

Mechanisms to mediate temperature-triggered responses

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Changes in temperature influence developmental programs in plants, including flowering and vegetative growth. Two temperature-triggered responses in plants, vernalization (prolonged exposure to cold) and ambient temperature (growth temperature) responses, will be discussed. Phenotypical and transcriptome analysis showed that a large number of genes are transcriptionally regulated by temperature changes. Our study indicates that both responses include a wide range of transcriptional changes due to the changes at the level of chromatin. We identified a few major chromatin regulators that are responsible for temperature responses. Our approach to dissect the molecular mechanism of temperature-triggered responses will be useful not only for understanding key mechanisms of plant development but also for elucidating the mechanism of genetic and epigenetic regulation of gene expression upon environment changes.

Key words: temperature and chromatin