

Molecular and Systems Biology Specialty Section

ANNUAL REPORT: 2019-2020

May 1, 2019 to April 30, 2020

I. Officers/Committees:

Officers:	2019-2020	2020-2021
President	Dana C. Dolinoy	Jessica Plavicki
Vice President	Jessica Plavicki	Brian Chorley
VP-elect	Brian Chorley	Tamara Tal
Past-President	Shaun D. McCullough	Dana C. Dolinoy
Secretary/Treasurer	Lindsay A. Holden	Lindsay A. Holden
Senior Councilor	Kari E. Sant	Larissa Williams
Junior Councilor	Larissa Williams	Jessica LaRocca
PDA Representative	Katelyn S. Lavrich	Elizabeth Martin
Senior Graduate Representative	Cassandra Meakin	Aalekhyia Reddam
Junior Graduate Representative	Aalekhyia Reddam	Courtney R. McClure

II. 2019 Membership total: 210

III. Key Outcomes in 2019-2020:

Activities:

Sessions endorsed by MSBSS that were scheduled for the 2020 meeting, but did not make it into the virtual program

Symposium II (traditional 165-minutes): Identifying and modeling gene-environment interactions in neurological diseases associated with metal exposure: challenges and recent advances. Tertiary Endorsement.

Symposium II (traditional 165-minutes): Adverse Outcome Pathway Quantification. Moving the concept into regulatory.

Symposium II (traditional 165-minutes): Environmental Exposure and Health Effects of Organophosphate Esters. Primary endorsement.

Workshop II (traditional 165-minutes): Improving Our Understanding of Toxicant Metabolism and Cytochrome P450s Using Novel Knockout Models and High Throughput Methods. Secondary Endorsement.

2020 SOT Annual Meeting Virtual Activities (e.g. courses, scientific sessions, or virtual receptions):

Scientific Session Webinar “Genome Editing in Drug Discovery: Using the Cas9 Protein to Explore Target-Mediated Toxicity” Monday, March 16, 1:00PM ET. Symposium. Primary Endorsement.

Scientific Session Webinar “Single Cell Applications in Mechanistic Toxicology” Thursday, April 2, 12:00 Noon EDT. Workshop. Tertiary Endorsement.

Scientific Session Webinar “TARGET II Consortium: Elucidating Epigenetic Responses to the Environment across Target and Surrogate Tissues” Thursday, May 21, 1:00PM EDT. Symposium. Primary Endorsement.

Scientific Session Webinar “Single Cell Technologies: A Potentially Transformative Tool for Toxicology” Thursday, May 28, 12:00 Noon EDT. Symposium. Primary Endorsement.

2020 Awards Information:

Undergraduate Research Award

1st place: Emily Severance

Mentor: Alicia Timme-Laragy

2nd place: Victoria Salemme

Mentor: Sasha Suvorov

3rd place: Nicholas Zacharewski

Mentor: Kelly Fader

Graduate Student Research Award

1st place: Mathia Colwell

Mentor: Chris Faulk

2nd place: Archit Rastogi

Mentor: Alicia Timme-Laragy

3rd place: Jennifer Schaefer

Mentor: Andy Babwah

Postdoctoral Research Award

1st place: Subham Dasgupta

Mentor: David Volz

2nd place: Lauren Poole

Mentor: Jim Luyendyk

3rd place: Abhishek Venkatratnam

Mentor: Rebecca Fry

Paper of the Year Award

Weitekamp CA, Phelps D, Swank A, McCord J, Sobus JR, Catron T, Keely S, Brinkman N, Zurlinden T, Wheaton E, Strynar M, McQueen C, Wood CE, and Tal T (2019). Triclosan-selected host-associated microbiota perform xenobiotic biotransformations in larval zebrafish. *Toxicological Sciences*, 172(1), pp.109-122. <https://doi.org/10.1093/toxsci/kfz166>.

Honorable Mentions (tie for 2nd):

- D You, X Wen, L Gorczyca, A Morris, JR Richardson, LM Aleksunes (2019). Increased MDR1 Transporter Expression in Human Brain Endothelial Cells Through Enhanced Histone Acetylation and Activation of Aryl Hydrocarbon Receptor Signaling. *Mol Neurobiol* 56, 6986–7002. doi:10.1007/s12035-019-1565-7

- S Sarkar, D Rokad, E Malovic, J Luo, DS Harischandra, H Jin, V Anantharam, X Huang, M Lewis, A Kanthasamy (2019). To collaborate and communicate issues, concerns, and opportunities of the specialty sections to and from SOT council.
- To support the collective voice from all specialty sections while recognizing their diversity in interest, size, and dynamics.
- To facilitate the exchange of ideas and issues across specialty sections.
- Amy, AG Kanthasamy (2019). Manganese activates NLRP3 inflammasome signaling and propagates exosomal release of ASC in microglial cells. *Science Signaling*, 12(563). DOI: 10.1126/scisignal.aat9900

