

MECHANISMS SPECIALTY SECTION

ANNUAL REPORT: 2009-2010

May 1, 2009 to April 30, 2010

I. Officers/Committees:

Officers:	<u>2009-2010</u>	<u>2010-2011</u>
President:	<i>Dennis R. Petersen</i>	<i>Jose Manautou</i>
President-elect:	<i>Jose Manautou</i>	<i>Joan B. Tarloff</i>
Vice President:	<i>Joan B. Tarloff</i>	<i>Michael D. Aleo</i>
Secretary:	<i>Lois Lehman-McKeeman</i>	<i>Patricia Ganey</i>
Treasurer:	<i>Lois Lehman-McKeeman</i>	<i>Patricia Ganey</i>
Councilors:	<i>Alvaro Puga</i> <i>Peter J. Harvison</i>	<i>Peter J. Harvison</i> <i>Vasilis Vasiliou</i>
Past-President	<i>Gary Rankin</i>	<i>Dennis R. Petersen</i>
SAC Representative:	<i>Derek A. Drechsel</i>	<i>Yinglin Liu</i>
PDA Representative:	<i>Sarah Campion</i>	<i>Jeff Vassallo</i>

II. Activities

General Overview:

During the year, the Mechanisms Specialty Section (SS) contributed to program planning for the Annual Meeting by soliciting and reviewing proposals for symposia, workshops, continuing education courses (noted below). A major activity for the section is the review of applications for the Carl C. Smith Graduate Student Awards, which is the longest running graduate student research award given by any SS of the Society. The SS also supported two post-doctoral fellow travel awards (\$500 each) with funds donated by TERA and from the section's budget. Two new graduate student and post-doctoral awards for Mechanisms SS were given for the first time at the 2010 meeting. These included the Renal Toxicology Award and the Robert Rubin Award for mechanistic risk assessment.

The graduate student and post-doctoral assembly representatives were charged with developing a poster for presentation at the student/post-doctoral mixer held at the annual meeting. This provided these representatives with an opportunity to learn more about the specialty section and take direct responsibility for an important outreach/communication effort for the section. The representatives did an outstanding job organizing this poster.

Specialty Section officers had a productive face-to-face meeting on March 9 2009 (7 am, Salt Lake City). The minutes of this meeting are attached (Attachment I).

2010 SOT Annual Meeting Reception

The SS reception was held Salt Lake City with approximately 180 attendees. Dr. Petersen called the meeting to order at approximately 6:30 pm on March 9, 2009. The results of the election were announced (Attachment II) and the major activity for this meeting was the recognition of graduate

student and post-doctoral fellow award winners. These are highlighted here and full details are provided in the meeting minutes (Attachment II).

Carl C. Smith Award

The winner of the 27th Annual Carl C. Smith Graduate Student Award was Bradley Sullivan from the University of Kansas Medical Center. The title of the winning paper was “Thrombin Signaling Enhances TGF-beta Induction of Integrin beta6 in Bile Duct Epithelial Cells,” and his advisor was Dr. James Luyendyk. Brad was awarded \$1000 and a plaque.

Other honorees for the Carl Smith Award were:

Second Place: Neal S. Gould, University of Colorado at Denver Health Sciences Center

Advisor: Brian J. Day

Title: Aging Adversely Affects the Cigarette Smoke-Induced Glutathione Adaptive Response Sensitizing the Lung to Inflammation and Oxidation

Third Place: Donald S. Backos, University of Colorado at Denver School of Pharmacy

Advisor: Christopher Franklin

Title: Post-Translational Modification and Regulation of Glutamate Cysteine Ligase by the α,β -Unsaturated Aldehyde 4-Hydroxy-2-Nonenal (4-HNE)

There were 8 Honorable Mention finalists who were recognized with certificates:

Anwar Anwar-Mohamed	University of Alberta Faculty of Pharmacy and Pharmaceutical Sciences
J. Michael Brown	Marshall University School of Medicine
Andre C. Eaddy	Medical University of South Carolina
Rhiannon N. Hardwick	University of Arizona
Chad D. Moore	University of Utah
Melanie B. Weed	University of North Carolina
Xiaoling Zhang	University of Georgia
Youcai Zhang	University of Kansas Medical Center

Mechanisms Specialty Section Post-Doctoral Travel Awards

Two awards were given (\$500 each)

Dr. Rohit Singhal, Michigan State University

Dr. Yinglin Liu, Rutgers University

Renal Toxicology Awards

The Renal Toxicology Awards were administered for the first time in 2010. The recipients were:

Xiaoling Zhang, University of Georgia

Bromate induces cell cycle arrest via DNA damage-dependent and independent pathways

Jennifer Cohen, University of Arizona

cAMP-dependent pathway(s) directs the Rap-GTP/B-raf MAPK-mediated cytosolic mislocalization of p27^{kip}-cyclin D1 in renal cancer

Robert Rubin Award

The Robert Rubin Award is co-administered with the Risk Assessment Specialty Section and was awarded to Dr. David Szabo, University of North Carolina, for his research entitled “Toxicokinetic differences between two HCBd stereoisomers: Effects of dose, time repeated exposure and route.”

