Susann Erdmann

Expression and localization of G-protein coupled pheromone receptor Bar2 in the basidiomycete *Schizophyllum commune*

The basidiomycete *Schizophyllum commune* is a widespread fungus and causes white rot in hardwoods. The mating type system of *S. commune* required for sexual reproduction depends on two genetic factors *A* and *B*. The *B*-locus encodes a pheromone/receptor system, which consists of a pheromone receptor belonging to the seven transmembrane domain receptor family and different lipopeptide pheromones. During mating interactions pheromones of non-self specificity become available. The recognition of a non-self pheromone by the receptor results in nuclear migration and clamp cell fusion.

The sexual development of the heterothallic fungus *Schizophyllum commune* depends on a tetrapolar mating system. The mating type specific pheromone receptor Bar2 belongs to the G-protein coupled, seven transmembrane domain receptors. The importance of the pheromone/receptor system is well-investigated, however there is little information available on the expression and the localization of the pheromone receptor. By means of real-time PCR, the expression level of receptor and pheromone genes was determined in mated mycelia over a 72-hour time period. In compatible wildtype strains very low expression levels which increased transiently during mating interactions were revealed. The same pattern but lower expression levels were seen when a receptor transformant was used in mating interactions. C-terminal truncated receptor transformants are notable because of the occurrence of unfused clamp cells in a compatible mating interaction. As the intracellular C-termini of pheromone receptors in *S. commune* are long compared to other fungal species, an additional function may be proposed to be located there. *S. commune* strains expressing a Gfp-fused receptor were investigated by confocal laser scanning microscopy. Expression of the Gfp fusion protein was seen in unfused clamp cells which could be well visualized in transformants containing the truncated receptor due to their phenotype of retarded clamp fusion.

Publications

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Supervisor

Erika Kothe

Start of PhD

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Doctoral Disputation

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