

**P007** Small RNA diversity in *Arabidopsis* pollen  
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New generation sequencing technology has allowed investigation of the small RNA populations of flowering plants at a great depth. However, little is known about small RNAs in reproductive cells, especially in the gametophyte generation. Whether development and differentiation in the male gametophyte depends on the action of microRNAs and trans-acting siRNAs guiding gene expression changes is largely unknown. We used 454 sequencing to survey the small RNA population of mature pollen from *Arabidopsis thaliana*.

We detected 33 different microRNA families in pollen and validated the expression levels of selected microRNAs by qRT-PCR. Modified 5' RACE analysis confirmed cleavage of target mRNAs for some miRNAs in pollen. We also report for the first time the presence of trans-acting siRNAs in pollen. In addition to describing new patterns of expression for previously described small RNAs, we identified several putative novel microRNAs. One targets a pollen-specific F-box family transcript and we demonstrate cleavage of the target mRNA.

Despite its apparent simplicity, pollen utilises numerous microRNAs and trans-acting siRNAs expressed in the somatic tissues, and also expresses novel stage-specific small RNAs. Small RNAs are likely to have hitherto unappreciated roles in pollen.