Annual Meeting Contributions

The Mechanisms SS was highly engaged in the scientific activities of the 2010 annual meeting with a sponsorship and endorsement of numerous symposium, workshops and continuing education courses. (Bolded designates sponsored sessions; all others endorsed by Mechanisms SS)

Continuing Education:

- Predictive Power of Novel Technologies (Cells to “Omics): Promises, Pitfalls and Potential Applications

Symposia

- **Mechanistic Role of Reactive Intermediate Protein Covalent Binding in Target Organ Toxicity: Past, Present and Future**
- Silica and Asbestos Immunotoxicity: Mechanisms of Fibrosis, Autoimmunity and Modified Tumor Resistance
- Metabolic Syndrome and Increased Sensitivity to Drug-Induced Liver Injury (DILI): Nonclinical Models and Clinical Implications
- Bile Salt Transport and Liver Injury
- MAP Kinase Signaling: A Common Target Eliciting Unique Tissue Responses
- **Molecular Determinants of Mitochondrial Disease**
- It’s Not Your Father’s Aryl Hydrocarbon Receptor: New Biological Roles for a Misunderstood Receptor
- Mechanisms of Chemical-Induced Liver Cancer: Putting the Pieces Together
- Recent Knowledge of Clinical Regulators of Lipid Homeostasis in Metabolic Disease&
- Zinc, Copper and their Metabolic Effect: Myths and Musts
- **Mitochondrial Toxicity in Disease and Death**
- The Fetal Basis of Adult Disease
- **Aging as a Determinant of Xenobiotic Toxicity**
- TRPing the Sensor: The Role of TRP Channel Signaling in Cardiopulmonary Toxicity

Workshops

- Toxicology in the 21st Century: Stem Cells in Drug Discovery and Development
- **Humanized Models in Toxicology and Their Application to Hazard Characterization and Risk Assessment**

Roundtables

- Weighing Complex Data in Risk Decisions: Concepts of Evidence-Based Toxicology

Regional Interest Session

- Signaling Mechanisms for Metabolic Dysfunction Following Low Level Arsenic Exposures: From Mouse to Man

Student and Postdoctoral Fellow Events

- MAP Kinase Signaling: A Common Target Eliciting Unique Tissue Responses

Endowment Fund Details:

The Endowment Fund consists of three major award funds, namely the Carl C. Smith Graduate Student Award the Renal Toxicology Fellowship Award Fund and the newly-approved Gabriel Plaa Award (discussed below). As of December 2009, there was approximately \$74,000 in the Carl C. Smith fund, \$30,000 in the Renal Toxicology Fellowship Award Fund, and \$43,000 in the Plaa Award fund.

Newsletters:

Newsletters were distributed to SS membership in the fall (September, 2009) and spring (February 2010). An important aspect of the fall newsletter was to provide details on the graduate student and post-doctoral awards deadlines relative to submission of abstracts for the annual meeting, whereas the spring newsletter provided details on the sessions that were sponsored or endorsed by the section. Copies of both newsletters are available online.

Contributions to SOT Web site:

The major contributions to the SOT Website in the 2009-2010 year were to communicate the new awards that are available broadly to the membership. The website will be an important tool for effectively communicating award criteria and to increase awareness of these awards among the membership at large. Other additions to the website included updating photographs of recent award winners.

Other Specialty Section 2009-2010 Activities:

The Gabriel Plaa Endowment fund was approved by the SOT Endowment Fund, and it has been agreed that this new award has been to be administered through the Mechanisms Specialty Section. Dr. Plaa died in late 2009, and a tribute to his many contributions was published in the February issue of Toxicological Sciences (Toxicol. Sci. 2010, 1113: 279-280). Dr. Plaa was also honored in the Spring 2010 Newsletter, His contribution to educating toxicologists is immeasurable, but his commitment to education and training was summarized in the tribute as follows: *Dr Plaa summarized his scientific career and concluded “the most satisfying ‘results’ of my research program are not the data or new observations acquired, but the graduate students and fellows with whom I collaborated over a span of nearly 40 years. I am forever grateful for their precious presence and participation in my laboratory.”*

The Mechanisms SS officers have discussed the Plaa award criteria (see Attachment I). The award will recognize outstanding post-doctoral research accomplishments and will be developed to be a highly competitive, visible and prestigious award. The Executive committee will work to develop the criteria for the award through 2010 so that the award can be administered for the first time at the 2011 Annual Meeting.

