



Der Vorsitzende des Promotionsausschusses

EINLADUNG

Hiermit lade ich ein zum öffentlichen Promotionskolloquium von

Herrn M.Sc. Wei Shu
Systembiotechnologie
(Prof. Dr. Christoph Wittmann)

am

Freitag, 17. Oktober 2025, 15:00 Uhr s.t.

per Videokonferenz:

<https://teams.live.com/join/9364971514664?p=d0VYArLKZ6OhtOnjPa>

Raum für die Prüfung: Gebäude C4.3, Kleiner Hörsaal I (Raum 0.02)

Thema der Dissertation:

Taxonomic characterization of a novel marine *Streptomyces* and its application in nybomycin production enhancement through systems metabolic engineering

Members of *Streptomyces* are prolific natural product producers, and nybomycin has emerged as a promising candidate to restore fluoroquinolone activity against *Staphylococcus aureus*. We identified the novel strain *Streptomyces explomaris* from the rhizosphere soil of *Juniperus excelsa* on the Crimean Peninsula and found it to be a superior heterologous nybomycin producer compared to other hosts. Transcriptomic analysis revealed downregulation of precursor pathways and upregulation of regulatory genes. Guided stepwise metabolic engineering alleviated these bottlenecks, and the engineered strain NYB-3B achieved a five-fold increase in production (57 mg L⁻¹). It also efficiently utilized seaweed hydrolysates, highlighting marine-derived feedstocks for sustainable antibiotic production.

Saarbrücken, 3. Oktober 2025

Prof. Dr.-Ing. Georg Frey