7th QSP SYMPOSIUM 2025

Quantitative Systems Pharmacology Symposium

July 29, 2025 Buffalo, NY



The Symposium brings together scientists interested in quantitative systems pharmacology (QSP) to present and discuss contemporary approaches, including the challenges and opportunities for advancing the science and practice of QSP. It is hoped the symposium serves to stimulate collaborations and synergies amongst its participants to promote discoveries in the field of QSP.

Tuesday, July 29, 2025

8:00 am Registration and continental breakfast

8:30 am

Welcome and Introductory Remarks

Sukyung Woo, PhD Professor, Pharmaceutical Sciences, University at Buffalo

Anne Talkington, PhD Assistant Professor, Pharmaceutical Sciences, University at Buffalo

8:45 am

Modeling Perturbations to Immune Activity in the Solid Tumor Microenvironment

Anne Talkington, PhD Assistant Professor, Pharmaceutical Sciences, University at Buffalo

9:30 am

Current Progress and Future Opportunities for Innovation in Virtual Population Simulations for QSP Blerta Shtylla, PhD Senior Director, QSP Group Lead, Pharmacometrics & Systems Pharmacology, Pfizer

10:15 am Networking and Coffee Break

10:45 am

Machine Learning-empowered PBPK and QSAR Models to Predict Pharmacokinetics of Drugs and Nanoparticles

Zhoumeng Lin, BMed, PhD, DABT, CPH, ERT Associate Professor, Department of Environmental and Global Health, University of Florida

11:30 am

Pharmacogenomics: Ready for Primetime or Hype?

Teri Klein, PhD

Director, Department of Biomedical Data Science's Precision Health and Pharmacogenomics Center of Excellence, Stanford University

12:15 pm Lunch

1:15 pm

Whole-patient and Spatial Quantitative Systems Pharmacology Models for Immuno-Oncology

Aleksander Popel, PhD

Professor, Department of Biomedical Engineering, Department of Medicine, Department of Oncology and Sidney Kimmel Comprehensive Cancer Center, Johns Hopkins University

2:00 pm

Modeling Individual Variability and the Impact of Immune Diversity in Respiratory Infections Amber Smith, PhD

Associate Professor, Department of Pediatrics, University of Tennessee Health Science Center

2:45 pm Networking and Coffee Break

3:15 pm PRiSM—Personalized Radiotherapy with Integrated Scientific Modeling

Heiko Enderling, PhD, FSMB

Professor, Department of Radiation Oncology, Director, Computational Modeling in Radiation Oncology Program, Co-Lead, Computational Modeling for Precision Medicine, IDSO, MD Anderson Cancer Center

4:00 pm Reception

Speakers

Heiko Enderling is a Professor in the Department of Radiation Oncology, Director of Computational Modeling in Radiation Oncology and Co-Leader in Computational Modeling for Precision Medicine/Institute for Data Science in Oncology at the MD Anderson Cancer Center. His research is focused on developing and applying data science approaches and mechanistic mathematical modeling techniques to decipher tumor growth and treatment response dynamics to individualize cancer therapy. Dr. Enderling develops clinically motivated quantitative models that are informable with patient-specific data for personalized treatment recommendations – Quantitative Personalized Oncology.

Teri Klein is the Director of Stanford Department of Biomedical Data Science's Precision Health and Pharmacogenomics Center for Excellence. She co-founded the Pacific Symposium on Biocomputing, the prestigious forum for publishing informatics in medicine and biology papers now in its 31st year and was a founding board member of the International Society of Computational Biology. Dr. Klein is the co-founder/ MPI of the Pharmacogenomics Knowledgebase (PharmGKB), the premiere online resource dedicated to the impact of human genetic variation on drug responses, the Clinical Pharmacogenetics Implementation Consortium (CPIC) which develops clinical dosing guidelines, the Pharmacogenomics Clinical Annotation Tool (PharmCAT) which annotates clinical genomes for pharmacogenomics and is PI of the Clinical Genome Resource (ClinGen). Dr. Klein received her Ph.D. in Medical Information Sciences from UCSF.

