Biological Modeling Specialty Section Newsletter

Volume 10
March 2026

President's message

Dear Biological Modeling Specialty Section (BMSS) members,

It has been my honor to lead our Biological Modeling Specialty Section (BMSS) this year. The past few years have been challenging for science and scientific societies, and the BMSS membership dropped during this time. However, we grew by 20% in 2025, and I'm confident that we can continue this growth into 2026. Please encourage your like-minded colleagues to join BMSS at the next renewal cycle. We take pride in being a resource for biological modeling information for SOT and beyond. Thanks to all our volunteers, leaders, and sponsors for making this all possible.

As I look back on the past year, I have enjoyed our opportunities to interact virtually via webinars and our virtual business meeting. I'm now very excited to see everyone in person in San Diego, and I hope all of you can attend our reception. I'm also looking forward to our mentoring event where I will meet the next generation of biological modelers. We are happy to provide a professional network to support you as you navigate your career, and we look forward to having you leading our specialty section in the years to come.

Feel free to contact us (please refer to the last page of this newsletter for information on how to contact BMSS officers) if you have ideas for future activities or would like to get more involved. BMSS is a resource for members thanks to all the efforts by the members, so your ideas for making our specialty section the best it can be are needed.

Thank you, members, for all you do in support of BMSS. I'd especially like to thank our BMSS leaders, past and present, for their hard work over the past three years. It has been a pleasure working with all of you. As I look ahead to my final year on the leadership team, I am very happy to see that BMSS is in great hands for the future as well.

I wish you all the best for 2026 and look forward to seeing you soon in San Diego.

