

QSP-SIG Newsletter n° 06



October 2019

Letter from QSP-SIG chair

Dear fellow members,

Welcome to the October 2019 newsletter for the International Society of Pharmacometrics (ISoP) Special Interest Group (SIG) on Quantitative Systems Pharmacology (QSP).

The Quantitative Systems Pharmacology Special Interest Group (QSP SIG) aims to advance the development and utilization of safe and efficacious medicines through the application of QSP modeling and simulation. We work towards this overarching goal through efforts that promote the discipline of QSP, advance QSP scientific approaches, and provide resources for practitioners. The QSP SIG Leadership Team currently comprises: Eric Sobie - *Chair*, Brian Schmidt - *Chair-Elect*, Christina Friedrich - *Vice Chair*, John Burke - *Communications Director*, Valeriu Damian - *Past Chair*, and Panteleimon Mavroudis - *Secretary*.

We held ISoP Regional QSP Day 2019 July 16, at the Bristol-Myers Squibb site in Princeton, New Jersey. There were nine excellent presentations from industry, academia, and even National Institutes of Health, many of which emphasized applications of platform QSP approaches, across a variety of disease areas. There was also an excellent poster session, as well as a networking gathering.

Modeled on the highly successful East Coast Day event, ISoP QSP Day is coming to the **West Coast**. Please mark your calendars for **December 13th, 2019**. This one-day event will feature talks from prominent QSP practitioners, a poster session, and plenty of time for networking and discussion. The event is co-hosted by the ISoP QSP Special Interest Group and GSK and will take place on the **ATOM campus in Mission Bay, San Francisco**.

We have developed **new Working Groups within the QSP SIG** that bring together experts in a specific sub-discipline of QSP for periodic meetings and collaborative projects such as webinars and review articles. Finally, we will **sponsor several events at ACoP10**, including a **student award, the Meet the SIG luncheon, and an evening networking event** to meet the working groups at which several selected poster presentations will be highlighted.

Finally, we're trying to keep the new [QSP website](#) up to date (please note that is a Google Site, and may not be allowed on all company firewalls).

Through these efforts we intend to raise the profile of QSP and highlight its value in drug research and development. Please feel free to share your feedback and advise! Please email John Burke (john.burke@appliedbiomath.com) and Pantelis Mavroudis (pmavrud@gmail.com) for content (like events).

Sincerely,

Eric Sobie and the QSP SIG Leadership Team

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QSP local event in NJ

The International Society of Pharmacometrics (ISoP) Regional Quantitative Systems Pharmacology (QSP) Day 2019, co-hosted by the ISoP QSP Special Interest Group (ISoP QSP SIG) and Bristol-Myers Squibb (BMS), took place on Tuesday July 16th 2019 in Princeton, New Jersey. The event was intended to highlight some of the recent achievements in QSP, illustrate application areas, and promote networking, collaboration, and shared learning between QSP industry practitioners, biological research scientists that can benefit from application of QSP, academic and government investigators, and students.

The audience had the opportunity to listen and interact with top-tier scientists from all spectrum of QSP science, from industry and academia. The event opened with the welcoming remarks of **Brian Schmidt** - *Research Fellow at BMS* and some introductory words regarding the ISoP QSP-SIG and its current activities. Next, **Tarek A. Leil** - *Group Director at BMS*, provided applications of QSP in the clinical setting leveraging the value of mechanistic disease models throughout the drug development and **Ted Rieger-Sr.** *Principal Scientist at Pfizer*, followed by showing a case of how QSP modeling aids to advance the treatment of non-alcoholic fatty liver disease. The morning session ended with **Eric Sobie**-*Professor at Mount Sinai Icahn School of Medicine and Chair of the ISoP QSP SIG*, presenting how machine learning and mechanistic modeling combination aids to predict cardiotoxicity and streamline drug development.

At noon, a poster session was held where event participants had the chance to walk through over 20 posters. The afternoon session was opened by **Ioannis Androulakis**-*Professor at Rutgers University*, presenting his work on circadian rhythms in QSP models. Afterwards, **Cibele Falkenberg**-*Investigator at GSK*, presented application of a QSP model of COPD progression for evaluating a novel mechanism targeting oxidative stress and inflammation in the lung and **Craig Thalhauser**-*Research Fellow at BMS* followed by presenting the use of a QSP model of Psoriasis to support clinical development of a novel Tyk2 inhibitor.

Later in the afternoon, **Grégoire Altan-Bonnet**-*Stadtman Investigator, National Cancer Institute* gave a talk on leveraging cell to cell variability to dissect drug perturbations of the immune system, and **Spyros Stamatelos**-*Group Leader at Sanofi* showed a QSP implementation to describe the effects of a bispecific antibody for hematologic malignancies treatment. Finally, **Brian Schmidt** presented strategies to support clinical development of new immuno-oncology combinations with expansion of QSP platforms.

