

## Molecular and Systems Biology Specialty Section

### ANNUAL REPORT: 2020-2021

May 1, 2020 to April 30, 2021

#### I. Officers/Committees:

<u>Officers</u>	<u>2020-2021</u>	<u>2021-2022</u>
President:	Jessica Plavicki	Brian N. Chorley
Vice President:	Brian N. Chorley	Tamara Tal
Vice President-Elect:	Tamara Tal	Karilyn E. Sant
Secretary:	Lindsay A. Holden	Lindsay A. Holden
Treasurer:	Lindsay A. Holden	Lindsay A. Holden
Past President:	Dana C. Dolinoy	Jessica Plavicki
Senior Councilor:	Jessica L. LaRocca	Jessica L. LaRocca
Junior Councilor:	Larissa Williams	Leah Wehmas
PDA Representative:	Elizabeth M. Martin	Subham Dasgupta
Senior Grad Student Representative:	Aalekhya Reddam	Courtney R. McClure
Junior Grad Student Representative:	Courtney R. McClure	Lindsay B. Wilson

#### II. 2020 Membership total: 209

#### III. Key Outcomes in 2020-2021:

- A. MSBSS made key contributions to the 2021 Annual Meeting; we received 13 proposals and 85% were accepted and presented at the meeting. We also hosted a special networking platform (Spatial Chat) to increase interactions at our reception. See more details in Activities.
- B. MSBSS continued our mission to support and recognize trainees in the field of mechanistic and systems toxicology. We held four mentoring sessions, representing different sectors, we awarded eight prizes for graduate student and postdoctoral research excellence, and we hosted a webinar to highlight 2020 award winners.
- C. MSBSS initiated efforts to create a more inclusive, diverse, and enabled environment. We recognized these efforts must permeate through all activities we engage in as a society and as a Specialty Section. Please see examples listed in this report. We will continue to build upon these initial efforts, as well as support overarching efforts promoted by SOT.

#### IV. Activities:

##### A. 2021 SOT Virtual Annual Meeting Activities (e.g., courses, scientific sessions, or virtual receptions):

A total of 13 CE Course, Workshop, and Symposium Session proposals were submitted to MSBSS for final review and endorsement. Of these, 11 were accepted and presented in a virtual format at the 2021 SOT Annual meeting. We also held our annual specialty section reception in a virtual format. The reception included recognition of award recipients, discussed MSBSS plans for the upcoming year, provided opportunities for networking via Spatial Chat, and hosted a game. The networking session via Spatial Chat was very well received.

1. Continuing Education Course (195 min) Advances in Single Cell Genomic Analyses for Toxicological Testing. Primary endorsement. Friday, March 12, 11:00 AM to 2:45 PM.
2. Symposium (165 min) Applications of Novel High-Throughput Approaches for Mechanism-based Chemical Safety Assessment. Primary endorsement. Monday, March 22, 10:00 AM to 11:00 AM.
3. Symposium (165 min) From Conception to Cane: Unique Life-stage Considerations for Reproductive Toxicity. Secondary endorsement. Thursday, March 25, 11:30 AM to 2:15 PM.
4. Symposium (165 min) Pairing Adverse Outcome Pathway Discovery with Advances in Gene Editing to Solve Toxicity Mechanisms. Primary endorsement. Tuesday, March 16, 11:15 AM to 2:00 PM.
5. Symposium (165 min) The Power of Integrating Computational Toxicology with Multiparametric In Vitro Assay Systems. Tertiary endorsement. Wednesday, March 17, 11:30 AM to 2:15 PM.
6. Symposium (165 min) Testing the Waters: How the Zebrafish, Xenopus, and Medaka Models Are Advancing Our Understanding of Reproductive and Developmental Toxicity. Primary Endorsement. Wednesday, March 17, 11:30 AM to 2:15 PM.
7. Symposium (90 min) SETAC-SOT Session: Environmental Risk Assessment of PFAS. Primary endorsement. Tuesday, March 23, 2:45 PM to 4:14 PM.
8. Workshop (90 min) Revising Biology: Alternative Splicing in Toxicology. Primary endorsement. This Workshop Session received an ITS designation. Thursday, March 18, 2:45 PM to 4:15 PM
9. Workshop Session (90 min) The methodological road towards single cell high-throughput transcriptomics (scHTTr). Primary endorsement. This Workshop Session received an IAT designation. Tuesday, March 16 2:45 PM to 4:15 PM.
10. Workshop (165 min) Molecular-Based Points of Departure as the New Basis for Chemical Risk Assessment: Are We Ready? Tertiary endorsement. Tuesday, March 23 11:15 AM to 2:00 PM.
11. Workshop (165 min) Improving our understanding of toxicant metabolism and Cytochrome P450s using novel knockout models and high throughput methods. Primary endorsement. Note: This session was endorsed in 2020 but did not make it into the 2020 virtual meeting schedule. Tuesday, March 16, 10:00 AM to 11:00 AM.
12. Molecular and Systems Biology Specialty Section Virtual Meeting. Wednesday March 17, 2021, 4:30 PM – 6:00 PM.

