Biological Modeling Specialty Section Newsletter

Volume 1, No. 2
February, 2008

2007 – 2008
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The Biological Modeling Specialty Section Newsletter is published 3 times/year (February, August and November). If you have any items to contribute, please send it to us by the middle of the month preceding the planned publication date. All comments or suggestions are welcome.

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President's Message

Welcome to this second BMSS newsletter. We hope to see you all soon at the BMSS mixer Tuesday March 18th at 6:00 p.m. This newsletter has information on plans for our mixer, student award winners and some useful job announcements and courses we've received from the membership. We really appreciate receiving notices of upcoming meeting, job postings and articles of interest from the membership. This newsletter is for all of our benefit and we hope you all will use this to help get information out to our shared community.

Our BMSS mixer promises to be a very informative meeting. Our keynote speaker will be Rob DeWoskin from the US EPA who will tell us about EPA's efforts to develop a website that will serve as a resource for the PBPK/PD and biological modeling community. This will be a great opportunity for all of us to learn what US EPA is doing and for us to give some feedback. We'll also have a few short presentations from John Lipscomb on changes that *Toxicological Sciences* is planning for new requirements of PBPK/PD modeling papers. John will also discuss changes to how SOT is soliciting and encouraging submissions for proposals for workshops, symposiums, CE courses and roundtables for the 2009 SOT Annual Meeting. At the meeting we will also be presenting awards for the Perry J. Gehring student awards for excellence in biological modeling and the inaugural BMSS best paper award for the 2007 paper that best advanced the field of biological modeling. We hope to see you soon at the BMSS mixer and please fell free to bring colleagues you think might get value from the BMSS.

Sean Hays
President of BMSS

Ballots On-Line for 2008 BMSS Officers
Ballots are now on-line for voting for 2008 BMSS officers. The following candidates graciously agreed to run for the following open positions:

VP-Elect
- Rob DeWoskin
- Karla Thrall

Secretary/Treasurer
- Hugh Barton
- Robinan Gentry

Councilor
- Bradford Gutting
- Irv Schultz

Please cast your vote by February 22 at https://www.surveymonkey.com/s.aspx?sm=P_2fDGNyt8_2bsEz964dKnCuHg_3d_3d. Results will be announced at the BMSS meeting in Seattle. Many thanks to our out-going officers: Chuck Timchalk (VP Elect, VP, President, Past-President), Brad Gutting (Secretary/Treasurer), and Cecilia Tan (Councilor).

New Student Representative
Susie Ritger, a graduate student with Jeff Fisher at the University of Georgia has agreed to become the new student representative for the BMSS. Susie will take over for Rebecca Clewell (The Hamner Institutes for Health Sciences) at the upcoming annual meeting in Seattle and will serve a two-year appointment. Welcome Susie and many thanks to Becky for all of your help the past two years!

2008 Perry J. Gehring Student Award for Excellence in Biological Modeling
The BMSS committee on student awards has completed its work to select the winners of the specialty section's 2008 SOT student abstracts. Three awardees were selected from among the many abstracts nominated for consideration. Each of the award winners will receive an 8×10 plaque, a $500 cash award, and selected software provided by specialty section corporate sponsors and the SOT Perry J. Gehring Student Award Fund at the BMSS reception which will be held Tuesday evening, March 18, during the Annual SOT Meeting.

Always a challenge, this year's decisions were made all the more difficult by the larger number of nominations received (twice as many as last year) and by the increased breadth of application of biological models that were represented. Areas of interest ran all the way from PK/PD modeling for risk assessment that often included increasingly sophisticated analyses and consideration of greater numbers of influencing factors, to small molecule property prediction, the development of *in vitro* laboratory models, modeling of ligand-induced protein conformational changes, and identification of genomic fingerprints. The scope and number of abstracts received is a clear indication of the rapidly growing interest and areas of application for biological modeling.

The committee is pleased to announce the winners of this year's BMSS student awards and wishes to congratulate all of the nominees and their sponsors for sharing their work in biological modeling by participating in the awards process. The 2008 winners are: *Eva McLanahan* (University of Georgia – currently at EPA), *Sanjeeva Wijeyesakere* (University of Michigan), and *Miyoung Yoon* (EPA – National Center for Computational Toxicology). Congratulations to each of these students and again to each one of the participants and sponsors who nominated an abstract for consideration. The BMSS officers and membership are looking

forward to meeting each of you at the SOT Annual Meeting.

