

COINS Seminar #51

[Date] 17/December/2019 (Tue.) 16:00 – 17:30 (Registration Open at 15 : 30)

* Research Mixer 17:30-18:15 *JPY500

[Venue] Innovation Center of NanoMedicine (iCONM) 3F 3001 Meeting room

[Registration] URL: https://www.cis-trans.jp/coins_seminar51/index.html

◆Part 1 16:00-16:45

Title : Nano on ICU: Overcoming limitations for the treatment of organ failure

Hepatic dysfunction and jaundice are late features of sepsis associated with poor outcomes. Phosphoinositide 3-kinases (PI3K) mediate critical functions in multiple cells, affecting among others, hepatocellular phase I, II, and III metabolism, immune cell recruitment and host defense. We and others have shown that mice lacking PI3K- γ are protected against hepatic excretory dysfunction while exhibiting a severe immune defect that disturbs recruitment of neutrophils to sites of infection. Thus, in order to exploit the therapeutic potential of (among others) PI3K- γ inhibitors, targeted delivery strategies enabling compartmentalized inhibition of kinase function in selected tissues or organs while maintaining critical immune functions are critical for the development of novel therapeutics.

Speaker : Prof. Dr. Michael Bauer

Affiliation : Jena University Hospital, Dep. Anesthesiology & Intensive Care Medicine

Position : Director

URL : <https://www.uniklinikum-jena.de/kai/>



| | |
|----------------------|---|
| ... since April 2016 | Director, Dept. of Anaesthesiology and Intensive Care Medicine, Jena University Hospital |
| 2010-2016 | Professor (W3) and Chief-Executive-Director, Center for Sepsis Control and Care, Jena University Hospital |
| 2004-2010 | Professor (C3) and vice chair, Dept. of Anaesthesiology and Intensive Care Medicine, Jena University Hospital |
| 1998-1999 | Visiting adjunct professor, Dept. of Biology, University of North Carolina, Charlotte, USA |

Selected publications:

1. **Bauer M** et al. Remembering Pathogen Dose: Long-Term Adaptation in Innate Immunity. *Trends Immunol.* 2018 Jun;39(6):438-445..
2. Weis S, Carlos AR, Moita MR, Singh S, Blankenhaus B, Cardoso S, Larsen R, Rebelo S, Schäuble S, Del Barrio L, Mithieux G, Rajas F, Lindig S, **Bauer M**, Soares MP. Metabolic Adaptation Establishes Disease Tolerance to Sepsis. *Cell.* 2017
3. Seidel RA, Claudel T, Schleser F, Ojha NK, Westerhausen M, Nietzsche S, Karailieva D, Sponholz C, Cuperus F, Coldewey SM, Heinemann SH, Pohnert G, Trauner M, **Bauer M**. Impact of higher-order heme degradation products on hepatic hemodynamics, function and integrity. *J Hepatol* 2017
4. Singer M, Deutschman CS, Seymour CW, Shankar-Hari M, Annane D, **Bauer M**, Bellomo R, Bernard GR, Chiche JD, Coopersmith CM, Hotchkiss RS, Levy MM, Marshall JC, Martin GS, Opal SM, Rubenfeld GD, van der Poll T, Vincent JL, Angus DC (2016). The 3rd International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). *JAMA* **315**: 801-10.
5. Press AT, Ramoji A., von der Lüche M, Rinkenauer AC, Hoff J, Butans M, Rössel C, Pietsch C, Neugebauer U, Schacher FH, **Bauer M**. Cargo-carrier interactions significantly contribute to micellar conformation and biodistribution. *NPG Asia Materials* volume 9, pagee444 (2017)

◆Part 2 16:45-17:30

Title : Raman spectroscopic imaging reveals changes in the micellar conformation dictating pharmacokinetic properties

Strategies to deliver drugs using nanocarriers, which are passively or actively targeted to their alleged site of action, might affect benefit-risk-profiles of novel therapeutics favorably. We recently demonstrated interactions within or in-between carrier and cargo are influencing the pharmacokinetic properties such as biodistribution, hence must be considered while designing translational nanocarrier platforms. To understand the surface changes affecting the biomedical applications in sub-100 nm micelles suitable methods are missing.

Speaker : Dr. Adrian T. Press

Affiliation : Jena University Hospital, Nanophysiology Group

Position : Group leader

[https://www.uniklinikum-](https://www.uniklinikum-jena.de/kai/Forschung+_Research/Nanophysilogie.html)

[jena.de/kai/Forschung+_Research/Nanophysilogie.html](https://www.uniklinikum-jena.de/kai/Forschung+_Research/Nanophysilogie.html)



... since 2016
2016

Group leader, Nanophysiology Group, Jena University Hospital
PhD in Molecular Biomedicine ((Friedrich-Schiller University, Jena, Germany)

2015

Master of Science in Molecular Medicine (Friedrich-Schiller University, Jena, Germany)

2013

Bachelor of Science in Molecular and Technical Medicine (Furtwangen University, Germany)

Selected publications:

Press AT, Traeger A, Pietsch C, Mosig A, Wagner M, Clemens MG, Jbeily N, Koch N, Gottschaldt M, Bézière N, Ermolayev V, Ntziachristos V, Popp J, Kessels MM, Qualmann B, Schubert US, Bauer M, Cell type-specific delivery of short interfering RNAs by dye-functionalised theranostic nanoparticles. *Nat Commun.* 2014; 3(5):5565

Rinkenauer AC, **Press AT**, Raasch M, Pietsch C, Schweizer S, Schwörer S, Rudolph KL, Mosig A, Bauer M, Traeger A, Schubert US, **Comparison of the uptake of methacrylate-based nanoparticles in static and dynamic in vitro systems as well as in vivo. *J Control Release.* 2015; 28(216):158-68**

Press AT, Ramoji A, Moritz vd. Lühe, Alexandra C. Rinkenauer, Jessica Hoff, Marianne Butans, Rössel C, Pietsch C, Neugebauer U, Schacher FH, Bauer M, Cargo-carrier interactions significantly contribute to micellar conformation and biodistribution. *NPG Asia Materials* 2017; 9:e444

Schaarschmidt B, Vlaic S, Medyukhina A, Neugebauer S, Nietzsche S, Gonnert FA, Rödel J, Singer M, Kiehntopf M, Figge MT, Jacobsen ID, Bauer M, **Adrian AT, Molecular signatures of liver dysfunction are distinct in fungal and bacterial infections in mice. *Theranostics* 2018; 8(14):3766-3780**