Sincerely,

Stephen Edwards

BMSS President 2025-2026

BMSS Officers 2025-2026

President
Stephen Edwards

Vice President
Dustin Kapraun

Vice President-Elect
Wei-Chun Chou

Secretary-Treasurer
Matt Linakis

Past President
John Wambaugh

Councilors
Xiaoqing Chang
Celia Schacht

Post-Doc Representative
Xuelian Jia

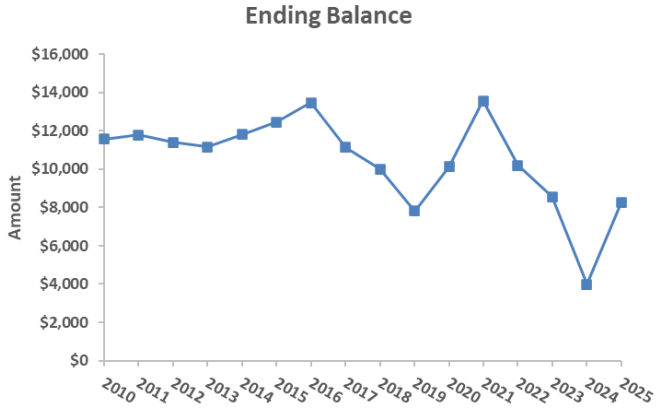
Student Representative
Xue Wu

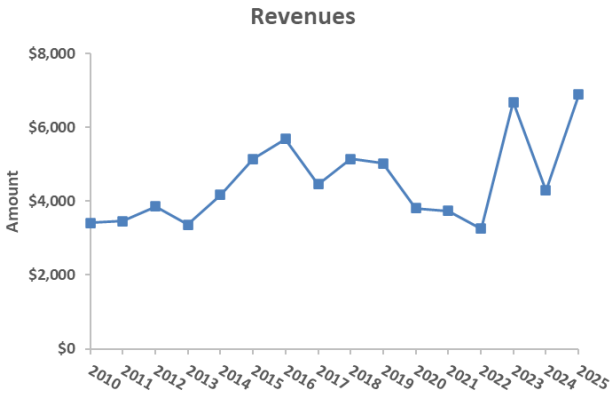
Treasurer's Report

Treasurer's Report for 2025 – Matt Linakis, BMSS Secretary-Treasurer

BMSS General Operating Fund

- Between January 2025 and December 2025, BMSS had revenues (credits) of $6,894 and expenditures (debits) of $2,650, resulting in a net gain of $4,244.
- The balance as of December 2025 is $8,240.
- SOT membership dues (115 dues-paying members) generated revenue of $2,880.
- SOT interest and the SOT Allocation Fund generated $351.47 and $858.90 of revenue, respectively; an error correction from the previous year of $1204 was also found.
- Other revenues came from individual donations (Steve Edwards, $600) and sponsorships (Pfizer, $1000).
- Expenses are for the SOT Conference Mentoring Session and Reception (1,721.44), plaques, certifications, and ribbons ($578.46), and the speciality section travel award ($350.00)
- In summary, BMSS annual revenues increased this year but were still around the yearly average when considering a distribution error and holdovers from last year being included in this year's budget. Nonetheless, BMSS ended the year with an increase in the balance. BMSS will continue to pursue sources of income other than member dues in the coming year.





Meet our BMSS officers

President – Stephen W. Edwards

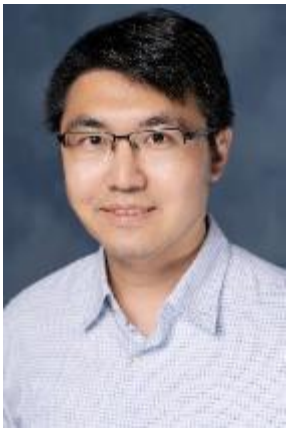
Stephen Edwards is Director of Scientific Computing and Data Management at UL Research Institutes' Chemical Insights. He leads integration, curation, and dissemination of scientific data, merging diverse sources to enable integrated analyses and novel insights. His work emphasizes public access to underlying datasets and web-based applications that support evidence-based public health decisions. Dr. Edwards has more than 30 years of experience in pharmacology and toxicology across academia, government, and industry and authored over 80 publications. His expertise includes data mining, web-accessible knowledgebases, biomarker development, omics analysis, database design, and statistical computing. Before joining UL Research Institutes, he served as Division Director at the U.S. Environmental Protection Agency's Center for Computational Toxicology and Exposure, overseeing tools such as the CompTox Chemicals Dashboard. Before that, he launched a computational toxicology program at RTI International and conducted drug target discovery at Rosetta Inpharmatics, Merck & Co. He holds a Ph.D. in Pharmacology from Vanderbilt University and a B.S. in Chemistry with Honors from the University of North Carolina at Chapel Hill.

Vice President - Dustin Kapraun

Dustin Kapraun, Ph.D., is a Physical Scientist at the U.S. Environmental Protection Agency (EPA) Office of Chemical Safety and Pollution Prevention (OCSPP) and an expert in physiologically based pharmacokinetic (PBPK) models and their applications in chemical risk assessment. He develops and applies PBPK models and other mathematical and statistical models to support chemical risk assessments, and is especially interested in pharmacokinetic models for gestation and the early postnatal period and mathematical methods for quantifying uncertainty in model predictions. Dr. Kapraun serves as a member of the Organization for Economic Cooperation and Development (OECD) committee that develops guidance on use of PBPK models for regulatory purposes and on the California Environmental Protection Agency's Expert Panel on Emerging Risk Assessment Approaches (EPERA). He also enjoys teaching and mentoring postdoctoral researchers and graduate students and leading workshops and training sessions on PBPK modeling and related topics.

Meet our BMSS officers

Vice President-Elect - Wei-Chun Chou



Dr. Wei-Chun Chou is an Assistant Professor in the Department of Environmental Sciences in the Department of Environmental Sciences at the University of California, Riverside (UCR). He received his Ph.D. in Biomedical Engineering and Environmental Sciences from the National Tsing-Hua University in 2013 and furthered his expertise through postdoctoral training at the Institute of Computational Comparative Medicine at Kansas State University, completing it in 2021. Before his current position at UCR, Dr. Chou was a Research Assistant Professor in the Department of Environmental and Global Health at the University of Florida from May 2021 to December 2023. Chou's lab focuses on advancing computational technologies, particularly in physiologically based pharmacokinetic (PBPK) modeling, machine learning, and artificial intelligence applications in nanomedicine, nanoparticles, and chemical risk assessment, aiming to elucidate their effects on the environment and human health.

