



Infectious  
Diseases Labs

ID LABS



## Professor Jörg Vogel

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**Thursday, 1 June 2023**

**10:00am to 11:00am (SGT)**

**Venue: Diversity @ Immunos L5**

### Programmable RNA Antibiotics

Our body is colonized by a vast array of bacteria the sum of which forms our microbiota. The gut alone harbors >1,000 bacterial species. An understanding of their individual or synergistic contributions to human health and disease demands means to interfere with their functions on the species level. Most of the currently available antibiotics are broad-spectrum, thus too unspecific for a selective depletion of a single species of interest from the microbiota. Programmable RNA antibiotics in the form of short antisense oligomers (ASOs) promise to achieve precision manipulation of bacterial communities. These ASOs are coupled to small peptides that carry them inside the bacteria to silence mRNAs of essential genes, for example, to target antibiotic-resistant pathogens as an alternative to standard antibiotics. There is already proof-of-principle with diverse bacteria, but many open questions remain with respect to true species specificity, potential off-targeting, choice of peptides for delivery, bacterial resistance mechanisms and the host response. While there is unlikely a one-fits-all solution for all microbiome species, I will discuss how recent progress in bacterial RNA biology may help to accelerate the development of programmable RNA antibiotics for microbiome editing and other applications.

**Prof Jörg Vogel** is full Professor and Director of the Institute for Molecular Infection Biology at the University of Würzburg. Since 2017, he has also been founding director of the Helmholtz-Institute for RNA-based Infection Research. His lab strives to understand the role of noncoding RNA and RNA-binding proteins in bacterial pathogens and in members of the human microbiome. He has developed new single-cell RNA-seq techniques to chart the RNA landscape of important microbes and to understand how bacteria use RNA as a regulator during infections. He asks mechanistic questions of RNA biology but also works on RNA-centric manipulations of the microbiota.

**Host: Dr Stefan Oehlers**

Webinar is open to all. No registration required

Questions? Contact us at [seminars@idlabs.a-star.edu.sg](mailto:seminars@idlabs.a-star.edu.sg)

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