Conferring student awards would not be possible without assistance from the SOT, the Perry J. Gehring Student Award Fund, and from our corporate sponsors: Aegis Technologies, Leadscope, Inc., and Lhasa, Ltd. Each of these companies has sponsored the BMSS student awards in the past and we are grateful for their continued interest in the work of the specialty section and their generous assistance.

2008 BMSS Best Paper Award

Thanks to the following members of BMSS for volunteering to help select the paper published in 2007 that has best contributed to the field of biological modeling: Lisa Sweeney, Mike Bartels, Jeff Gearhart, Stephen Edwards, Raviprakash Dugyala, Charles Wang, Lesa Aylward, Chuck Timchalk, and Craig Zwickl. Also, thanks to all the members who nominated papers for consideration. The winners of the best paper award will be announced at the BMSS mixer in Seattle.

Plenary Speaker for BMSS Annual Meeting in Seattle

Rob DeWoskin, USEPA/ORD/NCEA, will make a brief presentation on "Information resources that support the use of biological models in risk assessment" at our annual meeting/mixer, Tuesday evening, March 18, 2008. Below is an abstract of his presentation.

In 2007, EPA began to develop a number of needed information resources to support the increasing development and use of biological models in risk assessment. These include centralized access to databases of model parameter values and their sources, a model archive for code and supporting data, an annotated bibliography of peer reviewed articles organized by topics of interest to facilitate rapid identification and retrieval of needed data, and a glossary of terms. EPA's internal modeling community intends to evolve these resources with continued support into the foreseeable future, and to have significant amounts of this information available to the public and the larger community as part of EPA's transparency requirements when, for example, a PBPK model is used to derive a toxicity value in an IRIS assessment. This presentation will highlight the form and functionality of the resources as they currently appear, the present level of completeness and the anticipated progress that will be made in 2008, and some on-going challenges that we will invite BMSS members to comment upon and provide suggestions. One of the main challenges is how best to develop a broader community access for reviewing and/or submitting to these resources (or some combination of these resources and other such efforts) as well as how to share the tasks of maintaining the currency and quality of the information. *[This abstract does not necessarily reflect EPA policy.]*

Proposed Changes to *Toxicological Sciences* Policies for Publishing PBPK Models

John Lipscomb, Assoc. Editor, Toxicological Sciences

Over the last two decades there has been significant growth in the development of PBPK models for use in the field of toxicology ranging from applications to quantitatively understand biological and physiological processes that control dosimetry to applications such as risk assessment and establishing chemical exposure guidelines. There is no doubt that this field has matured with the hard work of a dedicated international community of scientists.

Historically, the focus was on careful documentation of how the model was developed in a step by step fashion using literature and laboratory derived data. Validation of the PBPK models usually entailed simulating data sets not used to develop the model, and publication of the data, simulations and overall validation of a model provided useful general information about the work. *Toxicological Sciences* (*ToxSci*) has been an important venue in which to publish these data. Although the breadth of articles published in *ToxSci* is quite large, the journal is striving to emphasize work that provides important new information, in-depth mechanistic studies and/or relevant translational data for human health assessment. With such an emphasis, *the editorial board of the journal has recommended that PBPK models published in* ToxSci *should focus on the application of the model to inform health risks, provide new insights into the mechanism of action or novel interpretations of kinetic data that better elucidates biological factors (e.g., transporter or receptor proteins or covalent binding to DNA, etc) related to understanding toxicity or health risks*. The editorial board of ToxSci is interested in soliciting your feedback on these proposed changes through the BMSS.

ToxSci's Editor-in-Chief, Lois Lehman-McKeeman, and Associate Editors Jeff Fisher and John Lipscomb will attend the BMSS mixer Tuesday evening at the SOT meeting to provide additional perspective on this potential shift in policy and to get feedback from members of MBSS on this issue. This will be an initial step in the process; additional discussions will follow. For BMSS members not able to attend, comments should be forwarded to BMSS leadership. We look forward to hearing your opinions as *ToxSci* strives to continuously improve its usefulness to all SOT members.

