



Der Vorsitzende des Promotionsausschusses

EINLADUNG

Hiermit lade ich ein zum öffentlichen Promotionskolloquium von

Frau Apothekerin Helena Loer

Klinische Pharmazie
(Prof. Dr. Thorsten Lehr)

am

Donnerstag, 30. Oktober 2025 - 15:00 Uhr s.t.

per Videokonferenz: Link für MS Teams: <https://msteams.link/CZB3>

Raum für die Prüfung: Gebäude C4.4, Seminarraum 0.01

Thema der Dissertation:

Predicting Complex Drug Interactions of CYP3A4 , CYP3A5 , and CYP2D6 Substrates : Physiologically based Pharmacokinetic Modeling for Individualized Therapy

Personalized medicine aims to maximize efficacy and safety by considering inter-patient variability in treatment decisions. Drug-gene (DGIs) and drug-drug interactions (DDIs), often co-occurring as drug-drug-gene interactions (DDGIs), are leading causes of variable response and adverse drug reactions. However, given the vast number of potential interactions, they cannot all be clinically tested. Physiologically based pharmacokinetic (PBPK) modeling enables mechanistic predictions of untested DD(G)Is and supports model-informed dosing. In this thesis, PBPK models were developed for the cytochrome P450 (CYP) 3A4 and 3A5 substrates tacrolimus, imatinib, and dasatinib, along with a comprehensive CYP2D6-centered model network. Their predictive performance was evaluated in numerous DD(G)I scenarios. In addition, untested DD(G)Is and model-informed dose adaptations were simulated. Overall, this thesis showcases PBPK modeling as a promising tool to bridge knowledge gaps and advance individualized therapy.

Saarbrücken, 16. Oktober 2025

Prof. Dr.-Ing. Georg Frey