



## ***ABSTRACT***

*"For neither can live while the other survives: Cell death during plant reproductive development"*

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Programmed cell death (PCD) comprises a variety of actively controlled, genetically encoded self-destruct mechanisms of the cell. While many forms of PCD have been recognized and meticulously dissected in animals, to date only little is known about the molecular control of PCD processes in plants. Nevertheless, plant PCD is an essential component of a plant's reaction to its biotic and abiotic environment, and a central theme during plant development. Plant reproduction in particular involves many instances of developmentally controlled PCD, and tight spatial and temporal control of PCD in reproductive tissues is crucial for successful fertilization and seed set.

We are investigating a selection of cell death events in *Arabidopsis thaliana* to create knowledge about the molecular mechanisms that control the initiation and execution, as well as the prevention of cell death during plant reproductive development. Candidate PCD events include abortion of unfertilized ovules, central endosperm cell death during mid-seed development, and aleurone cell death during seed germination. To analyze these small, inaccessible, and intricately connected tissues, we developed and adapted several forward and reverse genetics strategies, making the *Arabidopsis* reproductive tissues accessible for cutting-edge -omics approaches. First results on candidate modulators as well as on the development of ovule and seed specific genetics, cell biological and genomics tools will be presented.