

Identification of Novel Cell Wall Components (DE-FG02-97ER20275)

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PI: Michelle Momany

Dept. of Plant Biology, University of Georgia

Our DOE Biosciences-funded work focused on the fungal cell wall and morphogenesis. We are especially interested in how new cell wall material is targeted to appropriate areas for polar (asymmetric) growth. Polar growth is the only way that filamentous fungi explore the environment to find suitable substrates to degrade. Work funded by this grant has resulted in a **total of twenty peer-reviewed publications.**

In work funded by this grant, we identified nine *Aspergillus nidulans* temperature-sensitive (ts) mutants that fail to send out a germ tube and show a swollen cell phenotype at restrictive temperature, the *swo* mutants. In other organisms, a swollen cell phenotype is often associated with misdirected growth or weakened cell walls. Our work shows that several of the *A. nidulans swo* mutants have defects in the establishment and maintenance of polarity. Cloning of several *swo* genes by complementation also showed that secondary modification of proteins seems important in polarity. We also investigated cell wall biosynthesis and branching based on leads in literature from other organisms and found that branching and nuclear division are tied and that the cell wall reorganizes during development. In our most recent work we have focused on gene expression during the shift from isotropic to polar growth. Surprisingly we found that genes previously thought to be involved only in spore formation are important in early vegetative growth as well.

Publications citing this DOE grant:

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