BIOL-GA 1122 Molecular Lab Biology I

Instructor:
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Course Description:
Analyzes selective developmental systems using recombinant DNA techniques. Purification of nucleic acids from eukaryotes and prokaryotes; bacteria transformation; restriction enzyme analysis; immobilization of nucleic acids on nitrocellulose membrane; and DNA-DNA, DNA-RNA hybridization.

Pre-requisite:
N/A

Textbook and Required Materials:
N/A

Grading:
Labs
Midterm Quiz
Final Quiz

Topics:
DNA amplification
Polymerase chain reaction (PCR): theory and practice
Electrophoresis
Libraries of amplifiable genomic fragments
Cloning vectors: plasmids
Restriction enzymes
Working with nucleic acids: Cloning of genomic DNA fragments
Sequence homology & functional domains
Cloning techniques: selection of cloned DNA
Sequencing
Overview of the methods for studying gene expression: hybridization methods
cDNA libraries: preparation and applications
Real time quantitative PCR (qPCR): applications
Absolute quantification of mRNA.
Estimation of the efficiency and sensitivity of the real time PCR by standard curve
Introduction to vector ecology and pathogens carried by ticks
Phylogenetic analysis of environmental samples