PBG 431 Plant Genetics recitation

Genomics and minor crops

Today, research in plant genetics can include different approaches. Genomics, transcriptomics, proteomics and metabolomics are the *omics* fields that involve understanding genes, mRNAs, proteins and metabolic pathways, respectively. Whole genome sequences, linkage maps, SNP identification and GWAS analysis are some of the outputs achieved using high throughput DNA sequencing. Additionally, scientists can study more deeply genes that are affecting traits of interest with this large amount of information. The availability of a reference genome is a key reference point for all *omics* approaches. For sequencing, a reference genome is very useful – but not a pre-requisite - for genome assembly. In an applied breeding program, Genotyping by Sequencing (GBS) allows for partial genetic representation of a particular reference genotype. Then, the new target genomes can be compared against the reference genome to identify informative SNPs.

1. How can these ‘omics be used to improve a minor crop, like mint?