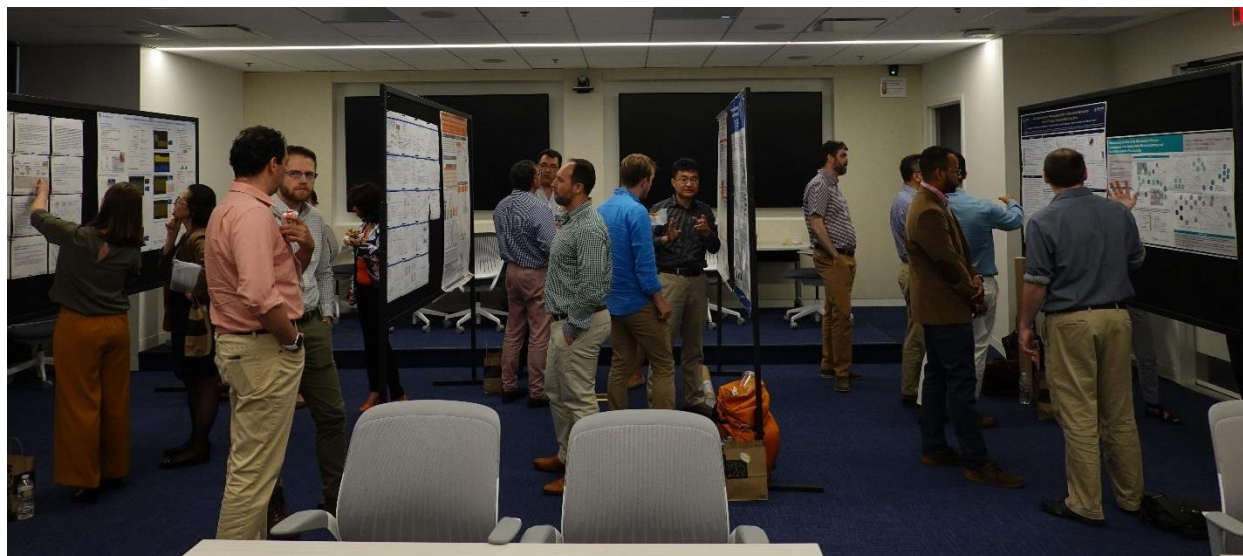
The event closed with the poster award that this year was nominated to **Ronny Straube**-*Principal Scientist, BMS* for his work "Calibration of a Mechanistic Mini-Model of IL-2 induced Lymphocyte Proliferation."

We would once again like to thank all attendees as well as the organizing committee: **Loveleena Bansal** (GSK), **John Burke** (Applied BioMath), **Eric Sobie** (Mount Sinai Icahn School of Medicine), **Pantelis Mavroudis** (Sanofi), **Sandy McVicar** (BMS), the **ISoP Board**, **Local ISoP Event organizer Aruna**

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Dontabhaktuni, Enrico Smith, as well as sponsors at Bristol-Myers Squibb (**Tarek Leil** and **Akintunde Bello**), and all of the **poster presenters, poster judges, and scientists** that attended and made the event a success.



Picture of the poster presentations at the QSP SIG NJ local event. Credits to **Songmao Zheng**

Buffalo QSP event

It is the third year that Buffalo has hosted its QSP event and has already become a tradition. It is an excellent opportunity for scientists interested in QSP to present and discuss contemporary approaches, including the challenges and opportunities for advancing the science and practice of QSP.

The event featured a breadth of presentations focused on network analysis, QSP platforms applied to a number of therapeutic areas, PBPK modeling, implications of cancer cellular temporal heterogeneity and deconvolution of cellular variability for quantification of transcripts with limited expression, and modeling of viral dynamics and treatment regimens in HIV. There was also a poster session and career discussion panel for students to engage with investigators at various stages of their career from industry and academia. We would like to thank Dr. Jim Gallo and Dr. Don Mager for organizing this event to bring the QSP community together.

This year the agenda included talks from a number of excellent scientists from industry and academia. The detailed agenda can be found on:

http://pharmacy.buffalo.edu/news-events/events/annual-events/quantitative-systems-pharmacology-symposium/quantitative-systems-pharmacology-symposium1.html#title_64622022

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Working groups within QSP - SIG

Uncertainty, Error, and Variability in QSP Models

This group will focus on the sources and impact of model uncertainty and biological variability within quantitative systems pharmacology (QSP). The group will draw on expertise from academia, government, and industry including experts from QSP and various related fields including mathematics/statistics, engineering, pharmacometrics, and life sciences. The goals will be to i) Define and clarify terms that have created confusion in the field of QSP modeling and ii) Provide resources for QSP modelers for understanding and handling uncertainty in QSP models.