Planning for the 2009 SOT Annual Meeting Program–Changes to the Submission and Review Process

The 2009 Annual SOT meeting will be held March 15-19 at the Baltimore Convention Center. Proposals for workshops, symposia, roundtables, etc. will be due shortly after the 2008 meeting in Seattle. Please be aware that there will be a new process for submissions for the 2009 Annual Meeting. The executive committee encourages all members to plan ahead and take advantage of the SOT meeting and our specialty section meeting to organize a session. This is especially critical this year due to the very short time between the Annual Meeting and the due date for proposals.

For those proposals requesting endorsement, the requests will have to be made directly to the appropriate Specialty Section (SS)/Special Interest Group (SIG) prior to submission. During the on-line submission, all proposal submitters will be prompted to confirm that they have worked with the intended SS/SIG Sponsor of the proposal. All SS/SIGs will be granted access to the site beginning **April 15th** to begin reviewing proposals that have been submitted to ensure that they reflect the SS/SIG input. **The final deadline for proposal submission will be April 30th.** The primary endorsement sought for any proposal will be collectively known and highlighted as the Sponsor for the proposal. All other endorsements will continue to be listed in the Annual Meeting publications in their present form. Multiple secondary endorsements, up to three, are encouraged but it is the responsibility of the submitter to contact each endorsing SS/SIG prior to submission. Both sponsors and secondary endorsers are encouraged to work with the submitter to assure that the session

is of the highest scientific quality and maintains a balanced perspective on controversial issues. The SS/SIG will rank the proposals requesting primary or secondary endorsement and address the following criteria:

- Is this submission on a cutting-edge subject?
- Has a similar subject been presented at a recent SOT Annual Meeting?
- Is the submission topic being presented in a scientifically balanced way?
- Are there points of view or significant data that are missing from the submission?
- Are the proposed speakers leaders on the topic?

In addition, the Continuing Education Committee is also trying to be more proactive this year and has begun to work directly with Specialty Section Leaders to solicit and develop Continuing Education course proposals for 2009. Proposals are due in April, 2008. We believe this new and direct process will result in more refined proposals and courses that are even better aligned with the CE needs of SOT members. Toxicologists interested in Chairing or Lecturing in CE courses, including those on topics identified below, should immediately discuss their interest with their Specialty Section leadership.

- Biomarkers
- Inflammation and Diseases
- Neurodegenerative Disease
- Nanotechnology
- Reproductive Toxicology
- Risk Assessment
- Toxicokinetics & data interpretation

John Lipscomb is the BMSS's liaison to the SOT's Continuing Education Committee and will speak briefly on this topic at the BMSS mixer on Tuesday evening at the SOT meeting.

BMSS Finances

Brad Gutting, Secretary/Treasurer

Biological Modeling Specialty Section Financials

	NOV 30, 2007
Ordinary Income/Expense	
Income	
Contributions	-
Dues - '06	-
Student Dues - '05	-
Grants - Food Safety	-
Grants - Mechanisms	-
Misc. Income	-
Registrat'n	
Interest	519
Total Income	**519**
Expense	
Awards - Sections	-
Plaques	-
Ballot	-
Exec. Mtgs.	-
Miscellaneous	-
Newsletter	-
Reception	-
Steno/Clerical	-
Symposia	-
Web Development	-
Total Expense	**-**
Net Assets Beginning of Year	10,378
Transfers from General Fund	-
Net Assets Beginning of Year After Transfers	10,378
Net Assets End of Year	**10,896**

Upcoming Meetings of Interest

Respiratory Dosimetry and Inhalation Risk Assessment Workshop
The Hamner Institutes for Health Sciences
RTP, NC
September 8-12, 2008

A new, five-day course called "Respiratory Dosimetry and Inhalation Risk Assessment Workshop" will be held at The Hamner Institutes for Health Sciences in Research Triangle Park, NC during September 8-12, 2008. The course will be aimed at all levels of familiarity with the topic of respiratory tract dosimetry and its relationship to inhalation risk assessment. Topics include biology of the respiratory tract; current regulatory methods for inhalation risk

assessment; examples of particle and vapor dosimetry models, measurements, and their uses in risk assessment; and how new ways of describing and measuring toxic responses are driving new dose-response models to further reduce uncertainty in human health risk assessment. For more information, please contact Jeanne Galbo (jgalbo@thehamner.org).

