RCB–Colloquium

Thursday, November 20th, 2 p.m.
H53

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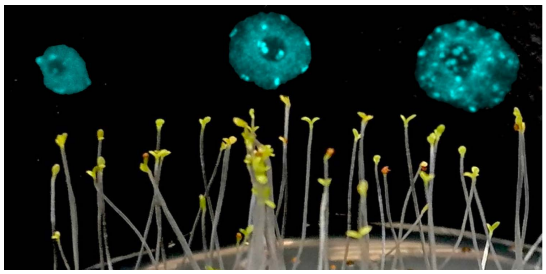
(*Plant Nuclear Dynamics & Signaling team*)

"Higher-order nuclear reprogramming during plant adaptation to light"



Genome expression reprogramming is a recurring theme orchestrated during most developmental transitions in eukaryotic organisms. This process is especially striking when germinating seedlings are exposed to light for the first time, triggering complex signaling pathways that lead to the establishment of photosynthesis and photomorphogenesis. We found that photomorphogenesis involves dramatic changes in nuclear architecture and epigenome status across thousands of genes, regulated by DET1 and other light-responsive chromatin factors. In most cells of the embryonic leaves, this transition also involves a general increase in RNA Polymerase II activity, indicating that light perception shifts cells from a quiescent state to a highly active transcriptional state to support the photomorphogenic process. Accordingly, spike-in-based RNA-seq analyses demonstrated that the transcriptome size of cotyledon cells doubles within six hours, primarily due to widespread upregulation of genes. These findings on light-controlled gene regulatory mechanisms and their possible link to sub-nuclear gene organization and transcription will be discussed.

Host: Prof. Dr. Klaus Grasser <klaus.grasser@ur.de>

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