



President's Message

We are looking ahead at an exciting year for genomics applications in toxicology both in human health and in the environment. Novel DNA sequencing methodologies, including the third generation sequencing instruments and advanced mass spectrometers for metabolite and proteomics profiling are now in the market place enabling toxicologists to accomplish what was just a dream a few years ago.

These new tools have provided scientists within MBSS the opportunity to be involved in paradigm changing research to evaluate single nucleotide methylation changes for epigenomic studies, DNA sequence polymorphisms associated with disease, the effect of the microbiome on health and disease, proteomics and much more. These same advances have made human toxicology incredibly sophisticated and are now allowing ecotoxicologists the ability to investigate ecological organisms at the molecular level. We have witnessed a large increase in high throughput assays helping us classify contaminants by their modes of action; potentially changing how toxicity testing will be performed in the future. Underpinning all of these efforts is systems biology. In addition to traditional mechanistic approaches, molecular biologists now deal with large data sets and infer system wide changes. It is because of these new developments that the MBSS favors changing our name to Molecular and Systems Biology Specialty Section (MSBSS). We will need your vote. Please read about our efforts in this direction below.

We are proud of our student and postdoctoral associates. They are embarking on exciting careers, answering novel questions using molecular methodologies. Please read about our competitive prizes for abstracts and submit your applications. MBSS is a great networking environment so invite your friends to join our group.

We have a new competitive prize this year entitled **Molecular Biology Specialty Section Paper of the Year Award**. This prize is open to any member of the MBSS and the paper must have been published within the past year. Information for how to apply for this award is below.

We look forward to a new exciting year in toxicology. Please join us at the MBSS reception at the Annual Conference at the Sheraton Hotel (Downtown Phoenix) on Monday March 24 from 6:00 to 7:30 PM.

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Potential Name Change for MBSS

We are proposing a change of name for our Specialty Section to “Molecular and Systems Biology Specialty Section.” We polled the MBSS membership this summer to establish if there was support among the members for the name change. A total of 79 members (out of 187 members or 42%) responded. Seventy-six out of seventy nine members (96%) responded “yes” and three (4%) responded “No.” We feel that this was an exceptionally good turn out since we sent the polling request by email in the middle of summer with a relatively quick deadline. The proposal is now being considered by the SOT Council. For this to go forward, we need the green light from Council and then another vote from our membership. The rationale for the change is that the study of molecular processes in toxicology has undergone a significant evolution in the last decade in which organismal perturbations are characterized by technologies that query entire sets of data rather than single genes.

Treasurer's Report

MBSS Financials (June 1, 2012 to May 31, 2013)

	Dollar Amount
Net Assets at Beginning of the year	\$7,718
2013 Meeting Registration	\$1,528
Total Income from SOT Meeting	\$1,528
Expenses (Awards)	(\$350)
Expenses (Plaques)	(\$167)
Expenses (Reception)	(\$2,149)
Total Expenses SOT meeting	(\$2,666)
Revenue over expense	(\$1,137)
NET Assets End of Year	\$6,580

Endowment Fund

	DOLLAR AMOUNT
Net Assets Beginning of Year	\$31,336
Contributions	\$350
Return on investments	\$796
Gain	\$3,207
TOTAL RETURN	\$4,003
Expenses (Awards)	(\$1,250)
Total Expense	(\$1,250)
Revenue over expenses	\$3,103
Net Assets End of the Year	\$34,439

CCT FutureTox I meeting – MBSS share of proceeds: \$24,000

Report on our Successful Contemporary Concepts in Toxicology (CCT) Workshop: FutureTox: Building the Road for 21st Century Toxicology and Risk Assessment Practices

The fields of toxicology and risk assessment are rapidly developing new tools and increased capacity for chemical testing. These changes were in part spearheaded by two US National Academy of Sciences (NAS) reports: Toxicity Testing in the Twenty-first Century: A Vision and a Strategy (2007) and Science and Decisions: Advancing Risk Assessment (2009) that formally challenged the entire scientific-academic-industrial-regulatory community to develop "solutions" to the problem of assessing the safety of large numbers of existing and new chemicals while at the same time reducing the numbers of animals used in the process and ensuring relevance to human health. These NAS reports recognized and recommended that effective implementation of these technologies will require regular interdisciplinary and inter-sector dialog in order to implement science informed decision making for human health effects from environmental chemicals.

