President’s Message
By Janet Clarke

BTSS Happenings and Updates

First I’d like to thank all of you for your interest, support and contributions that have made the first year of the Biotechnology Specialty Section a success. I’d also like to welcome our newly elected members; Laura Andrews (VP elect), Bill Brock (councilor) and Joy Cavagnaro (councilor). Contributing to the success of the last year were our departing officers Leigh Ann Burns and Tim MacLachlan as well as Barbara Mounho our founding President who will now serve as Past President- thank you all! The SOT annual meeting was very hectic this year (aren’t they all?) and so I’ll give you a short summary of the reception in case you couldn’t make it. About 80 people attended. We presented our first year of awards including Best Paper, Student Achievement and Career Achievement award (see awards section for more details). We had one award we weren’t able to give due to lack of applicants; the outstanding young investigator award. We know there are many up-and-coming talented scientists in the field, so please consider nominating someone you know so that we can support and recognize our rising stars. Joy (Career Achievement recipient) gave a wonderful presentation that highlighted what she has seen during her career in the development of the thinking around biotherapeutic toxicology and some behind the scenes views of the original ICH S6 discussions. Drs. Ann Chappelle and Mike Madden gave a joint presentation on biofuels, I certainly learned a lot about this area of biotechnology generated products including the challenges of transportation and temperature (did you know it can solidify in the truck? – think giant tube of lipstick). All the presentations can be found on ToXchange. I am proud to note that in our first year of activity we published 3 newsletters, launched a website, and sponsored 2 roundtables at the 2011 SOT meeting: “Current uses and understanding of the tissue cross reactivity assay” and “Risk assessment for proteins introduced into genetically modified crops”.

As always there are many opportunities to get involved, including content ideas for the newsletter (what would YOU like to read about or catch up on?), awards committee, program committee and much else. If you recently
attended a good conference or seminar for example please consider providing a summary for the newsletter. We are also seeking a postdoctoral and student representative for the section, please contact Andrea Weir (andrea.weir@crl.com).

Finally, a word about what we’re about. Our goal is to bring together toxicologists with the common interest of evaluating and understanding the toxicology of biotechnology-generated products. That is agents (whether as therapeutics, fuels, food, etc.) produced via living systems. A lot of this happens at the annual meeting through the organization of sessions devoted to these areas, but also through the newsletters and other forums. Several of you approached me at the annual SOT meeting expressing disappointment at the relatively few number of sessions focused on biotechnology products this year (we sponsored five but only two were accepted for the 2011 program). It was a tight year for programs due to fewer available slots for sessions with the anniversary celebrations. However, I do plan to pass along your concerns to the SOT council and we will redouble our efforts for the 2012 session. A sneak peak at the draft proposals shows we should be shaping up for a very diverse and high quality range of proposals for sponsorship at the 2012 meeting. We have provided speaker ideas and sessions to other scientific meetings that focus on a biotechnology product-related issue (e.g. American Association of Pharmaceutical Scientists National Biotechnology Conference, this year http://aaps.org/meetings/workshops/NBC/index.asp) and we’d like to plan in the future an additional scientific conference organized and focused exclusively on biotechnology product toxicology.

Looking forward, with your help, to another great year!

Summary of Workshop on “Nonclinical and Clinical Strategies for First-In-Human Dosing of Large and Small Molecules” (April 4-6, 2011, Washington, DC)

Submitted by Bill Brock

The purpose of this Drug Information Association-sponsored workshop was to describe the first-in-human (FIH) enabling nonclinical program for large and small molecules and to include the relevant pharmacological and toxicological data that are often used in determining the FIH dose for a Phase 1 Clinical Trial. This workshop comprised of speaker-led, traditional workshop sessions and interactive breakout sessions in which attendees were organized into groups, assigned large or small molecules, and were asked to develop nonclinical programs that would get their assigned molecule into a clinical trial.

Sessions on the first day explored the current regulatory environment – including current regulatory guidance and regulatory submissions – for nonclinical programs, along with Chemistry, Manufacturing and Controls and Clinical Pharmacology considerations and the progress of a lead small molecule compound through a nonclinical program. Day two sessions examined nonclinical development of biopharmaceuticals, and FIH dose setting in pediatric patients, oncology patients, and other special populations. Sessions on the third and final day were devoted to clinical designs and statistical evaluations for large and small molecules, and also presented the US Food and Drug Administration’s clinical view of FIH dose selection and escalation. The final part of the workshop was an interactive panel discussion on topics covered within the workshop as well as those not specifically mentioned during the workshop.

