

MICROBIOLOGIE, INFECTIOLOGIE ET IMMUNOLOGIE

Université 
de Montréal

CONFÉRENCE

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Insights into the structure and assembly of a putative secretion complex required for bacterial sporulation

Sporulating *Bacillus subtilis* cells assemble a transenvelope complex (called the A-Q complex) that connects the mother cell and developing spore. This complex bears similarity to specialized secretion systems found in Gram-negative bacteria and is required to maintain spore physiology and spore-specific gene expression, thus playing a key role in sporulation. There are many outstanding questions surrounding this complex: Is it a secretion complex and what does it secrete? What does it look like and how is it assembled? Do we even have the complete parts list for this complex? Using transposon sequencing (Tn-seq), we identified a new component of this complex and demonstrate it is part of the basal platform onto which the remaining complex is assembled. Interestingly, this protein (GerM) was previously implicated in spore germination so its role in the transenvelope complex was overlooked for decades. One of the proteins that GerM recruits to the complex is SpoIIIAG a protein with remote homology to the EcsJ/PrgK family of ring-forming proteins found in Type III secretion systems. We show that the extracellular domain of SpoIIIAG assembles into a 24-member ring with a large (6 nm) pore with similar architecture and dimensions as those found in Type III secretion systems. Furthermore, mutations that abrogate ring formation *in vitro* impair spore development and spore-specific gene expression *in vivo*. These data provide insight into how the A-Q complex assembles and represent the first direct evidence that it assembles a conduit between the mother cell and forespore.

Jeudi le 9 février à 11h30
Pavillon Claire-McNicoll, salle Z-210

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