Therefore, MBSS sponsored a two-day SOT-hosted Contemporary Concepts in Toxicology (CCT) Workshop called "FutureTox: Building the Road for 21st Century Toxicology and Risk Assessment Practices", which was held October 17-18 in Arlington, VA. The workshop goal was to address the challenges and opportunities associated with implementing 21st century technologies for toxicity testing, hazard identification and risk assessment. To facilitate an interactive multi-sector and discipline dialog necessary to progress this goal, the Workshop invitees and participants included stakeholders from governmental and regulatory agencies, research institutes, academia, and the chemical and pharmaceutical industry in Europe and the US. The Workshop agenda was constructed to collectively review and discuss the state-of-the-science in these fields, better define the problems and challenges, outline their collective goals for the future, and identify areas of common agreement key to advancing these technologies into practice. The meeting was attended by 206 Individuals distributed across government (93), industry (78), academia (11), and NGO's (24). The topics covered at FutureTox included (a) Considerations for predictive toxicology, and expectations for effective and efficient integration into practice and potential transitions of existing safety assessment practices in concert with this integration; (b) Considerations of value of human and environmental exposure information and links to toxicity test dosimetry, with a particular focus on relationships to contextual dose-exposure considerations associated with high throughput in vitro evaluation systems; and finally (c) Additional considerations for risk assessment, with an emphasis on how emerging science can best impact and reshape current risk assessment practice. The CCT format proved to be a valuable format for these discussions that advanced an understanding of the state of the science and the path forward for effective implementation of 21st Century toxicology and risk assessment goals.

FutureTox was a very successful CCT workshop and exceeded its financial objectives. As the sole sponsor, MBSS shared the additional revenue with SOT resulting in >\$24,000 added to the MBSS SOT account. The success of the first FutureTox workshop appears to have spawned a franchise with a FutureTox II: In Vitro Data and In Silico Models for Predictive Toxicology taking place January 16–17, 2014 in Chapel Hill, North Carolina and planning has already begun for a FutureTox III CCT workshop. The MBSS is uniquely positioned to significantly contribute to these exciting and important developments in toxicology, helping SOT to lead the way.

Dues Reminder

The annual Society of Toxicology membership deadline for dues is December 15th.

Please remember to renew your membership to the Society of Toxicology and to the MBSS. Also, please encourage your graduate students, post-doctoral fellows, and colleagues to become members of MBSS. This is a good time to also think about donating to the endowment fund to help support our student and postdoctoral prizes.

NEW: Molecular Biology Specialty Section Paper of the Year

The Molecular Biology Specialty Section (MBSS) will give a new monetary award at the SOT Annual Meeting for an outstanding paper applying molecular biology techniques to toxicity evaluation. Papers will be judged on the basis of innovation, quality of the study, quality of the manuscript, and application of molecular biology techniques to understanding mechanisms of toxicity and/or use in risk assessment. Papers can be self nominated or nominated by other MBSS members. Deadline is midnight on November 1, 2013. The paper must be published in a peer-reviewed journal during the 12 month period (August 1 to July 31) prior to the SOT meeting year. The award will be presented at the Annual Meeting, the following year. The nominee is expected to be the first author of the publication and a member of the MBSS. Review articles are not eligible. Submission materials must include a PDF of the paper and a short discussion (no more than one page) of the impact of the paper on the field including originality, quality, and impact. Please email the submission materials to Joel Meyer: joel.meyer@duke.edu

2013 Graduate Student and Postdoctoral Fellow Awards

The highlight of the MBSS reception at the annual meeting is the recognition of the graduate student and post-doctoral fellow award winners. The awards are extremely competitive and are an excellent way to enhance career development and become involved in the society. The awards were covered by our Molecular Biology Student Award Fund.

