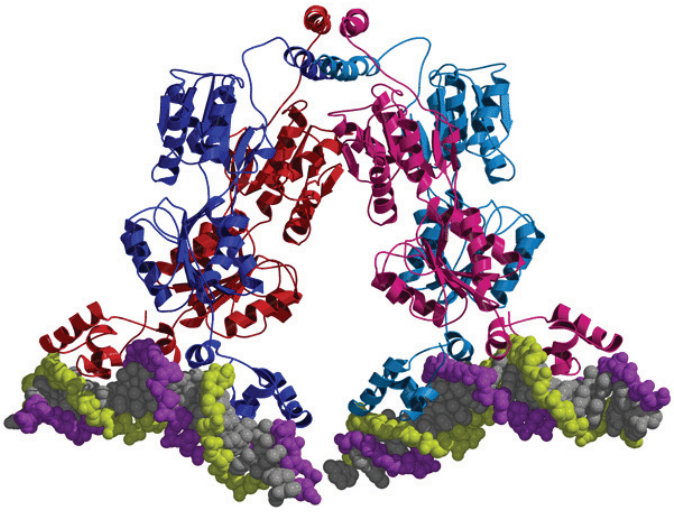
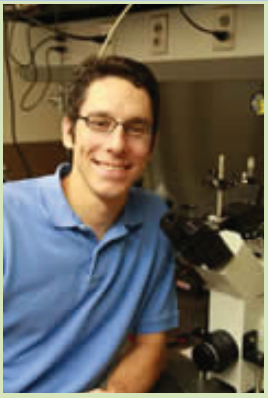
SEMINAR:

"Single Molecule Studies of Telomerase Structure and Function"



Monday
November 2, 2009
2:00-3:00
Engineering 2 Building
Room #599

Dr. Michael Stone



Assistant Professor, Department of Chemistry and Biochemistry, Center for Molecular Biology of RNA and Principal Investigator, Stone Research Group, UCSC

Michael Stone
Dr. Michael Stone received his PhD in Molecular Cell Biology from the University of California, Berkeley in 2003. His postdoctoral work at Harvard University involved single-molecule studies of telomerase ribonucleoprotein assembly and structure as well as telomerase structure-function analysis. In 2009 he became an assistant professor of Chemistry and Biochemistry department at UCSC where he formed the Stone Research Group. Dr. Stone leads his group in exploring the use of biochemical and structural methods with newly emerging single-molecule techniques to probe the dynamics of protein-nucleic acid interactions and the mechanism of biological motors. Dr. Stone's other current research interests include molecular basis of telomere length regulation and telomerase-related diseases, biophysical characterization of nucleic acid-associated molecular motors, and the development of novel single molecule assays to probe enzyme function. He has authored numerous publications and he is a member of the Biophysical Society and the American Chemical Society.

Abstract
Advances in single molecule techniques have made possible the quantitative description of complex dynamics intrinsic to many biological enzymes and their substrates. The Stone Research Group develops single molecule assays with which to investigate cellular mechanisms for the replication and maintenance of telomeres, the specialized chromatin structures that stabilize chromosome ends and control cell aging in all eukaryotic organisms. Our research is motivated by the demonstration that disruption of normal telomere homeostasis gives rise to several human diseases, including inherited bone marrow failure disorders, pre-mature aging syndromes, and the majority of human cancers. In this talk, I will discuss our recent efforts to characterize the three dimensional structure and dynamics of telomerase, the ribonucleoprotein reverse transcriptase responsible for telomere DNA synthesis. Our approach primarily involves the use of single molecule fluorescence spectroscopy to interrogate RNA structure and dynamics during telomerase assembly and catalysis.

CNO

Presented by:
The W. M. Keck Center for Nanoscale Optofluidics and QB3

Host: Professor Jin Zhang