

President's Research Council

Supporting the Advancement of Science and Medicine

Schedule of 2017 Programs

January 31

March 7

September 12

November 7

6:15 p.m. Reception

6:45 p.m. Program

Medical Education and Conference Center

T. Boone Pickens Biomedical Building

6001 Forest Park Road

Dallas, Texas 75390

UTSouthwestern
Medical Center

utsouthwestern.edu

Supporting the Advancement of Science and Medicine

Members of the President's Research Council (PRC) directly engage the advancement of medical research at UT Southwestern. Joining the PRC brings opportunities to hear from internationally recognized scientists conducting high-impact research. Your membership supports promising young scientists who are the innovators of tomorrow. As a member of the PRC, you'll be advancing the future of medicine, today.

President's Research Council member functions and activities include:

- Supporting the annual Distinguished Researcher Awards for faculty members early in their research careers when federal grants can be difficult to obtain. Support may also be given to a past recipient named as the Marnie and Kern Wildenthal President's Research Council Professorship in Medical Science;
- Attending four stimulating programs each year by prominent faculty researchers;
- Meeting outstanding scientists who are revolutionizing the scope and practice of medicine;
- Hosting an annual dinner with UT Southwestern President Daniel K. Podolsky, M.D., to honor the recipients of the Distinguished Researcher Awards;
- Learning about the latest advances in medical science from one of the nation's leading institutions.

President's Research Council programming in 2017 will be stimulating and informative. This year will offer members the opportunity to hear directly from gifted researchers who are rethinking and redefining what is possible in medical science today. Biographies of the four exciting speakers scheduled can be found on the back of this brochure.

Annual tax-deductible memberships in the President's Research Council start at \$1,000 for individuals or couples, but larger gifts to support the work of UT Southwestern physician-scientists are always appreciated.

For additional information about the President's Research Council, please call the Office of Development at **214-648-2344**.

About UT Southwestern Medical Center

One of the top academic medical centers in the world, UT Southwestern is a premiere educational, clinical, and research institution with an innovative approach to medicine. Our physicians and researchers seamlessly integrate breakthroughs in science, advances in comprehensive patient care, and prestigious educational programs to improve health care in North Texas and around the world.

Consistently ranking among the top institutions for biomedical research, UT Southwestern is home to six Nobel laureates, 18 members of the National Academy of Medicine (formerly the Institute of Medicine), and 22 members of the National Academy of Sciences, which is more than all other academic medical centers in Texas combined. More than 5,700 research projects totaling more than \$422 million annually are underway at UT Southwestern on a host of medical disorders, including cancer, heart disease and stroke, neurological diseases, arthritis, diabetes, and Alzheimer's disease.

Faculty and residents provide care to more than 100,000 hospitalized patients and oversee more than 2.2 million outpatient visits each year. UT Southwestern also impacts the regional economy as an employer of approximately 14,400 people in North Texas.

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James Stull, Ph.D.
Professor, Department of Physiology

Understanding How Our Bodies Move

January 31, 2017

As a UT Southwestern faculty member since 1978, Dr. James Stull studies the chemical reactions necessary for movement generated by contractions of smooth, skeletal, and cardiac muscles. In a long-standing collaboration with his wife and fellow Physiology Professor Kristine Kamm, Ph.D., Dr. Stull has applied multidisciplinary approaches to unravel how cellular signals turn the motor protein myosin on and off to coordinate movement.

“Our first studies showed how myosin phosphorylation [the process in which a phosphate group is added to a molecule, such as a protein] was turned on to increase the power of skeletal muscle contraction during exercise,” Dr. Stull said. “We have obtained insights into how these chemical reactions acting on myosin are uniquely involved in failure of heart muscle cells, and deranged in smooth muscle cells to cause aortic aneurysms and divisions.”

Dr. Stull recently discovered two new enzyme regulators in heart muscle that attach a phosphate to the myosin motor protein to enhance function. One of the enzymes is necessary for the heart to pump blood normally, and impairment of its function can lead to diminished heart performance and failure.

A committed academician and researcher, Dr. Stull has contributed extensive professional and academic service to his field and the Medical Center. He served as Chair of the Department of Physiology at UT Southwestern for 30 years and was holder of the Fouad A. and Val Imm Bashour Distinguished Chair in Physiology. Dr. Stull received his undergraduate degree in Biology from Rhodes College, Ph.D. in Pharmacology from Emory University, and completed postdoctoral training with the Nobel Laureate Edwin Krebs at the University of California, Davis.



Todd Roberts, Ph.D.
*Assistant Professor, Department of Neuroscience;
Thomas O. Hicks Scholar in Medical Research*

What Can Songbirds Teach Us About Learning?

