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Leibniz-Institut für
Molekulare Pharmakologie

Doctoral student position
(FMP, Peptide-Lipid Interaction /Peptide Transport Group)

DFG-financed project: Peptide-modified micellar nanocarriers to mediate transport at the blood brain barrier (BBB)
PhD position, three years, TVöD/E13 (67%)

The research of our group is focused on peptides as targeting and cellular uptake-promoting compounds (structural requirements, attachment of molecular cargos and lipid based particles, mode of uptake) and peptides as membrane-disturbing and membrane-translocating antimicrobial agents(structure -activity relationship).

Besides polymeric nanoparticles and liposomes more recently micelles modified with blood brain barrier (BBB)-recognizing moieties have emerged as promising systems to deliver drugs to the brain. One group of targeting and cellular uptake-mediating vectors represent so called cell penetrating peptides (CPPs). We developed a targeting and cellular uptake-mediating lipopeptide which forms stable micelles and rapidly incorporates into liposomes. The properties provide the potential for the activation of different modes of cellular uptake and allow the formation of different particulate systems.
This project aims at exploiting the advantageous properties of lipopeptides to develop an optimized carrier system. The work will be focussed upon the analysis of the role of physical properties such as size and surface charge of peptide-modified micelles in the mode of uptake into brain capillary endothelial cells in comparison to other endothelial cells. The efficacy of the transport will be studies in a cellular functional assay. As the result of these studies we expect to define parameters for the peptide/lipid-based systems which determine the activation of a selective and efficient uptake route into brain capillary endothelial cells. The results will support the development of carriers with optimized BBB-targeting and -translocating ability.

Recent publications: Biochim. Biophys. Acta (2009)1788(2) 442-449; J. Am. Chem. Soc. (2009) 131(2), 406-407; Biochim. Biophys. Acta (2008) 1778(12), 2781-2789; Contrast Media Molecular Imaging (2008) 3(6) 333-342; Biochim. Biophys. Acta (2006)758, 552-561; Biochemistry (2005) 44, 2021-2029.

For this position, which is available from now, we are looking for a student interested in biophysics, biochemistry, cell biology and pharmaceutical research.
The work encompasses peptide synthesis and characterization, studies of peptide interaction with lipids and drug models using spectroscopic and microscopic methods and investigation of cellular uptake (CLSM, FACS).
Applications from biochemists, pharmacists, biophysicists or chemists are welcome.

Doctoral students may join the Graduate program of the FMP.

Please direct your application with full CV and references to:
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