

Molecular and Systems Biology

ANNUAL REPORT: 2022–2023

May 1, 2022 to April 30, 2023

I. Officers

Officer	2022–2023	2023–2024
President:	Tamara Tal	Karilyn Sant
Vice President:	Karilyn Sant	Jessica LaRocca
Vice President-Elect:	Jessica LaRocca	Jessica Hartman
Secretary/Treasurer:	Lindsay Holden	Leah Wehmas
Past President:	Brian Chorley	Tamara Tal
Councilors:	Elizabeth Martin	Subham Dasgupta
	Leah Wehmas	Elizabeth Martin
Postdoctoral Representative:	David Gallegos	Yvonne Rericha
Graduate Student Representatives:	Lindsay Wilson	Marjorie Marin
	Marjorie Marin	Sarah Avila-Barnard

II. 2022 Membership total: 173

III. Key Outcomes in 2022–2023:

- A. We held our 4th MSBSS mentoring reception at the Annual Meeting in Nashville. This time, we asked 5 component groups and 4 professional sponsors to join our force, and this number has been increasing year-after-year since the initial event in San Antonio (which had three component group sponsors with no external/corporate sponsors). This resulted in an expansion of the types of careers represented and enabled greater access to a number of highly invested mentors. Feedback from participants was extremely positive.
- B. We created the inaugural travel award, aimed at helping defray travel costs for trainees from underrepresented backgrounds in toxicology.
- C. We updated our website and logo, providing much more information to our membership.

IV. Activities

- A. SOT Annual Meeting Activities (e.g., courses, scientific sessions, receptions):

MSBSS sponsored 8 sessions at the 2023 Annual Meeting (chronological order):

- i. CE Course: “Beyond the Powerhouse: Investigating Mechanisms of Mitotoxicity”
 - a. Led by ECR
- ii. Roundtable: “A Transformative Vision for an ‘Omics-Based Regulatory Chemical Testing Paradigm
- iii. Symposium: “Playing with Fire: Human Exposure, Health Risks and Safer Design of Flame Retardants”

- iv. Symposium: “Metals Matter: The Potential Effects of Metal-Mediated Cell Death in the Pathogenesis of Cardiopulmonary Diseases”
- v. Workshop: “Cancers, Chemicals, and the Microbiome”
 - a. Led by ECR
- vi. Workshop: “Grappling with the Grim Reaper: Epigenetics of Aging”
- vii. Symposium: “High-Content Imaging: Cell Painting Basics and Emerging Applications to Toxicological Research”

We also hosted two major events/receptions:

- MSBSS Reception: Tuesday March 19th
- MSBSS Joint Mentoring Reception: Monday March 20th

B. 2023 Awards Recipients:

2023 MSBSS Undergraduate Student Trainee Award

- i. 1st place: Zaria Killingsworth, Medical University of South Carolina:
“CYP2E1 expression in liver cells impacts lipid storage and utilization of free fatty acids”
- ii. 2nd place: Benjamin Gelfand, Rutgers University:
“PGC-1 β Promotes Macrophage Metabolic Activation Towards a Proresolution Phenotype after Ozone Exposure”
- iii. 3rd place (tie): Isabella Boyack, University of Massachusetts:
“Potential recovery of exocrine pancreas growth following embryonic PFAS exposure in Zebrafish (Danio rerio)”
- iv. 3rd place (tie): Charlotte Gridley, University of Massachusetts:
“Optimization of Lipid Uptake and Protease Activity Assays with Developmental PFOS Exposure using Zebrafish (Danio Rerio)”

2023 MSBSS Graduate Student Trainee Award

- i. 1st place: Danielle Kozlosky, Rutgers University:
“Enhanced Fetoplacental Cadmium Toxicity in Mice Lacking the Placental Bcrp Transporter”
- ii. 2nd place: Rachel Morgan, University of Michigan:
“Impact of Lead Exposure on Epigenetic Regulation During SH-SY5Y Neural Differentiation: Focus on piRNA and Transposable Element DNA Methylation”
- iii. 3rd place: Joanna Woo, Rutgers University:
“Inhibition of the Volume Regulating Anion Channel LRRC8 Attenuates Contraction and Migration in Human Airway Smooth Muscle Cells”

2023 MSBSS Postdoctoral Scholar Research Award

- 1st place: Michelle Kossack, Brown University:
“Juvenile 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) exposure results in lasting sex-specific changes in cardiovascular health”

2023 MSBSS Paper of the Year Award

- 1st place: Karina Orlowska, Michigan State University:
“Dioxin-elicited decrease in cobalamin redirects propionyl-CoA metabolism to the β-oxidation-like pathway resulting in acrylyl-CoA conjugate buildup”

2023 Travel Award

- Sarah Avila-Barnard, UC Riverside:
“Tris (1,3-dichloro-2-propyl) phosphate disrupts cellular metabolism within human embryonic kidney (HEK293) cells”

