

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 5: Fluorescence Microscopy

Discussion Section: April 28th

Labs: April 30th and May 1st

Lectures (watch before discussion section):

- [Introduction to Fluorescence Microscopy](#)
- [Fluorescent Probes](#)
- [Fluorescent Proteins](#)

Reading required for discussion section:

- Shaner, NC., Steinbach, PA., Tsien, RY. 2005. [A guide to choosing fluorescent proteins](#). Nat Methods. 2: 905-9.
- Shu X. et al 2009. [Mammalian expression of infrared fluorescent proteins engineered from a bacterial phytochrome](#). Science Vol. 324 no. 5928 pp. 804-807
- Yu D. et al 2014. [An improved monomeric infrared fluorescent protein for neuronal and tumour brain imaging](#). Nat Communications 5:Article 3626.

Additional Reading (optional):

- [Chroma: Handbook of Optical Filters for Fluorescence Microscopy](#)
- [MicroscopyU: Fluorescence Microscopy](#)
- [Introduction to Fluorescence Microscopy](#)
- [Zwier, J.M.,G.J. Van Rooij,J.W. Hofstraat,G.J. Brakenhoff . 2004. Image calibration in fluorescence microscopy. J. Microsc. 216:15–24.](#)
- [Waters JC. Accuracy and precision in quantitative fluorescence microscopy. J Cell Biol. 2009 Jun 29;185\(7\):1135-48.](#)
- [Chroma Spectra viewer](#)
- [Fluorescent Protein Visualization](#)

Discussion Section Topic: Fluorescent microscopy basics; choosing the right dyes and fluorescent proteins for your microscope and experiment. A laptop may be helpful for this discussion section.

Lab: We will go over the light path of the fluorescent microscope, discuss software control of the microscope, acquire fluorescence images, and measure microscope point spread functions. (Nikon Imaging Center)