

## Polymeric Biomaterials

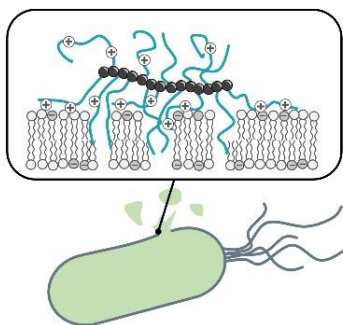


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### Description

Antimicrobial resistance (AMR) is one of the most serious issues of today's public health. This is where the DFG - Emmy Noether research group *Polymer Biomaterialien*, led by Dr. Matthias Hartlieb, starts searching for possible solutions.

The scientists aim to develop membrane active, antimicrobial polymers, which are so selective towards pathogenic bacteria that they compete with conventional antibiotics. Surface coatings (on medical devices or implants) will also be investigated in the future. The advantage of such materials: the development of resistance is almost impossible.

### Details

- Investigation of different polymer architectures in relation to biological activity
- Investigation of non-covalent, supramolecular polymers
- Implementation of intelligent features into antimicrobial polymers (smart materials)

### Methoden

- Reversible-Addition-Fragmentation Chain-Transfer (RAFT)-Polymerization
- Ring Opening Metathesis Polymerization (ROMP)
- Cationic Ring-Opening Polymerization
- Solid-Phase-Peptide-Synthesis (SPPS)
- Supramolecular Polymerization

### Scientific literature

- Laroque, et al. *Impact of Multivalence and Self-Assembly in the Design of Polymeric Antimicrobial Peptide Mimics*, [ACS Appl. Mater. Interfaces 2020, DOI: 10.1021/acscami.0c05944](#).
- Hartlieb et al. *A Guide to Supramolecular Polymerizations*, [Polym. Chem., 2020, 11, 1083-1110](#)
- Kuroki et al. *Sequence Control as a Powerful Tool for Improving the Selectivity of Antimicrobial Polymers*, *ACS Appl. Mater. Interfaces*, **2017**, 9, 40117–40126.

### Applications

- Biomedicine / Medizin
- Surface Coating
- Implants

### Keywords

- Antimicrobial Polymers
- Antimicrobial Resistance
- Biomaterials
- Functional Polymers

### Interest in cooperation

- Research collaborations
- Mission oriented Research

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