THE Flexner DISCOVERY LECTURE SERIES

Upcoming Discovery Lecture:

ERIC GOUAUX, PH.D.

Senior Scientist, Vollum Institute Jennifer and Bernard Lacroute Term Chair in Neuroscience Research Investigator, HHMI

April 20, 2017
208 Light Hall / 4:00 P.M.

THE Flexner DISCOVERY LECTURE SERIES

JAMES SPUDICH, PH.D.

THE MYOSIN MESA AND BEYOND: ON THE UNDERLYING MOLECULAR BASIS OF HYPER-CONTRACTILITY CAUSED BY HYPERTROPHIC CARD

APRIL 6, 2017
3:00 P.M.
208 LIGHT HALL

SPONSORED BY:
THE DEPARTMENT OF CELL AND DEVELOPMENTAL BIOLOGY

VANDERBILT UNIVERSITY
MEDICAL CENTER

THE MYOSIN MESA AND BEYOND: ON THE UNDERLYING MOLECULAR BASIS OF HYPER-CONTRACTILITY CAUSED BY HYPERTROPHIC CARD

After 40 years of developing and utilizing assays to understand the molecular basis of energy transduction by the myosin family of molecular motors, all members of my laboratory are now focused on understanding the underlying biochemical and biophysical bases of human hypertrophic (HCM) and dilated (DCM) cardiomyopathies. Our primary focus is on HCM since these mutations cause the heart to be hyper-contractile, and we hope to understand the molecular basis of this increased power output. HCM is most often a result of single missense mutations in one of several sarcomeric proteins, the sarcomere being the fundamental contractile unit of the cardiomyocyte. More than 40% of all HCM mutations occur in the motor domain of human beta-cardiac myosin, while another ~40% occur in myosin binding protein-C. Associated with HCM worldwide are heart failure, arrhythmias, and sudden cardiac death at any age. We are using in vitro molecular studies of biochemically reconstituted human sarcomeric protein complexes to lay the foundation for understanding the effects of HCM-causing mutations on power generation by the contractile apparatus of the sarcomere. With a detailed molecular understanding of the resultant increase in power output caused by HCM mutations, one should be able to exquisitely design appropriate small molecule therapies, which are desperately needed for treatment of these diseases.

JAMES SPUDICH, PH.D.

STANFORD UNIVERSITY SCHOOL OF MEDICINE
DEPARTMENT OF BIOCHEMISTRY

DOUGLASS M. AND NOLA LEISHMAN PROFESSOR OF CARDIOVASCULAR DISEASE

MEMBER, NATIONAL ACADEMY OF SCIENCES

James Spudich, Douglass M. and Nola Leishman Professor of Cardiovascular Disease, is in the Department of Biochemistry at Stanford University School of Medicine. He received his B.S. in chemistry from the University of Illinois in 1963 and his Ph.D. in biochemistry from Stanford in 1968. He did postdoctoral work in genetics at Stanford and in structural biology at the MRC Laboratory in Cambridge, England. From 1971 to 1977 he was Assistant, Associate, and Full Professor in the Department of Biochemistry and Biophysics, University of California, San Francisco. In 1977 he was appointed Professor in the Department of Structural Biology at Stanford University, and served as Chairman of that department from 1979-1984. Since 1992 he has been Professor in the Department of Biochemistry, and served as Chairman from 1994-1998. From 1998 to 2002, he was Co-Founder and first Director of the Stanford Interdisciplinary Program in Bioengineering, Biomedicine and Biosciences called Bio-X. Spudich has given more than 40 named lectureships and keynote addresses, including the First Annual Lecture of the series "The James Spudich AHA Research Committee Lecture," named in his honor. Spudich has been recognized for his work by many awards, including election to the National Academy of Sciences in 1991. He also was awarded the American Heart Association Basic Research Prize, the Biophysical Society Lifetime Research Career Award, the Lewis S. Rosenstiel Award for Outstanding Research Achievement in the Field of Basic Medical Studies, the Biophysics Society Award for Outstanding Investigator in the Field of Single Molecule Biology, the E.B. Wilson Medal, the Arthur Kornberg and Paul Berg Lifetime Achievement Award in Biomedical Sciences, the Wiley Prize in Biomedical Sciences, and in 2012 the Albert Lasker Basic Medical Research Award.