Interaction of the *B. subtilis* division protein YpsB with membranes

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In prokaryotes, the main form of reproduction is the binary division that allows a cell to generate two new cells, with identical genetic material to the ancestor. In *Bacillus subtilis* this process is dependent on the divisome, a complex composed of sixteen proteins that constricts the membrane and the wall forming the division septum. Using an *in-silico* procedure, we found that YpsB is a paralog of the division-site selection protein DivIVA and experimentally confirmed that YpsB is a new component of the divisome in *B. subtilis*. Here, we are investigating the interaction of YpsB with membranes. Subcellular fractionation of YpsB has shown its presence both in the membrane and cytoplasmic fractions. Bioinformatic analysis with the AMPHIPASEEK program (http://npsa-pbil.ibcp.fr/) showed that YpsB is predicted to have an amphypathic helix potentially capable of mediating interaction with the cell membrane in its N-terminal region. To confirm this prediction, recombinant YpsB protein expressed in *E. coli* was purified by affinity chromatography and used in experiments with a membrane model (large unilamellar vesicles-LUVs). Interaction between YpsB and LUVs was monitored by ITC (Isothermal titration calorimetry) and spectrofluorometry, by intrinsic fluorescence measurements of tyrosine. The results showed that YpsB can interact directly with membranes, in the absence of any other *B. subtilis* proteins. We are currently characterizing in more detail how YpsB associates with the membrane.

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