

November 2021

# Molecular and Systems Biology Specialty Section

MSBSS Fall Newsletter

## Welcome to our 2021 newsletter

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Dear MSBSS Members,

On January 1, 2021, as celebrations erupted throughout the world as the clocks struck midnight, there was a sense of optimism that we would emerge from this pandemic under the hopes of increased vaccination availability and awareness of safe practices to reduce spread of the virus. However, as the year progressed, 2021 seemed more of an extension of 2020 rather than the new beginning we had all wished for. Breakthrough variants of COVID-19, continued politicization of health care issues, and inaccessibility to vaccines and diagnostics to parts of the world that need it most are just some of the factors that hampered efforts to control the virus.

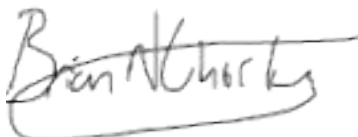
Thankfully science does not rest. This includes those in our field of toxicology that apply their talents and vision to combat this pandemic. Examples include NIEHS contribution to the NIH Rapid Acceleration of Diagnostics (RADx) initiative by applying NGS technology to ramp up diagnostic efforts, utilization of cardiomyocyte models for drug safety to test COVID-19 therapies, and creation of accessible information to aid in decision making for safe workplaces.

Beyond COVID-19, members of SOT and the Molecular and Systems Biology Specialty Section (MSBSS) continue to tackle challenges that impact us such as the ecological and economic impacts of climate change, health disparities due to issues of environmental injustice, and persistent chemicals in our shared environment. New methods, tools, and approaches are key to solving these complex issues. We encourage MSBSS scientists to share the excellent work they are performing by submitting their abstracts by December 1 to present at the 2022 SOT Annual meeting and be recognized through awards from our specialty section at undergraduate, graduate and postdoctoral stages, as well as the Paper of the Year award. We also encourage those from historically excluded backgrounds to participate in the meeting by applying for travel awards offered through our Specialty Section. Deadline for these awards is December 3.

Take a peek inside this newsletter to learn about our 2021 award winners, new mission statement and logo, and 2022 mentoring event.

2022 will be a year of celebration and we look forward to seeing you in person at San Diego in March. Here's to great science, renewed hope, and new beginnings.

Sincerely,



Brian Chorley

SOT MSBSS President

Contact us! Our email is [msbss.sot@gmail.com](mailto:msbss.sot@gmail.com)  
And follow us on Twitter for the latest SOT,  
MSBSS, and cool science news! [@msbss\\_sot](https://twitter.com/msbss_sot)

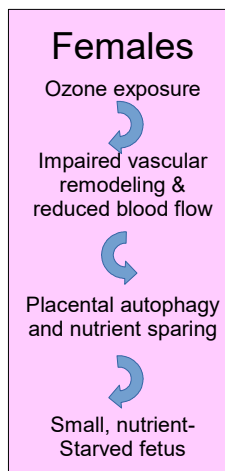
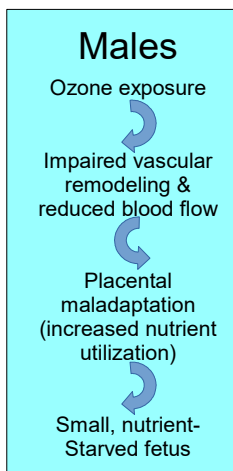
## SOT Molecular and Systems Biology Specialty Section 2021 Annual Meeting Award Winners

Congratulations to award winners from the 2021 Annual SOT meeting!

### Paper of the Year Award

Ozone induced fetal growth restriction in rats is associated with sexually dimorphic placental and fetal metabolic adaptation.