March 7, 2017

The lab of Dr. Todd Roberts is working to understand the brain mechanisms that allow young animals to learn from one another and imitate the behavior of their elders. This form of learning is particularly relevant for acquiring social and vocal communication skills. In people, learning speech and language relies on our ability to emulate the behavior of our parents and other role models during childhood. His research group is focused on understanding how animals, like songbirds, learn complex vocal behaviors through imitation.

Songbirds are a powerful model for studying vocal learning because they initially learn their songs by imitating a parent’s song. Studying this form of vocal learning provides entry points for understanding human disruptions of speech and vocal communication that often result from developmental brain disorders like autism.

“The details of song and speech learning have strong behavioral parallels, including similar transitions from babbling to the acquisition of vocal syllables,” Dr. Roberts said. “We’re examining how changes to circuits in the brain underlie this form of learning and how divergent pathways in the brain control the learning of different aspects of these vocalizations. The songbird has allowed us to explore these basic questions in a way that hasn’t really been done before.”

Dr. Roberts received his Ph.D. from the University of Maryland and completed his postdoctoral research at Duke University Medical Center, where he applied novel methods for imaging and manipulating brain circuits involved in learning vocal behaviors. He joined the Department of Neuroscience at UT Southwestern in March 2013.



John MacMillan, Ph.D.
*Associate Professor, Department of Biochemistry;
Martha Steiner Professorship in Medical Research;
Chilton/Bell Scholar in Biochemistry*

Natural Drug Discovery From the Sea

September 12, 2017

As a University of Iowa undergraduate majoring in chemistry, Dr. John MacMillan became interested in the chemistry of natural products. Today he searches for new antibiotics and cancer therapies by studying aquatic bacteria and other natural products that thrive in extreme environments. Dr. MacMillan’s travels have taken him from hot springs and mangrove swamps to the depths of the ocean.

“The vast microbial variety of the marine environment is a promising resource of biological and chemical diversity,” Dr. MacMillan said. “We’re using a combination of microbiology, chemistry, and cell biology to understand the role natural products can play in human health.”

Dr. MacMillan and his colleagues are currently utilizing cell-based screening and computational analysis to identify both promising cancer-fighting chemicals derived from natural marine products and the proteins or biological processes they act on in cells. Known as FUSION (Functional Signature Ontology), the technique uses libraries of small interfering RNAs and synthetic microRNAs to match gene expression patterns with those of marine-derived chemicals. Researchers can infer whether and exactly how the most promising chemicals exert anti-cancer effects.

Dr. MacMillan joined the UT Southwestern faculty in 2007 after pursuing postdoctoral research at the La Jolla, California-based Scripps Institution of Oceanography. He earned his Ph.D. at the University of California, Davis and now chairs the Organic Chemistry Graduate Program at UT Southwestern. Dr. MacMillan is a recipient of the Matt Suffness Award from the American Society of Pharmacognosy and the inaugural Marine Drugs New Investigator Award from UT Southwestern.



Trish M. Perl, M.D., M.Sc.
*Professor, Department of Internal Medicine;
Division Chief of Infectious Diseases;
Jay P. Sanford Professorship in Infectious Diseases*

Mers, Zika, Ebola – Emerging Infections

November 7, 2017

Distinguished for her research in infectious diseases and antimicrobial resistant organisms, Dr. Trish Perl joined the UT Southwestern faculty in 2016. She has helped with management of many international outbreaks, including severe acute respiratory syndrome and Middle East respiratory syndrome coronavirus, and consults internationally with governments to create prevention guidelines and tactics.

“Infectious diseases in the era of globalization are emerging as a real threat to patients and economies,” Dr. Perl said. “We must develop strategies to prevent their emergence and transmission in healthcare and community settings to protect large populations.”

An active researcher, Dr. Perl has authored or coauthored more than 200 peer-reviewed articles. She is the former President of the Society of Hospital Epidemiologists of America and has served on advisory panels for the National Academy of Medicine, the Centers for Disease Control and Prevention, and the World Health Organization, and been a consultant to the National Institutes of Health and the Agency for Healthcare Research and Quality.

Dr. Perl received her Bachelor of Arts and Medical degree from the University of North Carolina at Chapel Hill and a Master of Science degree from McGill University in Montreal, Canada. She completed an internship, residency, and fellowship in internal medicine at McGill University (Royal Victoria Hospital) in Montreal and a fellowship in Infectious Diseases and Clinical Epidemiology at the University of Iowa Hospitals and Clinics in Iowa City, Iowa. She formerly served as a Professor of Medicine and Pathology at Johns Hopkins University School of Medicine and in Epidemiology at the Bloomberg School of Public Health.