PBIV-3 A CIRCADIAN CLOCK-CONTROLLED MICRORNA DEFINES A NOVEL PHOTOPERIODIC FLOWERINF PATHWAY

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The photoreceptors and the circadian clock components worktogether to precisely decipher day length. In photoperiodic flowering, the perceived signals are modulated through *GIGANTEA* (*GI*) and *CONSTANS* (*CO*) to activate flowering time genes, including *FLOWERTING LOCUS T* (*FT*). However, it is unclear how clock function is related to seasonal control of flowering. Here we show that the circadian clock-controlled miR172 defines a novel photoperiodic pathway in which an *APETALA 2* (*AP2*)-like gene, *APL1*, regulates *FT* independent of *CO*. Consistent with the role of miR172 in photoperiodic flowering, miR172 expression showed circadian rhythm in long days whereas it is greatly reduced without rhythm in short days. The daily oscillations of miR172 level are disrupted in *gi*. An *Arabidopsis* mutant overexpressing *APL1* is late flowering in long days with reduced *FT* expression but normal in short days. However, *CO* transcript is unaffected in the mutant. Our results indicate that the photoperiodic flowering in *Arabidopsis* is fine-tuned by a *CO*-independent pathway that responds to *GI*-mediated circadian rhythms in which miR172 plays a crucial role.