**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. *Molecular Metabolism* 2020.



Dr. Colette Miller

### Postdoctoral Research Award

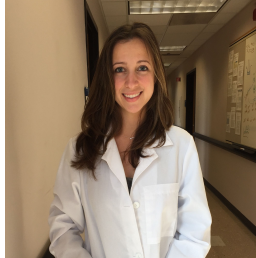
**1<sup>st</sup> place: Madelyn (Mimi) Huang;** Mentor: Alison Harrill; Multi-tissue transcriptomic analysis of Diversity Outbred mice fed a high fat diet

**2<sup>nd</sup> place: Subham Dasgupta;** Mentor: Robyn Tanguay; Impacts of a 5G level 3.5 GHz radiofrequency radiation on zebrafish embryonic development

**3<sup>rd</sup> Place: Genoa Warner;** Mentor: Jodi Flaws; Environmentally relevant mixtures of phthalates and phthalate metabolites differentially alter the cell cycle and apoptosis in mouse neonatal ovaries



Clockwise: Dr. Mimi Huang, Dr. Subham Dasgupta, Dr. Genoa Warner



Clockwise: Kathryn Wierenga, Tasha Thong, Eva Vitucci, Not pictured: Lillie Marie Barnett

### Graduate Student Research Award

**1<sup>st</sup> place: Kathryn Wierenga;** Mentor: James Pestka; Phenotypic stability and application of a self replicating murine alveolar macrophage model derived from fetal liver

**2<sup>nd</sup> Place: Tasha Thong;** Mentor: Justin A. Colacino; Understanding racial disparities in breast cancer: characterizing stem cell biology and the effects of bisphenols in normal breast cells from diverse donors

**3<sup>rd</sup> Place (tie): Eva Vitucci;** Mentor: Shaun D. McCullough; Identifying the molecular mechanisms of air pollution induced cardiovascular disease

**3<sup>rd</sup> Place (tie): Lillie Marie A. Barnett;** Mentor: Brian S. Cummings; Characterizing the nephrotoxicity of brominated flame retardants in rat and human renal cells: A transcriptomics approach

### Undergraduate Research Award

There were unfortunately no applicants this year. Please encourage your trainees to apply!

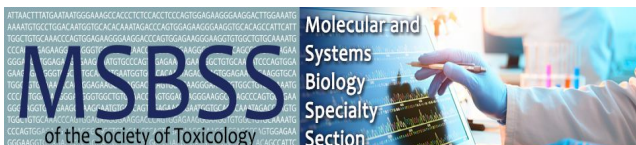
### New Award Alert!

All award applications are due December 3. Please encourage trainees to apply, including undergraduate researchers! This year, as part of the normal application, trainees from historically excluded backgrounds can apply for additional travel support, to be distributed BEFORE the annual meeting. We look forward to your applications!

## SOT Molecular and Systems Biology Specialty Section New Look!

In preparation for a website refresh, MSBSS has developed a new mission statement, new objectives, and a fresh logo. Take a look and let us know what you think!

We are excited about our **new MSBSS Logo**, but it is still a work-in-progress!



### MSBSS Mission Statement

The SOT Molecular and Systems Biology Specialty Section (MSBSS) is composed of toxicologists who apply molecular tools to understand how exposure to chemicals perturbs biology and impacts public health and the environment. Join MSBSS to connect with toxicologists using ‘omics, gene editing, and computational analyses in a diverse suite of experimental models to explore how chemical-dependent adverse outcomes are mechanistically triggered. A central goal of MSBSS is to amplify trainee science and facilitate career growth for junior scientists. We organize yearly research and travel awards for undergraduate, graduate, and postdoctoral researchers and a paper-of-the-year award. Each year, our graduate and postdoctoral representatives organize a successful and fun mentoring/networking event during the national SOT meeting that draws academic, government, industry, and non-governmental organization scientists to mentor and encourage MSBSS trainees. A core principle of MSBSS is to value diversity as an inherent good for the field of toxicology. As part of our activities, we aim to recruit, train, and promote scientists who identify as members of historically underrepresented groups and achieve equity of opportunity in the scientific endeavor for all MSBSS members.

