

P025 Three MYB transcription factors control interactions with synergid cells required for reception and sperm release in *Arabidopsis*

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Flowering plants have immotile sperm that develop within the pollen grain and are delivered to female gametes by a pollen tube. Pollen tubes interact with female cells during growth in the pistil and are an excellent model system for dynamic differentiation of a single cell as it grows through a changing extracellular environment. We identified three pollen tube-expressed MYB transcription factors as regulators of pollen tube differentiation. Pollen tubes lacking these transcriptional regulators fail to stop growing in synergids and fail to release sperm for double fertilization. Moreover, we find evidence that signaling from the pollen tube rather than pollen tube rupture triggers synergid degeneration and that signaling requires pollen tube MYB activity. These data indicate that pollen tube transcription during growth in the pistil leads to differentiation required for male-female recognition, synergid degeneration, and release of sperm. We define a suite of pollen tube-expressed genes regulated by these transcription factors and identify small peptides, carbohydrate active enzymes, and transmembrane transporters representing likely molecular mediators of pollen-female interactions necessary for flowering plant reproduction.