Secretary – Treasurer – Matt Linakis

Dr. Matthew Linakis is a Senior Lead Consultant with Ramboll, located in Research Triangle Park, North Carolina. He utilizes a wide range of both established and novel *in silico* modeling methodologies to respond to a variety of client needs and investigations. Dr. Linakis has several years of experience with various forms of pharmacokinetic modeling, including population- and physiologically-based methods and has a particular interest in special populations (e.g. pediatric, neonatal, pregnant). His work also frequently involves *in vitro* to *in vivo* extrapolation as a means to reduce animal testing.

Meet our BMSS officers

Past President - John Wambaugh

Dr. John Wambaugh is a Principal Computational Exposure and Toxicokinetics Research Scientist at Chemical Insights, a non-profit research institute. He develops tools to evaluate chemical risks and protect public health. He joined his current organization in 2025 after nearly two decades as a researcher in the U.S. Environmental Protection Agency's Office of Research and Development.

John's work centers on translating new approach methods (NAMs) into practical solutions for chemical safety. He is an expert in *in vitro–in vivo* extrapolation (IVIVE), toxicokinetics, and exposure assessment. He often applies advanced statistical techniques – including machine learning, Bayesian methods, and Monte Carlo simulation – to quantify uncertainty and guide model selection. Dr. Wambaugh has contributed to more than 120 peer-reviewed articles, including extensive publications on both the toxicokinetics of PFAS and the chemicals found in consumer products. He has also helped develop several open-source tools, including the widely used R package *httk*.

He is an adjunct associate professor in the University of North Carolina's Department of Environmental Sciences and Engineering and has previously served as Associate Editor for *Environmental Health Perspectives* (2017–2023). A longtime member of the Society of Toxicology, he has co-founded the Exposure Specialty Section, led the Biological Modeling Specialty Section, and served on multiple key committees.

Senior Councilor – Xiaqing Chang

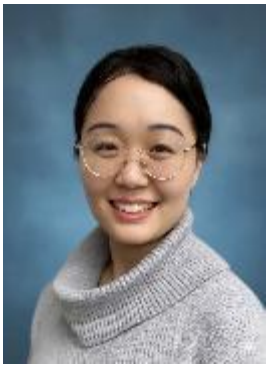
Dr. Chang is a predictive toxicologist specializing in computational approaches to evaluate new approach methodologies (NAMs) and to establish their utility and confidence in toxicity testing and safety assessment. She received her doctorate in molecular toxicology and a master's degree in biostatistics from the University of Cincinnati. She completed her postdoctoral training in computational toxicology at the National Institute of Environmental Health Sciences (NIEHS). Dr. Chang has provided technical support for the NTP Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM) for over 12 years. She is an expert in developing and applying physiology-based kinetic models to facilitate in vitro to in vivo extrapolation (IVIVE) in support of chemical human health risk assessments. She has been a member of the Society of Toxicology (SOT) since 2002 and has served on the executive committee of the Biological Modeling Specialty Section (BMSS) as a councilor since 2024.

Meet our BMSS officers

Junior Councilor – Celia Schacht

Celia Schacht, Ph.D., is a biologist at the U.S. Environmental Protection Agency (EPA). She holds a doctorate degree in biomathematics and a master's degree in applied mathematics from North Carolina State University. Her work focuses on applying physiologically based pharmacokinetic (PBPK) models to support chemical risk evaluations. She uses her expertise in probabilistic PBPK modeling to inform uncertainty quantification and characterize model applicability. Other work includes new approach methods (NAMs), such as high throughput toxicokinetics, where she builds and validates generic PBPK models and *in silico* methods.

