



## Development of a 3D model of GerA germination receptor in the inner spore membrane

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Spores of *Bacillus subtilis* are metabolically dormant and resistant to harsh environmental conditions and stresses, allowing them to survive for years. However, when favorable conditions arise, spores lose their dormancy and resistance in the process of germination. In order to initiate germination process, spores must be able to monitor their external environment. Dormant spores contain a set of specific germinant receptors (GRs) present in their inner membrane to continuously monitor the environment. When appropriate nutrients (germinants) are present in the environment, they bind to specific GRs and trigger the germination process. One of this receptors is a GerA germination receptor.

GerA germination receptor is composed of three proteins (GerAA, GerAB and GerAC) located in the inner membrane of the spore and is activated by L-alanine and/or L-valine. Up to now, no data describing 3D structure of these proteins, or entire receptor is available. This project is mainly focused on developing a 3D structure of GerA receptor in the inner spore membrane and predicting the nutrients binding sites. Using the developed 3D model of the GerA receptor we would like to clarify the relationship of structure and function of this receptor. We will identify amino acid residues responsible for the contact between the receptor subunits and residues involved in nutrients binding. Subsequently, their mutagenesis and further analysis, should allow us to propose the mechanism of action of the GerA receptor.

