



Der Vorsitzende des Promotionsausschusses

EINLADUNG

Hiermit lade ich ein zum öffentlichen Promotionskolloquium von

Frau M.Sc. Selina Deckarm

Mikrobielle Naturstoffe
(Prof. Dr. Rolf Müller)

am

Mittwoch, 3. September 2025, 13:00 Uhr s.t.

per Videokonferenz: Link für MS Teams: <https://tinyurl.com/4h27kmhs>

Raum für die Prüfung: HIPS, Gebäude E 8.1, Seminarraum EG 0.27

Thema der Dissertation:

Heterologous expression and genetic engineering of natural product biosynthetic pathways

Multidrug-resistant bacteria are emerging globally due to antibiotic overuse and bacterial resistance, representing an escalating threat to human health. Darobactins are a novel class of antibiotics effective against such critical Gram-negative pathogens. This work focuses on the generation of novel darobactin derivatives, some of which demonstrate improved bioactivity, such as, the lead candidate D22 showing promising efficacy in *in vitro* and *in vivo* models. In addition, structural constraints of the biosynthetic machinery were analyzed, and production bottlenecks in *Escherichia coli* were identified. To overcome these, alternative heterologous hosts—including Gram-positive and eukaryotic systems—were evaluated. Furthermore, efforts to identify the previously unknown peptidase involved in darobactin's maturation process are described, which could pave the way for enhancing its production efficiency.

Saarbrücken, 19. August 2025

Prof. Dr.-Ing. Georg Frey