

METHODS IN CELL BIOLOGY (TRMD 623)

Spring 2007, MW 1:00-2:15, Tidewater 1204

Instructor, Dr. Mark F. Wisner

<b>Date</b>	<b>Topic</b>	<b>Chapters</b>	
Jan	17	Introduction/Microscopy	1
	22	Spectrophotometry	2
	24	Fluorescence/Flow Cytometry	3
	29	Radiochemistry	4
	31	pH and Buffers	5
Feb	5	Centrifugation/Cell Disruption	6
	7	Exam 1 (over 1/17-2/5 material)	
	12	Protein Structure/Differential Solubility	7-8
	14	Chromatography	9
	19	<i>Lundi Gras – No Class</i>	
	21	Membrane Proteins/Detergents	10
	26	Electrophoresis/SDS-PAGE	11
	28	Electrophoresis/IEF	11
		Overview Protein Purification	12
Mar	5	Immunization/Adjuvants	13
	7	Immunoprecipitation and Immunoblotting	15
	12	Immunofluorescence + others	15
	14	Monoclonal Antibodies	14
	19-21	<i>Spring Break – No Class</i>	
	26	Isolation & Analysis of Nucleic Acids	16
Apr	28	Exam 2 (over 2/12-3/14 material)	
	2	Restriction Enzymes/Electrophoresis	17-18
	4	Blotting Techniques	19
	9	<i>Easter Break – No Class</i>	
	11	Polymerase Chain Reaction	20
	16	Recombinant DNA	21
	18	Expression of Recombinant Proteins	22
	23	DNA Sequencing	23
	25	Bioinformatics	24
30	Proteomics	24	
May	Exam 3 (over 3/26-4/30 material)		

Visit the webpage for updates and other course related material.  
[\(http://www.tulane.edu/~wiser/methods/\)](http://www.tulane.edu/~wiser/methods/)

## METHODS IN CELL BIOLOGY

### COURSE DESCRIPTION

This course provides students with a broad overview to the basic biochemical, molecular and immunological techniques that are commonly used in modern biomedical research. Lectures will describe the theories and principals behind each of the methods in addition to discussing the practical aspects and limitations in executing the various procedures. One of the course objectives is to assist students with their own research by providing them with sufficient background information so that they are able to design experiments and know which methods are best suited to address a particular research question or problem. A second course objective is to provide students a better access to the scientific literature in that a better understanding of the methods will allow the students to critically evaluate the results and conclusions of scientific papers. Students anticipating careers involving biological or medical research at any level will benefit from this course.

The course consists of three sections: 1) general biochemical and biophysical methods, 2) analysis and isolation of proteins and immunological procedures, and 3) analysis of nucleic acids and recombinant DNA. The first section will cover some basic biochemical procedures and equipment. Understanding these basic biochemical principals will assist in the subsequent discussions on proteins and nucleic acids. The section on characterization of proteins will describe some basic methods used to analyze proteins and provide an overview on protein purification. In addition, the generation of antibodies and their uses in various assays will also be covered. The final section on nucleic acids will describe the basic procedures used in molecular biology including gene cloning, PCR and sequence analysis.

Examinations will be given after each of the three sections. Exam 1 will count 80 points and Exams 2 and 3 will each count 100 points towards the final grade. The format of the examinations will be essay questions and problems. An additional 80 points of the grade will be derived from the best 8 of 11 homework assignments.

There is no required textbook for the course. Unfortunately no reasonably priced single textbook that covers all of the topics of the course exists. The chapters in the lecture notes approximately correspond to the lectures. Lecture notes are available on-line (see on-line class schedule) as pdf files. It is also possible to get a printed and bound copy for \$20-22 from printing services in room 806 Tidewater.

OFFICE HOURS      Tuesdays 2-4 (or by appointment).

OFFICE              2224 Tidewater  
                         988-2507

EMAIL                wiser@tulane.edu