

Publication

Quo vadis, Pep? Plant elicitor peptides at the crossroads of immunity, stress and development

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The first line of inducible plant defence, pattern-triggered immunity (PTI), is activated by the recognition of exogenous as well as endogenous elicitors. Exogenous elicitors, also called microbe-associated molecular patterns, signal the presence of microbes. In contrast, endogenous elicitors seem to be generated and recognized under more diverse circumstances, making the evaluation of their biological relevance much more complex. Plant elicitor peptides (Peps) are one class of such endogenous elicitors, which contribute to immunity against attack by bacteria, fungi, as well as herbivores. Recent studies indicate that the Pep-triggered signalling pathways also operate during the response to a more diverse set of stresses including starvation stress. In addition, in silico data point to an involvement in the regulation of plant development, and a study on Pep-mediated inhibition of root growth supports this indication. Importantly, Peps are neither limited to the model plant *Arabidopsis* nor to a specific plant family like the previously intensively studied systemin peptides. On the contrary, they are present and active in angiosperms all across the phylogenetic tree, including many important crop plants. Here we summarize the progress made in research on Peps from their discovery in 2006 until now. We discuss the two main models which describe their likely function in plant immunity, highlight the studies supporting additional roles of Pep-triggered signalling and identify urgent research tasks to further uncover their biological relevance.

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