Zhoumeng Lin is an Associate Professor in the Department of Environmental and Global Health at the College of Public Health and Health Professions at the University of Florida (UF). He is a member of the Center for Environmental and Human Toxicology (CEHT) and the Center for Pharmacometrics and Systems Pharmacology (CPSP) at UF. He received a B.Med. In Preventive Medicine from Southern Medical University in China in 2009 and a Ph.D. in Toxicology from the University of Georgia in 2013. Dr. Lin's research is focused on the development and application of computational technologies, especially physiologically based pharmacokinetic (PBPK) modeling, quantitative structure-activity relationship (QSAR) modeling, machine learning, and artificial intelligence approaches, to study nanomedicine, food safety, nanoparticle and chemical risk assessment.

Aleksander Popel is a Professor of Biomedical Engineering at the Johns Hopkins University School of Medicine. He also holds appointments as a Professor of Oncology and Medicine and a member of the Sidney Kimmel Comprehensive Cancer Center. His areas of expertise are Systems Biology, Quantitative Systems Pharmacology, immuno-oncology, and development of therapeutic peptides. He delivered keynote addresses for The Virtual Physiological Human (VPH) European Union Physiome Project, and Next-Generation Integrated Simulation of Living Matter Project in Japan; he was C. Forbes Dewey Distinguished Lecturer in Biological Engineering at the Massachusetts Institute of Technology, delivered A.C. Suhren Lecture at Tulane University, Robert M. and Mary Haythornthwaite Distinguished Lecturer at Temple University, and Kawasaki Medical Society Lecturer in Japan. He serves on the Steering Committee, International Society of Pharmacometrics (ISoP) Quantitative Systems Pharmacology (QSP) Special Interest Group (SIG).

Blerta Shtylla is Senior Director at Pfizer. She serves as group lead for the Quantitative Systems Pharmacology team supporting the oncology portfolio within the Pharmacometrics and Systems Pharmacology department. Prior to Pfizer, Dr. Shtylla held multiple academic appointments, the most recent being Associate Professor of Mathematics. Her academic research focused on development and analysis of mathematical models applied to cancer therapies, autoimmune disease, bio-mechanical circuits involved in cell division, as well as control mechanisms involved in early development/morphogenesis. Her areas of expertise also include development of mathematical techniques for model uncertainty quantification and data assimilation applied to mechanistic differential equation models. She is author of several publications in quantitative systems pharmacology, mathematical biology, as well as editor of two books focused on mathematical modeling of complex biological processes.

Amber Smith is an Associate Professor in the Department of Pediatrics at the University of Tennessee Health Science Center. She earned her B.S. from the Colorado School of Mines and her M.S. and Ph.D. from the University of Utah. Following her doctoral studies, she completed postdoctoral training at Los Alamos National Laboratory and St. Jude Children's Research Hospital before establishing her own laboratory. Dr. Smith's research focuses on host-pathogen interactions during respiratory infections and multi-pathogen coinfections. Her lab employs an integrated approach that combines data-driven mathematical modeling, clinical data analysis, and model-driven experiments to explore disease mechanisms and therapeutic responses. By developing and calibrating mathematical models, virtual patient cohorts, and immune digital twins, her team aims to uncover fundamental biological insights and improve treatment strategies.

Anne Talkington is an Assistant Professor at the University at Buffalo Department of Pharmaceutical Sciences. Dr. Talkington works at the intersection of mathematical modeling, immunology, oncology, and pharmacology. She received her B.S. in Mathematics and B.A. in Biology from Duke University, and her M.S. in Applied Mathematics and Ph.D. in Computational Biology from the University of North Carolina at Chapel Hill. She then pursued postdoctoral research at the University of Virginia in Systems Immunology. Dr. Talkington recently completed a National Research Council Fellowship at the National Institute of Standards and Technology, where she developed a multiscale modeling framework for tumor-immune interactions. Since joining UB in early 2025, her emerging research group has focused on understanding spatiotemporal immune activity in the tumor microenvironment and optimization of therapeutic strategies for immune checkpoint inhibition. The Talkington Lab integrates computational models and experimental data to answer questions of optimization in drug activity and delivery strategies.