Radhika Jain

Regulation of cell wall integrity signalling by mitogen-activated protein kinase MpkA in *Aspergillus fumigatus*

Mitogen-activated protein kinase (MAPK) cascades are essential signalling modules that are evolutionary conserved among eukaryotes, and transduce stimuli from the cell surface to the nucleus. MAPK pathways control key cellular functions. In fungi three conserved MAPK cascades have been identified, each of them carrying out specific functions in cell fusion and differentiation (Fus3/Kss1), cell integrity (Slt2/Mpk1) or stress adaptation (Hog1). There is strong evidence that these MAPK pathways are master control switches for pathogenicity in some fungi. MAPK cascades regulate key virulence functions, including host-induced spore germination, polarized hyphal growth, adhesion to the host surface, differentiation of specialized infection structures, remodelling of the fungal cell wall or secretion of enzymes and toxins. The genome of *A. fumigatus* has four MAPK genes, sakA/hogA, mpkA, mpkB and mpkC. The project aims at investigating the role of mitogen activated protein kinase MpkA in cell wall integrity (CWI) signalling in *Aspergillus fumigatus*.

Publications

Jain R, Valiante V, Remme N, Docimo T, Heinekamp T, Hertweck C, Gershenzon J, Haas H, Brakhage AA (2011) The MAP kinase MpkA controls cell wall integrity, oxidative stress response, gliotoxin production and iron adaptation in *Aspergillus fumigatus*. *Mol Microbiol* 82(1), 39-53. Details PubMed

Valiante V, Jain R, Heinekamp T, Brakhage AA (2009) The MpkA MAP kinase module regulates cell wall integrity signaling and pyomelanin formation in *Aspergillus fumigatus*. *Fungal Genet Biol* 46(12), 909-918. Details PubMed

Supervisor

Axel A. Brakhage

Co-Supervisors

Erika Kothe

Start of PhD

May 1, 2006

Doctoral Disputation

June 23, 2011