### MSBSS Objectives

- Serve as a home for scientists who apply molecular tools and methods to toxicological issues
- Promote, facilitate, and amplify scientific and career growth for junior scientists
- Value inclusiveness as inherent and necessary for the field of toxicology

We meet these goals by providing:

- Conduits to disseminate scientific knowledge relating to ‘omics, gene editing, and computational analyses in a diverse suite of experimental models to define how chemical-dependent adverse outcomes are mechanistically triggered.
- Yearly research and travel awards for undergraduate, graduate, and postdoctoral researchers and a paper-of-the-year award.
- Mentoring/networking events that include academic, government, industry, and non-governmental organization scientists to assist MSBSS trainees.
- Opportunities to recruit, train, and promote underrepresented scientists to achieve equity of opportunity in the scientific endeavor for all MSBSS members.

Not already a member of MSBSS? Join us today! More information here:  
<https://www.toxicology.org/groups/ss/msbss/membership.asp>



## SOT Molecular and Systems Biology Specialty Section Member Highlights

### Awards

#### Robyn Tanguay Receives RIVER Award

Dr. Robyn Tanguay, along with co-I, Dr. Lisa Truong, both longtime MSBSS members, were awarded the 8 year, \$7M NIEHS Revolutionizing Innovative, Visionary Environmental Health Research (RIVER) grant. More here: <https://today.oregonstate.edu/news/osu-distinguished-professor-receives-7m-wide-ranging-study-biological-impact-chemicals>



#### Dana Dolinoy and Justin Colacino Awarded NCI Grant

Drs. Dolinoy (Co-PI) and Colacino (Co-I) are members of a multidisciplinary team of scientists who received a \$13M grant from the National Cancer Institute called

MI-CARES, or Michigan Cancer and Research on the Environment Study. This collaborative award will quantify the impacts of environmental exposures on cancer risks around the state of Michigan. This award will focus on participants age 25-44, and will collect biological samples to assess exposures and examine correlations with cancer biomarkers.



#### Former MSBSS Postdoc Rep Elizabeth Martin receives an NIEHS Independent Research Scholar award

Dr. Martin was awarded a three-year principal investigator position at NIEHS to pursue research into how eukaryotic cells regulate gene expression. More information here: <https://factor.niehs.nih.gov/2021/6/feature/4-feature-directors-corner/index.htm>



#### MSBSS VP Tamara Tal awarded a W2 Professorship at Leipzig University

This five year, €1M award enables Tal to further build her research group at the Helmholtz Centre for Environmental Research, UFZ and Leipzig University.



#### David Leuthold wins 2021 UFZ Young Scientist Award

Dr. Leuthold was honored for his excellent inter- and transdisciplinary work on socially relevant topics with outstanding output



#### Go Tanguay Lab!

**Dr. Subham Dasgupta** won Oregon State University's Postdoctoral Excellence Award, presented at the University Day in 2021

**Yvonne Rericha and Connor Leong** (Oregon State University) won the Best Graduate Student Presentation Awards (1st and 4th respectively) at the Pacific Northwest Association of Toxicologists (PANWAT) conference, 2021

**Drs. Lindsey St. Mary and Subham Dasgupta** (Oregon State University) won first and second place in the Best Postdoctoral Presentation Awards at PANWAT, 2021

### Updates

#### 2021 Postdoctoral Awardee Dr. Genoa Warner Opens New Lab

A warm welcome to the to the Laboratory of Endocrine Disruption & Chemical Biology (EDC Lab) in the Department of Chemistry and Environmental Science at the New Jersey Institute of Technology! The EDC Lab uses chemical tools to investigate the toxicity and mechanisms of endocrine disrupting chemicals in biological systems. More info: <https://www.genoawarner.com/>



#### Senior Graduate Councilor Courtney McClure Interviewed by the Genetic Society of America

<https://genestogenomes.org/early-career-scientist-leadership-spotlight-courtney-mcclure/>

