



Friday, 23 October
2:30-4 pm, HCK 320

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Circadian clock regulation by protein degradation and stabilization

The circadian clock is essential for coordinating the proper phasing of many cellular processes. PRR (Pseudo-Response Regulator) proteins are a core group of circadian clock components that control the pace of the central oscillator. We demonstrate a functional significance for the phosphorylated forms of PRR5, TOC1, and PRR3. The more highly phosphorylated forms of PRR5 and TOC1 interact best with the F-box protein ZTL (ZEITLUPE). TOC1 and PRR3 interact in vivo and phosphorylation of both is necessary for their optimal binding in vitro. TOC1/PRR3 phosphorylation-dependent interaction may protect TOC1 from ZTL-mediated degradation, resulting in an enhanced amplitude of TOC1 cycling. We also found that GIGANTEA (GI) is essential to establish and sustain oscillations of ZTL by a direct protein-protein interaction. GI, a large plant-specific protein with a previously undefined molecular role, stabilizes ZTL in vivo. Furthermore, the ZTL-GI interaction is strongly and specifically enhanced by blue light.