

# 9<sup>th</sup> Global Summit and Expo on **Vaccines & Vaccination**

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## ***Bacillus subtilis* spore as edible vaccine carriers**

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**B**acterial spores are produced in response to unfavorable environmental conditions. This form of *B. subtilis* cell is extremely resistant to various harsh conditions such as high temperature, desiccation, chemicals and others. The spores maintain the potential of germination for many years. It is possible because the spore core is surrounded by multiple protective layers. Four outermost layers (spore coat) are built out of at least 70 proteins. This allows by relatively easy modifications to introduce an additional peptide or protein into coat structures by introducing into bacterial chromosome, a fusion gene consisting of a coat protein (carrier) and the presented protein (passenger). For efficient induction of immune response, the carrier should be exposed on to the spore surface, so proper choice of the coat protein used is crucial. Here we have a tool for quick and easy construction of the fusion proteins which has high probability of being exposed on the spore surface. The system consists of 16 shuttle vectors designed for building fusion proteins between five selected coat proteins and passenger proteins. In addition, the system also offers different type of linkers which may have influence on the efficiency of presentation of passenger protein. What is more important *B. subtilis* is a part of human and animal intestinal flora, so immunization with *B. subtilis* spores will not introduce a new bacteria into the gastrointestinal tract. Taking into account that sporulation is natural ability of this bacterium, scaling up the production of spores should be easy and cheap.

### **Biography**

Michał Obuchowski has completed his PhD at University of Gdańsk, Poland and Post-doctoral studies at University Paris-XI in the Institute of Genetics and Microbiology in France. He is the Head of Laboratory of Molecular Bacteriology, a part of the Intercollegiate Faculty of Biotechnology (IFB), University of Gdańsk and Medical University of Gdańsk. He currently serves duties as Vice-Dean for science of IFB. He has published more than 40 papers in peer-reviewed scientific journals. Seven of them are related to spores as antigen carriers.

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