The intricate interplay among circadian rhythms and genetic variation profoundly impacts photomorphogenic growth. The circadian clock is proposed to function as a transcriptional-translational feedback system, generating approximately 24-hour rhythms after entrainment. Importantly, these feedback loops determine the timing of various processes throughout the day, such as light signalling occurring during daylight hours and not at night. The coordination of light perception and the circadian system enables photoperiod sensing. I will discuss the exploration of allelic circadian diversity in Arabidopsis, revealing a memory of past photic environments. Cloning a circadian quantitative trait locus (QTL) reveals variations in a core-clock gene, elucidating the cellular basis of its QTL effect. We are currently studying a latitudinal recombinant inbred line (RIL) population. Of course, there is never constant light outside the artic circle, and the clock actually exist to provide anticipation information on presumed future light availability. We thus are now using functional data analysis (FDA) to move away from “period” and “phase” as static traits to look at how rhythms behave under contrasting photoperiods. Statistical modelling and QTL identification illuminate how circadian clock properties influence the plant’s ability to sense and respond to seasonal photoperiod shifts. Time-series QTL mapping has enabled the detection of when in the day allelic variation modulates light signalling and circadian performance. Indeed our first cloned QTLs are in photoreceptors and circadian genes, thus distinguishing when different photic processes speed up and slow down the clock in its operation of physiology and development.

Termin: Mittwoch, 06.03.2024, 16 Uhr s.t.
Ort: ND 3/33

Gäste sind herzlich willkommen!