*Chairs/contact info: **Michael Weis** (mweis@rosaandco.com), **Josh Apgar** (apgar@appliedbiomath.com)*

Integrating QSP and machine learning

The aim of the working group is to bring researchers together to critique, share and develop new approaches for integrating QSP models with multi-layer omics data via: (1) Organizing at least one workshop/symposium for each of the buckets of activity. (2) Growing the QSP community and training for industry by providing awareness and opportunity for the ML community to connect (3) Establishing labor force training roster of academic programs and a community of interns/trainees – past and future. These training initiatives also serve as a forum for deeper public-private collaboration.

*Chairs/contact info: **Carolyn Cho** (carolyn.cho@merck.com), **Tongli Zhang** (zhangtl@ucmail.uc.edu)*

Call for leadership team nominations

Communications Director

We are delighted to welcome **Abhishek Gulati**, Senior Manager at Astellas Pharma, as the new Communications Director of the SIG. Immediately after ACoP10, Abhishek will assume this role from John Burke, CEO of Applied Biomath. Abhishek received his PhD in Pharmacometrics and Systems Pharmacology from the University of Otago, New Zealand, where he trained with Dr. Stephen Duffull, and obtained postdoctoral training at the University of Indiana with Dr. Robert Bies. He is currently working in Clinical Pharmacology and Exploratory Development at Astellas, and he is already involved with the QSP SIG, serving as co-chair of the iPSP Working Group.



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Secretary

Peter Bloomingdale, Senior Scientist at Merck, will be the new Secretary of the QSP SIG. Peter recently obtained his PhD in Pharmaceutical Sciences from the University at Buffalo, where he trained with Dr. Donald Mager. He was the recipient of the QSP SIG Student Award in 2017. He has been working in the Quantitative Pharmacology and Pharmacometrics group at Merck for approximately one year, and he will take over the Secretary role from Panteleimon Mavroudis.



ACoP 10 events

Meet the SIG luncheon

The goal of this luncheon is to set the floor for an informal and relaxed environment where participants can discuss with SIG representatives and people from the different QSP Working Groups for work-, career- and extra-curriculum matters. The QSP SIG Leadership Team will also provide an introduction and discuss accomplishments since ACoP9! The Meet the SIG luncheon will take place on **Tuesday October 22nd 11:45am-1:15pm on room Wekiwa 1**. Further information can be found on: <https://www.go-acop.org/conference-program>.

ISoP SIG Abstract Award at ACoP 10

It is with our greatest pleasure to announce our **4th QSP-SIG student award winner Qingxiang Lin**, for his work “Mechanistic multi-scale models characterize drug synergism between BGJ398 and gemcitabine in pancreatic ductal adenocarcinoma”.

Abstract M-076:

https://www.go-acop.org/assets/ACoP10/documents/ACoP10%20Combined%20Abstracts_2019.pdf

Join us in congratulating our 2019 QSP-SIG awardee and do not miss his presentation at the Meet the QSP-SIG event!. Further information can be found on: <https://www.go-acop.org/awards>

Working Group Poster Presentation and Networking Event

We will host the second annual QSP SIG Working Group (WG) Poster Presentation and Networking Event from **5:30 – 7:00pm on Tuesday October 22nd in the poster area (Sebastian)**. All ACoP attendees interested in QSP are invited to join the event. The goal is to gather in an informal and relaxed environment, see old friends and meet new collaborators, as well as have an open discussion of SIG goals, exciting developments in QSP, and new SIG initiatives moving forward that we will likely not have time to explore in depth at the lunch event. Representatives of the different QSP SIG WGs will be there to kick off the discussion, update us on exciting progress from their working groups, and network with potentially interested new members or just engage in enthusiastic discussion of progress in the field. WG members will also invite selected ACoP poster presenters to re-present their work based on abstracts relevant to the

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objectives of the active WGs. Please stop by and let us know your thoughts! Also, please watch your e-mail in case you are invited to present!

Recent and Upcoming Webinars of Interest

Dr. Mark Coles, Professor of Immunology, Senior Research Fellow, and Dr. Eamonn Gaffney, Associate Professor of Mathematics, University of Oxford. “Modelling cancer vaccines and CART cell therapies: Using simulation to understand the translational gap between mouse and human biology.” ISoP QSP SIG Immuno-Oncology Working Group Webinar Series. 9th July 2019.

Dr. Vincent Lemaire, Senior Scientist, Clinical Pharmacology, Genentech. “Identifying biological signals differentiating responders and non-responders to cancer immunotherapy using machine learning analysis of virtual populations.” ISoP QSP SIG Immuno-Oncology Working Group Webinar Series. October 3rd at ET: 12:00 pm.

We are working on making these WG webinars available on archive!

Newsletter content

Suggestions for webinars, meetings, recent publications or other items of interest to be published in this QSP-SIG newsletter can be sent to this email address: ISoPQSP@go-isop.org