Post-Doc Representative – Xuelian Jia



Xuelian Jia earned her PhD in August 2024 and is currently a Postdoctoral Fellow in the Division of Biomedical Informatics & Genomics, School of Medicine, Tulane University. Her research focuses on computational toxicology, machine learning modeling of organ toxicity, pharmacokinetics, mixture effects, interpretable deep learning, and the integration of biological knowledge into predictive modeling frameworks. Her studies have been published in journals including *Journal of Medicinal Chemistry*, *Environmental Science & Technology*, and *Journal of Hazardous Materials*. Xuelian has been an active member of SOT and has received several honors, including the Graduate Student Award, Postdoctoral Award, and the Colgate-Palmolive Award.

Student Representative – Xue Wu

Xue Wu is a Ph.D. candidate in Environmental and Global Health at the University of Florida. Xue's doctoral research focuses on developing computational and mechanistic modeling frameworks to support animal-derived food safety and human health risk assessment, with an emphasis on predicting drug residue depletion in food animals. Her work integrates Physiologically based Pharmacokinetic (PBPK) modeling, population variability analysis, and machine learning based QSAR approaches to improve prediction of tissue residues and inform evidence-based withdrawal intervals under real-world use scenarios. To advance this goal, she combines experimental pharmacokinetic data with model-based analysis, including multi-compartment PBPK model development and model validation, sensitivity analysis, Monte Carlo simulations, and translation of models into user-friendly web-based tools (e.g., R Shiny dashboards) to facilitate broader adoption by researchers and decision-makers.

Outgoing BMSS officers

John Wambaugh (Past President):

These are challenging times for scientific research. Because of this, the work of the Biological Modeling Specialty Section of the Society of Toxicology is more essential than ever. By quantifying the links between chemical stressors and public health, we provide critical insights that support sound decision-making. Amid growing skepticism of scientific expertise among the both the public and the halls of power, our efforts offer a valuable, evidence-based foundation for understanding the impacts of chemical policies. I encourage everyone to continue this important work and to advance the tools that will help shape a healthier and more informed future.

Xiaoqing Chang (Senior Councilor):

Dr. Chang served as BMSS councilor from 2024-2026.

I would like to thank my fellow officers and all BMSS members for their support and for the opportunity to serve as Councilor over the past two years. We are experiencing a rapid expansion in toxicological data generation, particularly through high-throughput screening (HTS) platforms and other New Approach Methodologies (NAMs). By leveraging computational and mathematical models to represent, simulate, and predict biological processes across multiple levels of biological organization, biological modeling plays a central role in integrating and translating these data into mechanistic insights and predictive tools for human health risk assessment. These approaches are also critical for supporting the application of NAM data in regulatory decision-making. Methods such as PBPK modeling and IVIVE provide an essential bridge between in vitro bioactivity and real-world exposure relevance. Advances in machine learning and artificial intelligence are reshaping scientific research in ways we are only beginning to appreciate. Thus, it is important for the next generation of toxicologists to understand and adopt biological modeling approaches to tackle emerging challenges and help move the field forward.

Xue Wu (Graduate Student Representative):

Xue Wu served as Graduate student representative during 2024–2026, and she leaves us with the following message.

Serving BMSS has been a real privilege, and I'm truly grateful for the support from our officers and members. BMSS has been closely connected with my Ph.D. journey over the past four years, where I learned, shared ideas, and found a community that values biological modeling and collaboration. I'm proud of what we've accomplished together and excited to see BMSS continue to grow alongside advances in AI, NAMs, and innovative modeling approaches. Thank you again for your passion, commitment, and support. I hope you'll continue to stay engaged with BMSS — by attending events, sharing your expertise, mentoring others, and encouraging new members to join. BMSS grows because of you, and I'm proud to have been a small part of this journey. I look forward to staying involved and cheering BMSS on in the years ahead.

