



ABSTRACT

“Dying for Life – Dissecting molecular networks controlling cell death during endosperm development in flowering plants”

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In contrast to the embryo, which lives on to form the next generation, the endosperm's lifespan and function are limited to seed development and end after germination. Although recent research in *Arabidopsis* has brought a remarkable progress in our understanding of the molecular mechanisms controlling early endosperm development, the pathways governing endosperm death remain largely unknown. In cereals, however, morphological and physiological clues indicate the existence of an actively controlled, programmed cell death (PCD) in the endosperm.

PCD processes are fundamental to development, stress, and pathogen interactions in eukaryotic organisms. Research in animal systems has identified a complex molecular network that controls PCD, including BCL-2s and the cell death executing caspase family. In plants, various forms of PCD have been described in a range of tissues and cell types. Some PCD mechanisms appear to be conserved between plants and animals, and expression of mammalian BCL-2s or application of caspase inhibitors have been shown to influence plant PCD. However, the lack of true plant caspase homologues and many morphological differences point to the existence of plant-specific PCD pathways.

Here, I will present a strategy to investigate the molecular networks orchestrating developmental cell death in developing endosperm. Fusing two research fields, seed developmental biology and cell death research, will provide a new angle to dissect control mechanisms of developmental plant PCD.