

DBMR Research Conference

Langhans Auditorium
Murtenstrasse 31, 3008 Bern

Date: Monday, January 13, 2025, 5pm – 6pm

Title: Studying the immune response in liver throughout life

Speaker: Prof. Dr. Paul Kubes, Canada Excellence Research Chair in Immunophysiology and Immunotherapy, Queen's University, Kingston, Ontario, Canada

Bio: Paul Kubes is the current Canada Excellence Research Chair in Immunophysiology and Immunotherapy at Queen's University and the former Director of the Snyder Institute for Chronic Diseases at the University of Calgary. As the Director of the Snyder Institute, Dr. Kubes led numerous collaborative initiatives, overseeing more than 50 basic scientists and 50 clinician scientists. His leadership was instrumental in securing large infrastructure grants that supported the development of cutting-edge core facilities, including a world-class Imaging Facility and the International Microbiome Center, both of which promoted further collaborations. During the COVID-19 pandemic, he led an interdisciplinary team to establish a SARS-CoV-2 research program, which included the creation of a \$20 million Level 3 biocontainment facility. Dr Kubes latest collaborative endeavor was to answer a call by the Canadian Government to address lung health issues by assembling a transdisciplinary team including an atmospheric engineer, clinician scientists and basic immunologists. He and his team have published several paradigm-changing publications in the field of immunobiology, underscoring his ability to lead impactful, multi-institutional research initiatives. Dr Kubes is internationally recognized for his pioneering work in intravital microscopy, which has unveiled critical mechanisms underlying dynamic biological processes. Renowned for his ability to communicate complex scientific concepts with clarity and enthusiasm, this seminar is highly recommended for all attendees.

Abstract: We have become interested in how the liver macrophages or Kupffer cells become very important intravascular cells for maintaining homeostasis. We will show that at birth they are perivascular and require migration into the lumen of vessels to be able to catch bacteria. This leaves neonates quite vulnerable to blood stream infections. Once they survive these early life events, the Kupffer cells reach out to other cells and become bona fide liver macrophages and self-sustain for life unless the local environment is severely perturbed. Indeed, if we alter the structure of the liver vasculature by inducing fibrosis, narrowing sinusoids and increasing collateral vessels, the Kupffer cells lose their local environmental input and dedifferentiate into a more monocyte-like cell. This and the poor perfusion of sinusoids again increases the susceptibility to blood stream infections. However, in this instance, the bone marrow derived monocytes are recruited into the collateral vessels where they form large syncytial structures (clusters of monocytes) that upregulate key Kupffer cell molecules to help decrease blood stream infections. Interestingly, reversal of the fibrosis leads to some structural changes and loss of syncytia, but the Kupffer cells retain a mechanical memory that prevents them from reverting back to efficient Kupffer cells.

Host: Prof. Guido Beldi Department for Visceral Surgery and Medicine, Faculty of Medicine and Department for BioMedical Research, University of Bern.

The DBMR Research Conference takes place from 5 pm – 6 pm and will be followed by an apéro.

Next DBMR Research Conference: Monday, February 3, 2025, 5pm-6pm
Speaker and title: tba



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