

NAME OF SPECIALTY SECTION: Risk Assessment

ANNUAL REPORT: 2016-2017

May 1, 2016 to April 30, 2017

I. Officers/Committees:

| <u>Officers</u> | <u>2015-2016</u> | <u>2016-2017</u> |
|-----------------------|-------------------------|--------------------------|
| President: | Hugh A. Barton | Sean M Hays |
| Vice President: | Sean Hays | Elaina M Kenyon |
| Vice President-Elect: | Elaina M. Kenyon | George Woodall |
| Secretary/Treasurer: | Daniele Staskal Wikoff | Daniele Staskal Wikoff |
| Past President | John M DeSesso | Hugh A Barton* |
| Councilors: | Michael H Lumpkin | John Norman* |
| | John Norman | Betina Lew |
| PDA Representative: | Kausar Begam Riaz Ahmed | Kausar Begam Riaz Ahmed* |
| GSLC Representative: | Allison C Franzen | Sloane Tilly |

*- Officers who rotated off May 2017.

II. Activities:

2017 SOT Annual Meeting Reception was held in Baltimore, MD on Monday, March 13, 2017.

Approximately 325 people were in attendance.

Dr. Hays called the meeting to order at 6:30 PM on March 16, 2016.

Business Meeting Speaker: None

Meeting Minutes: Dr. Hays opened the business meeting with a welcome to all attendees following an initial networking period. He thanked the outgoing officers and welcomed the incoming officers. RASS members receiving SOT awards were recognized, including Lorenz Rohmberg (Merit Award),

Elaina Kenyon and George Woodall presented the 2017 Award Winners (student/post doc and best paper) with plaques and award checks. Handouts were available on tables listing all award winners and Top 10 best paper selections. The networking opportunities and reduced formal portion of the meeting seemed to be very well received and appreciated by the RASS membership.

Awards:

2017 RASS Award Winners

Perry J. Gehring Best Postdoctoral Fellow Abstract Award

Fabian Grimm, PhD. (Texas A&M University, College Station, TX); Advisor - Ivan Rusyn
Diversity in a dish: A population-based organotypic human in vitro model for cardiotoxicity testing

Perry J. Gehring Best Graduate Student Abstract Award

Abhishek Venkatratnam (University of North Carolina); Advisor - Ivan Rusyn
A population-wide study of metabolism and toxicodynamics of trichloroethylene using Collaborative Cross (CC) mouse panel provides critical insights into the mechanisms of inter-individual variability

Honorable Mention

Gopi Gadupudi, MS, PhD. (University of Iowa); Advisor - Larry W. Robertson
Diminished Phosphorylation of CREB Is a Key Event in the Dysregulation of Gluconeogenesis, Glycogenolysis, and Fatty Acid Oxidation in PCB126 Hepatotoxicity.

Robert J. Rubin Student Travel Award

Yvonne Chang (Department of Environmental and Molecular Toxicology, Oregon State University);
Advisor - Susan C. Tilton
PAHs Differentially Regulate Transcription in Human 3D Bronchial Epithelium

Honorable Mention

Gopi Gadupudi, MS, PhD. (University of Iowa); Advisor - Larry W. Robertson
Diminished Phosphorylation of CREB Is a Key Event in the Dysregulation of Gluconeogenesis, Glycogenolysis, and Fatty Acid Oxidation in PCB126 Hepatotoxicity.

John Doull Award

Tanzir B. Mortuza (University of Georgia); Advisor – James V. Bruckner
Age-dependent Toxicokinetics (TK) of Trans-Permethrin (TRANS) in Adult and Juvenile Sprague-Dawley (SD) Rats

RASS Trainee Award

Joseph Cichocki, PhD (Texas A&M University, College Station, TX); Advisor - Ivan Rusyn
Non-Alcoholic Fatty Liver Disease as a Modifier of Perchloroethylene-Induced Toxicity

2017 BEST ABSTRACT AWARD WINNERS

Best Abstract

D.E. Hines, S.W. Edwards, R.B. Conolly, and A.M. Jarabek. Cross-Species Integration of Human Health and Ecological Endpoints Using the Aggregate Exposure Pathway (AEP) and Adverse Outcome Pathway (AOP) Frameworks to Advance Risk Assessment

Other Top 10 Abstracts (in order of abstract number)

M.B. Phillips, K. Dunnick, P. Balbuena, J.R. Enders, S. Ross, D. Billings, R.A. Clewell, and M. Yoon