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MSBSS LEADERSHIP

MEET YOUR 2021-2022 MSBSS LEADERSHIP TEAM



Row 1: Jessica Plavicki, Past President; Brian Chorley, President; Tamara Tal VP;  
Row 2: Kari Sant, VP Elect; Lindsay Holden, Treasurer; Jessica LaRocca, Senior Councilor  
Row 3: Leah Wehmas, Junior Councilor; Subham Dasgupta, Postdoctoral Rep; Courtney McClure, Senior Grad Rep  
Row 4: Lindsay Wilson, Junior Grad Rep

Register for the 2022 SOT Annual Meeting!  
Join us for the MSBSS-sponsored symposia and workshops

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# Mark your calendars for the MSBSS Annual Mentoring event!

MSBSS is planning its fourth annual mentorship reception at the 2022 SOT Meeting in San Diego, in collaboration with the Biotechnology Specialty Section. This reception serves to bring together trainees and mentors from across toxicology disciplines to facilitate interactions in an informal setting. Drinks and appetizers will be served reception-style. All students and postdocs within MSBSS are eligible to attend, but keep an eye out for further announcements because space is limited!

Tentative date and time:  
March 30, 2022, 7-9pm  
Location: San Diego, CA, TBA  
Sign up will open early next year, stay tuned!

*The future belongs to those who believe in the beauty of their dreams. -Eleanor Roosevelt*

## Treasurer Report

The MSBSS General Fund Financial statement (as reported June 2021) is below. Our specialty section is in good financial standing with sufficient funds to support our meeting and award activities in 2021.

	General Fund	Endowment
starting balance	\$ 32,552.61	\$ 53,673.00
trainee awards	\$ (1,944.85)	\$ (1,750.00)
membership dues	\$ 3,065.00	
earned interest	\$ 1,763.64	\$ 13,408.00
contributions	\$ 1,600.00	\$ 500.00
net changes	\$ 4,483.79	\$ 12,158.00
ending balance	\$37,036.40	\$ 65,831.00



## Papers

Aalekhya Reddam, David C Volz. Inhalation of two Prop 65-listed chemicals within vehicles may be associated with increased cancer risk. *Environment International*.

Bowers EC, Martin EM, Jarabek AM, Morgan DS, Smith HJ, Dailey LA, Aungst ER, Diaz-Sanchez D, McCullough SD. Ozone responsive gene expression as a model for describing repeat exposure response trajectories and inter-individual toxicodynamic variability *in vitro*. *Toxicol Sci*. 2021 Oct 30:kfab128.

Chorley BN, Ellinger-Ziegelbauer H, Tackett M, Simutis FJ, Harrill AH, McDuffie J, Atabakhsh E, Nassirpour R, Whiteley LO, Léonard JF, Carswell GK, Harpur E, Chen CL, Gautier JC. Urinary miRNA Biomarkers of Drug-Induced Kidney Injury and Their Site Specificity Within the Nephron. *Toxicol Sci*. 2021 Feb 26;180(1):1-16.

Lindsay B Wilson, Lisa Truong, Michael T Simonich, Robyn L Tanguay. 2020. Systematic Assessment of Exposure Variations on Observed Bioactivity in Zebrafish Chemical Screening. *Toxics*.

Milankumar Prajapati, Heather L. Conboy, Shintaro Hojyo, Toshiyuki Fukada, Bogdan Budnik, Thomas B. Bartnikas. Biliary excretion of excess iron in mice requires hepatocyte iron import by Slc39a14. *Journal of Biological Chemistry*. DOI:<https://doi.org/10.1016/j.jbc.2021.100835>

Prarthana Shankar, Ryan S McClure, Katrina M Waters, Robyn L Tanguay. 2021. Gene co-expression network analysis in zebrafish reveals chemical class specific modules. *BMC Genomics*.

