Séminaire ibs

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Conférencier invité

Vendredi 16 Nov. 2012

A 11h - Salle des séminaires de l'IBS

Par Samuel T. Hess

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Localization-Based Super-Resolution Fluorescence Imaging

Diffraction limits resolution in conventional light microscopy to a fraction of a wavelength, but much of biology occurs on the molecular length scale. Electron microscopy can achieve nanometer resolution or better, but is difficult to use to image living specimens. Thus, there is strong motivation to improve resolution in fluorescence microscopy, which is compatible with live cell imaging. To achieve this goal, in 2005 we developed an imaging method based on single molecule imaging and localization. Published in 2006, fluorescence photoactivation localization microscopy (FPALM) images stochastically sampled sparse subsets of fluorescent molecules, determining their coordinates with nanometer precision. Many subsets are imaged sequentially, and molecular coordinates are combined to form an image of living or fixed biological samples with resolution of ~20-50 nanometers. Recent developments now permit imaging multiple species simultaneously, three dimensional imaging, and super-resolution imaging of molecular anisotropies. With these powerful capabilities, numerous biological applications are now possible. Examples related to assembly of influenza viral components in host cells, neuronal systems, and cytoskeletal binding proteins will be discussed.

Hôte : D. Bourgeois (IBS/Groupe Dynamop)