

E I N L A D U N G

zum ZHMB Kolloquium

Vortrag von

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am

Montag, 22. Juli 2024
17:00 – 18:30 Uhr

Campus Saarbrücken, Gebäude B 2.1 – Hörsaal 0.02

Link für MS Teams: <https://tinyurl.com/shfmvt95>

Functionalizing the bacterial cell surface for reaction cascades and beyond

To display a protein on the surface of a living cell bears several advantages for analytical and biotechnological applications. In biocatalytic applications, the cellular surface display provides a direct contact between enzyme and substrate, without requiring any mass transfer. The transport mechanism used in autodisplay, a convenient method for the display of enzymes in Gram-negative bacteria, enables on top of that an orientation and density control of proteins at the cell surface.

Initially starting with single enzymes for biocatalytic applications, we engineered autodisplay for displaying multiple functions on the surface of a single cell, e.g. electron supply chains for P450 enzymes, including co-factor regeneration. In addition, it was possible to combine cells displaying different enzymes in a reaction cascade, in which one step provided the redox equivalents required by the following. Most recently, it was shown, that biocatalysis and transition metal ion mediated catalysis can be combined in a joint reaction cascade at the cell surface of *E. coli*. Due to the orientation and density control of the proteins, outer membrane vesicle obtained after autodisplay of proteins, can be used to coat material surfaces in order to equip them with distinct functionalities. This can lead to new hybrid materials, applicable in biosensor development, for drug delivery and other targeted approaches.