CELL BIOLOGY

BIOL 309 **Fall 2006** **Dr. Spilatro**

Lecture: T, Th 11:00 - 12:15, Bartlett 285 **Laboratory**: Thursday, 1:00 - 4:00, Rickey 204
Text: Alberts et al, *Essential Cell Biology*, 2nd ed. 2004
Investigation of Cell Biology, Fall 2006

*****PowerPoint and Question Bank downloads are available through WebCT*****

TENTATIVE SCHEDULE OF LECTURE TOPICS

***** You are expected to bring your book to class *****

Meeting	Lecture Topic	Reading assignments
Aug 22	Introduction	
24	From whence the cell? Origin or eukaryotic membranes	Chapter 7, pp 258 - 262 Chapter 14, pp 500 - 501
Aug 29 & Sept 5	Chromatin Structure and DNA Replication	Chapter 5, pp 181-190 Chapter 6, pp to 219
Sept 7 & 12	From DNA to Protein	Chapter 7
Sept 14 & 19	Regulation of Gene Expression	Chapter 8
	Thursday, Sept 21: FIRST EXAM	
Sept 26 & 28	Membrane Structure	Chapter 11
Oct 3 - Oct 5	Membrane transport	Chapter 12
Oct 10	**Break**	
Oct 12 - 17	Energy From Food	Chapter 13
Oct 19 & 24	Energy Generation	Chapter 14
	Thursday, Oct 26: SECOND EXAM	
Oct 31 – Nov 7	Intracellular transport	Chapter 15
Nov 9 & 14	Cytoskeleton	Chapter 17
Nov 16 & 21	Cell Signalling	Chapter 16
Nov 23	**Thanksgiving Break**	
Nov 28 & 30	The Cell Cycle	Chapter 18
	Monday, December 7, Noon: FINAL EXAM	

Laboratory Exercises

Date	Laboratory Exercise
Aug 24	Introduction **Discussion of B16 and melanoma**
31**	Histology of B16 melanoma **Fixation and embedding**
Sept 7	Basic lab techniques **Pipetting; solution making, etc**
14**	Histology, cont **Sectioning & staining**
21	Digital imaging **Due: Histology Procedures section**
28	Discussion of assigned reading **Due: Completed assessment form for 1^{o} article**
Oct 5**	Principles of Electrophoresis and Immunoblotting **Due: Histology Images with legends**
19	Absorption Spectrophotometry
Oct 12	Electrophoresis & Electroblotting to Nitrocellulose **Due: Graphs, Abs Spec Description of Results, and pages 9-11 completed for Absorption Spectrophotometry lab** **★★★ Lab will also meet for evening session ★★★**
26	Immunoblotting of Nitrocellulose Membranes
Nov 2	Electrophoresis and Immunoblotting: Image Analysis of Results **Due: Introduction for electrophoresis & electroblotting**
9**	Chloroplast Isolation and the Hill Reaction **Due: Procedures for electrophoresis & electroblotting & Figures with legends**
16	*Research Paper Symposium* **Due: Graphs and calculations page for Hill Reaction exercise**
23	**Thanksgiving Break**
30	Wrap up **Due: Results and Discussion for Electrophoresis & Electroblotting**

QUIZZES WILL BE GIVEN DURING LAB PERIODS INDICATED WITH A "⁎⁎"

OBJECTIVES OF COURSE

LECTURE MATERIAL

This course is designed to provide students planning on attending a graduate or medical program with a suitable understanding of the molecular processes and mechanisms of eukaryotic cells. Some of the concepts you should be able to describe after taking this course include:

– flow of genetic information from gene to RNA and protein
– regulation of gene expression
– processes of energy production
– characteristics of cell membranes, membrane transport and membrane potential
– structure and organization of the cytoskeleton
– of transport and processing of proteins in cells
– molecular regulation of cell division

LABORATORY

The laboratory exercises provide hands-on experiences in modern laboratory techniques used to study cell biology. Some of the methodologies that students should learn include the principles and uses of:

- histology
- spectrophotometry
- cell fractionation
- tissue culture
- electrophoresis and western blot technologies

Some basic laboratory techniques that students should learn include:

- solution preparation
- use of pH meter
- use of spectrophotometer
- pipetting and weighing
- importance of cleanliness
- precise measurements

Through various assignments and exercises, students will further their ability to read the scientific literature, and interpret and explain results and conclusions. Students also learn how to present data in professional quality figures.

STUDENT EXPECTATIONS

Students assume responsibility for reading and learning assigned material. Students are expected to actively participate in class discussions by asking and answering questions, and actively pursue a thorough understanding of the material. The subject matter builds upon topics covered in Biol 131, and you will be expected to review fundamentals on your own as necessary.

ON-LINE CLASS RESOURCES

Some class resources, the **Test Question Bank** and **PowerPoint files** can be accessed from WebCT . Other resources, including the molecular modeling page, can be accessed through the Cell Biology Homepage at **http://www.marietta.edu/~spilatrs/biol309/309index.html** , which also can be accessed through WebCT.

ATTENDANCE POLICY

Attendance will be taken in lectures and laboratories. I must be notified at least ONE WEEK in advance if you need to miss a lecture or laboratory due to a field trip, athletic event, etc. Because of the nature of certain laboratory exercises, make-ups are not possible and an absence will result in a deduction from the final grade. Extraordinary circumstances will be dealt with on an individual basis.

GRADING POLICY

Your final grade will be determined as follows:

		(points subject to change)
Exams	2 x ~110	~ 220 points
Final exam		~130
Quizzes	4 x ~ 25	~100
Key paper presentation		50
Laboratory grades		~300

		~ 800

Grading Scale

97 - 100% = A+
93 - 96% = A
90 - 92% = A-
87 - 89% = B+
83 - 86% = B
80 - 82% = B-
77 - 79% = C+
73 - 76% = C
70 - 72% = C-
67 - 69% = D+
63 - 66% = D
60 - 62% = D-
< 60% = F

Labs that are missed and cannot be made up will result in a 20 pt deduction.
Late assignments will be penalized 10% per day. Failure to turn in a major assignment may be grounds for a failing grade, at the instructor's discretion.

Turnitin.com

Written essays must be submitted to turnitin.com by the due date for the assignment.

Class ID= 1557823 Password = Biol30901 ** Ignore the due dates shown in TII.com**
Late submissions to TII.com will be docked 5% per day.

OFFICE HOURS

Location: Bartlett Hall rm 161B, ext. 4748
Times: Mon. 8:30-9:30; Wed. at 4:00 – 5:00

I will make every effort to be accessible at other times --just drop in.
If I'm busy, we can schedule another time at which we can meet.

EXAMS & QUIZZES

Exams & Quizzes will cover lecture materials and assigned readings. I must be notified at least one week in advance if you must miss a class the day of an exam or quiz due to an athletic event, field trip, etc, at which time we will arrange an alternative exam time. You may not be allowed to makeup an exam if I receive "last minute" notification. There will be no makeups for unexcused absences. Extraordinary circumstances will be dealt with on an individual basis.

If you have special needs because of a documented learning disability or other disability, please see me immediately to discuss possible accommodations.

Academic Dishonesty

Academic dishonesty within the academic community is a very serious matter, because dishonesty destroys the basic trust necessary for a healthy education environment. Academic dishonesty is any treatment or representation of work as if one were fully responsible for it, when it is in fact the work of another person. Academic dishonesty includes cheating, plagiarism, theft, or improper manipulation of laboratory or research data or theft of services. A substantiated case of academic dishonesty may result in disciplinary action, including a ‘0' on the assignment, a failing grade in the course, or expulsion from the College.