

P006 In-vitro Synthesis and Reconstitution of Cytochrome bo₃-Ubiquinol Oxidase in Artificial Membranes
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Research about membrane proteins is facing severe obstacles, still just few examples of membrane proteins have been characterized in suitable experimental platforms. The major challenge is to preserve their excellent structural integrity during the expression and reconstitution processes. *In-vitro* translation systems may have advantages over cell based systems for example; when the over-expressed product is toxic or lack of available membrane space prohibit functional expression.

We are able to address membrane protein species, since we introduce a platform for membrane protein synthesis. The reconstitution of membrane proteins in lipid bilayers generally results with different conformations. As an alternative, we are exploring this system for the first time to create closer model to the cellular membranes and to mimic their function.

Our aim is to synthesize complex transmembrane proteins, such as cytochrome bo₃-ubiquinol oxidase (Cyt bo₃) directly inside the biomimetic model membrane. In our system, solid supported tBLM such as, P19/DMPE/PC is used as a platform. This artificial membrane system mimics the amphiphilic architecture of a cell-derived membrane system.

Preliminary results indicate that, Cyt bo₃ has been expressed and purified from both the cellular context of *E.coli* and *in-vitro* expression system.