2013 Graduate Student Award Winners

- 1st Place: Le Cody Smith, University of Florida, “Effects of GPER Activation on (Xeno) Estrogen-Induced Cellular Responses”, Advisor: Tara Sabo-Attwood
- 2nd Place: Xiao Pan, Michigan State University, “Quantitative Phosphoproteomic Analysis of the Dynamic Signaling Network Mediating Proinflammatory Response in the Spleen of Mice under Deoxynivalenol-Induced Ribotoxic Stress”, Advisor: James Pestka.
- 3rd Place (Tie):
 - Vince Ramirez, University of Connecticut, “TNIP1 Regulates the Cell Stress Response through Repression of Heat Shock Proteins A6 and A1A”, Advisor: Brian Aneskievich
 - Tejas Lahoti, University of Pennsylvania “Aryl Hydrocarbon Receptor (*AhR*) Regulates Growth Factor Expression, Proliferation, Protease-Dependent Invasion and Migration in Primary Fibroblast-Like Synoviocytes from Rheumatoid Arthritis Patients,” Advisor: Gary Perdew

2013 Post-Doctoral Award Winners

- 1st Place: Durga Tripathy, University of Texas Health Center, Reactive Nitrogen Species Regulate Autophagy through ATM-AMPK-TSC2-mediated Suppression of mTORC1, Advisor, Cheryl Walker
- 2nd Place: Adita Joshi, UTMB, "Transcription Regulation by Novel Interaction of Kruppel-Like Factor 6 with Aryl Hydrocarbon Receptor at the NC-XRE", Advisor: Cornelis Elferink



Graduate Student Winners: Left to Right: Vince Ramirez, Le Cody Smith, and Tejas Lahoti. (Xiao Pan not pictured)



Post-Doctoral Winners: Left to Right: Adita Joshi and Durga Tripathy.

Pictures From the 2013 Reception



For MBSS Graduate Students

This year SOT kicked off their first YouTox Video Challenge, where students answered the question, “why did you become a toxicologist?” The winning video this year was submitted by students, staff, and faculty from the University of Rochester Medical School. Submissions this year will be due on January 15, 2014 at 12:00 noon. Cash prizes are awarded for 1st, 2nd, and 3rd place! For more information about the challenge, how to submit, and contact information, go to

https://www.toxicology.org/ai/spd/VideoChallenge_flyer_2014.pdf.

As always, SOT hosted their informal student and postdoc mixer, which allows students to network amongst themselves and postdoctoral fellow colleagues. The mixer is a great way to learn more about regional chapters, specialty sections, and special interest groups of SOT. This year, over 100 students enjoyed the first ever regional chapter/specialty section/special interest groups poster interaction game and prizes, such as iPads, iPods, and Toxicology Textbooks were raffled off to those who completed the game.

An additional informal networking opportunity provided each year by SOT is “Chat with an Expert” where a small group of students meet one-on-one with an Associate or Full SOT member Experts to increase their own network and gain insight into the field of toxicology over coffee or snacks. Those who would like to participate are required to sign up beforehand. Look for more information on how to participate at SOT 2014 as the meeting draws closer.

For more general information about additional student services provided by SOT, go to <https://www.toxicology.org/ai/spd/studentservices.asp>

The SOT Domestic Tox Scholar program provides funding to help with traveling costs for any SOT member who would like to give presentations about toxicology and toxicology careers to undergraduate institutions. This is a great opportunity for graduate students or post-docs to practice their presentation skills and to share with undergraduates the opportunities available to them in the world of toxicology. Since the grant is modest, it's best to travel to nearby institutions, such as visiting your alma mater, a college in your hometown or a college or university in a community that you are visiting for a work trip or a conference. Visits can be done with another SOT member or your mentor and SOT has great slides that you can use for your presentation. For more information, please visit <http://www.toxicology.org/ai/eo/toxscholar.asp>.

For MBSS Postdoctoral Members

Gordon Research Seminar organized by the PDA: “Genes - Environmental interactions: Environmental exposure and the toxicological mechanisms leading to diseases”. This scientific session was held during the “Cellular and Molecular Mechanisms of Toxicity Gordon-Kenan Research Seminar” at Proctor Academy in Andover, New Hampshire (August 10-16, 2013). Students and Postdoctoral Fellows were encouraged to submit their research. More information can be found at

http://www.grc.org/programs.aspx?year=2013&program=grs_tox . The next GRS Cellular and Molecular Mechanisms of Toxicity (2015) will be organized by the PDA and the GSLC.

Joint PDA and GSLC Symposium: “Role of Systems Biology in Characterizing Risk of Developmental Origins of Disease”. This symposium was held during the 2013 SOT Annual Meeting at San Antonio, Texas.

