Séminaire ibs

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Conférencier invité

Vendredi 27 Avril 2012

A 11h - Salle des séminaires de l'IBS

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Bacterial Membrane Fission

Fission and fusion of membranes are essential events in all organisms. Yet, little is known about the mechanisms that drive these processes in bacteria. We studied a membrane fission process that occurs during sporulation in the Gram-positive model bacterium *Bacillus subtilis*. This cellular differentiation is induced in response to nutrient limitation. It is marked by an asymmetric septation that generates a large mother cell adjacent to a small cell, the prospective forespore. Soon after, the mother cell membranes migrate around the forespore in a phagocytic-like process called engulfment. As a consequence, two membranes surround the forespore: an inner membrane and an outer membrane that is actually part of the mother cell membrane. At the end of engulfment, the leading edges of the mother cell migrating membranes meet at the forespore pole. Finally, a membrane fission event separates the mother cell and outer forespore membranes, thus resulting in the internalization of the forespore.

We identified a membrane protein, called FisB, which is specifically involved in that membrane fission process. I will present cytological and biochemical results supporting the idea that FisB directly catalyzes membrane fission. Notably, FisB localizes «in the right place at the right time». In addition, FisB formed oligomers that were SDS-resistant in vitro, similar to eukaryotic and viral membrane fusion proteins that form high-affinity complexes. These results are consistent with the idea that FisB directly bridges adjacent membranes to destabilize lipid bilayers. In support of that model, FisB mediates fusion of liposomes in vitro through interactions with specific lipids.

Hôte : Thierry Vernet (IBS/PG)