

Receptor-Like Kinase Signaling in Plant Reproduction



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ITbM Lecture room (101),
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Research in our laboratory focuses on the developmental genetics of plant reproduction, with an emphasis on cell-cell communication during double fertilization. Fertilization depends on the proper reception of the pollen tube by the synergid cells, where the pollen tube arrests growth and ruptures to release the sperm cells. We have shown that receptor-like kinases (RLKs) of the *CrRLK1L* subfamily play an important role in reproduction, with the *FERONIA* RLK acting in the female and the *ANXUR1/2* RLKs in the male gametophyte (Escobar-Restrepo et al. *Science* 317: 656; Boisson-Dernier et al. *Development* 136: 3279; Miyazaki et al. *Curr Biol* 19: 1327). The *Arabidopsis* genome encodes 17 plant-specific *CrRLK1L* family members with a multitude of functions in pollen tube reception, pollen tube growth but also hormone signalling, mechano-sensing and plant defense. The extracellular domain of *CrRLK1L*s has similarities with malectin (Boisson-Dernier et al. *J Exp Bot* 62: 1581), suggesting that it may bind carbohydrate moieties, but it was also reported to bind the small, secreted RALF peptide (Haruta et al. *Science* 343: 408). Thus, the functions of *CrRLK1L*s are diverse and complex. Using various forward and reverse genetic approaches, we are in the process of identifying additional components in the *CrRLK1L* signalling cascade, focusing on both upstream and downstream components of this RLK subfamily.