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

N/A

D. Communication Activities:

1. Newsletter publication frequency: MSBSS newsletters are released annually in the Fall (October or November). The 2022 edition was published on 12/1/22.
2. Communication Highlights: We have been using social media primarily for communications with our membership including Twitter: @msbss_sot. We have ensured that is compliant with the Spring 2023 SOT request, that component group accounts “share SOT and Component Group news and updates, foster discussions of scientific questions, expand networking opportunities, and facilitate mentorship.” We are considering a move to another social media platform, but we will ensure that we are always compliant with requests.
3. Highlights of website enhancements: The MSBSS website was updated last year, including new logos, color scheme, and some additional content. The 2023 information has yet to be posted but should be updated soon.

E. Mentoring Activities: MSBSS held its annual Mentoring Reception at the 2023 Annual Meeting in Nashville.

We partnered with other SOT Component Groups (Mechanisms SS, Biotechnology SS, SCCT, Risk Assessment SS and OTA SIG), and received support from industrial partners including SCJohnson, Corteva Agrisciences, HESI eSTAR.

We hosted over 125 mentees and mentors representing various disciplines in toxicology including academia, industry, consulting, government, and science communication.

Following the event, we sent a survey to acquire feedback from attendees. In the “speed-mentoring” style event, mentors and mentees alike appreciated the opportunity to network with a diverse group of attendees in a fun, informal way, while making connections that we hope will be long-lasting and fruitful. In 2024, we will be partnering with other SOT sub-groups and all students and postdocs within partnering groups are eligible to attend.

V. Feedback and Ideas:

A. In what ways is your group fostering and maintaining an inclusive environment? Please give examples of any current practices used to support inclusion in processes such as 1) leadership selection and promotion, 2) award descriptions and selection, and 3) endorsement of proposals for the Annual Meetings.

Leadership selection and promotion:

We currently have relied mostly on networking with our membership, social media posting, and meetings at SOT to spread the word about running for a MSBSS leadership position. We also post to ToXchange, and in our newsletter. In future years, we may want to evaluate how insular MSBSS is, and whether new measures need to be implemented to increase diversity (in all forms).

Awards:

In 2022, MSBSS revisited our Award descriptions, including selection criteria. We specifically considered whether our application metrics were truly equitable and gave us the best chances to select the best toxicology abstracts/papers. We made changes to all of these processes, and they were initiated for the first time in 2023.

We also instated a new travel award, “intended for undergraduates, graduates, or postdoctoral trainees from underrepresented or disadvantaged backgrounds as defined by NIH Guidelines and/or applicants who have faced background or adversity challenges.” We gave our first award out this year, of \$500, to help defray the costs of SOT attendance. If funding is sustainable, we intend to continue to offer this opportunity in the future.

Proposal endorsements:

MSBSS has a good history of encouraging proposals that have been led by junior scientists and trainees. For this reason, we have strong representation among chairs at all career stages. Likewise, we have positively reviewed and supported sessions that include junior speakers. Two endorsed sessions from 2023 were chaired by PhD or postdoc trainees. We highlighted their accomplishments at the reception.

Lastly, MSBSS considers representation very seriously during the review and pre-review processes. If there is a complete lack of representation based on gender, race, country of origin, etc., that is reflected in our scores (5/25 points are based on this). When scientists approach us at the pre-review stage, we give constructive feedback on this and encourage ways to improve.

B. What is one thing 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?

Reception costs are growing unsustainable for component groups. Having a centralized plan for Component Groups, or a list of best practices from HQ, would be helpful.

Registration discounts for award winners and specialty section officers would engage participation.

We would like SOT to highlight the work of MSBSS and other SS' through social media, ToxChange, etc.

Please provide more streamlined support for the organization of the reception.

It is essential to ensure that there are quality options for hearing impaired attendees at the Annual Meeting. We know that SOT asks for this information at the time of registration, but there are some issues. For example, many of the receptions are held off-site at loud venues (especially in Nashville, which was perhaps the worst). One of our members couldn't participate in activities because they were unable to hear any of the programming. Perhaps SOT can be clearer about recommendations up front to component groups surrounding accessibility.

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.)?

Please reconsider holding meetings in locations that are not inclusive (for example, anti-LGBTQ laws, California travel bans, Driver's License issues in FL next year, etc.).

In the meantime, provide support for prospective attendees from CA who cannot attend the next two meetings in Utah and Florida, and consider providing guidelines for inclusivity at ancillary events (to ensure ALL attendees are safe at our events).

Make ToXchange more streamlined and visible so that information doesn't get lost, which is often the case.

Advertise component group activity within regional chapter meetings.

It is a problem that SOT does not have centralized sustainability rules (e.g., no plastic meeting, discounts for people who take slow travel). We all want to participate in the Society, but at a smaller cost to the environment.