

Molecular and Systems Biology Specialty Section

ANNUAL REPORT: 2021-2022

May 1, 2021 to April 30, 2022

I. Officers/Committees

Officers	2021-2022	2022-2023
President:	Brian N. Chorley	Tamara Tal
Vice President:	Tamara Tal	Karilyn E. Sant
President-Elect:	Karilyn E. Sant	Jessica L. LaRocca
Treasurer:	Lindsay A. Holden	Lindsay A. Holden
Past President:	Jessica Plavicki	Brian N. Chorley
Senior Councilor:	Jessica L. LaRocca	Leah Wehmas
Junior Councilor:	Leah Wehmas	Elizabeth Martin
PDA Representative:	Subham Dasgupta	David Gallegos
Senior Grad Student Representative:	Courtney R. McClure	Lindsay B. Wilson
Junior Grad Student Representative:	Lindsay B. Wilson	Marjorie Marin

II. 2021 Membership total: 194

III. Key Outcomes in 2021-2022

- A. MSBSS made key contributions to the 2022 annual meeting. We received nine proposals and 90% were accepted and presented at the meeting. We were the main organizers of the mentorship event, which was attended by 30 mentors representing academia, government, consulting, science communication and approximately 75 mentees representing three specialty sections attended.
- B. MSBSS continued our mission to support and recognize trainees in the field of mechanistic and systems toxicology. We awarded eight awards recognizing excellent undergraduate, graduate student, and postdoctoral science.
- C. MSBSS continued efforts to create a more inclusive, diverse, and enabled environment through the addition of a new travel award for a deserving award winner from an historically underrepresented group. In addition, we updated our mission statement and values to reflect our commitment to increasing diversity.

IV. Activities

- A. **2022 SOT Annual Meeting Activities** (e.g., courses, scientific sessions, or virtual receptions): A total of 10 proposals were submitted to MSBSS for final review and endorsement and nine were accepted and presented at the 2022 SOT Annual meeting. We held our annual specialty section reception in person for the first time in three years where we recognized award recipients, discussed of MSBSS plans for the upcoming year, and had social and networking time. We also led the organization of the 2022 Mentoring event.

1. CE PM09: Leading-Edge Microbiome Methods for Toxicological Applications
2. CE PM11: Next level neurotoxicology: New technologies to advance visualization of spatial molecular alterations and behavioral phenotyping
3. CE PM11: Next-Level Neurotoxicology: New Technologies to Advance Visualization of Spatial Molecular Alterations and Behavioral Phenotyping
4. Symposium 1026: New Approach Methods for Functional Developmental Neurotoxicity
5. Workshop 1128: Technological Advancements and Strategic Approaches in Developmental and Reproductive Toxicity Assessments
6. Symposium 1177: Applications of Single Cell Profiling Methods to Enhance Mechanistic Understanding of Toxicological Responses
7. Workshop 1156: Advances in CRISPR-Based Molecular and Computational Methods for Assessing Mechanistic Underpinnings of Toxicity and Gene-Environment Interactions
8. Workshop 1072: Bad Breath: Non-invasive Investigation into the Exhaled Biomarkers for Toxicological Research
9. Roundtable 1164: Application of next-generation assessment principles for decision making
10. MSBSS Virtual meeting – Monday evening
11. MSBSS Mentoring Event – Wednesday evening

B. 2022 MSBSS Awards

AWARD ORDER	TYPE	APPLICANT NAME	MENTOR	TITLE
1	Graduate	Wilson	Tanguay	Combining RNA-sequencing with bioactivity screening reveals phenotypically-anchored gene profiles associated with increasing retene concentration in zebrafish
2	Graduate	Marin	Timme-Laragy	Embryonic Perfluorooctanesulfonic Acid (PFOS) Exposure Increases β -cell Sensitivity to Nitroreductase-Mediated Ablation in Zebrafish (<i>Danio rerio</i>)
3	Graduate	Vitucci	McCullough	A Novel In Vitro Model of the Alveolar Capillary Region: Bridging the Gap Between Inhalation Toxicology and Cardiovascular Disease
1	Paper of the Year	Prajapati	Bartnikas	Biliary excretion of excess iron in mice requires hepatocyte iron import by <i>Slc39a14</i>
2	Paper of the Year	Hudson	Cowley	Transcriptomic, proteomic, and metabolomic analyses identify candidate pathways linking maternal cadmium exposure to altered neurodevelopment and behavior
3	Paper of the Year	Nault	Zacharewski	Single-Nuclei RNA Sequencing Assessment of the Hepatic Effects of 2,3,7,8-Tetrachlorodibenzo-p-dioxin

1	Postdoctorate	Leuthold	Tal	A novel battery of behavior-based assays in larval zebrafish and its potential to elucidate neurodevelopmental toxicity mechanisms with a focus on deficits in learning and memory
2	Postdoctorate	Poole	Luyendyk	Canonical activation of protease-activated receptor-1 drives experimental liver fibrosis
3	Postdoctorate	Dasgupta	Tanguay	Characterizing the developmental role of AhR-dependent sox9b long intergenic noncoding RNA (slincR) using CRISPR-Cas9-gene editing
1	Undergraduate	Sturgis	Willett	BaP-Induced Multigenerational Gene Expression and DNA Methylation Changes are Primarily Influenced by Paternal Genotype
2	Undergraduate	Gonzalez	Hartman	Subcellular Targeting of Induced CYP2E1 in the Brain During Alcohol Use
3	Undergraduate	Moore	Gow	Nitrated Fatty Acids Inhibit NF- κ B Pathway in LPS-Stimulated RAW 264.7 Macrophage Cells

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

NA

D. Communication Activities

1. Newsletter publication: Currently annual; last edition was Fall 2021
2. New or Significant Announcements/blogs: More engaged with Twitter account (@msbss_sot) as well as our contact email (msbss.sot@gmail.com). 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: We generated a new logo! Website refresh ongoing.

E. Mentoring activities

MSBSS led the organization of an official SOT mentoring event. We collaborated with Biotechnology and Mechanisms Specialty Sections to increase donations and access to a diversity of mentors and mentees. The event had 30 mentors representing academia, government, consulting, science communication and more. Approximately 75 mentees representing the three specialty sections attended. After the event, we sent a survey to participants asking for feedback. The survey showed that attendees enjoyed the “speed dating” format and appreciated the diversity of mentors representing a range of career stages. To improve the event, attendees also recommended that we increase the length of the event and strategically place mentees with mentors in their sector of interest in future years. To facilitate organization of the annual event, a standard operating procedure was generated.

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. Key actions include:

- Promoting diversity in elected positions of leadership and MSBSS-endorsed sessions;
- We provide SOT meeting travel support for disadvantaged trainees (a travel support statement has been included in all of our recent trainee award descriptions); and
- DEI considerations are prioritized in mentor selection for the annual mentoring event.

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?):

- We need closed captioning and/or translators for our 2023 reception so deaf and hard-of-hearing (DHH) members can participate; and
- Please follow-up with tamara.tal@ufz.de by December 2022 to set this up for 2023.

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.)?

- We would like to have our mentorship event on Monday night and reception on Tuesday night in perpetuity.
- Trainees want the mentorship event to occur on Monday nights so they are fresh and have time throughout the meeting to capitalize on new connections.

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

- Possibly implement a new sponsorship mechanism on the website.