Presidential Service

Dana Dolinoy

MSBSS representation on Specialty Section Collaboration and Communication Group (SS-CCG)

MSBSS began representation on the SS-CCG, starting April 2020, and will serve for two years. Brian Chorley (current MSBSS VP) will serve as the MSBSS representative and will attend meetings and participate in activities of this committee. The mission of the SS-CCG is three-fold: 1) To collaborate and communicate issues, concerns, and opportunities of the specialty sections to and from SOT council. 2) To support the collective voice from all specialty sections while recognizing their diversity in interest, size, and dynamics. 3) To facilitate the exchange of ideas and issues across specialty sections. Current activities include review of SOT proposals that have communication components pertinent to the SS-CCG, building standard practices of conduct that cross-cutting across specialty sections, as well as other pursuits.

Other Educational Activities Conducted (e.g. webinars, in person meetings, etc.):

Webinar #1

Title: "Get Noticed! Writing Abstracts and Award Applications to Get Your Science Recognized"

Date: Wednesday, October 9, 2019 12-1 PM EDT

Chairs: Katelyn Lavrich & Jessica Plavicki

Sponsors: MSBSS and GSLC

Abstract: With the autumn chill and changing leaves also brings the frantic hustle by many trainees to write abstracts and submit award applications for the forthcoming SOT Meeting. A well-written abstract is essential for a competitive award application and increases the likelihood of being selected for a platform presentation. This webinar will cover the essentials of how to write a powerful SOT abstract and craft compelling award applications. We will discuss the fundamental elements of the abstract, including the title, question, hypothesis, methods/results, and conclusion. We will review examples of clear, effective abstracts and instruct individuals on how to edit their own abstract. The second half of the webinar will focus on building competitive award packages for the numerous SOT trainee awards. Award applications often require additional writing pieces beyond the standard abstract including extended abstracts, cover letters, and personal statements. We will discuss strategies for developing engaging award applications that showcase trainees' scientific and professional accomplishments. By participating in this webinar, attendees will learn key strategies for generating concise and compelling writing pieces and will develop valuable and transferable skills in advance of 2020 SOT Annual Meeting.

Speakers:

Alison Harrill, PhD, National Toxicology Program, NIEHS

Alison Harrill is a scientist in the Molecular Toxicology & Genomics Group within the Biomolecular Screening Branch (BSB) of the National Toxicology Program (NTP). Harrill is leading efforts toward developing models that incorporate host genetic susceptibility into risk assessment. Prior to joining the NTP, Harrill was an Assistant Professor at the University of Arkansas for Medical Sciences and, prior to her academic tenure, Head of the Translational Pharmacogenetics Laboratory at the Hamner Institutes for Health Sciences. Harrill received her PhD in Toxicology from the University of North Carolina at Chapel Hill and her BS in Genetic Engineering from Cedar Crest College (Allentown, PA). She has been honored to receive many awards for her research, most recently: The Best Paper Published in Toxicological Sciences Award (2016) and the Burroughs Wellcome Fund Innovation in Regulatory Sciences Award (2013-2016).

Daniel Spade, PhD, Brown University

Daniel Spade, PhD is Assistant Professor in the Department of Pathology and Laboratory Medicine. His research focuses on mechanisms of male reproductive toxicity. The goal of this work is to better understand the impacts of environmental chemicals and pharmaceuticals on fetal testis development and reproductive health in later life. He obtained a PhD in Veterinary Medical Sciences with a Toxicology concentration from the University of Florida, followed by postdoctoral training at Brown. His research is funded by an R00 from the National Institute of Environmental Health Sciences.

Webinar #2

Title: "MSBSS Award Webinar Series: 2019 Graduate Student and Postdoctoral Awards"

Date: November 4, 2019 at 12:00 PM EDT

Chairs: Kari Sant and Larissa Williams

Sponsors: MSBSS

The Molecular & Systems Biology Specialty Section welcomed members to join us for a webinar highlighting the research of the 2019 Molecular & Systems Biology SS award recipients. The webinar took place on Monday, November 4, from 12-1pm EST.

