

## Pollen tube guidance: The interplay between male and female gametophytes

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During evolution, novel reproductive structures and mechanisms have been emerged in plants. In angiosperms, such evolutionary development is manifested by the flower, multicellular gametophyte, double fertilization, loss of sperm motility and siphonogamy in which the immotile sperm is delivered to the egg by a pollen tube produced by the male gametophyte (pollen), a process named pollen tube guidance (PTG). Previous studies suggested that PTG requires the intimate interactions between the pollen tube and maternal tissue of the pistil and the female gametophyte, respectively. Through genetic screen, we isolated a number of *Arabidopsis* mutants that disrupt these processes. *CCG*, a central cell-specifically expressed gene, is required for the female gametophyte to attract the pollen tube. *CCG* encodes a nuclear protein that regulates the expression of a number genes important for PTG via interacting with RNA polymerase II, the mediator complex and AGL transcription factors. *POD1*, a pollen tube-expressed gene, is required for the male gametophyte to respond to the female signals. *POD1* encodes a ER protein that interact specifically with CRT3, suggesting that it might play a role in the protein folding of putative receptor proteins. Recently, we identified the male MDIS/MDIK receptor complex that recognizes the female attracting signals. These findings provide novel insight to mechanisms controlling PTG. More recent progresses will be discussed.

### Biography

Wei-Cai Yang has completed his PhD in 1994 from Wageningen University, Netherlands and then Post-doctoral studies at Wageningen University, Cold Spring Harbor Laboratory, and Institute of Molecular Agrobiolgy in Singapore, respectively. He is a Principal Investigator and the Director of Institute of Genetics and Developmental Biology, Chinese Academy of Sciences. He has published more than 60 papers in reputed journals and has been serving as an Editorial Board Member of a number of scientific journals.

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