

Tuesday, April 30th at 12:00 p.m.

Room 700, Fairchild Hall

Pizza will be served at 11:45 a.m. outside 700 Fairchild

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Novel bio-imaging techniques using optical highlighter fluorescent proteins

Fluorescence imaging of genetically encoded fluorescent proteins (FPs) has transformed cell biology and neurobiology. Optical highlighters are a remarkable family of FPs that could alter their excitation and emission spectra upon proper external light illumination. Since their first appearance about a decade ago, optical highlighters have played a major role in super-resolution imaging, protein dynamics, gene expression and cellular trafficking *et al.* Here we are harnessing optical highlighters to develop three distinct new bio-imaging techniques: genetically-encoded microviscosity sensor using protein-flexibility mediated photochromism, deep tissue imaging with super-nonlinear fluorescence microscopy, and light-driven fluorescent timer for simultaneous spatial-temporal mapping of protein dynamics in live cells. The unique on-off switch capability of optical highlighters have been indispensable in all these new techniques.