CRC 670
CELL-AUTONOMOUS IMMUNITY

UNIKLINIK KÖLN

Seminar

Wednesday, April 9th, 2014, 12:15 p.m.

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Prion domains and NOD-like STAND proteins in fungal non-self recognition

Host:
Prof. Dr. Kay Hofmann, Institut for Genetics, University of Cologne

Venue:
Institute for Genetics, Zülpicherstr. 47a, 50674 Cologne

Lecture Hall, 4th Floor

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Prion domains and NOD-like STAND proteins in fungal non-self recognition

Fungi expose virtually all their somatic cells to their biotic environment and recognition and appropriate response to non-self is as critical in this phylum as it is in the plant and animal reign. Fungi recognize and react to conspecific non-self (different individuals belonging to the same species) by a process termed heterokaryon incompatibility. Incompatibility is triggered when two individuals differing genetically at specific loci termed *het* loci undergo somatic cell fusion (which occurs spontaneously in fungi). The mixed fusion cells undergo a programmed cell death reaction and the two individuals remain isolated. Incompatibility serves to prevent conspecific parasitism and limits horizontal transmission of deleterious plasmids and viruses. Remarkably, in several species *het* genes are homologous to animal NLR and plant NBS-LRR immune receptors. We have proposed that these proteins could have a more general role in fungal immunity. The current understanding of the players and mechanisms controlling and executing fungal incompatibility will be presented, domain organisation and diversity of fungal NOD-like STAND proteins will be described as well as the particular case of the involvement of amyloid prion domains as signal transducing devices connecting STAND proteins with their effector domain. The fungal phylum with an estimated 5 million species with highly diversified habitats may constitute a valuable addition to comparative immunology approaches, to flesh out communalities and differences in the build up of immune function in the different eukaryotic branches.