SFB 960-/BZR – Kolloquium

Donnerstag 05. März 2020, 14.00 Uhr
Neubau Biologie H 53

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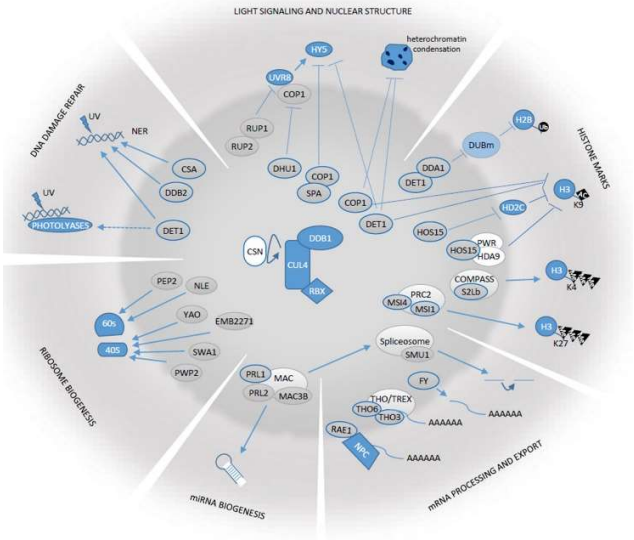
Ubiquitination machineries controlling transcription factor activity and chromatin states during plant photomorphogenesis

DE-ETIOLATED1 CONTROL OF TRANSCRIPTION FACTOR ACTIVITY AND CHROMATIN STATES

Light is a powerful stimulus that controls a multitude of developmental responses through massive gene expression reprograming. This requires a fine control of the activity of specific transcription activators and the modification of chromatin marks, as well as an intense protein turnover regulated by the ubiquitin-proteasome system. DE-ETIOLATED1 (DET1) is a DDB1-CULLIN4 Associated Factor that, together with COP10 and DDA1, constitutes the CDDD substrate adaptor module within CRL4 E3 ubiquitin ligases. DET1 is a classic photomorphogenesis repressor which mode of action is not completely understood. In etiolated seedlings, DET1 facilitates CRL4-COP1-SPA activity towards HY5 destabilization. Yet DET1 can also directly interact with Histone 2B (H2B) and regulates histone H2B monoubiquitination (H2Bub).



In this context, we recently found that the CDDD subunit DDA1 directly interacts with SAGA-INTERACTING FACTOR (SGF11), which is part of a deubiquitination module (DUBm). Recognition of SGF11 by DDA1 recruits the CRL4-CDDD module to ubiquitinate and degrade the DUBm in a DET1- and dark- dependent manner. Therefore, Arabidopsis *det1* mutants display reduced levels of H2Bub mark as a consequence of the accumulation of DUBm and increased H2Bub deubiquitination activity. Noticeably, a mutation in *HY5* seems to be sufficient to partially restore *det1* H2Bub deficient levels, indicating that there is a link between CRL4-CDDD -regulated targets; the HY5 transcription factor and the H2B ubiquitination/deubiquitination machineries.

Here, we will present recent results on the functional interactions between CRL4-CDDD, chromatin remodelling and different transcriptional machineries that shape plant development in response to light cues.

Host: Prof. Dr. Klaus Grasser
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