

**S014** Cell-cell communication during fertilization in *Arabidopsis*: a surprising link to disease resistance

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Research in our laboratory focuses on the developmental genetics of plant reproduction. Our studies have shown that both genetic and epigenetic mechanisms play a key role in plant reproduction. In this seminar I will focus on cell-cell interactions during double fertilization. We have isolated a female gametophytic mutant, *feronia*, which disrupts double fertilization: in *feronia* mutant embryo sacs the pollen tubes, even if wild-type, are unable to release the sperm cells to effect fertilization (Huck et al., 2003, *Development* 130: 2149). This phenotype suggests that the female gametophyte plays a crucial role in pollen tube reception and, thus, controls the behaviour of the male gametophyte. The *feronia* mutant defines novel signalling processes between the male and female gametophytes in the process of double fertilization *FERONIA* was shown to encode a receptor-like kinase of a plant-specific subfamily (Escobar-Restrepo et al., 2007, *Science* 317: 656). Interestingly, some interspecific crosses result in phenotypes that are very similar to those observed in the *feronia* mutant. The evolutionary implications of these findings will be discussed. I will report on the molecular and biochemical characterization of *FERONIA* and on our search for additional components of this signal transduction process using genetic and biochemical approaches. Our recent attempts to identify novel components of the *FERONIA* signal transduction pathway have identified surprising links to disease resistance in plants. The evolutionary implications of these findings will be discussed.