UCLA *Department of Chemistry & Biochemistry*

2014 NOBEL PRIZE IN CHEMISTRY

Eric Betzig

Janelia Farm Research Campus
Howard Hughes Medical Institute

Imaging Life at High Spatiotemporal Resolution

Abstract: As our understanding of biological systems has increased, so has the complexity of our questions and the need for more advanced optical tools to answer them. For example, there is a hundred-fold gap between the resolution of conventional optical microscopy and the scale at which molecules self-assemble to form sub-cellular structures. Furthermore, as we attempt to peer more closely at the three-dimensional dynamic complexity of living systems, the actinic glare of our microscopes can adversely influence the specimens we hope to study. Finally, the heterogeneity of living tissue can seriously impede our ability to image at high resolution, due to the resulting warping and scattering of light rays. I will describe three areas focused on addressing these challenges: super-resolution microscopy for imaging specific proteins within cells at various lengths scales down to near-molecular resolution; plane illumination microscopy using non-diffracting optical lattices for noninvasive imaging of three-dimensional dynamics within live cells and embryos; and adaptive optics to recover optimal images from within large, optically heterogeneous specimens such as zebrafish and cortex of living mice.

Monday, June 1, 2015

Lecture 4:00 P.M.
Faculty Center
(California Room)

Reception 5:15 P.M.
Faculty Center
(Patio)

Please **RSVP** to Carol Canedo at x64956 or carol@chem.ucla.edu