**B. 2021 MSBSS Awards:**

**Graduate Student Research Award**

- 1st place: Kathryn Wierenga  
Mentor: James Pestka
- 2nd place: Tasha Thong  
Mentor: Justin A. Colacino
- 3rd place (tie): Eva Vitucci  
Mentor: Shaun D. McCullough
- 3rd place (tie): Lillie Marie A. Barnett  
Mentor: Brian S. Cummings

#### **Postdoctoral Research Award**

- 1st place: Madelyn (Mimi) Huang  
Mentor: Alison Harrill  
2nd place: Subham Dasgupta  
Mentor: Robyn Tanguay  
3rd place: Genoa Warner  
Mentor: Jodi Flaws

#### **Paper of the Year Award**

Miller CN, Dye JA, Henriquez AR, Stewart EJ, Lavrich KS, Carswell GK, Ren H, Freeborn DL, Snow SJ, Schladweiler MC, Richards JH, Kodavanti PRS, Fisher A, Chorley BN, Kodavanti UP. Ozone-induced fetal growth restriction in rats is associated with sexually dimorphic placental and fetal metabolic adaptation. *Mol Metab.* 2020 Dec; 42:101094. doi: 10.1016/j.molmet.2020.101094. Epub 2020 Oct 5.

#### **C. Other Educational Activities Conducted (e.g., webinars, in person meetings):**

1. **2020 Molecular and Systems Biology Specialty Section Award Recipient Webinar.**  
Wednesday, October 14, 2020 at 12:00 Noon EDT.

This webinar highlighted the research of the 2020 Molecular and Systems Biology Specialty Section award recipients. These four outstanding scientists shared their work during this one-hour webinar.

- Molecular and Systems Biology SS Paper of the Year Awardee. Chelsea Weitekamp (United States Environmental Protection Agency) and Drake Phelps (North Carolina State University). "Triclosan-Selected Host-Associated Microbiota Perform Xenobiotic Biotransformations in Larval Zebrafish."
- Molecular and Systems Biology SS Postdoctoral Fellow Research Awardee. Subham Dasgupta (University of California, Riverside). "High-Content Screening in Zebrafish Identifies Perfluorooctanesulfonamide as a Potent Developmental Toxicant."
- Molecular and Systems Biology SS Graduate Student Research Awardee. Mathia Colwell (University of Minnesota) "Preferential Tissue Hypomethylation of the Mouse Epigenome by Low Dose Decitabine Exposure."

#### **D. Communication Activities:**

1. **Newsletter publication:** Currently annual; last edition was Fall 2020
2. **New or Significant Announcements/blogs:** Also, in Fall 2020, we revamped our Twitter account (@msbss\_sot) as well as our contact email (msbss.sot@gmail.com). Old accounts were deleted, and followers were transferred. We have utilized our Twitter account to disseminate the latest SOT, MSBSS and cool science news (such as relevant publications from our members) that our followers would enjoy.

3. **Highlight of Website enhancements:** The MSBSS website has been maintained and updated as needed. The MSBSS is on the rotation schedule for a website upgrade in 2021-2022. We are in the process of also updating our logo for 2022.
4. **MSBSS representation on Specialty Section Collaboration and Communication Group (SS-CCG):**  
 Brian Chorley served the first year of his two-year service to SS-CCG. He had attended monthly meetings throughout 2020 and 2021. The mission of the SS-CCG: 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. The primary activity of the group this year was to collect “best practices” from the specialty sections to be used as guidance. The dissemination of this guidance will be performed in 2021-2022, as well as other communication efforts, such as a SS-CCG newsletter.

#### D. Mentoring activities:

We conducted several virtual mentoring events in 2020 in lieu of the in-person mentoring event planned for the 2020 Annual meeting. These events were coordinated by our postdoctoral and graduate student representatives Elizabeth Martin, Courtney McClure, and Alekhya Reddam. We plan to coordinate an in-person event for the 2022 meeting.

