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A MRG-operated chromatin switch at SOC1 attenuates abiotic stress responses during the floral transition

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摘要	Plants react to environmental challenges by integrating external cues with endogenous signals to optimize survival and reproductive success. However, the mechanisms underlying this integration remain obscure. While stress conditions are known to impact plant development, how developmental transitions influence responses to adverse conditions has not been addressed. Here, we reveal a molecular mechanism of stress response attenuation during the onset of flowering in Arabidopsis (Arabidopsis thaliana). We show that Arabidopsis MORF-RELATED GENE (MRG) proteins, components of the NuA4 histone acetyltransferase complex that bind trimethylated-lysine 36 in histone H3 (H3K36me3), function as a chromatin switch on the floral integrator SUPPRESSOR OF OVEREXPRESSION OF CONSTANS 1 (SOC1) to coordinate flowering initiation with plant responsiveness to hostile environments. MRG proteins are required to activate SOC1 expression during flowering induction by promoting histone H4 acetylation. In turn, SOC1 represses a broad array of genes that mediate abiotic stress responses. We propose that during the transition from vegetative to reproductive growth, the MRG-SOC1 module constitutes a central hub in a mechanism that tunes down stress responses to enhance the reproductive success and plant fitness at the expense of costly efforts for adaptation to challenging environments.
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