

SIGNALING SYSTEMS INVOLVED IN FUNGAL PATHOGENESIS

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Host: **Prof Prakash Kumar**

The germinating spores of the rice-blast fungus *Magnaporthe grisea* differentiate into infection structures called the appressoria in order to penetrate its plant host. Host-surface characteristics responsible for appressorium initiation and maturation are poorly understood. In a forward genetics approach, we isolated *Magnaporthe* mutants defective in early signaling events during infection-related differentiation; and identified a Regulator of G-protein Signaling (Rgs1), which couples appressorium formation to proper perception of surface rigidity. Further characterisation, molecular identification and biophysical analysis helped us define a thigmotropic response as being essential for initiation of pathogenesis. Heterotrimeric G-proteins and cyclic AMP signaling act as downstream effector modules of such early surface-hardness dependent response, which is likely mediated through a non-canonical GPCR during host infection. Preliminary results suggest a novel function for Rgs1 in elaborating the extracellular matrix during pathogenic development in *Magnaporthe*.