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Ethylene Response Factors (ERF) are differentially regulated by different abiotic stress types in tomato plants

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Highlights:

- *ERFs* display differential expression in response to different abiotic stresses.
- Responses to different types of abiotic stresses can involve common *ERFs* to set up adaptive strategy.
- High and low temperature stresses activate different set of *ERFs* than those activated under water, flooding and salt stresses.
- *ERFs* regulate the expression of abiotic stress genes regardless of the presence of conserved GCC or DRE *cis*-elements in their promoter region.

Abstract

Plants are sessile organisms, hence to face environmental constrains they developed strategies that rely on the activation of stress-response genes under the control of specific transcription factors. The plant hormone ethylene mediates physiological, developmental and stress responses through the activation of Ethylene Response Factors (*ERFs*) which belong to a large multigene family of transcription factors. While an increasing number of studies supports the involvement of *ERFs* in abiotic stress responses, so far the specific role of *ERF* family members in different abiotic stress conditions remains unexplored. The present work investigates the

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