

**D301**

Nuclear Behavior during Reduced Reproductive Cycle  
in *Allomyces macrogynus*.

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The thalli of *A. macrogynus* could be induced to sporulate in several hours if they were shifted from growth medium to a dilute inorganic salts solution. It was possible to form sporangia containing even a single zoospore by incubating zoospores in growth medium for a short period before shifting to salts solution. In this study, the nuclear behavior in this reduced reproductive cycle was examined.

The nuclear number per cell found in premature sporangia continued to increase after induction of sporulation. However, the nuclear number per cell decreased in mature sporangia. Even in single-spored sporogenesis, the nuclear number per cell increased from one to two, and then decreased to one again. The nuclear behavior in single-spored sporogenesis was also examined at the ultrastructural level.

These results suggest that at least one nuclear division is required for sporulation and that the number of nuclei should be adjusted before discharge of zoospores.

**D801**

**Hierarchical Relationship of the *spitz* Class Genes in the Cell Fate Determination of *Drosophila* Ventral Neuroectoderm**

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It is known that the *spitz* class genes, *pointed* (*pnt*), *rhomboid* (*rho*), *single-minded* (*sim*), *spitz* (*spi*) and *Star* (*S*) as well as *argos* (*aos*), *orthodenticle* (*otd*) and *Drosophila* EGF receptor (*DER*) genes are required for proper formation of ventral neuroblasts and epidermis derived from ventral neuroectoderm. The expression of the *spitz* class genes was analyzed to determine the spatial and temporal pattern of each individual *spitz* class gene expression and to establish a hierarchical relationship of the *spitz* class genes in cell fate determination of ventral neuroectoderm. This analysis showed that *aos*, *otd*, *pnt*, *rho* and *spi* expression is severely reduced in *sim* mutant and greatly broadened in the HS-*sim* mutant. In addition, *sim* expression in the other *spitz* class, *DER* and *otd* mutants, is not affected. These results indicate that the *sim* gene acts upstream of all the *spitz* class genes as well as *aos*, *DER* and *otd*. It was also shown that *otd* and *pnt* expression in the ventralmost neuroectoderm is almost abolished in *rho*, *S*, *spi* and *DER* mutants and their expression in the HS-*S*, *-spi*, *-rho* and *DER<sup>RLP</sup>* is expanded, indicating that *otd* and *pnt* genes act downstream of the most *spitz* class genes. *aos* and *otd* expression in *pnt* mutant becomes almost abolished and *otd* expression is widened into 3-4 rows of medial neuroectodermal cells in *aos* mutant and its expression is reduced into 1 row of cell in the HS-*aos* mutant, indicating that the *aos* gene acts downstream of *pnt* and upstream of the *otd* gene. These results suggest the following tentative hierarchical relationship among the *spitz* class and *aos*, *DER* and *otd* genes: *sim* → *rho*, *S*, *spi* → *DER* → *pnt* → *aos* → *otd*. The finding that *otd* and *pnt* expression in the medial neuroectoderm of *sim* mutant is affected indicates the presence of cell-cell interaction between the medial neuroectoderm and CNS midline cells through the EGF signaling pathway.