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UNIVERSITÄTSKLINIKUM ULM | Institut für klinische und experimentelle
Trauma-Immunologie

Institut für klinische und
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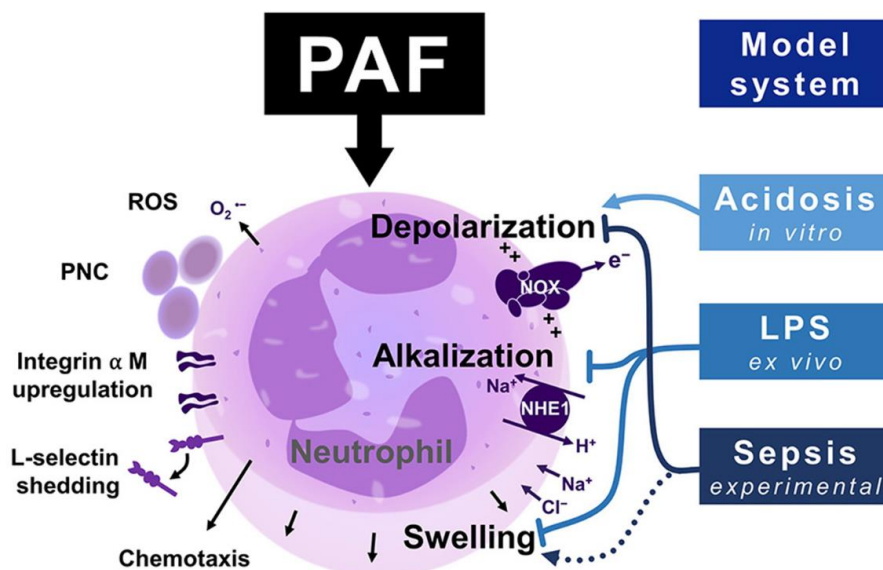
<https://www.uniklinik-ulm.de/klinische-und-experimentelle-trauma-immunologie>

Announcement: Master Thesis at the Institute of Clinical and Experimental Trauma-Immunology

August 2022

Sepsis and severe physical trauma are complex entities in clinical management. Despite progress in emergency and critical care medicine, a key factor for bad outcome is the excessive activation of the innate immune system, which contributes to the multi organ dysfunction syndrome (MODS) and ultimately, death (1,2).

During severe systemic inflammation, there are distinct alterations in the biology of leukocytes, e.g. the intracellular pH, their phagocytotic activity, and their interaction with platelets (3–5). There are several inflammatory mediators like platelet-activating factor (PAF) that are involved in these processes. However, further research is warranted to elucidate how the interaction of platelets and/or platelet-derived extracellular vesicles alters neutrophil biology during sepsis.



Graphical summary of a recent project-related publication (Hug et al., Frontiers in Immunology 2021, [4])

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Our institute offers students the opportunity to realize their master thesis (molecular medicine, biology, biochemistry or related fields) in a working environment that combines experimental research with strong connections to clinical medicine in the field of immunology research with a focus on shock, sepsis, and severe injuries. We are looking for committed and self-sufficiently working students, preferably with a background knowledge in the routine methods of immunology (e.g. western blotting, immunohistochemistry, and enzyme-linked immunosorbent assays).

Currently, we are seeking a highly motivated master candidate starting in winter term 2023/24 or summer term 2024.

We offer you comprehensive insights into planning, executing, and interpreting experiments and provide you with a basic knowledge in statistical analysis of scientific data. In the course of your research, you will be mentored to perform routine assays of immunological research. You will gain deep insights into flow cytometry and a clinically relevant ex vivo whole blood model system. Currently, we are seeking potential candidates to further elucidate the interaction of platelets and neutrophils in the context of acute inflammation such as sepsis and trauma.

For further information of our research field, please refer to <https://www.uniklinik-ulm.de/klinische-und-experimentelle-trauma-immunologie/team/dr-med-david-messerer.html> and the listed references. Please send an informative letter of application as well as your CV (including a list of previous internships and a transcript of records) to david.messerer@uni-ulm.de. Applications can be drafted in German or in English. For questions, feel free to contact Dr. Messerer.



Prof. Dr. med. Markus-Huber-Lang

Dr. med. David Messerer

References:

1. Huber-Lang M, Lambris JD, Ward PA. Innate immune responses to trauma. *Nat Immunol.* 2018 Apr;19(4):327–41.
2. Messerer DAC, Halbgebauer R, Nilsson B, Pavenstädt H, Radermacher P, Huber-Lang M. Immunopathophysiology of trauma-related acute kidney injury. *Nat Rev Nephrol* [Internet]. 2020 Sep 21 [cited 2020 Oct 14]; Available from: <http://www.nature.com/articles/s41581-020-00344-9>
3. Messerer DAC, Schmidt H, Frick M, Huber-Lang M. Ion and Water Transport in Neutrophil Granulocytes and Its Impairment during Sepsis. *Int J Mol Sci.* 2021 Feb 8;22(4).
4. Hug S, Bernhard S, Stratmann AEP, Erber M, Wohlgemuth L, Knapp CL, et al. Activation of Neutrophil Granulocytes by Platelet-Activating Factor Is Impaired During Experimental Sepsis. *Front Immunol.* 2021 Mar 16;12:642867.
5. Stratmann AEP, Wohlgemuth L, Erber ME, Bernhard S, Hug S, Fauler M, et al. Simultaneous Measurement of Changes in Neutrophil Granulocyte Membrane Potential, Intracellular pH, and Cell Size by Multiparametric Flow Cytometry. *Biomedicines.* 2021 Oct 20;9(11):1504.