

## **S008** MicroRNA functions in *Arabidopsis* embryos

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In plants, the zygote initiates the sporophytic gene expression program and undergoes a series of cell divisions to generate the basic body plan. After this morphogenesis phase, embryos transition to a maturation phase during which they accumulate proteins, starch, lipids and sugars. Not only are these macromolecules required for successful germination, but they are also the major nutritional component of several key crops. Despite their fundamental importance to both developmental biology and agriculture, the molecular mechanisms that regulate plant embryonic patterning and maturation remain mostly uncharacterized. MicroRNAs (miRNAs) are a class of small regulatory RNAs that repress key developmental regulators and are essential for plant embryo development. Previously we found that miRNA-deficient embryos exhibit widespread differentiation defects and precociously express maturation-phase genes. This indicates that miRNAs are required for both embryonic pattern formation and the timing of the morphogenesis-to-maturation phase transition. Because plant miRNAs typically repress transcription factors and other key developmental regulators they likely have a large influence on the gene regulatory networks that control plant embryogenesis. Our major goal is to understand how miRNAs shape the gene regulatory networks that govern plant embryogenesis, and I will present our progress towards this aim.