2025 SOT BMSS Events

2025 BMSS Mentoring Event:
Orlando, Florida

2026 BMSS Mentoring Event Information

Biological Modeling Specialty Section Mentoring Event,

Where: Presidio, Marriott Marquis Marina

When: Tuesday, March 24, 2026, 5:00-6:00pm (Pacific)

BMSS Endowments

Andersen-Clewell Trainee Award Fund

- There were $100 of contributions through Q2 of 2025.
- There was a net gain from investments of $5,311 through Q2 of 2025.
- There will be a disbursement (for a cash award) in 2026.
- The balance was $73,629 as of June 2025.

Perry J. Gehring Biological Modeling Award Fund

- There were no contributions through Q2 of 2025.
- There was a net gain from investments of $3,782 through Q2 of 2025.
- There was a disbursement of $2697.52 (for two cash awards) in 2026.
- The balance was $67,438 as of June 2025.

Thanks to Our Sponsors!

BMSS sincerely thanks our generous supporters for their contributions to the BMSS General Operating Fund.

Gold Sponsor (2026)

Underwriters Laboratories Research Institutes' Chemical Insights (Marietta, GA) - $2,000

Silver Sponsor (2025)

Pfizer (Groton, CT) - $1,000

Individual Donors (2025)

Our members donated a total of $600 in 2025.

Please consider a 2026 gift to support our Specialty Section.

BMSS-Sponsored Continuing Education Courses and Sessions

BMSS Endorsed Continuing Education Courses
AM03: Applications of Machine Learning and Artificial Intelligence Approaches to Advance Toxicology and Environmental Health Sciences
Sun, Mar 22
8:15am - 12:00pm (Pacific)

AM06: Systematic Methods for AOP Development and Application: New Technologies and Tools
Sun, Mar 22
8:15am - 12:00pm (Pacific)

BMSS Endorsed Research Sessions
Efforts Toward Building Aligned Physiologically Based Kinetic Models for Thyroid Hormone Homeostasis in Rodents and Humans: Can We Develop "Supermodels"?
Mon, Mar 23
Ballroom 6E, Convention Center
9:15am - 12:00pm (Pacific)

Integrating In Vitro Data and PBK Modeling for Exposure-Led Risk Assessment
Tue, Mar 24
Ballroom 6D, Convention Center
1:00pm - 2:30pm (Pacific)

Do We Need a Number, a Pathway, or Both? Applying Transcriptomics for Chemical Hazard Assessment
Tue, Mar 24
Ballroom 6E, Convention Center
4:30pm - 6:00pm (Pacific)

NAM In Vitro Assessment of Intestinal Metabolism to Inform PBK Modeling of Bioavailability and Systemic Exposure
Wed, Mar 25
Ballroom 6F, Convention Center
8:00am - 10:45am (Pacific)

Call for **2027** BMSS session proposals

Dear BMSS Members,

We hope you enjoy the 2026 SOT Annual Meeting in San Diego and are excited for next year in San Antonio. To prepare for next year's meeting, we would like to solicit ideas for session proposals related to biological modeling in toxicology.

If you plan to submit proposals, we encourage you to submit draft session proposals to Wei-Chun Chou (weichun.chou@ucr.edu) for pre-review by **May 6, 2026**.

The BMSS review committee will review and provide feedback (**May 10, 2026**) to help strengthen the proposals before you submit your session on the SOT website (**May 15, 2026**).

Thank you!

BMSS Executive Committee.

BMSS Webinars

Can you suggest anyone that you think would be an excellent candidate to present during our BMSS webinars?

You are welcome to nominate yourself and anyone else who is actively involved in biological modeling, pharmacokinetics, or other innovative and cutting-edge modeling subjects.

Please submit your nominations via email to Dustin Kapraun (dfkapraun@gmail.com) or Wei-Chun Chou (weichun.chou@ucr.edu) with the subject line "BMSS webinars"

BMSS social media accounts info

Please stay tuned for our new updated website!
(https://www.toxicology.org/groups/ss/BMSS/)

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LinkedIn (https://www.linkedin.com/in/sotbmss)