PDA Luncheon: All postdoctoral scholars were invited to this PDA-sponsored luncheon during the SOT meeting in San Antonio. Highlights included: recognition of the Best Postdoctoral Publication awardees and postdoc recipients of Specialty Section and Regional Chapter awards, introduction of PDA board members, and networking. More information on postdoctoral events during the Annual Meeting can be found at <http://www.toxicology.org/AI/MEET/AM2013/studevent.asp>

2014 Annual Meeting Events: The 2014 Annual Meeting in Phoenix will again include a PDA luncheon, poster tours for trainees, student-postdoc mixer, and other events for postdoctoral members. Please see <http://www.toxicology.org/AI/MEET/AM2014/studevent.asp> for more information.

MBSS Needs You... To Serve as an Officer or Representative!

The MBSS election is held prior to the Annual Meeting. This year we will need to elect a new Vice President elect (total of 4 year commitment, VP-elect, VP, President, Past President), a Jr. Councilor (2 year commitment), a Junior Student Rep. (2 year commitment), and a post-doc. rep (1 year commitment). If you are interested in running for an officer position or would like to nominate someone please contact Craig Rowlands (JCRowlands@Dow.com) who will be coordinating the election this year.

Anyone interested in running for office will need to submit a brief bio by December 15, 2013. MBSS now elects student and post-doctoral representatives through the annual ballot. This is a great opportunity for students and post-doctoral fellows. One of the Junior Student Representatives serves a one-year term on the SOT Graduate Student Leadership Council (GSLC). The GSLC-representative is able to run for office within the GSLC and serve on its executive board as the role of GSLC within SOT continues to be refined. If you wish to be considered for the MBSS graduate student representative, you must be a full-time graduate student in good standing and have interest in SOT policy and initiatives. The post-doc rep position is for one year and you must be a post-doctoral fellow from May 2014-May 2015.

Feel free to contact any of the MBSS officers with questions or visit the following website for details on officer responsibilities:

<http://www.toxicology.org/ISOT/SS/molecular/MBSS.html>

2014 Annual Meeting Sessions Sponsored by MBSS

Five symposia and four workshops having MBSS sponsorship have been tentatively accepted for the 2014 SOT Annual meeting— final acceptance will be made for these sessions by early October. Keep an eye out for these sessions and remember the titles may change a bit with their final acceptance by the SOT program committee.

Sponsored Symposia

1. Molecular mechanisms involved in neuro/glial toxicity: From oxidative stress to redox signal transduction
2. Does this chemical make my liver look fat? (Environmental exposures and steatosis)
3. Does Evolution Matter in Toxicity Testing in the 21st Century? Rethinking Cross-Species Extrapolation in Hazard Characterization
4. The role of the AHR in stem cell development and lineage specification
5. Adverse Outcome Pathways as an Integrative Framework for Predictive Toxicology: Combining Top-down and Bottom-up Thinking

Sponsored Workshops:

1. Developmental Programming of Hepatic Metabolism: Assessing the Impact of Perinatal Exposure to Xenobiotics
2. Adverse Outcome Pathways: A Conceptual Framework for 21st Century Risk Assessment
3. Databases Facilitating Systems Biology Approaches to Toxicology
4. Toxicogenomic Technologies Can Improve the Assessment of Xenobiotic-induced Liver Injury and Inform Human Relevance

A Plea from the Vice President Elect...

Although 2015 may seem like a long way off, the Society of Toxicology requires session proposals to be submitted shortly after the 2014 meeting. It is not too early to start thinking about innovative sessions that may contribute to the 2014 meeting. Please be aware that the MBSS officers are there to provide suggestions and assist you with the development and sponsorship of the proposals. We especially want to remind you that coordinating your submission early with the VP elect (Kristie Willett, kwillett@olemiss.edu) will allow us to provide feedback on the proposal prior to submission. This practice has proven invaluable over the past few years in terms of success rates for acceptance by the Program Committee. The MBSS leadership notes that in previous years sessions co-chaired by junior faculty members were selected, demonstrating that a winning symposium/workshop/CE course does not depend on the seniority of the co-chairs. Students and Post-Docs are also strongly encouraged to communicate with the MBSS officers to develop any ideas they may have.

If you need more information on our specialty section,
please check out our web site:

<http://www.toxicology.org/ISOT/SS/molecular/MBSS.html>