

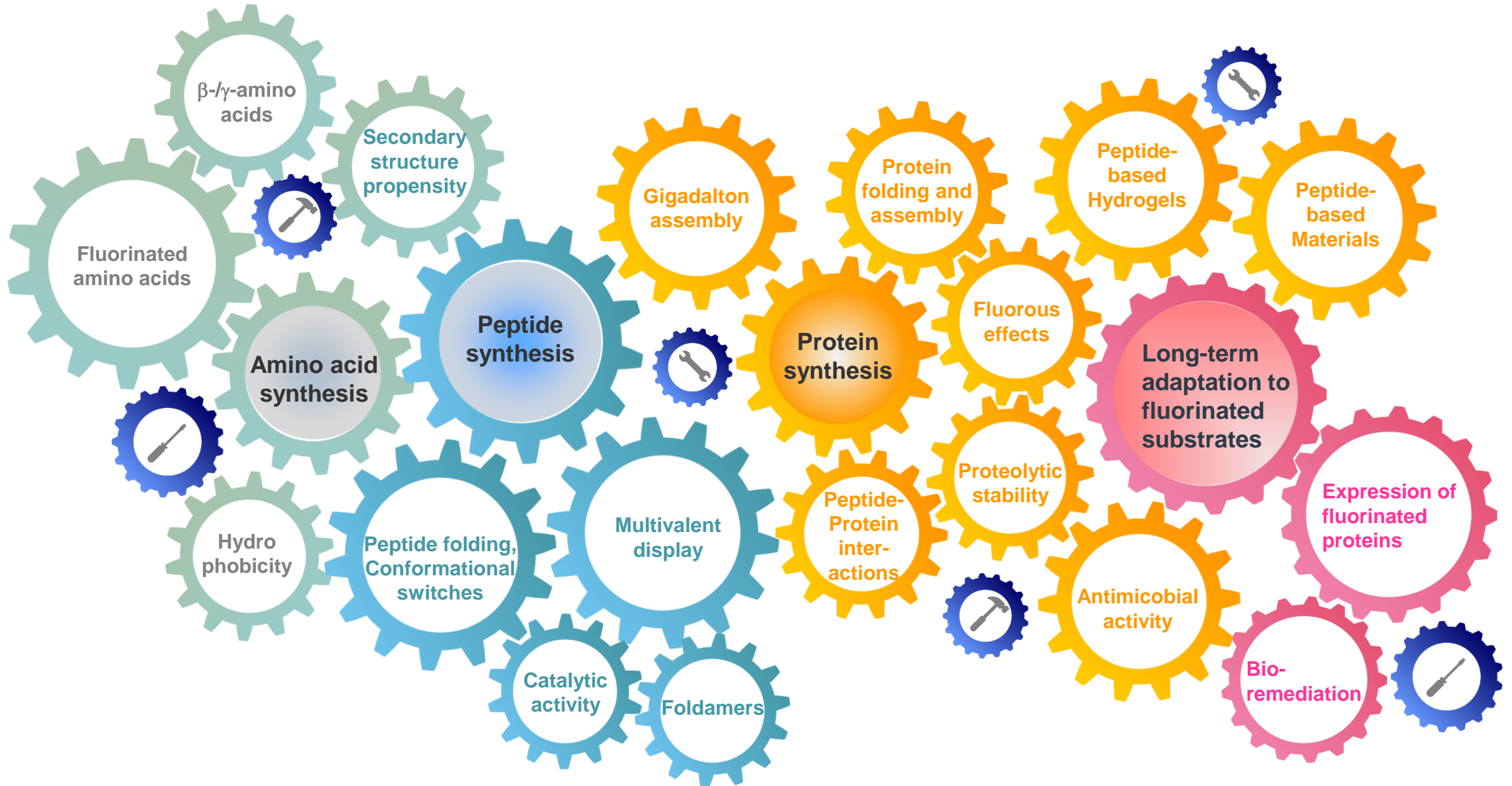
Peptide, protein, and bacterial cell engineering