Respectfully submitted,
Lois Lehman-McKeeman, Ph.D.
Secretary-Treasurer, Mechanisms Specialty Section, 2009-2010

ATTACHMENT I
Mechanisms Specialty Section Officers Meeting
March 9, 2009 during the annual meeting in Salt Lake City

Present: D. Petersen (presiding), J. Manautou, J. Tarloff, M. Aleo, G. Rankin, P. Harvison, A. Puga, P. Ganey, L. Lehman-McKeeman, D. Dreschel, J. Vassallo and Y. Liu

Invited Guest: C. Klaassen

Dennis Petersen called the meeting to order, and welcomed the newly elected officers. Lois provided an update on the expenses for the year and the estimated current state of the budget. Total available funds as of March, 2010 are approximately \$40,000. The balances in the three endowment funds for Mechanisms-supported awards (December, 2009) were noted as follows:

Carl Smith Fund	\$74,120
Renal Toxicology Fund	\$30,600
Robert Rubin Fund	\$31,302
(shared with Risk Assessment)	

There was a quick review of Mechanisms-sponsored session content at the Annual Meeting. Briefly, the specialty section sponsored or endorsed 14 symposia, 2 workshops and 1 each round table, continuing education course, regional interest session and a student/postdoctoral fellow targeted session.

Dennis and Jose Manautou reviewed major points of discussion at the Specialty Section Officers meeting. The items of note included: (1) the development of a specialty section governance group of which Jose will be directly involved; (2) a special request for development of continuing education courses for the 2011 annual meeting with emphasis on global health; (3) encouraging all members to join and actively participate in ToxExchange, and (4) the availability of monies from the Society that could be used in the sponsorship of meetings not directly associated with the Society of Toxicology.

Jose Manautou led the discussion of a minority initiative whereby members of the Mechanisms Specialty Section along with the Hispanic Organization for Toxicologists (HOT) Special Interest Group would be working to develop a scientific session for inclusion at future toxicology meetings in Central and/or South America.

ACTION: Jose will organize a committee to develop program content and make a proposal to the Mechanisms Executive Committee (all officers) for discussion and support.

A major focus for the officers' meeting was a review of the status of all section-sponsored awards, including the newly-funded Gabriel Plaa Award. The discussion and recommendations were as follows:

- The Post-doctoral travel awards were historically supported by external donations (Merck-Frost). In 2009, two awards were funded from the Mechanisms budget, and

- in 2010, half of the funding (\$500) was donated by TERA and the remaining \$500 was provided by the Mechanisms budget.
- **ACTION: For 2011, the Executive Committee must determine whether to solicit funding for these travel awards or to continue to support the award from the section treasury.**
 - The Senior Councilor for 2010-2011 is responsible for administering these awards (P. Harvison)
 - The Renal Toxicology Award had few applicants for the first year, and it was agreed that there needs to be better communication of the award along with better overall organization of the applicant review process.
 - **ACTION: For the 2011 award year, Joan Tarloff will organize the effort to enhance the visibility and increase the number applicants for this award.**
 - The Robert Rubin Award is shared with the Risk Assessment Specialty Section, and it was noted (D. Petersen) that the number of candidates for this award was low, and the general relevance to mechanisms of toxicity was limited. It was agreed that the VP-Elect will take responsibility for the Award, and there needs to be better communication with the Risk Assessment Specialty Section in the administration of this award. It was agreed that we should ensure that the VP-Elect is included in the early screening of the abstracts for this award in future years as that did not occur in 2010.
 - **ACTION: M. Aleo, VP-Elect will be responsible for administering the Rubin Award on behalf of Mechanisms.**
 - D. Petersen will recirculate a description of the award and effort will be made to increase the number of applicants for the award.
 - The Carl Smith Award is recognized as a highly prestigious award that is generally well run. However, it was noted that the description of eligibility for the award may be problematic because it stipulates that the manuscript submitted for award consideration must not have undergone peer review, thereby eliminating some applicants. It was also noted that the award description puts limitations on eligibility for other awards. The consensus opinion was that there was a clear need to harmonize award criteria across specialty sections.
 - **ACTION: It was recommended that Jose Manautou follow up with the Specialty Section Governance Group regarding harmonizing award criteria.**
 - The Junior Councilor is responsible for administering the Carl Smith Award (Vasilis Vasiliou).
 - Dr. Curtis Klaassen joined the officers meeting to discuss the development of the newly-established Gabriel Plaa Award. The fund had already accrued more than \$25,000 (approximately \$43,000) and will be administered for the first time in 2011. It was agreed that this was intended to be a highly prestigious award, and after discussion, the executive committee agreed that the award should be targeted to post-doctoral fellows (as the post-doctoral equivalent of the Carl Smith Award). There was a general discussion of the award process.
 - **ACTION: M. Aleo and P. Ganey will take responsibility for the development and administration of the Plaa Award for 2011.**

- General process will include: candidates submit abstract, CV and letter of recommendation. Finalists should be interviewed at the Annual Meeting
- The amount of the award remains to be determined but should be as much as possible and awarded to a single recipient on an annual basis.
- It was noted that there is another fund recently established in honor of Ronald Thurman that will also enable an award to be administered through the Mechanisms specialty section. However, the fund has not yet reached the \$25,000 threshold required to support a new award. As of December 2009, there was \$10,400 in this fund. Development of criteria for an award linked to this fund will be tabled until the minimum level of support has been reached.