Employment Opportunities

Post-Doctoral Opportunity at the EPA in Research Triangle Park, NC

We are seeking a highly motivated individual with expertise in data mining and the analysis of high-volume data sets (e.g., microarray, proteomics) to support existing efforts in building biologically based dose-response (BBDR) and other mechanistically based models for use in risk assessment. Duties associated with this position include the following.

1. Analysis of high-throughput data to predict the mode of action for toxicants. This will include identification of bioindicators significantly associated with toxic effects based on one or more of the following data types: microarray, proteomics, metabolomics, SNP genotyping, and CHIP-seq (DNA methylation, chromatin, and transcription factor binding). In addition, the candidate will be responsible for generating data-driven biological networks using the data referenced above along with protein-protein interaction data extracted from public databases. The goal of these studies would be to determine measureable key events appropriate for describing the mode of action in a BBDR model.
2. Work with collaborating laboratories to design experiments to support key event discovery and BBDR modeling efforts. The candidate will be responsible for insuring that the experiments including high-throughput data collection are sufficiently powered to enable the activities outlined in section 1. In addition, the candidate will be responsible for insuring that data generated to support BBDR modeling will be sufficient to support a quantitative deterministic model for the mode of action of environmental stressors.
3. Work with modelers in developing BBDR models. While this position will not require the candidate to produce deterministic models of environmental stressors, the candidate will work closely with others in building these models. Based on the candidate's background and interest, some modeling work may be included as appropriate to the project.

Opportunities exist for investigation of both air and water toxicants with toxic effects ranging from cardio-vascular disease to cancer. For more details, please visit the following URLs:
http://cfpub.epa.gov/nheerl/index.cfm?fuseaction=postdocs.main
http://cfpub.epa.gov/nheerl/index.cfm?fuseaction=postdocs.Detail&PostDocProjectID=421

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Research and Development
National Health and Environmental Effects Research Laboratory

POST-DOCTORAL RESEARCH PROGRAM

HIGH PRIORITY RESEARCH OPPORTUNITIES

- Research spans all levels of biologic organization from the genome to populations, communities and ecosystems
- Research results contribute to protecting human health and the environment
- Facilities and equipment are state of the art
- Resources are reserved for your work -- no need to write a grant!
- Mentors are nationally known and care about your career
- Research opportunities are now available in these exciting areas:
  - Investigations of Oxidative Stress as a Mode of Action in DNA Damage and Cancer Induction
  - Molecular Modeling for Risk Assessment
  - Neurophysiologic linkages between the pulmonary and cardiac system in response to air pollutants
  - Toxicity Pathways in Chemical Carcinogenesis
  - Aquatic Ecosystem Services Indicators for Monitoring and Assessment
  - Population Genetics and Evolutionary Ecology

UNSURPASSED FEDERAL EMPLOYEE BENEFITS

- Starting salary-- $45,040 for new Ph.D.; up to $84,913 for post-doctoral experience
- Full three-year appointments
- Paid relocation to EPA duty location
- Vacation and sick leave
- Federal health benefits, life insurance, and retirement program
- Travel to professional scientific meetings
- Active Post-doctoral Trainee Organization, onsite at RTP, NC

EASY APPLICATION PROCESS–MAIL, EMAIL OR FAX US BY FEBRUARY 29, 2008

- Up-to-date Curriculum Vitae
- Letter of recommendation from your research advisor or comparable official
- Cover letter indicating positions and locations of interest
- DD-214, if claiming veteran's preference
- Preference is given to U.S. Citizens

To learn more about our current research projects and application requirements, please visit the NHEERL Internet site at http://www.epa.gov/nheerl/postdocs/ or contact Ms. Dorothy Carr at (800) 433-9633, or via email at ordpostdocapps@epa.gov. The U.S. EPA is an Equal Opportunity Employer.

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SOT On-Line Job Bank

The Society of Toxicology CRAD Job Bank provides employers and candidates who are seeking jobs with the opportunity to establish contacts relating to their specific needs and areas of interest. Registrations will be valid for 6 months and all registrants may access the system as often as they wish. In addition to this service, the traditional Career Resource and Development Service program will be offered at the 2008 SOT Annual Meeting in Seattle, Washington March 16–19, 2008. For more information, see https://www.toxicology.org/ai/crad/login.asp