AG Koksch

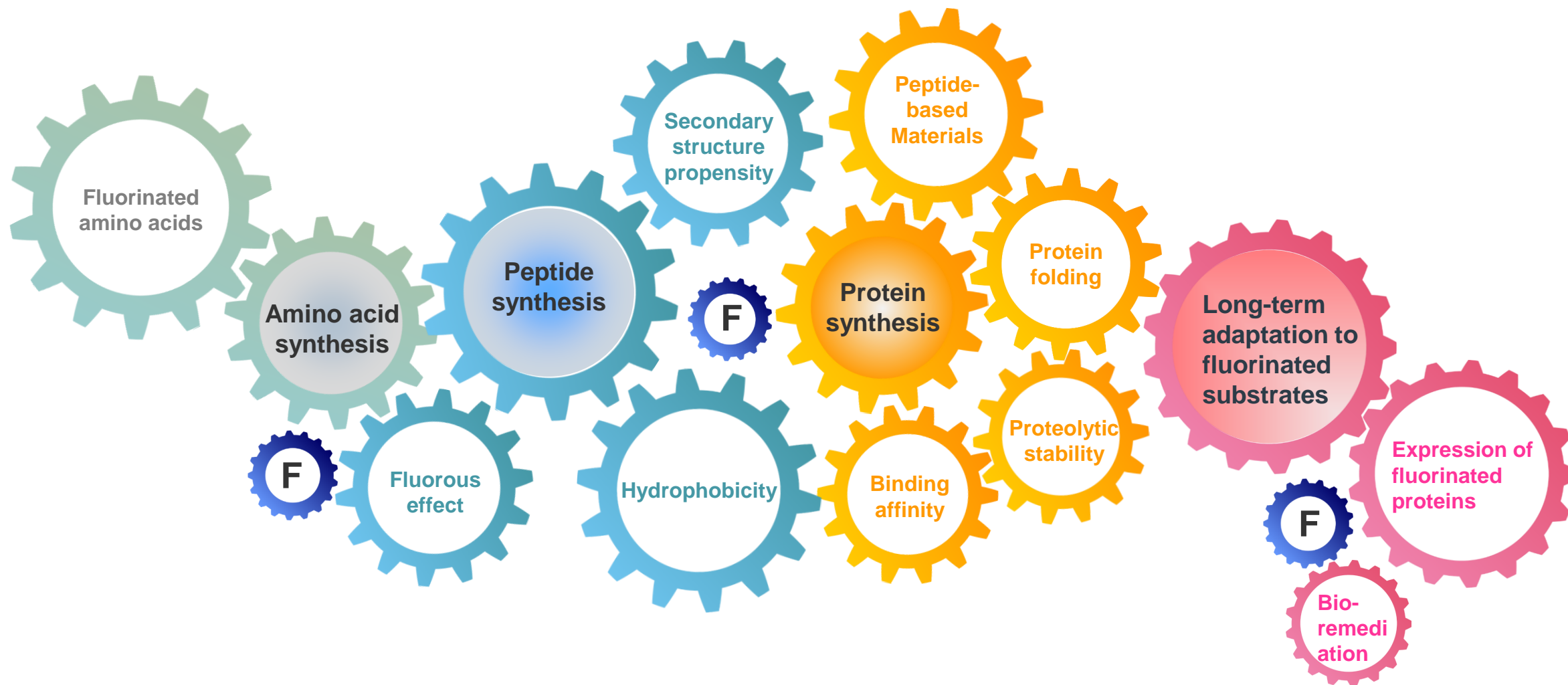
Freie Universität Berlin, Arnimallee 20, 14195 Berlin, beate.koksch@fu-berlin.de



