ACME Seminar

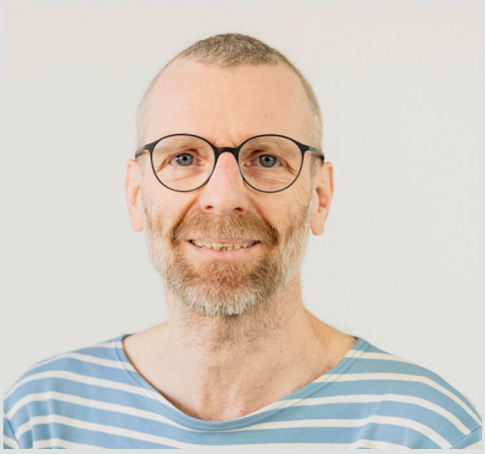
Speaker	**Prof. Roland Lang**
Title	**Immunoregulation and antimicrobial activity by itaconate in macrophages**
When	**30.07.2026, 13:00**
Where	**Lecture Hall Q**
Host	**Dr. Nishanth Gopala**

Research interests of Roland Lang

Balancing innate immune activation and deactivation

The question driving our research is how the immune system generates resistance to infection without causing excessive inflammation. This implies a need for efficient sensing of microbes, production of inflammatory cytokines that direct adaptive immune responses, and regulatory mechanisms to prevent immunopathology and achieve resolution of inflammation.

Innate immunity's pattern recognition receptors trigger rapid and robust anti-microbial responses. In a collaboration with the lab of Anja Lührmann, we recently showed a pivotal role of TLR-MyD88 in efficient sensing and elimination of Coxiella burnetii, the cause of Q fever in the mouse model in vivo (Kohl 2019). Like Q fever, tuberculosis is caused by an intracellular pathogen surviving in macrophages. We have discovered that the cord factor of the mycobacterial cell wall activates macrophages through the SYK-CARD9 pathway after being sensed by the C-type lectin receptor Mincle (Werninghaus 2009; Schoenen 2010), leading to strong Th17 immunity (Desel 2013). Dissecting the requirements for Mincle activation by microbial glycolipids and identification of signaling and transcription factors involved has been a focus of the lab (Schoenen 2014; Huber 2016; Ostrop and Lang 2017; Schick 2017; Hansen 2019, Huber 2020). Since we found that IL-4 inhibits expression of several Dectin-2 family C-type lectin receptors in mouse and human (Ostrop 2015; Hupfer 2016; Lang and Schick 2017), we are now investigating the functional consequences of CLR regulation by different cytokines (Schick 2020). In addition, the role of TDM-Mincle signaling in immune evasion by mycobacteria is addressed in ongoing work.



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Activation of Cellular anti-Microbial