University at Buffalo

School of Pharmacy and Pharmaceutical Sciences

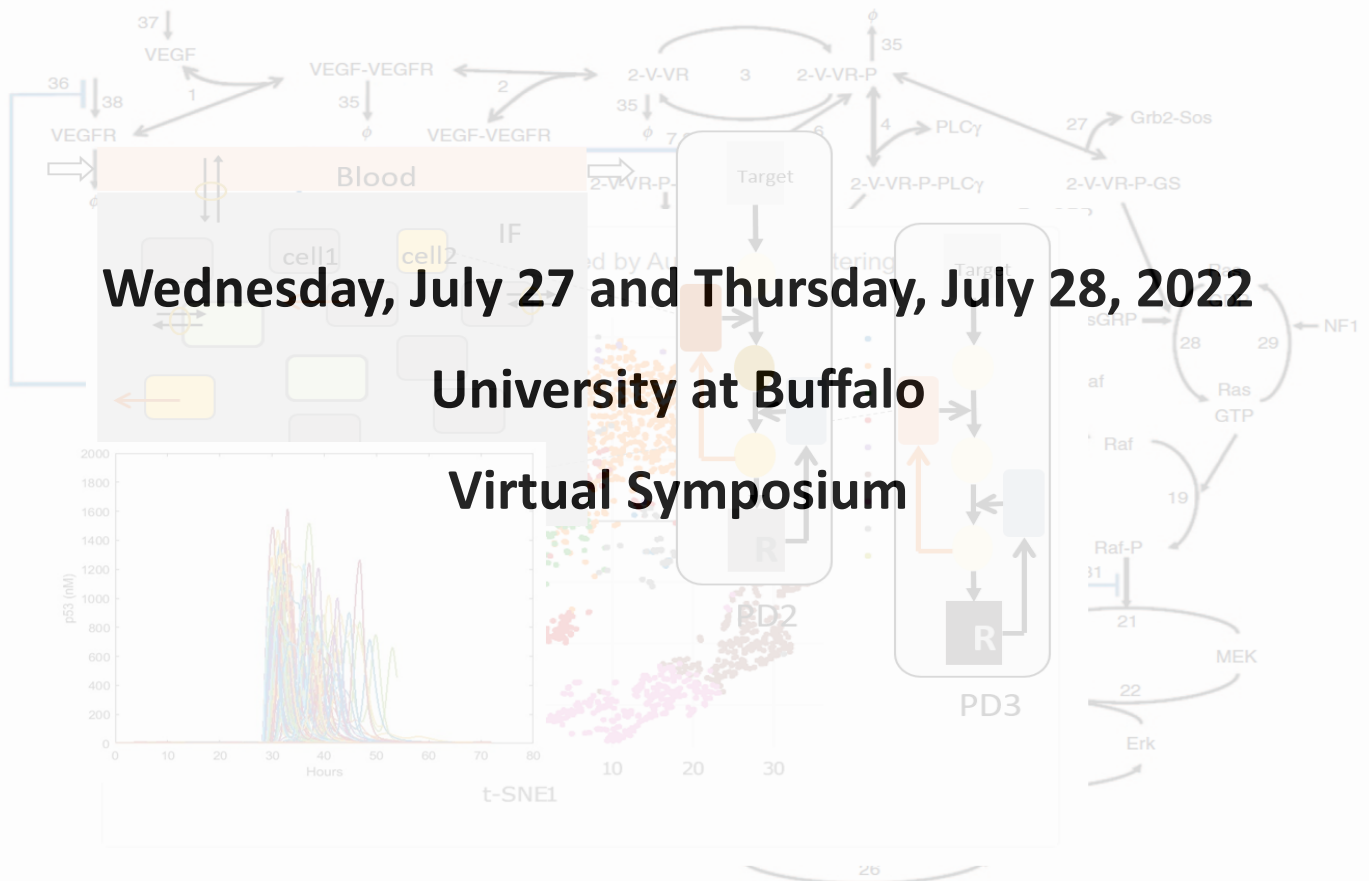## Fifth Annual

Quantitative Systems Pharmacology

Virtual Symposium 2022

Wednesday, July 27 and Thursday, July 28, 2022

University at Buffalo

Virtual Symposium

This Symposium brings together QSP scientists to discuss contemporary approaches, including the challenges and opportunities for advancing the science and practice of QSP. In addition, we seek to identify potential opportunities to collaborate and enable synergy with SUNY-wide researchers, as well as industrial and government partners.

Wednesday, July 27, 2022

8:50 am
Welcome and Introductory Remarks
James Gallo, PharmD, PhD
Empire Innovation Professor, Pharmaceutical Sciences, University at Buffalo

Donald Mager, PharmD, PhD, FCP
Professor, Pharmaceutical Sciences, University at Buffalo

9:00 am
Data-driven Computational Modeling for the Rational Design of Combination Therapy for Cancer
Matthew Lazzara, PhD
Associate Professor, Chemical Engineering and Biomedical Engineering, University of Virginia

9:45 am
Overcoming Kinase Inhibitor Resistance and Oncogenic RAS Signaling
Boris Kholodenko, PhD
Professor, Systems Biology, Co-Director, Systems Biology Ireland, University College Dublin

10:30 am Break

10:45 am
Dynamical Systems Analysis as a Complementary Tool to Inform Treatment Outcomes of Immuneoncology
Fahima Nekka, PhD
Professor, Faculty of Pharmacy, Université de Montréal

11:30 am
Dynamics of Response and Resistance to Cancer Therapy
Ivana Bozic, PhD
Assistant Professor, Department of Applied Mathematics, University of Washington

