen is a Research Associate at the Stanford Genome Technology Center. He holds a Ph.D. in biophysical chemistry from Purdue University and is a chemist by training. In his early years of research, he developed glycolysis metabolite detection methods by capillary zone electrophoresis for the detection and separation of metabolites such as glucose 6-phosphate, fructose 6-phosphate, fructose 1,6-bisphosphate, fructose 2,6-bisphosphate, glyceraldehyde phosphate, dihydroxyacetone phosphate, phosphoenolpyruvate, pyruvate, and lactate along with ATP, AMP and ADP. He also has experience in enzyme kinetics and DNA hybridization, human genome and DNA sequencing method development, and DNA capture. He has already been active in our ME/CFS research by sequencing and analyzing cell-free DNA, mtDNA and virus detection in human fluids like plasma.

**Michael Snyder, PhD**

Dr. Snyder is the Stanford B. Ascherman Professor and Chair of the Stanford Department of Genetics, and Director of the Stanford Center for Genomics and Personalized Medicine. He is a pioneer in personal omics profiling, having combined state-of-the-art omics technologies to perform the first longitudinal detailed integrative personal omics profile (iPOP) and used this data to assess disease risk and monitor personalized disease states. He has made major contributions to prominent omics consortia, including ENCODE, the Integrated Personal Omics Profiling/Human Microbiome Project (iPOP/HMP), and Genotype-Tissue Expression (GTEx). His research uses cutting-edge technologies to understand gene regulation and its impact on biological phenotypes, providing valuable insights into the role of genetic variation in disease.

**Ron Tompkins, MD, ScD**

Dr. Tompkins is the Sumner M. Redstone Professor of Surgery at Harvard Medical School, Founding Director of the Center for Surgery, Science & Bioengineering at Massachusetts General Hospital, and Chief of Staff Emeritus at Shriners Hospitals for Children in Boston. He is a leading trauma and burn physician and trauma specialist at Massachusetts General Hospital. He is a board-certified general surgeon with a doctorate in chemical engineering, which provides him with expertise not only in the clinical evaluation of critical care patients, but also in inflammation biology, genomics, proteomics, and computational biology. Elected as a Director of the American Board of Surgery in 1994, Dr. Tompkins has received multiple honors including a fellowship from the American Institute for Medical and Biological Engineering and an honorary M.A. from Harvard University. He has served as an officer including as President and Board
Member of more than a dozen national and international academic societies. Dr. Tompkins is a member of the OMF Scientific Advisory Board.

**Jarred Younger, PhD**

Dr. Younger is an Associate Professor of Psychology at the University of Alabama at Birmingham, with secondary appointments in Anaesthesiology and Rheumatology, and Director of the Neuroinflammation, Pain and Fatigue Laboratory. Dr. Younger received his Ph.D. in Experimental Psychophysiology in 2003 at the University of Tennessee, Knoxville. He then completed postdoctoral fellowships at Arizona State University and the Stanford University School of Medicine before taking an assistant professor position at Stanford. In 2014, he joined the faculty at the University of Alabama at Birmingham. Dr. Younger’s goal is to end the chronic pain and fatigue that is caused by inflammation in the brain. He is currently funded by the National Institutes of Health, Department of Defense, and several non-profit agencies to develop techniques for diagnosing and treating neuroinflammation, pain, and fatigue.

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