



## Gap, a mycobacterial specific integral membrane protein, is required for glycolipid transport to the cell surface

Submitted by Caroline Deshayes on Thu, 03/30/2017 - 10:34

Titre	Gap, a mycobacterial specific integral membrane protein, is required for glycolipid transport to the cell surface
Type de publication	Article de revue
Auteur	Sondén, Berit [1], Kocíncová, Dana [2], Deshayes, Caroline [3], Euphrasie, Daniel [4], Rhayat, Lamya [5], Laval, Françoise [6], Frehel, Claude [7], Daffé, Mamadou [8], Etienne, Gilles [9], Reyrat, Jean-Marc [10]
Editeur	Wiley
Type	Article scientifique dans une revue à comité de lecture
Année	2005
Langue	Anglais
Date	Octobre 2005
Numéro	2
Pagination	426-40
Volume	58
Titre de la revue	Molecular Microbiology
ISSN	0950-382X
Mots-clés	Bacterial Proteins [11], Cell Membrane [12], Genetic Complementation Test [13], Glycolipids [14], Membrane Proteins [15], Molecular Sequence Data [16], Molecular Structure [17], Mycobacterium smegmatis [18], Subcellular Fractions [19]
Résumé en anglais	<p>The cell envelope of mycobacteria is a complex multilaminar structure that protects the cell from stresses encountered in the environment, and plays an important role against the bactericidal activity of immune system cells. The outermost layer of the mycobacterial envelope typically contains species-specific glycolipids. Depending on the mycobacterial species, the major glycolipid localized at the surface can be either a phenolglycolipid or a peptidoglycolipid (GPL). Currently, the mechanism of how these glycolipids are addressed to the cell surface is not understood. In this study, by using a transposon library of Mycobacterium smegmatis and a simple dye assay, six genes involved in GPLs synthesis have been characterized. All of these genes are clustered in a single genomic region of approximately 60 kb. We show by biochemical analyses that two non-ribosomal peptide synthetases, a polyketide synthase, a methyltransferase and a member of the MmpL family are required for the biosynthesis of the GPLs backbone. Furthermore, we demonstrate that a small integral membrane protein of 272 amino acids named Gap (gap: GPL addressing protein) is specifically required for the transport of the GPLs to the cell surface. This protein is predicted to contain six transmembrane segments and possesses homologues across the mycobacterial genus, thus delineating a new protein family. This Gap family represents a new paradigm for the transport of small molecules across the mycobacterial envelope, a critical determinant of mycobacterial virulence.</p>
URL de la notice	<a href="http://okina.univ-angers.fr/publications/ua15771">http://okina.univ-angers.fr/publications/ua15771</a> [20]

DOI 10.1111/j.1365-2958.2005.04847.x [21]  
Lien vers le document <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2958.2005.04847.x/pdf> [22]  
Titre abrégé Mol. Microbiol.  
Identifiant (ID) 16194230 [23]  
PubMed

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## Liens

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- [3] <http://okina.univ-angers.fr/c.deshayes/publications>
- [4] <http://okina.univ-angers.fr/publications?f%5Bauthor%5D=11541>
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Publié sur *Okina* (<http://okina.univ-angers.fr>)