数据资源：林业专题资讯

打印 下载 A+ A- 分享

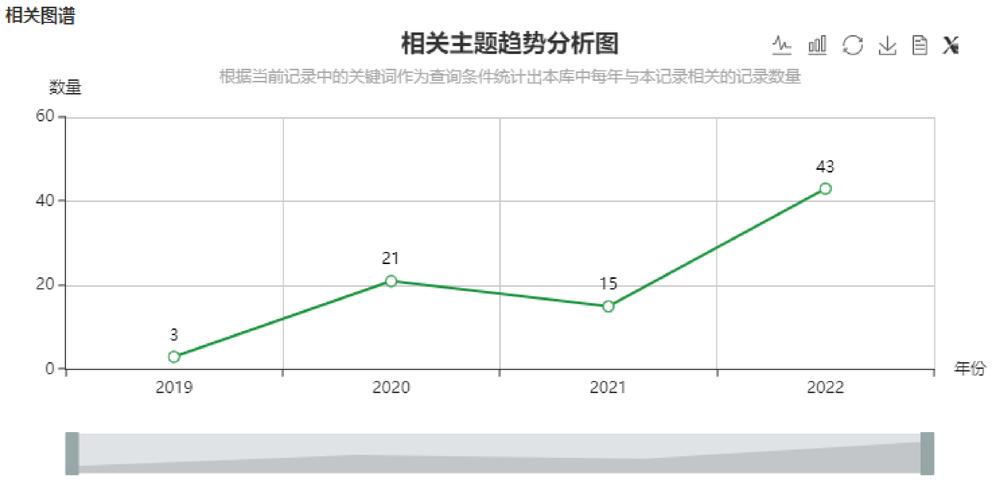
BBX19 fine-tunes the circadian rhythm by interacting with PSEUDO-RESPONSE REGULATOR proteins to facilitate their repressive effect on morning-phased clock genes

编号	040031103
推送时间	20211004
研究领域	森林培育
年份	2021
类型	期刊
语种	英语
标题	BBX19 fine-tunes the circadian rhythm by interacting with PSEUDO-RESPONSE REGULATOR proteins to facilitate their repressive effect on morning-phased clock genes
来源期刊	The Plant cell
期	第311期
发表时间	20210514
关键词	BBX19; circadian clock; transcription factors; zinc; Arabidopsis thaliana;
摘要	The core plant circadian oscillator is composed of multiple interlocked transcriptional–translational feedback loops, which synchronize endogenous diel physiological rhythms to the cyclic changes of environmental cues. PSEUDO-RESPONSE REGULATORS (PRRs) have been identified as negative components in the circadian clock, though their underlying molecular mechanisms remain largely unknown. Here, we found that a subfamily of zinc finger transcription factors, B-box (BBX)-containing proteins, have a critical role in fine-tuning circadian rhythm. We demonstrated that overexpressing Arabidopsis thaliana BBX19 and BBX18 significantly lengthened the circadian period, while the null mutation of BBX19 accelerated the circadian speed. Moreover, BBX19 and BBX18, which are expressed during the day, physically interacted with PRR9, PRR7, and PRR5 in the nucleus in precise temporal ordering from dawn to dusk, consistent with the respective protein accumulation pattern of PRRs. Our transcriptomic and genetic analysis indicated that BBX19 and PRR9, PRR7, and PRR5 cooperatively inhibited the expression of morning-phased clock genes. PRR proteins affected BBX19 recruitment to the CCA1, LHY, and RVE8 promoters. Collectively, our findings show that BBX19 interacts with PRRs to orchestrate circadian rhythms, and suggest the indispensable role of transcriptional regulators in fine-tuning the circadian clock.
服务人员	孙小满
服务院士	尹伟伦
PDF文件	浏览全文

相关记录 更多 >

- A simple and robust method for isolating and analyzing chromatin-bound RNAs i... 2023-01-30
- Leaf-transcriptome profiles of phoebe bournei provide insights into temporal dro... 2022-12-19
- Engineering a K+ channel ‘sensory antenna’ enhances stomatal kinetics, water ... 2022-11-28
- A stress-inducible protein regulates drought tolerance and flowering time in Brac... 2023-02-20
- The OPEN STOMATA1–SPIRAL1 module regulates microtubule stability during abs... 2023-02-13
- Massive crossover suppression by CRISPR–Cas-mediated plant chromosome engi... 2022-11-07

相关图谱



相关主题

锌 锌植被 锌指结构 锌指蛋白 锌指蛋白基因 铬化氯化锌 铜铬氯化锌 碱性锌铵盐 氯化锌法活性炭 豆荚螟

相关论文

- Constructive Approaches to Intelle...
- 辣椒疫霉侵染拟南芥的酵母双杂交cD...