

**S001** Cell-cell interactions during patterning of the *Arabidopsis* anther

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Key stages in the evolution of the angiosperm anther include the patterning of the concentrically-organised microsporangium, and the incorporation of four such microsporangia into a leaf-like structure. Mutant studies are leading to an increasingly-accurate picture of the cell lineage leading to the formation of the microsporocytes, and the tapetal, middle cell and endothelial layers that invest them. Further, recent evidence suggests that crosstalk between cells of the developing microsporangium determines both cell number and fate. One of the gene networks involved - that controlling development of the microsporocytes and their investing tapetal layer - is currently being unravelled. However, the processes that position the microsporangia within the developing anther are unknown. New data from mutants, and lines reporting the synthesis and trafficking of auxin, suggest that this hormone plays a central role in the patterning of the anther initial, and may be responsible for locating the microsporangia. These latest findings will be discussed in the context of the expression of *AGAMOUS* and *SPOROCTELESS*, genes which initiate reproductive development, and in the perspective of current views of anther evolution