

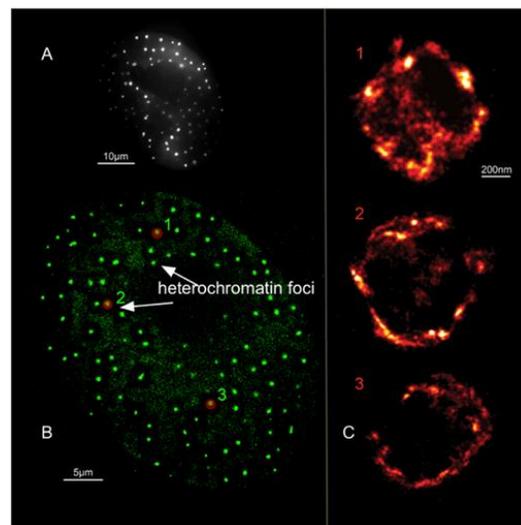
May 8, 2013

Cloud computing and light-sheet illumination for single-molecule super-resolution imaging

Dr. Hu Cang

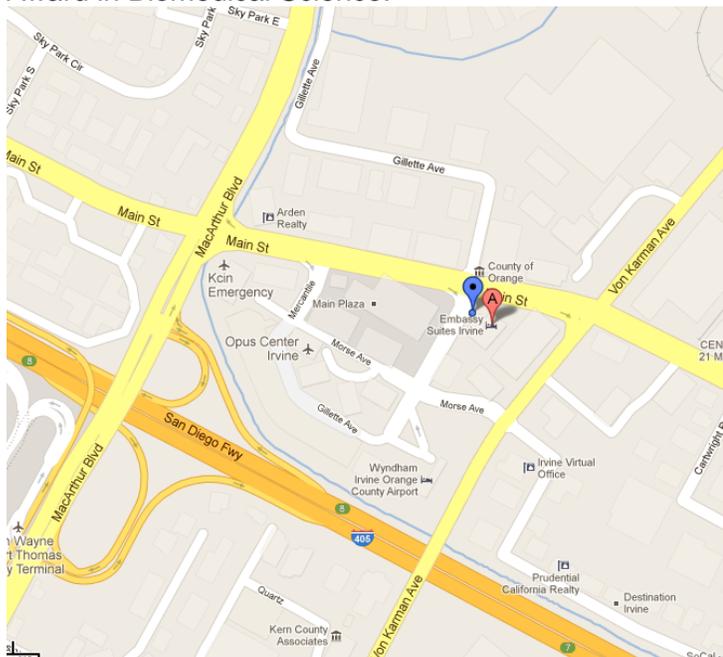
Waitt Advanced Biophotonics Center, Salk Institute for Biological Studies

Abstract: We present a Light-Sheet Bayesian Super-resolution Microscope (LSB-SRM) that allows direct visualization of nuclear structure in human embryonic stem cells (hESs). This microscope is a marriage between two recently developed techniques: light-sheet single molecule super-resolution microscopy and a Bayesian super-resolution image reconstruction algorithm. The light-sheet illumination reduces the excitation volume, suppresses the fluorescence background from fluorophore in unwanted layer of a sample, and therefore increases the signal-to-noise ratio of the single-molecule detection. The Bayesian algorithm, which is implemented on Amazon Elastic Compute Cloud, can efficiently resolve single molecules in images with noisy background. A combination of the two allows us to directly visualize nanometer scale domains of heterochromatin in the nucleus of human embryonic stem cells.



Super-resolution images of heterochromatin foci in BJ fibroblast cells.

About our speaker: Dr. Hu Cang is an Assistant Professor from the Waitt Advanced Biophotonics Center at the Salk Institute for Biology Studies, San Diego. He received a MS of Electrical Engineering and a PhD of Chemical Physics from Stanford University in 2005. His current research focuses on developing novel super-resolution light microscopy techniques. Dr. Cang has authored more than 20 articles in scientific journals including Nature, Nature Methods and Phys. Rev. Lett. He is a recipient of the Ray Thomas Edwards Career Award in Biomedical Science.



Wednesday, May 8, 2013

Reception: 6:00; Dinner: 6:45; Talk: 7:30

Meal: Family-Style

Cost: \$30 (OSSC Student Members are Free!)

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On-line Registration: www.osscc.org or

Contact: [Joseph Diep](#), OSSC Arrangements

Chair, Events@osscc.org, 951-926-2994

Please Register by May 6, 2013