

Publication

Defense-Related Calcium Signaling Mutants Uncovered via a Quantitative High-Throughput Screen in *Arabidopsis thaliana***JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 1013029**Author(s)** Ranf, Stefanie; Grimmer, Julia; Pöschl, Yvonne; Pecher, Pascal; Chinchilla, Delphine; Scheel, Dierk; Lee, Justin**Author(s) at UniBasel** [Chinchilla, Delphine](#) ;**Year** 2012**Title** Defense-Related Calcium Signaling Mutants Uncovered via a Quantitative High-Throughput Screen in *Arabidopsis thaliana***Journal** Molecular plant**Volume** 5**Number** 1**Pages / Article-Number** 115-30**Keywords** Calcium signaling, transport, defense responses, plant-microbe interactions, signal transduction, *Arabidopsis*

Calcium acts as a second messenger for signaling to a variety of stimuli including MAMPs (Microbe-Associated Molecular Patterns), such as flg22 and elf18 that are derived from bacterial flagellin and elongation factor Tu, respectively. Here, *Arabidopsis thaliana* mutants with *changed calcium elevation* (*cce*) in response to flg22 treatment were isolated and characterized. Besides novel mutant alleles of the flg22 receptor, *FLS2* (*Flagellin-Sensitive 2*), and the receptor-associated kinase, *BAK1* (*Brassinosteroid receptor 1-Associated Kinase 1*), the new *cce* mutants can be categorized into two main groups—those with a reduced or an enhanced calcium elevation. Moreover, *cce* mutants from both groups show differential phenotypes to different sets of MAMPs. Thus, these mutants will facilitate the discovery of novel components in early MAMP signaling and bridge the gaps in current knowledge of calcium signaling during plant–microbe interactions. Last but not least, the screening method is optimized for speed (covering 384 plants in 3 or 10) and can be adapted to genetically dissect any other stimuli that induce a change in calcium levels.

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