Biophysics 210: Biological Light Microscopy
Kurt Thorn
Syllabus

Discussion section meets Tuesdays from 1-2:30pm in MH2100

Week 10: Digital Images and Image Analysis

Goals: Understand how information is encoded in digital images, what the bitdepth of an image means, how images must be transformed for printing or display on a screen, and how RGB and monochrome images differ. Learn about basic image analysis operations. Use Fiji/ImageJ for executing basic image analysis operations.

Discussion Section: June 2nd
No lab this week

Lectures (watch before discussion section):

- Introduction to Digital Images
- Image Analysis

Additional Reading (optional):

- Peter Bankhead: Analyzing fluorescence microscopy images with ImageJ
- Ljosa V, Carpenter AE. Introduction to the quantitative analysis of two-dimensional fluorescence microscopy images for cell-based screening.PLoS Comput Biol. **2009** Dec;5(12):e1000603.
- ImageJ Tutorial Series from the UChicago Imaging Center
- http://www.pasteur.gr/wp-content/uploads/Basics-of-Quantitative-image-analysis.pdf (big set of power point slides but has some good slides that illustrates important points about analysis)
- Jennifer C. Waters. Accuracy and precision in quantitative fluorescence microscopy. Journal of Cell Biology 2009 185(7):1135-1148
- Douglas W. Cromey Avoiding Twisted Pixels: Ethical Guidelines for the Appropriate Use and Manipulation of Scientific Digital Images. Sci Eng Ethics (2010) 16:639-667

Discussion Section Topic: In the discussion section we will work through a series of image analysis techniques and problems using the open source Fiji distribution of ImageJ. Please install Fiji from http://fiji.sc/Fiji to your laptop before discussion section

and bring your laptop to discussion section if you can. A link to the images for these exercises will be sent out with the discussion section write up.

There is no lab this week.