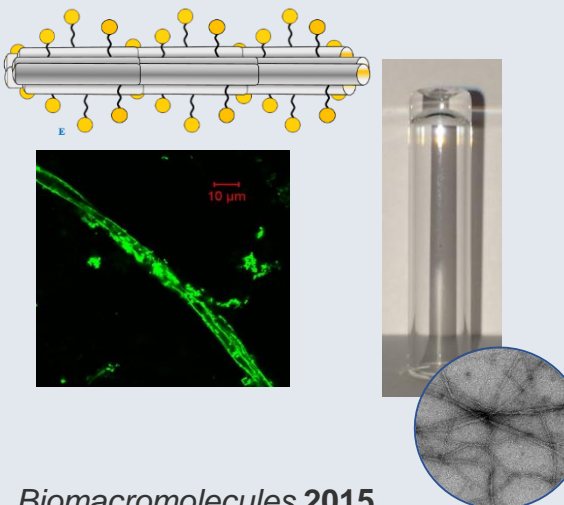
We are Peptide and Protein Engineers



FLUORINE is one of our favourite tools



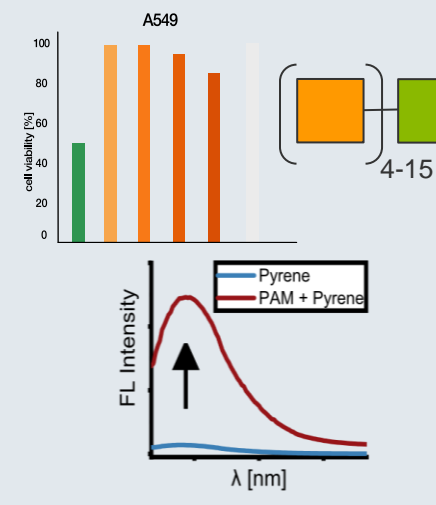
Current projects and topics for Internships and Master Theses



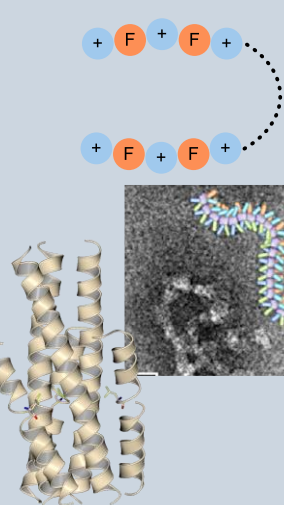
Biomacromolecules 2015
ACS Peptide Sci 2021
Biomacromolecules 2023



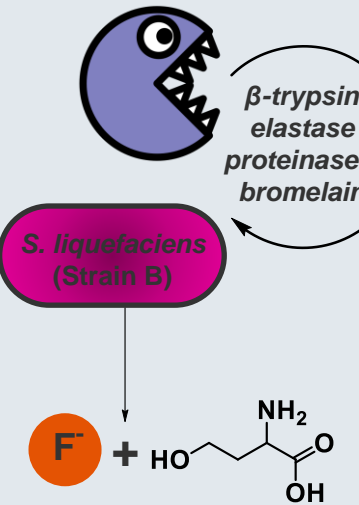
ChemBioChem 2020
Angew Chem 2022



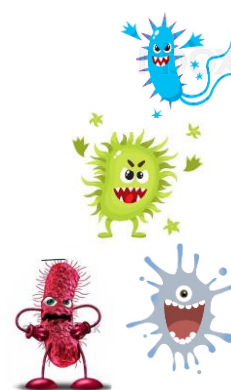
Chem EurJ 2022



Pept Sci 2019 & 2023
ChemBiochem 2022



Envi Sci Tech 2023



Front Synth Biol 2024

Hydrogels that mimic mucus and extracellular matrix

Gigantic peptide layers and amyloids

Polyfluorinated peptides for selective drug targeting

Antimicrobial peptides

Degradation of polyfluorinated amino acids

Bacteria with fluorinated proteom



New EU RTN Initiative

Collaboration with Ned Budisa University of Manitoba

Current and future topics for Internships and Master Theses

- Fine-tuning antimicrobial activity of an artificial β -hairpin motif by strengthening π stacking interactions
- Antimicrobial activity of SAJO-analogues modified at the Tryptophane positions
- Incorporation of tailor-made fluorinated amino acids to fine-tune peptide self-assembly
- Establishing a gigantic fluorinated peptide layer
- Biologically active fluoro-peptide conjugates, 1, 2, 3,...
- Probing the Stress Response of Fluorine-adapted *Escherichia coli*
- Library design of a dehalogenase for screening specificities toward highly fluorinated amino acids
- Re-cloning a dehalogenase gene
- Metal-ion induced cross-linking in mucin inspired peptide hydrogels
- Cross-linking in mucin inspired peptide hydrogels by disulfide bridges
- Alanine scan of Histidine positions in N-terminal A β - fragments
- Inhibition of A β -amyloid formation by interaction with charged polysaccharides
-

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CRC 765 – Multivalency



DFG-Collaborative Research Center
CRC 1349 – Fluorine specific interactions

DFG-Collaborative Research Center
SFB 1114 – Scaling Cascades