Ph.D. Position

King Abdullah University of Science and Technology

# Characterization of the wild genetic diversity in *Chenopodium* spp. for improvement of heat stress tolerance in quinoa.

The Salt Lab from Prof. Mark Tester (https://saltlab.kaust.edu.sa/) is looking for a dynamic and self-motivated PhD student to join our team on the project entitled ‘Uncovering the wild genetic diversity in *Chenopodium* spp. for improvement of heat stress tolerance in quinoa’.

This project aims to explore heat stress tolerance mechanisms in wild relatives of *C. quinoa* and identify the underlying molecular genetic basis for differences in tolerance. For this, we will use available germplasm diversity, including cultivated quinoa varieties and wild populations of *C. hircinum* and *C. berlandieri*, to support comparative physiological and molecular analyses. Considering that the most populations of wild quinoa relatives are from hot environments in South and North America, we hypothesize that they possess previously unexplored mechanisms of adaptation to high temperatures, not present in cultivated quinoa. This project should deliver the first fine-scale dissection of reproductive development for each of quinoa, *C. hircinum* and *C. berlandieri* species, the first physiological and morphological characterization of the heat stress responses of *C. hircinum* and *C. berlandieri*, and finally identify key genetic factors governing heat stress tolerance in both wild and cultivated species.

The project will offer the student a highly interdisciplinary training, spanning plant physiology, microscopy, reproductive developmental biology, and molecular genetics. The student will be part of the KAUST PhD program ([https://www.kaust.edu.sa/en/study/phd](http://www.kaust.edu.sa/en/study/phd-program%29)-program[)](http://www.kaust.edu.sa/en/study/phd-program%29) which takes place at the University of KAUST, which campus is situated on the border of the Red Sea in the Arabic Peninsula. The student will work in a multicultural environment and attend an international conference in order to present the results of his research. This project will be run in collaboration with both internal (KAUST) and external partners in Argentina and USA, who will contribute their skills and experience in the management to the project.

Candidates should have a master degree in plant sciences, with ideally a first experience in either plant physiology, plant reproductive development, and/or plant genetics and genomics.

European candidates can apply for a special fellowship (<https://cemse.kaust.edu.sa/alkhwarizmi> - deadline 22 January 2021).

Interested candidates should contact Prof. Mark Tester (mark.tester@kaust.edu.sa)
or Dr. Elodie Rey (elodie.rey@kaust.edu.sa) for more information.