

## **Hyphae hot off the presses: investigating cell wall structure by atomic force microscopy.**

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In multicellular species, inhibitory controls prevent the growth of most cells. Cancerous cells lack these controls, growing and dividing abnormally, as evidenced by their aberrant morphologies. Cell cycle regulatory proteins are highly conserved amongst eukaryotes, and therefore fungi, such as *Aspergillus nidulans*, can be used as elegant model systems for studying growth regulation and cell morphogenesis. Five genes have been identified in *A. nidulans* (*hypA* - *hypE*) that control cell morphogenesis and growth regulation (Kaminskyj & Hamer 1998 Genetics 148:669). When the *hyp* genes are "turned off", tip growth is compromised, leading to abnormal hyphal shape. Remarkably, the quiescent sub-apical cells resume growth, and therefore the *hyp* genes appear to regulate two essential but poorly understood aspects of cell growth.

Atomic force microscopy (AFM) was used to investigate the morphological effects displayed by *A. nidulans* as a result of 'up-shifts' in temperature during cell growth. *A. nidulans* hyphal cells were grown and fixed directly on glass coverslips. Cells grown at 28 °C were considered 'normal' and were used as a morphological control. Images were collected using contact (fixed cells) and tapping mode (live cells) with scan sizes ranging from 100 µm (whole hyphae) to <200 nm (cell wall structure). The effects of temperature on *A. nidulans* cell structure will be presented.