The 'Stress' in Research

Academic Year 2020-2021, Fall Semester

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Description:

The course is designated for 3rd-year biology undergraduate students who intend to carry out graduate studies, and MA students in their first year (up to 10 students).

The course is divided into two parts: 1- The biology of stress (theoretical); and 2- The stress in biology (practical).

1- Stress – a known driver of genetic variation, and is described as disruption in the internal stable environment of cells and organisms, and develops as result of biotic and abiotic stimuli. The course focuses on cellular responses to various stress conditions (described below in the Program).
2- Stress in Research - this practical part includes work with relevant-to-course literature, with thorough analysis of a significant research article and its presentation in the course forum by each student (Mid-term task), as a first stage. In the second stage, each student will take the presented earlier paper as a basis to construct and develop a basic research proposal in a standard format (Final task).

This part is interactive and the students are encouraged to participate in the discussions on each individual task. The Lecturer will accompany and advice the student throughout this part.

**Goals:** Exploring the cellular and molecular mechanisms of the response to stressful conditions which underlies adaptations to different ecological niches, focusing on traits evolved under extreme environmental conditions. The course will also develop skills in analyzing research articles, and grants tools for critical scientific thinking, and research proposal preparation skills useful for the continuation of studies.

Articles and Proposal are in Eng.

**Tentative Program:**

Intro - types of stress; Hypoxia and Hypercapnia; Heat shock and Endoplasmic reticulum stress; Unfolded protein response; Cellular senescence; Oxidative stress; DNA damage response (DDR); Epigenetic transgenerational inheritance; Cell death mechanisms

**Dr. Re'em HaLevi:** שנה ב - מסטMohava Sheet ז prova. אנגלית ברמה גבוהה: אנגלית ברמה גבוהה: מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת מנהלת M

**Attendance:** 80% (in case classes will take place in campus); Full participation in case the semester will proceed distantly. Grades are composed of: Mid-term assignment (Analyzing and presenting a research article in the classroom)=50% + Final task (research proposal)=50%

A variety of articles will be provided to choose from; students can suggest additional articles.

Literature: No text book; the course is based on research and review articles that will be cited in the presentations.

**Reception hrs:** Lab 224, the Multi-Purpose Building (please, email to set an appointment)