

Publication

Emerging functions for plant MAP kinase phosphatases

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Reversible phosphorylation is a crucial regulatory mechanism that controls the activity of proteins. In mitogen-activated protein kinase (MAPK) signaling cascades, the cellular response depends on the intensity and duration of the MAPK activation, which is determined by balanced phosphorylation-dephosphorylation. MAPK phosphatases (MKPs), a subgroup of the dual-specificity phosphatases, are major negative regulators of MAPKs. The plant MKP family members are highly diverse in their structure and biological functions, and can be classified into five groups by sequence analysis. We review the recent progress made by genetic studies in identifying the physiological role of plant MKPs in a multitude of cellular processes, including cytoskeleton rearrangement, stress responses and phytohormone signaling, and examine the importance of negative regulators in plant MAPK signaling networks.

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