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Unifying Concepts in Catalysis

UniCat Colloquium

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Research Center Borstel, Leibniz-Center for Medicine and Biosciences

Microbes and Humans: A Battle between Membranes and Pores

Between microbes and humans there is a permanent battle in which pore-forming molecules play a decisive role. On the one hand microbes attack other microbes, and the cytoplasmic or the phagosome membrane of mammal cells by pore forming proteins or peptides. On the other hand mammals use pore-forming peptides of the innate immune system, the so called Host Defense Peptides (HDP) or Antimicrobial Peptides (AMP), to kill microbes.
Since the discovery of antibiotics, a number of different classes of antimicrobial agents have been found from natural origin. Unfortunately, more and more bacterial strains became resistant against a number if not all available antibiotics. Understanding of the molecular architecture of bacterial lipid membranes, which are the first barrier or target for antimicrobial agents, and of the interaction of peptides based on natural compounds of the innate immune system with these membranes can be a key approach for the development of new antimicrobial peptides. We characterized the interaction between AMPs as well as microbial peptides and reconstituted membranes using various biophysical techniques.
Using liposomes, solid-supported bilayers and multilayers composed of phospholipids and bacterial glycolipids we analyzed the basic structure of these membranes, e.g. supramolecular organization of the lipids, phase separation and orientation of fatty acids, and the influence of specific AMPs. Furthermore, these small peptides interfere in immunoregulatory mechanisms allowing to use them for the treatment of sepsis.

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TU Berlin, Institute of Chemistry
Straße des 17. Juni 115, 10623 Berlin

Building C, Lecture Hall **C 264**

Prof. Dr. Mroginski (TUB)
Organizer

Coffee and cake will be served 30 minutes before the lecture. Guests are cordially invited to attend!
Prof. Dr. Matthias Driess - Chair of the Cluster of Excellence UniCat - www.unicat.tu-berlin.de