Details and plans for the evening reception and business meeting were discussed. Dennis Petersen will chair the meeting, with emphasis placed on acknowledging award winners and having a good time!

The meeting adjourned at approximately 8:30 am.

Respectfully submitted,
Lois Lehman-McKeeman

ATTACHMENT II
Mechanisms Specialty Section Reception and Meeting
March 9, 2010 during the annual meeting in Baltimore

Dennis Petersen welcomed the attendees to the meeting and reception at approximately 6:45 pm. There were approximately 180 attendees. The results of the election were announced as follows:

Vice President Elect:	Mike Aleo
Councilor:	Vasilis Vasiliou
SAC Representative:	Jeff Vassallo
PDA Representative:	Yinglin Liu

Dr. Lois Lehman-McKeeman provided an update on the expenses for the year and the estimated current state of the budget. The section was in good stead with approximately \$40,000 in reserve.

Dr. Petersen announced that a new award would be funded for post-doctoral research starting in 2011. This will be the Gabriel Plaa Award, a newly funded award in recognition of the contributions of the late Dr. Plaa to toxicology research and education. Details of the award criteria will be published in upcoming newsletters.

Dr. Alvaro Puga coordinated the Post-doctoral travel awards for 2010. The recipients of the travel awards were Dr. Rohit Singhal from Michigan State University and Dr. Yinglin Liu from Rutgers University. Dr. Puga also recognized Dr. Michael Dourson, TERA, whose company helped to support these travel awards

Dr. Petersen recognized Dr. David Szabo, University of North Carolina, as the recipient of the Robert Rubin Award, an award shared with the Risk Assessment Specialty Section, for his research entitled "Toxicokinetic differences between two HCBd stereoisomers: Effects of dose, time repeated exposure and route." Dr. Petersen also encouraged students and post-doctoral fellows to consider submitting relevant research with application to risk assessment for consideration for this award in future years.

Dr. Joan Tarloff announced the winners of the inaugural awards in Renal Toxicology. These awards are funded by a new Endowment Fund in Renal Toxicology (described in the 2009 Annual Report). The recipients were:

Xiaoling Zhang, University of Georgia
Bromate induces cell cycle arrest via DNA damage-dependent and independent pathways

Jennifer Cohen, University of Arizona
cAMP-dependent pathway(s) directs the Rap-GTP/B-raf MAPK-mediated cytosolic mislocalization of p27^{kip}-cyclin D1 in renal cancer

The reception culminated in the recognition of the Carl Smith Award winners. The ongoing support of Mrs. Tee Smith was recognized, and photographs of the award winners were taken to be sent

to her. There were a total of 11 finalists, with 8 Honorable Mention winners receiving certificates, and 3 winners (1st-3rd place) who received cash awards and plaques.

The winner of the 27th Annual Carl C. Smith Graduate Student Award was Bradley Sullivan from the University of Kansas Medical Center. The title of the winning paper was “Thrombin Signaling Enhances TGF-beta Induction of Integrin beta6 in Bile Duct Epithelial Cells,” and his advisor was Dr. James Luyendyk. Brad was awarded \$1000 and a plaque.

Second Place: Neal S. Gould, University of Colorado at Denver Health Sciences Center
Advisor: Brian J. Day
Title: Aging Adversely Affects the Cigarette Smoke-Induced Glutathione Adaptive Response Sensitizing the Lung to Inflammation and Oxidation

Third Place: Donald S. Backos, University of Colorado at Denver School of Pharmacy
Advisor: Christopher Franklin
Title: Post-Translational Modification and Regulation of Glutamate Cysteine Ligase by the α,β -Unsaturated Aldehyde 4-Hydroxy-2-Nonenal (4-HNE)

Honorable Mention finalists:

Anwar Anwar-Mohamed	University of Alberta Faculty of Pharmacy and Pharmaceutical Sciences
J. Michael Brown	Marshall University School of Medicine
Andre C. Eaddy	Medical University of South Carolina
Rhiannon N. Hardwick	University of Arizona
Chad D. Moore	University of Utah
Melanie B. Weed	University of North Carolina
Xiaoling Zhang	University of Georgia
Youcai Zhang	University of Kansas Medical Center

The meeting adjourned at approximately 7:30 pm.

Respectfully submitted,
Lois Lehman-McKeeman