BIOLOGY 557: ULTRASTRUCTURAL TECHNIQUES
Fall 2009

Use of the Facility is predicated on successful completion of a portfolio of images utilizing these techniques and instruments. All images generated as part of this class are the property of the EM Facility.

This laboratory is intended to train students in electron and light microscopic techniques and will take a minimum average of 8 hours per week in the laboratory. Students are not permitted to work in the lab outside of 8:30 am-5 p.m. M-F without express permission of Dr. Barlow.

Students will learn how to

prepare grids to support samples in the TEM	negatively stain small samples
preserve and embed samples for slicing	prepare knives used in slicing
create surface replicas of samples	record and process images
align and use the light and transmission electron microscope	slice both thick and thin slices for light and electron microscopic examination

Text: ELECTRON MICROSCOPY, J. Bozzola and L.Russell
2nd edition, Jones & Bartlett (1999)
EM Facility instrument tutorials

GRADING: Late assignments incur a grading penalty:

Lab report I	Negative staining	20%	Friday noon, October 23
Lab report II	Thick sections	20%	Friday noon, October 30
Lab report III	Thin slicing	20%	Monday noon, November 30
Lab report IV	Shadowing	20%	Friday noon, December 4
Lab report V	Class presentation	10%	Tuesday class, December 8
Lab report VI	Tomography	10%	Friday noon, December 11
Lab Practicals	TEM solo exam Microscopes & cameras Blocks and thick sections	Credit Credit Credit	No later than Oct. 2 No later than Oct. 16 No later than Oct. 16

Lab activities will consist primarily of labeled micrographs highlighting each of the techniques discussed. Additional guidelines will be given out in class.

Lab work will be graded on attendance, quality, timeliness, and adherence to guidelines

Tentative schedule

Week 1	9/1	Introduction to laboratory	
Week 2	9/8	Grids, negative stain, TEM operation	Watch grid loading insertion, neg. stain, grids videos
Week 3	9/15	TEM operation, camera	
Week 4	9/22	Knives, trimming blocks, thick sections	Watch Sectioning videos
Week 5	9/29	(Exam) Thick sections	
Week 6	10/6	Light microscopes, digital cameras	
Week 7	10/13	Fixation	
Week 8	10/20	Thin sectioning	
Week 9	10/27	(Exam) Tomography	
Week 10	11/3	Tomography	
Week 11	11/10	Shadowing	
Week 12	11/17	SEM demonstration	
Week 13	11/24	Open Lab	
Week 14	12/1	Open Lab	
Week 15	12/8	Class presentation	