
Construction of biocatalytic micro-reactors with the bacterial ghost platform technology

Bacterial ghosts (BGs) are empty, non-living cell envelopes of Gram-negative bacteria, which are created by the controlled expression of gene E in bacteria and formation of a lysis-tunnel structure spanning the inner and outer membrane. Actual and potential application areas for the BG technology platform are manifold. Within the field of medicine, they include immunotherapy of cancer, human and veterinary vaccines, BGs as carrier and delivery system for drugs and other active substances. Within the area of industrial applications, the use of BGs as carrier particles for enzymes is one of the most advanced of all concepts. Commonly used enzyme immobilization agents are rather old-fashioned and show various disadvantages compared to BG-based enzyme carriers. BGs carrying enzymes could be advantageous for the catalysis of products at the interface between organic and inorganic solutions that prove often to be problematic for enzyme stability. Here, a BG would act like a bioreactor containing and thus protecting the enzymes against harsh environmental conditions while allowing for the synthesis and export of the product of interest into the exterior.

Biography

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