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Biosynthesis of the galactomannan in *Aspergillus fumigatus*

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The galactomannan (GM) is a polysaccharide produced by the human fungal pathogen *Aspergillus fumigatus* and is used as a biomarker for the diagnosis of invasive aspergillosis. The GM remains unique in the fungal kingdom since it is produced under three forms. This polysaccharide can be covalently bound to β -(1,3)-glucans in the cell wall, anchored to the plasma membrane by a glycosylphosphatidylinositol (GPI), or released into the extracellular environment. GM is composed of linear α -(1,2)/ α -(1,6)-mannan chain with short side chains of β -(1,5)-galactofuran. Its biosynthesis remain poorly understood. Previous studies have shown that GM biosynthesis takes place in the Golgi apparatus, into which sugar-donor (UDP-galactofuranose and GDP-mannose) are transported prior the polysaccharide polymerisation. The addition of galactofuran was due to the action of a specific galactofuranosyltransferase GfsA, but the mannosyltransferases responsible for the synthesis of the mannan chain remains unknown. Here, we have identified a mannosyltransferase and GH76 family members in *A. fumigatus*, involved respectively in the biosynthesis and the cross-linking of GM into the cell wall. Phenotypic analyses of mutants deficient in these proteins will be presented and the role of GM in fungal growth will be discussed.

Biography

Thierry Fontaine completed his PhD in 1991 on the chemical characterization of microbial polysaccharides at the University of Lille 1 (France) and is currently a Senior Scientist at the Institut Pasteur. He is an expert in Fungal Polysaccharide Biochemistry. His main research field is focused on the molecular organization and the biosynthesis of the cell wall skeleton and associated extracellular matrix in *A. fumigatus*.

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