

SOUTHEAST MISSOURI STATE UNIVERSITY

Department of Biology

Course Number BI-414/614

Current Problems in Cell and Molecular Biology

New Fall, 2001

- I. Course Description and Credit Hours of Course: In-depth consideration of selected topics of current interest in cellular and molecular biology, with emphasis on problem solving and analysis of primary literature. Three hours lecture and one hour recitation. (3)
- II. Prerequisite(s): BI 404/604 Cell Biology
- III. Purposes or Objectives of the Course:
 - A. To provide extended topical coverage of important cellular and molecular phenomena, the basis of which is introduced in prerequisite courses.
 - B. To provide for students an avenue for developing critical reading skills with emphasis on current primary literature.
 - C. To provide for students an opportunity to develop skills in research data analysis and problem solving related to cellular and molecular biology.
 - D. To provide students the opportunity to develop formal writing and presentation skills.
- IV. Expectations of Students:
 - A. Students are expected to attend all class meetings and participate vigorously in all course activities.
 - B. Students are expected to demonstrate the ability to read, discuss, and write about complex primary literature in cellular and molecular biology.
 - C. Students are expected to demonstrate the ability to analyze molecular research data, both in the literature and as a part of problem-based activities.
 - D. Students are expected to demonstrate an understanding of the topics covered as evaluated by performance on two examinations.
 - E. Graduate students are expected to provide a 5-page review/summary of one topic area covered. This review is to be provided to other students in the class.
- V. Course Content or Outline (include number of periods on each topic):

The content of this course will vary from one course offering to the next, based on current trends in cell and molecular biology research. At the time of the writing of this syllabus topic areas might include:

Eukaryotic Transcription regulation	Regulation of protein synthesis
Meiotic pairing/recombination mechanisms	Protein targeting in cells
Nuclear pore dynamics	Vesicular targeting in cells
Molecular Biology of Cell Cycle regulation	Plant and fungal development

Advanced topics in signal transduction

The course will be divided into two blocks, with one block dealing primarily with issues related to molecular biology issues (DNA, RNA, regulation) and the other dealing primarily with cellular issues (targeting, cell-level regulation). However, these topics will be integrated wherever possible. It is expected that four topics will be covered in a semester.

Block 1 Topics

Lecture/discussion	10 periods
Problems	9 periods
Paper presentations	3 periods
Block 1 Exam	1 period

Block 2 Topics

Lecture/discussion	10 periods
Problems	9 periods
Paper Presentations	3 periods
Block 2 Exam	During finals week

VI. Textbook and/or Supplemental Materials:

Lodish, H., A. Berk, S.L. Zipursky, P. Matsudaira, D. Baltimore, J. Darnell. 2000. *Molecular Cell Biology*. W.H. Freeman and Company, New York, New York.

VII. Basis of Student Evaluation - undergraduates:

Problems/assignments	30 %
Literature critiques	30 %
Presentations	10 %
Exams	30 %

Basis of Student Evaluation – graduate students

Problems/assignments	30 %
Literature critiques	30 %
Presentations	10 %
Exams	20 %
Review	10 %