

## **Fruiting Body Specific Sc4 Hydrophobin Gene Plays a Role in Schizophyllum Commune Hyphal Attachment to Structured Glass Surfaces**

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**Abstract :** Genes encoding hydrophobins play distinct roles at different stages of the life cycle of fungi, and they foster hyphal attachment to surfaces. The hydrophobin Sc4 is known to provide a hydrophobic membrane lining of the gas channels within Schizophyllum commune fruiting bodies. Here, we cultivated non-fruiting, monokaryotic S. commune 12-43 on glass surfaces that could be verified by micrography. Differential gene expression profiling of nine hydrophobin genes and the hydrophobin-like sc15 gene by quantitative PCR showed significant up-regulation of sc4 when S. commune was attached to glass surfaces, also confirmed with RNA-Seq data analysis. Another silicate, namely quartz sand, was investigated, and induction of sc4 was seen as well. The up-regulation of the hydrophobin gene sc4 may indicate involvement in S. commune hyphal attachment to glass as well as quartz surfaces. We propose that the covering of hyphae by Sc4 allows for direct interaction with the hydrophobic surfaces of silicates and that differential functions of specific hydrophobin genes depend on the surface interface involved. This study could help with the clarification of the biological functions of hydrophobins in natural surroundings, including hydrophobic surface attachment. Therefore, the analysis of growth on glass serves as a basis for understanding S. commune interaction with glass surfaces while providing the possibility to visualize the interaction microscopically.

**Keywords :** hydrophobin, structured glass surfaces, differential gene expression, quartz sand

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