

Master thesis project on Investigating chromatin remodelling responses of *Zea mays* to drought and sulfur stress using ATAC-seq

We are offering a master's thesis project in the department "Physiology of Yield Stability" with Jun. Prof. Dr. Sandra Schmöckel under joint supervision with PhD candidate Marius Kollmar.

Zea mays has become one of the most important crops worldwide since its domestication several thousand years ago. One of the key challenges to overcome in modern agriculture is the increasing water shortage emerging from climate change resulting in drought stress for plants. Therefore, it is important to understand how plants respond to drought stress. Furthermore, it is important to understand how plants recover from water deficits occurring during the growing season. Since plants are sessile organisms, they can only react to drought stress by adapting their stress response mechanisms at a physiological and molecular level. Despite knowing about the severe impact of drought stress on *Zea mays* yield reduction, the epigenomic response of the plant to the stress is yet to be unraveled. Therefore, Assay for Transposase Accessible Chromatin using sequencing (ATAC-seq) has been applied to samples of repeatedly drought stressed *Zea mays* samples to investigate structural changes in the chromatin landscape in response to the stress. The sequencing reads obtained from the ATAC-seq experiment were processed and are now available for analysis. Specifically, the changes in chromatin dynamics near genes related to drought stress will be the target of investigation.

The project will consist of working on analyzing epigenomic data using bioinformatic tools and statistical methods.

We are looking for a motivated and well-organized student with a keen interest in epigenetics and bioinformatics. Requirements are willingness to work with the operating system 'Linux', and some prior bioinformatic experience. Basic skills in statistics are also desirable.

Start can be as soon as possible (the work can also be performed alongside lectures).

We offer

- hands-on experience in cutting-edge research techniques
- an on-site workstation for conducting analyses
- help to define the research and topic for your MSc thesis, regular meetings to discuss progress, any problems and upcoming research
- provide guidance on writing the MSc thesis
- full integration into the team

The thesis can be done in German or English, but preferentially in English.

Please contact (in German or English):

Marius Kollmar

marius.kollmar@uni-hohenheim.de

About us

Some more information can also be found at phys.uni-hohenheim.de