Bi 227 Syllabus Fall 2007
Scott Fraser, Michael Liebling, TA: Louisa Liberman

Week 1
October 1 Administrative Session
Room keys, class program, attendance (Bi177 and Bi227), grading, general microscope rules
signup calendars, students choose groups.

October 5 No class

Week 2
October 8 Widefield Microscopy
Topics: Brightfield (Köhler illumination), polarization, and epi-fluorescence microscopy
Samples: fixed slides

October 12 Q+A Widefield Microscopy

Week 3
October 15 Confocal Laser Scanning Microscopy (LSM) Training,
Groups I-IV (Chris Waters)
(Hand out LSM 310 and LSM 410 documentation)
Samples: fixed slides

October 19 LSM Training, Groups V-VIII (Chris Waters)
(Hand out LSM 310 and LSM 410 documentation)
Samples: fixed slides

Week 4
October 22 LSM Thin Fixed Samples
Goal: effects on image quality of laser intensity, integration time, pinhole aperture; bleaching
Samples: fixed pollen, stem, mold, and cell slides, point spread functions

October 26 No class (Biology Retreat)

Week 5
October 29 LSM Live Thin Samples
Goal: controlled imaging environment, phototoxicity, time-series, multiple-channel imaging
Samples: ES cells or C.elegans

November 2 Student Presentations 1 (Thin Fixed Samples)

Week 6
November 5 Dissecting Microscopes (and Fluorescence Stereo-Microscope)
Goal: sample mounting
Sample: zebrafish embryos

November 9 Student Presentations 2 (Live Thin Samples)

Week 7
November 12 Zebrafish Timelapse Imaging for Cell Tracking
Goal: In vivo timelapse imaging, working distance
Samples: Bodipy TR, Histone-GFP injected zebrafish embryos

November 16 Student Presentations 3 (Zebrafish Imaging)

Week 8
November 19 Bi 177 (1:00-2:30 BBB24): 3D Reconstruction and Rendering
November 19(3-4pm) Image Analysis I: Introduction to Visualization and Tracking
Data: Zebrafish timelapses

November 23 No class (Thanksgiving)

Week 9
November 26 Drosophila Timelapse Imaging
November 30 Student Presentations 4 (Zebrafish Cell Tracking and Visualization)

Week 10
November 3 Image Analysis II: Colocalization
Data: multi-channel data from live thin sample session

November 7 Student Presentations 5 (Drosophila Imaging and Cell Tracking)

Week 11
December 14 11:59pm Final Paper Due
Grading:
50% Lab work
50% Final paper (choose one topic from Presentations 1-5)

Office Hours: by appointment
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Obtaining key (Church 68) for the lab:
Contact:
Mary Marsh
105 Kerckhoff
x6444
marshm@its.caltech.edu
Note: you may also need a key to access Church building during off-hours