האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

INTRODUCTION TO MOLECULAR BIOLOGY - 73903

Last update 02-12-2020

HU Credits: 3

Degree/Cycle: 2nd degree (Master)

Responsible Department: Field and Vegetable Crops-International Prog.

Academic year: 0

Semester: 1st Semester

Teaching Languages: English

Campus: Rehovot

Course/Module Coordinator: Dr. Ofer Gover

Coordinator Email: ofer.gover@mail.huji.ac.il

Coordinator Office Hours: By appointment via Division for International Studies

Teaching Staff:

Dr. Ofer Gover

Course/Module description:

Students will learn the basic structure of living organism's genome, from prokaryotes to eukaryotes, and how the genome is expressed to perform the various functions needed for cell maintenance, development, reproduction and adaptation toa changing environment . The flow of genetic information, from gene to protein, will be analyzed. The evolution of the genome as the drive of evolution will be discussed.

Course/Module aims:

To provide a comprehensive understanding of the dogma that govern molecular biology. From DNA to RNA to protein. Understanding how to interpret molecular biology experiment.

Learning outcomes - On successful completion of this module, students should be able to:

• to be knowledgebale on various aspects of cells molecular biology
• Understand how the genetic information is passed from the mother to the daughter cell.
• detailed knowledge on the sequences of steps of DNA replication, transcription and translation.
• Know the basic features of genes encoding the major RNA molecules of the cel: ribosomal RNA, tRNA, small RNAs.
• Know the basic features of protein-coding genes (consensus sequences, introns and exons, polyadenylation) and their regulatory modules (promoter, enhancer).
• Describe the difference between constitutive and specific genes, their expression and regulation.
• Know that there is also important genetic information outside the nucleus, in the mitochondria and chloroplast.

Attendance requirements(%):

100

Teaching arrangement and method of instruction: •DNA and RNA, the genetic material
•Variety of genome size
•Variety of genome organization
•Central dogma of molecular biology
•Genes encoding RNA

•Structure of the eukaryotic gene
•Multigene families
•From DNA to protein
•Extranuclear genomes
•DNA packing into chromosomes
•Chromatin modifications in differentiation and development
•siRNA and gene silencing
•Basic and advanced molecular techniques.

Course/Module Content:
Mentioned throughout the lectures.

Required Reading:
Mentioned throughout the lectures.

Additional Reading Material:
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Grading Scheme:

Additional information:
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