

The role of an E-box element: multiple functions and interacting partners.

Seitz SB, Voytsekh O, Mohan KM, Mittag M (2010) The role of an E-box element: multiple functions and interacting partners. *Plant Signal Behav* 5(9), 1077-1080. [PubMed](#)

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Projects

Functional characterization of molecular components of the circadian clock of the green alga *Chlamydomonas reinhardtii*
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Abstract

Circadian clocks can be entrained by light-dark or temperature cycles. In the green alga *Chlamydomonas reinhardtii*, 12h changes in temperature between 18°C and 28°C synchronize its clock. Both subunits of the circadian RNA-binding protein CHLAMY1, named C1 and C3, are able to integrate temperature information. C1 gets hyper-phosphorylated in cells grown at 18°C and the level of C3 is up-regulated at this temperature. In the long period mutant *per1*, where temperature entrainment is disturbed, the temperature-dependent regulation of C1 and C3 is altered. Up-regulation of C3 at the low temperature is mediated predominantly by an E-box element situated in its promoter region. This cis-acting element is also relevant for circadian expression of *c3* as well as of its up-regulation in cells, where C1 is overexpressed. Among the few identified factors interacting with the E-box region, C3 is also present, suggesting that it feedbacks on its own transcription.

Identifier

doi: 10.4161/psb.5.9.12564 PMID: 20818183