NYU DEPARTMENT OF BIOLOGY

BIOL-UA 37 At The Bench: Applied Cell Biology

Instructor:
Ignatius Tan

Course Description:
Various methodology used to study cell structure and function will be examined. In the laboratory the students will study the fundamentals of cell biology and the experimental approaches used to examine the cell. Experimental topics will cover cellular, subcellular and macromolecule localization, biochemical analysis of the cell, and cell culture techniques. Discussion will also cover protein and antibody microarray techniques used in proteomics

Pre-requisite:
Molecular and Cell Biology (BIOL-UA 22).

Textbook and Required Materials:
N/A.
During the course handouts will distributed

Grading:

2 Lecture Lab Exams	60%
Paper	15%
Presentation/Discussions	15%
Class Participation/Attendance	10%

Topics:

Vectors
Introduction to course. Vectors for the propagation, manipulation and delivery of specific DNA sequences into a host cell.
Transform bacteria with specific vector.
Isolate transformant and Setup mini-culture
Mini-plasmid Prep.
Agarose gel of mini-plasmid prep.
Introduction to microscopes. Culturing cells.

Cell Culture and Transfection.
Introduction to microscopes. Culturing cells.
Setup culture cells for Immunofluorescence and Cell fractionation (2/20).
Transfect cultured cells with vectors.
Fix cultured cells for Confocal Cell fractionation of cells - I.

ImmunoFluorescence and Cell Fractionation.
Cell fractionation of cells - Part II.
RNA and Protein Extraction.
Immunofluorescence – I
Immunofluorescence – II
Immunofluorescence – III

Protein Analysis.
Extract Mito DNA
Agarose Gel on Mito DNA
Design probes for RT-PCR
Analysis of Mito DNA

Genomics and proteomics.
Student Presentation – Grp I
Paper Discussion-I
Paper Discussion-II

PCR Amplification of Message.
RT-PCR
Agarose Gel of Amplicons. Proteonomics

Student Presentations – Grp II.Review