

USC Viterbi School of Engineering, Department of Biomedical Engineering

The Fred S. Grodins Keynote Lecture

Keynote Lecturer: **Dr. Roger D. Kamm**



*Cecil and Ida Green Distinguished Professor of
Biological and Mechanical Engineering
Massachusetts Institute of Technology
Dept. of Biological Engineering; Dept. of Mechanical
Engineering*

**Monday, October 10, 2016
3:00PM
EEB 132**

Followed by a reception in the DRB Patio at 4:00PM
Open to all faculty, staff and students.

In Vitro Vascularized Models for Metastatic Cancer

Over the past 10 years, our ability to realistically model the critical biological steps in disease have dramatically improved, due in part to the advances in microfluidic technologies. In particular, the capabilities to create realistic 3D microenvironments, including microvascular perfusion, have led to in vitro models for disease that offer, in many respects, considerable advantages over in vivo experiments. In this talk, I will present some recent advances in creating microvascular networks in vitro and using these to model the successive stages of metastatic cancer, especially in the context of immunotherapies and organ-specific models of metastasis.

Bio:

A primary objective of Kamm's research has been the application of fundamentals in fluid and solid mechanics to better understand essential biological and physiological phenomena. Past studies have addressed issues in the respiratory, ocular and cardiovascular systems. More recently, his attention has focused on the molecular mechanisms of cellular force sensation, cell population dynamics, and the development of new microfluidic platforms for the study of cell-cell and cell-matrix interactions, especially in the context of metastatic cancer. This cumulative work has led to over 280 refereed publications. Recognition for his contributions is reflected in Kamm's election as Fellow to AIMBE, ASME, BMES, AAAS and the IFMBE. He is also the 2010 recipient of the ASME Lissner Medal and the 2015 recipient of the Huiskes Medal, both for lifetime achievements, and is a member of the National Academy of Medicine.



Grodins Keynote Lecture

Fred S. Grodins (1915-1989), joined the faculty at USC in 1967 as Professor of Physiology and Electrical Engineering. He established Biomedical Engineering (BME) at USC first as a Program in 1970 and subsequently as a full-fledged Department in 1976. Dr. Grodins was Professor and Chairman of BME until 1986. He remained active in research as Emeritus Professor at USC until his death in 1989.

Universally acknowledged as a pioneer in the field of biomedical engineering, Dr. Grodins made profound and lasting contributions in the area of physiological control. His famous monograph on “Control Theory and Biological Systems”, published in 1963, is considered a landmark publication on the application of engineering control theory to physiological systems. Dr. Grodins published over 100 scientific articles and book chapters in the areas of respiratory physiology, cardiovascular control, mathematical modeling and computer simulation. Through his career-long active research program, funded by the National Institutes of Health, Dr. Grodins was responsible for the training of numerous graduate students and postdoctoral fellows.

Dr. Grodins served on many governmental panels and advisory committees for the NIH, NSF and NASA, and was on the editorial boards of the American Journal of Physiology, the Journal of Applied Physiology, Circulation Research and Physiological Reviews. A past president and member of the board of directors of the Biomedical Engineering Society, Dr. Grodins was also a member of the American Physiological Society, Phi Beta Kappa, Sigma Xi, and the American Association for the Advancement of Science.

Dr. Grodins received his B.S., M.S., M.D. and Ph.D. (Physiology) degrees from Northwestern University. He served in the U.S. Air Force from 1944 to 1946. He was Abbott Professor of Physiology at Northwestern until his move to USC in 1967.

Biomedical Engineering Department | USC Viterbi School of Engineering
1042 Downey Way, DRB-140 | Los Angeles, CA 90089-1111
Tel: 213-740-7237, Fax: 213-821-3897
<http://bme.usc.edu>