

Ph.D. Project Number	14
in Project cluster	Drug Delivery and Biological Barriers
Supervisors + Affiliations	<p>Prof. Dr Alexandra K. Kiemer Saarland University (Campus Saarbrücken), Department of Pharmacy, Pharmaceutical Biology https://www.uni-saarland.de/en/chair/kiemer/research.html</p> <p>Jun.Prof. Dr. Daniela Yildiz née Dreymueller Saarland University (Campus Homburg), Institute of Experimental and Clinical Pharmacology and Toxicology https://www.uni-saarland.de/fakultaet-m/pzms/gruppe/pharmakologie-toxikologie/jun-prof-dr-daniela-yildiz.html</p>
Description research focus/environment	The Kiemer group has a major research focus on the regulation of inflammatory and immunosuppressive actions of macrophages. The Yildiz group has a major focus on ADAM proteases as drug targets in inflammatory and infectious diseases. Both groups have a strong expertise in extracellular vesicles and their biological relevance. Research is mostly done on primary human cell cultures.
Project title	Extracellular vesicles as pathobiochemical regulators and antibacterial delivery vehicles
Short description Ph.D. project	Doctoral candidate (DC) 14 will assess the role of extracellular vesicles (EVs) in the interaction between bacteria and host cells, but also as antibacterial delivery vehicles. Effects of EVs isolated from either pathogenic bacteria or drug-producing bacterial strains on the activation of macrophages will be assessed. <i>Vice versa</i> , effects of EVs isolated from macrophages in different polarisation stages on pathogenic bacteria will be studied. EVs can be exogenously loaded with antibacterial compounds (collaboration Prof. G. Fuhrmann). These characterized EVs will be investigated under (patho)physiological conditions in wound (infection) models (with DC10 and DC11) and zebrafish models (with DC15). The DC will work with primary human macrophages, mammalian or bacterial EVs, and will apply multi-color flow cytometry, high-content live-cell microscopy and molecular biology techniques (RNA-Seq, qPCR, ELISA) and analyze macrophage and bacterial metabolism.
Secondment	The secondment to the Vlaams Institute for Biotechnology (VIB) in Ghent, Belgium provides an experience of bioinformatics analysis for the EVs under expert guidance of Prof. C. Libert.
Required or advantageous skills/competences	MSc (or equivalent) in Pharmacy, Biology, Biotechnology or related fields. Expertise in cell culture, molecular biology, microscopy, flow cytometry. Open-minded person motivated to work in a multidisciplinary team.
Career perspectives	Scientific career in biomedical or pharmaceutical area in academia or industry.
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