

NCCR AntiResist Seminar Series

Monday June 12. 2023,

Biozentrum Basel, Room U1.101, start: 5.15 pm / ZOOM

Speaker

Prof. Charlotte Scott

VIB-UGent, Center for Inflammation Research, Belgium

DeLIVERing a spatial cell atlas of the healthy and obese liver across species

The liver is the largest solid organ in the body, yet it remains incompletely characterized. Here, we present a spatial proteogenomic atlas of the healthy and obese human and murine liver combining single-cell CITE-seq, single-nuclei sequencing, spatial transcriptomics and spatial proteomics. By integrating these multi-omic datasets, we provide validated strategies to reliably discriminate and localize all hepatic cells, including a population of lipid-associated macrophages (LAMs) at the bile-ducts. We then align this atlas across seven species, revealing the conserved program of *bona fide* Kupffer cells and LAMs. We also uncover the respective spatially-resolved cellular niches of these macrophages and the microenvironmental circuits driving their unique transcriptomic identities. Specifically, we demonstrate that LAMs are induced by local lipid exposure, leading to their induction in steatotic regions of the murine and human liver. The profile, location and increased abundance of LAMs in NAFLD has made these cells a key target for our ongoing functional studies aimed at unravelling the role played by these cells in NAFLD pathogenesis.

Host: Prof. Dirk Bumann