Overall, this was a very successful event and there are some considerations for repeating this workshop in the future.
Membership Update
Submitted by Andrea Weir

As of April 21, 2011, we have 176 members in BTSS compared to 104 in April 2010. What a great way to kick off our second year as a specialty section!

As shown in the chart below, most of our members are from the biopharmaceutical industry. A total of 55% of our current members are from that industry, compared to 64% last year.

The percent increase in all sectors relative to 2010 is shown in the table below. We are really pleased with the increase in members from outside the biopharmaceutical sector, such as industries other than biopharmaceuticals and academia.

Please continue to encourage your colleagues from these other areas to join BTSS.

### BTSS Membership per Sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>% Increase (Relative to 2010)</th>
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<tbody>
<tr>
<td>Biopharmaceuticals</td>
<td>30</td>
</tr>
<tr>
<td>Other Industry</td>
<td>83</td>
</tr>
<tr>
<td>Academia</td>
<td>60</td>
</tr>
<tr>
<td>Government</td>
<td>22</td>
</tr>
<tr>
<td>Consultants</td>
<td>40</td>
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<tr>
<td>Contract Research</td>
<td>50</td>
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Seeking a Student and a Post-Doctoral Representative
The Biotechnology Specialty Section (BTSS), a specialty section formed in 2010 that focuses on all areas of biotechnology-derived products, is actively seeking a Student Representative and a Postdoctoral Representative.

Being a representative will provide you with an opportunity to interact with toxicologists with established careers involving the different types of biotechnology-derived products, including agricultural and biopharmaceutical. You will be able to learn about career paths for toxicologists in the biotechnology field while providing support to your chosen profession. Finally, being a representative on a specialty section will provide you with a possible foundation for participating on other SOT committees in the future. If you would like to know more about BTSS and this exciting opportunity, please see our website ([http://www.toxicology.org/isot/ss/btss/index.asp](http://www.toxicology.org/isot/ss/btss/index.asp)) and/or contact Andrea Weir ([andrea.weir@crl.com](mailto:andrea.weir@crl.com)). If you have already expressed interest in one of these positions, please contact Andrea to ensure that we have your current contact information.
BTSS Awards 2011 - Congratulations to the winners!

Best Paper Award

“Carcinogenicity Assessments of Biotechnology-Derived Pharmaceuticals: A Review of Approved Molecules and Best Practice Recommendations”


Student Achievement Awards

Sadiye Rieder

“Resveratrol, an AhR ligand, alleviates bacterial enterotoxin-induced Acute Lung Injury via upregulation of miRNA 155 and subsequent increase in Myeloid-derived Suppressor Cells”. Sadiye Amcaoglu Rieder, Prakash Nagarkatti and Mitzi Nagarkatti. University of South Carolina, School of Medicine

Arun Kumar Asaithambi

“Post-translational Modulation of Protein Kinase D1 (PKD1) Signaling Offers Neuroprotection Against Oxidative Damage in Dopaminergic Neurons: Relevance to development of novel therapy for PD”. Asaithambi, Arunkumar; Ghosh, Anamitra; Kanthasamy, Arthi; Anantharam, Vellareddy; Kanthasamy, Anumantha G. Biomedical Sciences, Iowa State Univ., Ames, IA.

Awards Committee

• Hanan Ghantous
• Joy Cavagnaro
• Meghan Flaherty
• Michael Bolt
• Stephanie Burleson
• Marina Seme Nelson
Joy Cavagnaro, PhD, DABT, RAC, FATS, FRAPS

“The Road Less Traveled”

In 1987 Professor Gerhard Zbinden challenged toxicologists declaring “Since progress can be made through accumulation of experiences, it appears reasonable to suggest that a considered effort be made to develop and to use scientifically sound experimental systems and to refrain from routine toxicity testing”. Biotechnology provided us the opportunity to accept this challenge. The new approach came to be known as the “case-by-case”, science-based approach, which was formalized a decade later by the ICH S6 guidance. The approach is consistent with “traditional principles” of preclinical safety evaluation but is not consistent with “traditional practices.” The new practices would be influenced by product attributes defined by a continuum based on size and complexity in molecular structure. Case-by-case is experiential based where defining events such as Jesse Gelsinger and “Tegenero” are difficult, but also provide the opportunity to learn and revise approaches. With gratitude to Professor Zbinden and support from fellow “rational practitioners” and “kindred spirits,” I took the one less traveled by—and that has made all the difference. It has been a great ride! I am especially honored to be awarded the first BTSS Career Achievement Award.

