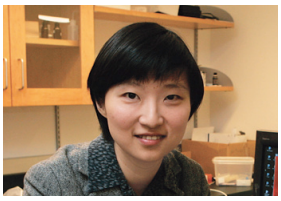
THE HARVEY SOCIETY

First Lecture: 2014-2015 Series

www.harveysociety.org

October 16, 2014 at 8:00 P.M.



Xiaowei Zhuang, Ph.D.
Howard Hughes Medical Institute
Harvard University
Cambridge, MA

Illuminating Biology at the Nanoscale with Single-Molecule and Super-Resolution Fluorescence Microscopy

Dissecting the inner workings of a cell requires imaging methods with molecular specificity, single-molecule sensitivity, molecular-scale resolution, and dynamic imaging capability such that molecular interactions inside the cell can be directly visualized. Fluorescence microscopy is a powerful imaging modality for investigating cells largely owning to its molecular specificity and dynamic imaging capability. However, the spatial resolution of light microscopy, classically limited by the diffraction of light to a few hundred nanometers, is substantially larger than typical molecular length scales in cells. Hence many subcellular structures and dynamics cannot be resolved by conventional fluorescence microscopy. We developed a super-resolution fluorescence microscopy method, stochastic optical reconstruction microscopy (STORM), which breaks the diffraction limit. STORM uses single-molecule imaging and photo-switchable fluorescent probes to temporally separate the spatially overlapping images of individual molecules. This approach has allowed multicolor and three-dimensional imaging of living cells with nanometer-scale resolution and enabled discoveries of novel sub-cellular structures. In this talk, I will discuss the recent technological development and biological applications of STORM.

The Rockefeller University – Caspary Hall
York Avenue and 66th Street, New York

Sanford M. Simon, *President*

ALL WELCOME

Hors d'oeuvres served at 7:30 P.M.

Made possible with support from member institutions:

Albert Einstein College of Medicine, Columbia University Medical Center, Hofstra University, Hunter College, Memorial Sloan Kettering Cancer Center, Mount Sinai School of Medicine, NYU School of Medicine, SUNY Downstate Medical Center, The Rockefeller University, Weill Cornell Medical College.