This year, we acknowledged the exceptional research related to targeting renal proliferation to combat acute kidney injury, estrogen as a modulator of the microbiome, and hepatic transcriptomics following prenatal exposures. These three outstanding early career scientists shared their work during this 1-hour webinar:

MSBSS Paper of the Year Award

Dr. Maria Monteiro, Harvard Medical School

A High-Throughput Screen Identifies DYRK1A Inhibitor ID-8 That Stimulates Human Kidney Tubular Epithelial Cell Proliferation

MSBSS Postdoctoral Research Award

Dr. Tara Catron, US EPA

Estradiol exposure disrupts the microbiota-gut-brain axis during zebrafish development

MSBSS Graduate Student Research Award

Dr. Kari Neier, University of Michigan

Reprogramming of Peroxisome Proliferator-Activated Receptor Target Genes in Mice Perinatally Exposed to Phthalates

Newsletter publication frequency: Fall 2019

Mentoring activities:

The original MSBSS mentoring event was to be held Tuesday, March 17th at the Fifth (21650 S Harbor Blvd, Anaheim, CA, 92802). However, the mentoring reception was cancelled when the in-person SOT annual meeting was cancelled. In lieu of this, we initiated a series of virtual career panels. We reached out to the mentors that had previously agreed to be involved in the previously planned in-person event and asked if they would be willing to participate in our online initiative. To facilitate mentor-mentee relationships in an online format, we have dedicated different days to different sectors. The June MSBSS mentoring event was planned by Elizabeth Martin, Courtney McClure, and Aalekhya Reddam and took place on June 25th, 11am PST/2pm EST. Mentors included Grace Chapell, PhD, who is a Scientist III at ToxStrategies, Inc, Brett Winters, PhD, who is a toxicologist at GSI Environmental, Anne Loccisano, PhD, DABT, who is a Senior Toxicologist at Exponent Inc, Joel Cohen, ScD, DABT who is a Senior Toxicologist at Gradient, and Lisa Beilke, PhD, DABT, ERT, who is a CEO/Consultant at Toxicology Solutions Inc. The mentoring event was well received. Trainees learned several of the most important components of a consultant career in toxicology through the point of view of each mentor. Questions were submitted via google RSVP form prior to the event as well as asked during the event by trainees. Some of the questions addressed were transition between graduate school to the mentor's current job, what the steps were to becoming a consultant toxicologist, what career steps are needed to have a career in consulting, and how the coronavirus has affected career and hiring decisions. There will be several more MSBSS mentoring events throughout 2020-2021 on a variety of topics including early/mid-career academia, contract research organizations, and research government.

Endowment details and Treasurer's report

MSBSS Financial Report as of 05/2020	
Ordinary Income/Expense	
Income	
Contributions	-
Global Initiatives (CNCL)	-
Misc. Income	-
Total Income	-
Expense	
Awards - Sections	750
Plaques	491
Contributions	1,000
Global Outreach/Initiatives	-
Mentoring Activities	5,867
Printing	-
Reception	-
Total Expense	8,107
Excess (Deficiency) of	

Revenue over Expenses	(8,107)
Net Assets Beginning of year	32,896
Transfers from General Fund	-
Net Assets After Transfers	32,896
Net Assets End of Year	24,789

Feedback and Ideas:

A. How might SOT better support your group's activities (perhaps something the Society should be doing that we currently do not do, or do not do effectively, that would be of importance/benefit to the members of your component group?)

Note: If funding is listed, please provide detail on the membership need that the funding would support.

1. MSBSS and SOT as a whole would benefit if donations could be made via Venmo (or a similar online payment service). Currently, there is a paperwork burden that makes it harder for people to donate. Having a Venmo option would make it easier for people who might not feel inclined to donate because of the associated work to make a donation. It would likely also facilitate contributions from younger members of SOT who use Venmo frequently. We also believe that this would increase the number of smaller donations that ultimately have the potential to add up to a significant amount (think Bernie Sanders).
2. MSBSS is committed to increasing diversity and inclusion in our membership and awards recipients. To achieve this goal, we are building a list of possible strategies to increase representation and inclusion in MSBSS and will have this topic as a standard agenda item for all MSBSS leadership calls in the foreseeable future. Our initial step in this process was to assess the demographics of our membership and award recipients. Next, we will be surveying our membership regarding potential ways to increase diversity and inclusion. Over the course of the next year, we will be developing specific mechanisms to achieve this goal. Our leadership team is interested in being part of any SOT wide discussions on diversity and inclusion and working with other specialty sections and special interest groups to help generate meaningful and lasting change.
3. During our pre-review process, we encountered a situation in which one of the speakers was unintentionally misgendered. This situation generated a broader conversation about how MSBSS can help prevent misgendering in future reviews and resulted in a productive conversation with OTA about systematic changes that would support the spectrum of gender identities that exist in our society. Some of the suggested changes include: (1) making gender a continuously editable item in our ToXchange profiles, (2) providing a sufficient list of options under the gender tab that do not make individuals further removed from our community (ex "other" as an option), (3) including pronouns with our profiles and badges, and (4) increasing awareness in our community through educational initiatives, and (5) making sure our LGBTAI+ SOT members are recognized as contributing to the diversity of our community.