

Advancing Methods for Labeling, Staining, Imaging and Reconstructing Large Brain Tissue Volumes at High Resolution

Frontiers in Chemical Imaging Seminar Series



Presented by...

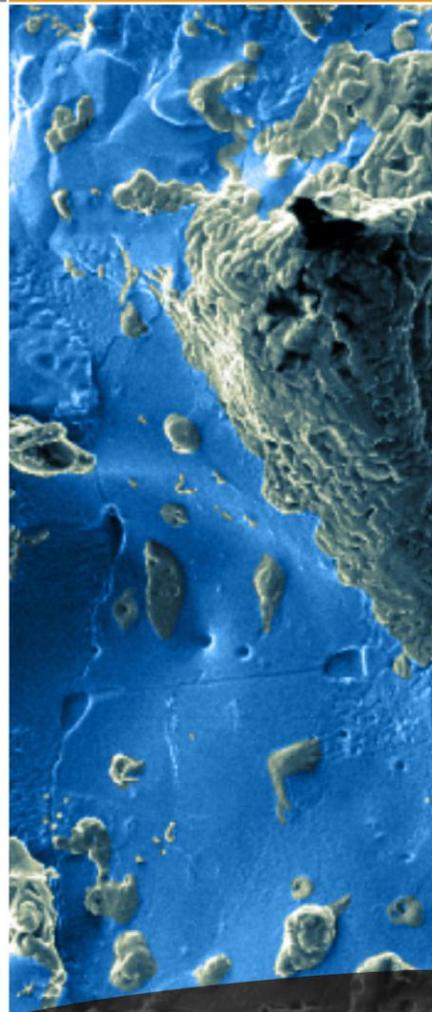
Mark H. Ellisman, Ph.D.
Professor of Neurosciences
University of California, San Diego

Abstract

A grand goal in neuroscience research is to understand how the interplay of structural, chemical and electrical signals in and between cells of nervous tissue gives rise to behavior. We are rapidly approaching this horizon as neuroscientists make use of an increasingly powerful arsenal of tools and technologies for obtaining data, from the level of molecules to nervous systems, and engage in the arduous and challenging process of adapting and assembling neuroscience data at all scales of resolution and across disciplines into computerized databases. This presentation will highlight development and application of new contrasting methods and imaging tools that have allowed us to see otherwise hidden relationships between cellular, subcellular and molecular constituents of nervous systems. New chemistries for carrying out correlated light and electron microscopy will be described, as well as recent advances in large-scale high-resolution 3D reconstruction with TEM and SEM based methods. The Whole Brain Catalog (WBC), a Google Earth-like open-source virtual model of the mouse brain, will also be described. The WBC is as an example of an informatics framework and web-based tool whose purpose is partly to facilitate integration of 3D image data from multiple microscopy methods and to enable the linking of information derived from other analytical approaches to imaging data shared in the publically accessible catalog.

Bio

Dr. Ellisman established the National Center for Microscopy and Imaging Research in 1988 to achieve greater understanding of the structure and function of the nervous system by developing 3D light and electron microscopy methods. Ellisman, also a founding fellow of the American Institute of Medical and Biological Engineering, has received numerous awards including the Jacob Javits Neuroscience Investigatory Award from the National Institutes of Health. Since 1996, he has been serving as the founding director of the UCSD Center for Research in Biological Systems.



Date: July 26, 2011

**Location: ETB
Columbia River
Room**

Time: 3:00 pm