



Plant Molecular Breeding
July 10-14, 2016, 10:00-16:00
Course number: 0411.4001

Taught by Dr. Assaf Distelfeld (TAU)
3 points

The course will focus on the application (theory + *hands on*) of molecular genetics and genomics to the development of cultivars more suited to the needs of humans. A final written exam will be conducted at the end of the course.

As lab space is limited, prerequisites include relevance, student commitment, and lecturer's approval.

Course Schedule:

Day 1: Genetics

Genetic variation
Recombination and population development
Segregating populations
Linkage drag
Polyploidy

Laboratory – Phenotyping the genetic material and DNA extraction

Day 2: Introduction to plant breeding

Plant breeding objectives
Germplasm resources and pools
Crop evolution (domestication + evolution under domestication)
Plant breeding methods

Laboratory – PCR and gel electrophoresis – geneotyping

Day 3: Marker Assisted Selection (MAS)

MAS traits
Genetic markers
Bases and availability of markers and marker development

Laboratory – PCR and gel electrophoresis – geneotyping

Day 4: Genetic mapping

QTL
Marker assisted selection and backcrossing
Quantitative genetics model

Laboratory – Laboratory – PCR and gel electrophoresis – geneotyping

Day 5: Breeding in the genomics era

Gene discovery
Reverse genetics
Mutation breeding
Biotechnology (transgenic)

Laboratory – genetic mapping

Grade: 4 quizzes (Day 2 to Day 5) = 60% + 40% lab-work evaluation