Biophysics 210: Biological Light Microscopy
Kurt Thorn
Syllabus

Discussion section meets Tuesdays from 1-2:30pm in MH2100
Labs meet Thursday or Friday from 2-5pm (location varies)

Week 6: Optical Sectioning: Confocal Microscopy and TIRF

Goals: Understand the different mechanisms by which confocal microscopy, two-photon microscopy, and TIRF microscopy produce optical sectioning. Understand the trade-offs involved in these techniques and the kinds of samples that each technique is most appropriate for.

Discussion Section: May 5th
Labs: May 7th and 8th

Lectures (watch before discussion section):

- Optical Sectioning and Confocal Microscopy
- Two Photon Microscopy
- Total Internal Reflection Fluorescence Microscopy

Additional Reading (optional):

- JM Murray et al. Evaluating performance in three-dimensional fluorescence microscopy. *J. Microsc.* 2007 Dec;228(Pt 3):390-405.
- MicroscopyU: Confocal Basics
- MicroscopyU: TIRF Microscopy
- Mattheyses et al. Imaging with total internal reflection fluorescence microscopy for the cell biologist. *J. Cell Sci.* 2010 123, 3621-3628.
- MicroscopyU: Multiphoton microscopy

Discussion Section Topic: In the lab you will be introduced to laser-scanning confocal microscopy, spinning disk confocal microscopy, and TIRF microscopy. For the discussion section we will talk about the different techniques, important factors that impact the quality of the images, and how to choose between techniques.

Lab: Introduction to Laser-scanning confocal microscopy, spinning disk confocal microscopy, and TIRF (Nikon Imaging Center)