Sant KE, Moreau HM, Williams LM, Jacobs HM, Bowsher AM, Boisvert JD, Smolowitz RM, Pantazis J, Annunziato K, Nguyen M, Timme-Laragy A. Embryonic exposures to mono-2-ethylhexyl phthalate induce larval steatosis in zebrafish independent of Nrf2a signaling. *J Dev Orig Health Dis*. 2021 Feb;12(1):132-140.

Svoboda LK, Neier K, Wang K, Cavalcante RG, Rygiel CA, Tsai Z, Jones TR, Liu S, Goodrich JM, Lalancette C, Colacino JA, Sartor MA, Dolinoy DC. Tissue and sex-specific programming of DNA methylation by perinatal lead exposure: implications for environmental epigenetics studies. *Epigenetics*. 2021 Oct;16(10):1102-1122.

Subham Dasgupta, Vanessa Cheng, David C Volz. 2021. Utilizing Zebrafish Embryos to Reveal Disruptions in Dorsoventral Patterning. *Current Protocols in Toxicology*.

Rericha, Dunping Cao, Lisa Truong, Michael Simonich, Jennifer A Field, Robyn L Tanguay. 2021. Behavior Effects of Structurally Diverse Per-and Polyfluoroalkyl Substances in Zebrafish. *Chemical Research in Toxicology*.

Vanessa Cheng, Aalekhya Reddam, Anil Bhatia, Manhoi Hur, Jay S Kirkwood, David C Volz. Utilizing systems biology to reveal cellular responses to peroxisome proliferator-activated receptor  $\gamma$  ligand exposure. *Current Research in Toxicology*.

Weitekamp CA, Kvasnicka A, Keely SP, Brinkman NE, Howey XM, Gaballah S, Phelps D, Catron T, Zurlinden T, Wheaton E, Tal T. Monoassociation with bacterial isolates reveals the role of colonization, community complexity and abundance on locomotor behavior in larval zebrafish. *Anim Microbiome*. 2021 Jan 21;3(1):12

Yang Y, Filipovic D and Bhattacharya, S, Negative Feedback Loop and Transcription Factor Cooperation Regulate Zonal Gene Induction by 2, 3, 7, 8-Tetrachlorodibenzo-p-Dioxin in the Mouse Liver. *Hepatol Commun*. 2021

Yue MS, Martin SE, Martin NR, Taylor MR, Plavicki JS. 2,3,7,8-Tetrachlorodibenzo-p-dioxin exposure disrupts development of the visceral and ocular vasculature. *Aquat Toxicol*. 2021 May;234:105786. doi: 10.1016/j.aquatox.2021.105786. Epub 2021 Feb 24.

## SOT ToxScholar Program

**SOT ToxScholar program supports presentations to increase awareness of toxicology as a science and as a career field.**

At institutions that are

- Primarily undergraduate
- With a high proportion of undergraduates from underrepresented groups
- In countries listed by the World Bank as low or middle income.

**We need YOU to be a ToxScholar**

Apply for funding

<https://www.toxicology.org/awards/gf/toxscholar.asp>

Sponsored by the

Faculty United for Toxicology Undergraduate

Recruitment and Education (FUTURE) committee

## MSBSS Opportunities

Calling all mentors! MSBSS has numerous opportunities to serve as a mentor at the annual meeting and throughout the year. These opportunities include in-person activities at the annual meeting (such as during our MSBSS mentoring event and during the Undergraduate Education Program) and virtually year-round for the Undergraduate Diversity Program. If you are interested in serving as a mentor this year, please reach out to Kari Sant ([ksant@sdsu.edu](mailto:ksant@sdsu.edu)).

Please consider making a tax deductible donation to MSBSS. We use these funds to support our awards, mentorship events, travel grants, and other initiatives. Please contact our Treasurer, Lindsay Holden ([linsay.a.holden3.civ@mail.mil](mailto:linsay.a.holden3.civ@mail.mil)).