

# GATERSLEBEN LECTURE



**Speaker:** **Prof. Dr. Douglas R. Cook**  
(Dept. of Plant Pathology, Director, USAID Feed the Future Innovation Lab on Climate Resilient Chickpea, University of California, UC Davis)

**Title:** **Ecology and community genomics of an important crop wild relative and its Microbes as a prelude to agricultural innovation**

**Time:** **Wednesday, March 8, 2017, 2 pm**

***Abstract:***

We have collected and made public a large, novel source of natural genetic variation for chickpea improvement. Population genomic analysis of 1,100 wild accessions using genotyping-by-sequencing nominated a representative set of 20 wild genotypes for full genomic characterization, population development, phenotyping and breeding. Whole genome sequencing of wild progenitor and elite cultivated accessions reveals a massive shift in the extent and nature of genetic diversity. Modern elite genotypes retain less than 5 % of wild diversity. This unusually strong domestication bottleneck is accompanied by both shifts in patterns of genomic diversity consistent with the impact of domestication and a decrease in observed phenotypic variation in the elite cultivated materials. These observations suggest that the wild progenitors species of chickpea will provide a novel resource of agronomic traits not selected during the initial phase of domestication, including those for climate resilience. Our collection of wild accessions surveys the full ~100 Km<sup>2</sup> natural range of the species. In recognition of the importance of microbial communities to plant function, including tolerance of environmental extremes and environmentally-driven disease incidence, we are also characterizing microbial communities in natural settings and derived agricultural systems, using a combination of metagenomics and living collections. Pre-breeding in the crop has been initiated based on genotyping and phenotyping of a set of >10,000 recombinant inbred lines based on 20 wild donors and recurrent elite cultivars, which comprise an incipient association mapping population. Microbial resources are being deployed in field trials to improve inoculum for nitrogen fixation and for disease resistance screening.

[drcook@ucdavis.edu](mailto:drcook@ucdavis.edu)

<http://chickpealab.ucdavis.edu>

**Place:** **Lecture Hall, IPK Gatersleben**

**Prof. Dr. Andreas Graner**  
(organizer)

**Dr. Nils Stein**  
(host)

If you are interested in personal discussions with the speaker please contact the host (phone: 039482/5522) beforehand.