

P024 Understanding gamete interaction during double fertilisation
**Stefanie Sprunck, Svenja Rademacher, Lucija Soljic,
Thomas Dresselhaus**

*Cell Biology and Plant Physiology, University of Regensburg,
Universitätsstrasse 31, D-93053, Regensburg, Germany*

Once a sperm cell comes in close vicinity to the egg cell, the following gamete interactions can be sub-divided into i) sperm-egg recognition, ii) sperm adhesion to the egg cell plasma membrane, and iii) the following sperm-egg membrane fusion (plasmogamy). For both vertebrate and invertebrate animals it is known that sperms and eggs carry surface proteins needed for gamete recognition, adhesion and fusion. Moreover, several cysteine-rich secretory proteins (CRISPs) have been found to be involved in mammalian gamete interaction. In contrast, almost nothing is known about the molecular mechanisms during plant gamete interaction. A specific feature of flowering plants is the process of double fertilisation, in which the two female gametes (egg and central cell) are fertilised by two sperm cells that are delivered as a physically linked unit by the pollen tube inside the embryo sac.

To elucidate the molecular mechanisms necessary to achieve double fertilisation we used a transcriptomic approach with isolated wheat and *Arabidopsis* egg cells. Among the genes that are specifically expressed in the egg cell, we found one gene family encoding small cysteine-rich proteins (EC1) whose secretion is triggered upon pollen tube arrival. Knock-down studies revealed that EC1 proteins are important signalling components of pre-membrane fusion events necessary for successful double fertilisation. We will report about our egg cell transcriptome analysis, the functional analysis of the EC1 protein family, and the identification of EC1 interaction partners.