Dear Faculty, IGERT Fellows, IGERT Associates and Students,

You are cordially invited to attend a Seminar presented by Dr. David Lo. Please plan to attend.

M cells: Imaging and Mucosal Immune Surveillance

David Lo

Distinguished Professor of Biomedical Sciences
UC Riverside

Date: Friday, April 20, 2012
Location: Bourns A265
Time: 11:10am

Abstract:

The barrier created by epithelial cells in the airways and intestine provides an important primary level of protection against invasion by infectious microbes. However, a barrier alone is not sufficient for protection; the body's immune system also needs a surveillance mechanism to alert it to potential invasions. To accomplish this, specialized epithelial cells called M cells provide a selective gateway for the capture of viruses and bacteria for presentation to the immune system, triggering protective immune responses such as secreted IgA antibody. Our goal is to understand how M cells develop, perform their capture function, and aid in the induction of protective immune responses.

Because M cells are relatively rare among the mucosal barrier epithelial cells, we have had to develop a series of specialized methods for visualizing and identifying M cells, including Transmission and Scanning Electron Microscopy and fluorescence confocal microscopy. In the case of confocal microscopy, we have further augmented the methods by generating novel genetically modified strains of mice (transgenic mice) which express fluorescent proteins in specific cell types. Thus, the development of specialized cells and their interactions with other cells can be visualized both in

ex vivo preparations, and using in vitro cell culture models. From these imaging methods, we have been able to perform quantitative analyses of M cell development and function, and discover entirely new and unsuspected principles in the relationship between the host and pathogens.

Bio:

David D. Lo, M.D., Ph.D. is Distinguished Professor of Biomedical Sciences, having joined the division of Biomedical Sciences in 2006. Previously, he led a research group at the Scripps Research Institute in La Jolla, CA, was Vice President of Integrative Biology at Digital Gene Technologies, and most recently led a research group as Member, Developmental Immunology at the La Jolla Institute for Allergy and Immunology. His work has been supported by awards from the National Institute for Allergy and Infectious Diseases (NIAID, NIH), and the Grand Challenges in Global Health (administered by the Foundation for the NIH and Bill and Melinda Gates Foundation).