1. Consulting Panel. Thursday, June 25th 11am PST. Participating mentors: Grace Chappell, PhD (Scientist III, ToxStrategies, Inc.); Brett Winters, PhD (Toxicologist, GSI Environmental); Anne Loccisano, PhD, DABT (Senior Toxicologist, Exponent Inc); Joel Cohen, ScD, DABT (Senior Toxicologist, Gradient); Lisa Beilke, PhD, DABT, ERT (CEO/Consultant, Toxicology Solutions Inc.)
2. Early and Mid-Career Academics Panel: Thursday, Jul 30th 2pm EDT. Participating mentors: Patricia Silveyra, PhD (Associate Professor, The University of North Carolina at Chapel Hill); Kari Sant, PhD (Assistant Professor, San Diego State University); Tirupapuliyur Damodaran, PhD (Research Assistant Professor, North Carolina Central University); Alicia Timme-Laragy, PhD (Associate Professor, University of Massachusetts Amherst); Jessica Plavicki, PhD (Assistant Professor, Brown University); James Luyendyk, PhD (Professor of Pathobiology, Michigan State University).
3. Regulatory Government Panel. Thursday, August 27th 2pm EDT. Participating mentors: Anna Lowit, PhD (Senior Science Advisor, US Environmental Protection Agency); Brian Chorley, PhD (Research Scientist, US Environmental Protection Agency); Emily N. Reinke, PhD, DABT (Biologist, U.S. Army Public Health Center).
4. Pharmaceutical Industry Panel. Thursday, October 29th 2pm EDT. Participating mentors: Rhiannon Hardwick, PhD, DABT (Senior Scientist, Theravance Biopharma); Catrin Hasselgren, PhD (Principal Scientist, Genetech Inc); Lauren Lewis, PhD (Investigative Toxicologist, Takeda).

#### V. Feedback and Ideas:

- A. **In what ways is your group fostering and maintaining an inclusive environment?**  
*MSBSS is committed to increasing diversity and inclusion in our membership. In 2020, we began to strategize how MSBSS could foster a DEI environment. Actions of immediate impact that MSBSS has begun include providing statements of MSBSS' commitment to inclusive actions (examples included email communications to members and newsletter and with the future website upgrade), promoting diversity in elected positions of leadership and MSBSS-endorsed sessions, providing SOT meeting travel support for disadvantaged trainees (a travel support statement has been included in all of our recent trainee award descriptions), and recruiting and establishing a new MSBSS Inclusion Working Group and future plans to begin a Diversity Journal Club (to discuss DEI publications). We are also preparing for efforts to partner with*

*Undergraduate Consortium Task Force Schools to help build relationships and recruit diverse student populations to SOT activities, participation in SOT organizations and Specialty Sections, and encourage leadership roles. We also made efforts to survey SOT members about their thoughts on inclusion and diversity with a draft Google form, however we recognized we were duplicating efforts of SOT leadership and decided to support those larger efforts directly and where possible. Related, 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.*

- B. 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.**

*This suggestion was made in the 2020 report; however, it will be reiterated here. MSBSS and SOT as a whole would benefit if donations could be made via Venmo/PayPal (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.*

- C. What is one thing that the Society is currently doing that impacts your component group that should be changed (e.g., stopped, modified, etc.)?**

*During the 2021 virtual meeting, we had some issues establishing an effective conduit of communication for participants that were deaf and hard-of-hearing (DHH). There are specific needs that may not be fully addressed to support DHH individuals in a scientific conference environment and some suggestions, made by SOT and MSBSS member Dr. Tom (Lok Ming) Tam, should be implemented for the 2022 meeting. MSBSS will respond from lessons learned from 2021 and we hope that SOT will provide additional support as well (please see Dr. Tam's publication on DHH individuals in STEM: [Becoming a hearing ally: how do you best accommodate non-hearing scientists? \(ecrlife.org\)](https://ecrlife.org/)).*

- D. What changes do your component group anticipate making in the way in which it operates in the coming year?**

*Our 2021 MSBSS Research Awardees did not have undergraduate winners. This is not because the award was not available, but because we did not have any applications. We believe that this was in part due to lower undergraduate student research participation in the virtual meeting, but also because there was not effective communication of this award in the primarily digital-driven environment. MSBSS has committed to fostering new channels of communication to reach undergraduates to not only apply for these awards, but also participate in SOT and MSBSS activities. These include reaching mentors and other networks with direct communication to undergraduates, as well as utilizing internet social media to advertise our awards and activities.*