



The Hebrew University of Jerusalem

Syllabus

NEUROBIOTECHNOLOGY LABORATORY: THE NATURE AND NURTURE OF SEXUAL ORIENTATION - 71218

Last update 16-09-2019

HU Credits: 2

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: Plant Sciences in Agriculture -Special in Biotec

Academic year: 0

Semester: 2nd Semester

Teaching Languages: English

Campus: Rehovot

Course/Module Coordinator: Jonathan Bohbot

Coordinator Email: jonathan.bohbot@mail.huji.ac.il

Coordinator Office Hours: by appointment

Teaching Staff:

Dr. Yael Heifetz,
Dr. Jonathan Bohbot,
Ms. Yaara Yizhak,
Mr. Yuri Vainer

Course/Module description:

*What is the respective role of genes and the environment in shaping animal behavior? This course will explore this question from the standpoint of sexual orientation in the vinegar fly *Drosophila melanogaster*. The decision for a male to court a female seems to be an obvious process that only requires the meeting of both genders. Yet, this stereotypical behavior is governed by a fascinating gendered neural circuit.*

During this course, students will compare the natural and deviant sexual orientations of male flies by observing male courtship. They will combine the use of genotyping and histology to determine the genetic and neurological bases of this behavior. Last, they will test how social context affects this decision process. This course will not only expose students to state of the art laboratory techniques, it will highlight how genetics and neural circuitry (nature) can be tuned by social conditions (nurture).

Course/Module aims:

- *Integrate the molecular and neural bases of behavior.*
- *Understand how decision processes are tuned by social experience.*
- *Identify areas of mate selection and decision making that are poorly understood.*
- *Explore the future of behavior research.*

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

- *Learn the causal link between genes, neural substrates, behavior and experience.*
- *Acquire laboratory skills in the field of neuroscience.*
- *Promote inquiry-based learning and creative thinking.*
- *Understand how our understanding of innate behavior is rudimentary.*
- *Emphasize the necessity for integrative approaches in neuroscience.*

Attendance requirements(%):

100

Teaching arrangement and method of instruction: Lectures

Labs

Guest lecture

Simulations

Course/Module Content:

- *Introduction: the ideas and aims of the course*
- *Characterize wild type and mutant fru male courtship behavior and sexual orientation.*
- *Ascribe these behaviors to fru sex-specific splicing isoform by genotyping.*
- *Identify the neural circuitry specified by fru using histological and microscopy techniques.*
- *Test the effect of social experience on sexual behavior.*
- *Explore new cutting-edge techniques in genetics, neurobiology and imaging.*

Required Reading:

A variety of articles on the genetic and social basis of courtship behavior in Drosophila.

Additional Reading Material:

no

Course/Module evaluation:

End of year written/oral examination 0 %

Presentation 0 %

Participation in Tutorials 5 %

Project work 0 %

Assignments 0 %

Reports 65 %

Research project 0 %

Quizzes 0 %

Other 30 %

the lab research project

Additional information: