Personal Details

Dominic Stefan Bräm
Pediatric Pharmacology and Pharmacometrics
University Children's Hospital Basel
Spitalstrasse 33, 4056 Basel, Switzerland

Education & Work Experience

2021 – 2024 — **PhD student in Pediatric Clinical Pharmacology and Pharmacometrics, University of Basel**
Investigate neural ordinary differential equations (NODEs) in pharmacometrics and develop NODE structures specifically for pharmacometric applications, translate machine learning models to classical pharmacometric models, apply machine learning to impute missing covariate data for pharmacokinetic analysis, conduct classical pharmacokinetic and pharmacodynamic analysis with drug-drug interaction, optimize drug dosing for clinical application and personalized medicine

2020 – 2021 — **Internship on Advanced Analytics in Pharmacometrics, Roche**
Investigate the application of artificial neural networks in pharmacokinetic modelling

2019 – 2020 — **Master Thesis: *Population Pharmacokinetics in Patient Data and Image Analysis***
Investigate population pharmacokinetics in pediatrics for Busulfan and Gentamycin, analyze PET-data using ordinary differential equations and analytical approaches

2019 — **Research Project: *Interrupted time series analysis of acetaminophen intoxications and the influence of a policy change***
Conduct statistical time series analysis of spontaneous case reports, investigate effect of new dosage strength on acetaminophen intoxications

2018 — **Research Project: *Determination of kinetic parameters by simulating enzymatic assays***
Perform enzyme kinetic and inhibition assays, analyze observed dynamics with pharmacometric modeling

2018 – 2020 — **MSc Pharmaceutical Sciences, ETH Zurich**
Courses in Biopharmacy, Biostatistics, Pharmacoepidemiology, Computer-Assisted Drug Design, Scientific writing, Pharmacovigilance, Clinical Development etc.

2015 – 2018 — **BSc Pharmaceutical Sciences, ETH Zurich**
General courses in Mathematics, Statistics, Informatics, Biology, Chemistry, Biochemistry etc.

Teaching Activities

2023 and 2024 — **Applied Pharmacometrics Training mentoring program**
Teach and supervise doctoral-level students from Africa in pharmacometric analysis, including theoretical and practical background in pharmacometrics, development of analysis plans, and publication of scientific articles

2022 and 2024 — **R introduction course at University of Basel**
Organize and conduct an R introduction course for students and employees of University of Basel, including theoretical lectures and practical exercises

2023 — **Workshop on Machine Learning in Pharmacometrics at University of Buffalo**
Organize and conduct a workshop on integrating machine learning into pharmacometrics for students of the State University of New York, including theoretical lectures and practical exercises in Monolix

Funding

~200'000 CHF — **F. Hofmann-La Roche Ltd.**
Person- and project-related funding of PhD salary and over-head costs at the University Children's Hospital Basel

245'013 CHF — **SNF Project funding**
Project "Automation of pharmacometrics modeling by deducing mechanism-based models from neural ordinary differential equations", submitted by Dr. Gilbert Koch due to SNF regulations

Patent applications

1. **Bräm, DS**, Koch, G, Pfister, M. Computer system and method for generating a data driven interpretable pharmacometrics prediction model to predict medical state parameters of a patient of a special population. Submitted to European Patent Office 26.04.2024, File number EP24172640.5 [Decision pending]

2. **Bräm, DS**, Parrot, N, Hutchinson, L, Steiert, B. Prediction of pharmacokinetic curves. Submitted to European Patent Office, filing date 14.07.2022, publication date 19.01.2023, File number EP4371118 [Decision pending]

Oral Presentations at Conferences and Seminars

2024	**Modeling & Simulation Seminar, Basel, Switzerland** Modeling pharmacometric data with neural ODEs: Get insights into unknown model structures with machine learning
2024	**Drug Metabolism Discussion Group (DMDG) Open Meeting, York, United Kingdom** Application of Neural ODEs to predict PK and PD profiles
2023	**American Conference on Pharmacometrics (ACoP), Maryland, USA** Modeling pharmacometric data with Neural ODEs including inter-individual variability
2023	**Population Approach Group Europe (PAGE) Meeting, Rome, Italy** Neural ODE structures based on pharmacokinetic principles
2022	**American Society for Clinical Pharmacology and Therapeutics (ASCPT) Satelite Session, online** Machine Learning supports covariate imputation in Pharmacometrics
2021	**Modeling & Simulation Seminar, Basel, Switzerland** Supporting Pharmacometrics by learning with machines

Extracurricular Activities

2010 – 2024	**Scout leader, Section leader, Group leader** Manage an association with over 120 members, lead a group of up to 20 scout leaders, work in a team, take responsibility, solve different kind of problems, deal with different areas e.g. corporate design & corporate identity, annual planning, event organization etc.
2018 – 2020	**Executive board member of the Academic Pharmacy Student's Association (APV), ETH Zurich - Chief editor of student magazine *Tonikum*** Organize editorial meetings, coordinate article submission, contact to sponsors, responsible for printing and publishing
2019	**SPHN Data Privacy and IT Security Training** Training for the handling of patient data