

Publication**The anticipation of danger: microbe-associated molecular pattern perception enhances AtPep-triggered oxidative burst****Journal Article (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 1939135**Author(s)** Flury, Pascale; Klauser, Dominik; Schulze, Birgit; Boller, Thomas; Bartels, Sebastian**Author(s) at UniBasel** [Boller, Thomas](#) ; [Klauser, Dominik](#) ; [Merker, Sebastian](#) ;**Year** 2013**Title** The anticipation of danger: microbe-associated molecular pattern perception enhances AtPep-triggered oxidative burst**Journal** Plant physiology**Volume** 161**Number** 4**Pages / Article-Number** 2023-35

The endogenous Arabidopsis (*Arabidopsis thaliana*) peptides, AtPeps, elicit an innate immune response reminiscent of pattern-triggered immunity. Detection of various danger signals, including microbe-associated molecular patterns (MAMPs), leads to elevated transcription of PROPEPs, the AtPep precursors, and PEPRs, the AtPep receptors. It has been hypothesized that AtPeps are involved in enhancing pattern-triggered immunity. Following this idea, we analyzed the relationship between MAMP- and AtPep-elicited signaling. We found that the perception of MAMPs enhanced a subsequent AtPep-triggered production of reactive oxygen species (ROS). Intriguingly, other components of AtPep-triggered immunity like Ca(2+) influx, mitogen-activated protein kinase phosphorylation, ethylene production, and expression of early defense genes, as well as ROS-activated genes, remained unchanged. By contrast, treatment with methyl jasmonate promoted an increase of all analyzed AtPep-triggered responses. We positively correlated the intensities of generic AtPep-triggered responses with the abundance of the two AtPep receptors by generating constitutively expressing PEPR1 and PEPR2 transgenic lines and by analyzing *pepr1* and *pepr2* mutants. Further, we show that enhanced, as well as basal, ROS production triggered by AtPeps is absent in the double mutant of the respiratory burst oxidase homologs D and F (*rbohD rbohF*). We present evidence that the enhancement of AtPep-triggered ROS is not based on changes in the ROS detoxification machinery and is independent of mitogen-activated protein kinase and Ca(2+) signaling pathways. Taken together, these results indicate an additional level of regulation besides receptor abundance for the RbohD/RbohF-dependent production of AtPep-elicited ROS, which is specifically operated by MAMP-triggered pathways.

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