About the Award

An engraved plaque is presented to a Senior Investigator nominated by our members whose body of work represents an outstanding achievement or contribution in the evolution of scientifically relevant approaches to and interpretation of toxicological aspects that are unique to biotechnology-derived products.

It’s not too early to think about recommendations for 2012 Awards:

- Best paper
- Student Achievement
- Career Achievement in Biotechnology
- Outstanding Young Investigator

There were no nominees for the Outstanding Young Investigator Award this year, see criteria below:

Award description: A monetary prize will be awarded to the Young Investigator who has made a significant contribution to the evolution of scientifically relevant approaches to and interpretation of toxicology aspects unique to biotechnology-derived products. The recipient must have less than 10 years of experience since obtaining his/her highest earned degree. This award is NOT LIMITED only to those in Academia. The nomination should include:

1) A summary of the candidate’s scientific contributions, including originality, creativity, and impact on advancing the field of biotechnology as it relates to the toxicology/ environmental health sciences communities;
2) A Curriculum Vitae; and
3) Two letters of recommendation.

All nominations of candidates that have not received the award will be retained and considered for an additional 2 years unless the nomination is withdrawn by the sponsor.

Deadline for all awards: December 1, 2011.

Contact for all awards: Laura Andrews (Laura.Andrews@genzyme.com)
BTSS Reception 2011
March 7th—Washington, D.C.
Time capsule for 50th anniversary of SOT
Submitted by Tim MacLachlan

The Biotechnology Specialty Section contributed symbols to represent a couple of landmark events in biotechnology, as well as a text that provides a current comprehensive overview of biopharmaceutical toxicology, in the spirit of "Where have we been, where are we going and how are we being guided".

The first was a copy of the 1977 Science paper from Herbert Boyer describing the first instance of expression of a protein from recombinant DNA, attached to a small, plush *E. coli*. The second was a copy of the 1997 Science paper from Ian Wilmut describing the cloning of Dolly the sheep, which was attached as a small plush sheep. Finally, the text "Preclinical Safety Evaluation of Biopharmaceuticals" edited by Joy Cavagnaro contains contributions from several key members of the biopharmaceutical toxicology community elaborating on the current state of the art of risk assessment in this area.

“Where have we been...”

**Expression in *Escherichia coli* of a Chemically Synthesized Gene for the Hormone Somatostatin**

*Keiichi Itakura, Tadaaki Hirose, Roberto Crea, Arthur D. Riggs*

Division of Biology,
City of Hope National Medical Center,
Duarte, California 91010

*Herbert L. Heyneker*,
*Francisco Bolivar*,
*Herbert W. Boyer*

Department of Biochemistry and Biophysics, University of California,
San Francisco 94143

“...where are we going...”

**Human Factor IX Transgenic Sheep Produced by Transfer of Nuclei from Transfected Fetal Fibroblasts**

Angelika E. Schnieke,* Alexander J. Kind, William A. Ritchie, Karen Mycock, Angela R. Scott, Marjorie Ritchie, Ian Wilmut, Alan Colman, Keith H. S. Campbell†

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“...and how we are being guided”
BTSS Posters 2011
Submitted by Fanny Casado and Tim MacLachlan

The Biotechnology Specialty Section presented a poster in the Exhibit Hall during the Annual Meeting commemorating the 50th Anniversary of SOT. Also, a poster with a historic perspective was exhibited during BTSS Annual Reception. The posters are available to download in ToXchange from the Biotechnology Community Home under File Library.
Thank you to our sponsors!

For more information about our Specialty Section, visit the BTSS Website:

http://www.toxicology.org/isot/ss/btss/index.asp