Thursday, July 28, 2022

9:00 am

Re-evaluating Oncology Clinical Trials using Data Science

Peter Sorger, PhD

Otto Krayer Professor of Systems Pharmacology, Director of the Laboratory of Systems Pharmacology, Harvard Medical School

9:45 am

QSP to Link Learn/Confirm with Expand/Understand in Model-informed Drug Development

Matthew Riggs, PhD

Chief Science Officer at Metrum Research Group (MetrumRG)

10:30 am Break

10:45 am

Computational Modeling to Optimize Treatment Schedules for Glioblastoma

Amanda Randles, PhD

Alfred Winborne Mordecai and Victoria Stover Mordecai Assistant Professor of Biomedical Sciences, Duke University

11:30 am

Building the Mind of Cancer

Trey Ideker, PhD

Professor, Department of Medicine, Adjunct Professor, Departments of Bioengineering and Computer Science, University of California San Diego

Speakers

Ivana Bozic is an Assistant Professor in the Department of Applied Mathematics at the University of Washington and also an affiliate faculty member in the Herbold Computational Biology Program at the Fred Hutchinson Cancer Research Center in Seattle. She received her BSc and MA degrees in mathematics from the University of Belgrade, Serbia, and her PhD in mathematics from Harvard University. Her group at the University of Washington develops mathematical and computational models to study the evolutionary dynamics of cancer and its response to therapy. She is the recipient of the NSF CAREER Award and the Johnson & Johnson WiSTEM2D Scholas Award.

Trey Ideker is a Professor in the Department of Medicine and Adjunct Professor for the Departments of Bioengineering and Computer Sciences at the University of California San Diego. Dr. Ideker directs or co-directs the National Resource for Network Biology and the Cancer Cell Map and Psychiatric Cell Map Initiatives. He received his BS and Meng degrees in Computer Science from MIT and his PhD in Genome Sciences from the University of Washington. Dr. Ideker is a pioneer in genomic, transcriptomic and proteomic analysis and in the theory and practice of Systems Biology. He founded and continues to develop the widely used Cytoscape network analysis platform (>30,000 citations.) He serves on the Board of the Scientific Advisors to the National Cancer Institute, is a AAAAS & AIMBE Fellow and is a Web of Science Highly Cited Research (top 1% by citations.)

Boris Kholodenko is a Professor of Systems Biology and Co-Director, Systems Biology Ireland at the University College Dublin. Dr. Kholodenko is a member of the Royal Irish Academy and Adjunct Professor of Pharmacology at Yale University. He received his PhD in Biophysics from the Moscow Institute of Physics and Technology and a Dr. Sc. From Moscow State University. He is a pioneer in the field of systems biology and provides mechanistic insights into cell signaling networks and their characteristic behaviors.

Matthew Lazzara is an Associate Professor of Chemical Engineering and Biomedical Engineering at the University of Virginia. Dr. Lazzara received hi BS in Chemical Engineering from the University of Florida and a PhD in Chemical Engineering from the Massachusetts Institute of Technology. He remained at MIT for postdoctoral studies in the lab of Douglas Lauffenburger and received the NIH Ruth L. Kirschstein National Research Service Award Postdoctoral Fellowship. The Lazzara Lab research employs a combination of experimental and computational methods to study problems in cell signaling. Current projects focus on the rational (model-drive) identification of combinational therapies for cancer and fundamental studies of the spatiotemporal regulation of cell signaling by phosphatases and receptor trafficking.

Fahima Nekka is a Professor in the Faculty of Pharmacy at the Université de Montréal. Dr. Nekka received her PhD in mathematics in the field of fractal analysis and has evolved her research into the areas of Pharmacometrics and Quantitative Systems Pharmacology (QSP.) Her projects span a whole range of therapeutic areas, involving fundamental aspects for methodologies development, their applications, and their translation to the end users at the academic, industrial and regulatory levels. She is an active mentor of a new generation of highly qualified personnel, trained between mathematics and pharmaceutical sciences.

Amanda Randles is an Alfred Winborne Mordecai and Victoria Stover Mordecai Assistant Professor of Biomedical Sciences at Duke University. Dr. Randles received her BS degree from Duke University and both her MS in Computer Sciences and PhD in Applied Physics degrees from Harvard University. Her research in biomedical simulation and high-performance computing focuses on the development of new computational tools that we use to provide insight into the localization and development of human diseases ranging from atherosclerosis to cancer. Amongst her many awards, she has received the NSF CAREER award.

Matthew Riggs is the Chief Sciences Officer at Metrum Research Group (MetrumRG). Dr. Riggs received his BS degree in Pharmacy and PhD in Pharmaceutical Science from the University of Connecticut School of Pharmacy. Following a postdoctoral fellowship at GloboMax LLC (now ICON Development Solutions), Dr. Riggs worked for five years at Pfizer Global Research and Development and was an Associate Director and Clinical Pharmacology prior to joining MetrumRG as a Team Leader. At MetrumRG he leads research efforts to develop and integrate translational, quantitative, and systems pharmacology within model-driven therapeutics development. He is an ISoP Fellow and was the co-recipient of the 2019 ISoP Innovation Award.

Peter Sorger is an Otto Krayer Professor of Systems Pharmacology and Director of the Laboratory of Systems Pharmacology at Harvard Medical School. Dr. Sorger received his PhD from Trinity College in Cambridge, trained as a postdoctoral fellow at UCSF and served as a Professor of Biology and Biological Engineering at MIT. His research uses mathematical and experimental approaches to study signal transduction networks controlling cell proliferation and death, dysregulation of these networks in cancer and inflammatory diseases and mechanisms of action of therapeutic drugs targeting signaling proteins. The Sorger group also develops open-source software for analyzing biological networks and drug mechanism of action and it participates in multiple collaborative programs working to improve data access and reproducibility.