Guided Reading on Molecular and Systems Biology Approaches to Plant Stress Tolerance Research
(2 credits)
001-2-2289

Course syllabus:
This course will introduce students to state-of-the-art approaches in plant stress tolerance research with special emphasis on systems biology approaches (phenomics, transcriptomics, proteomics and metabolomics, network analysis) and molecular biology approaches. The course will cover the following questions:

1. How do plants regulate their stress response?
a) Epigenetic control
b) Transcriptional cascades
c) Post-transcriptional regulation
d) Metabolic responses

2. How can the molecular components of the response networks be identified?
a) Genetic screens for stress regulators
b) Systems biology-based screens for stress regulators
c) Molecular biology approaches

3. How can we use systems biology to understand how stress response networks function?
a) "Omics" techniques
b) Transcriptional and metabolic stress network analysis

Course structure:
The student will read, present and discuss with the lecturer, papers dealing with the subjects mentioned above. The student will be guided as to possible papers to choose so that a comprehensive picture is built of how plants respond to stress at the molecular level and the research techniques used. The focus will be on research articles from top international journals. Grades will be assigned according to the last two presentations.

Lecturer: Dr. Simon Barak