Incorporation of Human Relevant Metabolism for the Classification of Xenobiotics as Mutagens

H.M. Bolstad , R. Woods, and L. Lim

A Bounding Approach for Reference Dose Estimation Using Human, Animal, and High Throughput Data:

Chlorpyrifos As a Case Study

C. Clark and H. Goeden

Providing Risk Context for Environmental Contaminants with Minimal Toxicity Data

P.S. Price, K.L. Dionisio, H. Hubbard, and G. Graham

Developing a Rich Definition of the Person/ Residence to Support Models of Consumer Product Usage

D.S. Wikoff, J. Rager, S. Harvey, L. Haws, G. Chappell, and S. Borghoff

Framework for Quantitative Consideration of Study Quality and Relevance in the Systematic Evaluation

of Mechanistic Data per the Ten Key Characteristics of Carcinogens

Conolly, G.T. Ankley, W. Cheng, M. Mayo , D.H. Miller, E.J. Perkins, D.L. Villeneuve, and K.H. Watanabe

Application of Quantitative Adverse Outcome Pathways to Rapid Screening for Adverse Outcome. R.B.

K. Saito, Y. Otsubo, H. Mizumachi, T. Nishijo, M. Miyazawa, and H. Sakaguchi.

Development of Non-Animal Assessment Strategy for Skin Sensitization Using a Variety of Raw Materials.

S.S. Auerbach, J. Phillips, D.L. Svoboda, L. Yang, B. Kuo, R.S. Thomas, C.L. Yauk, R.R. Shah, and R.S. Paules

Evaluation of Parameter Settings in Genomic Benchmark Dose Analysis That Minimize False Discovery

and Maximize Reproducibility

S. Ramm, P. Todorov, V. Chandrasekaran, M. Pavkovic, H. Shankaran, J. Mettetal, and V.S. Vaidya.

A Systems Approach to Predict and Classify Toxicity In Vitro.

2016 Best Paper Demonstrating an Application of Risk Assessment

Guo J, Sinclair CJ, Selby K, Boxall AB. 2016. Toxicological and ecotoxicological risk-based prioritization of pharmaceuticals in the natural environment. *Environ. Toxicol. Chem.* 35:1550-1559.

2016 Top Papers Demonstrating an Application of Risk Assessment

Alajlouni AM, Al Malahmeh AJ, Kiwamoto R, Wesseling S, Soffers AE, Al-Subeihi AA, Vervoort J, Rietjens IM. 2016. Mode of action based risk assessment of the botanical food-borne alkenylbenzene apiol from parsley using physiologically based kinetic (PBK) modelling and read-across from safrole. *Food Chem. Toxicol.* 89:138-150.

Baumung C, Rehm J, Franke H, Lachenmeier DW. 2016. Comparative risk assessment of tobacco smoke constituents using the margin of exposure approach: the neglected contribution of nicotine. *Scientific Reports* DOI: 10.1038/srep35577.

Doe JE, Lander DR, Doerrner NG, Heard N, Hines RN, Lowit AB, Pastoor T, Phillips RD, Sargent D, Sherman JH, Young Tanir J, Embry MR. 2016. Use of the RISK21 roadmap and matrix: human health risk assessment of the use of a pyrethroid in bed netting. *Crit. Rev. Toxicol.* 46:54-73.

Dong Z, Yuan G, Hu J. 2016. Uncertainty analysis in 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) cancer dose-response for three occupational cohorts. *Environment International* 88:53-59.

Fu KY, Cheng YH, Chio CP, Liao CM. 2016. Probabilistic integrated risk assessment of human exposure risk to environmental bisphenol A pollution sources. *Environ. Sci. Pollut. Res.* 23:19897-19910.

Korsman JC, Schipper AM, Hendriks AJ. 2016. Dietary Toxicity Thresholds and Ecological Risks for Birds and Mammals Based on Species Sensitivity Distributions. *Environ. Sci. Technol.* 50:10644-10652.

Radomyski A, Giubilato E, Ciffroy P, Critto A, Brochot C, Marcomini A. 2016. Modelling ecological and human exposure to POPs in Venice lagoon - Part II: Quantitative uncertainty and sensitivity analysis in coupled exposure models. *Science of the Total Environment* 569-570:1635-1649.

2016 Best Paper Advancing the Science of Risk Assessment

Haber LT, Sandhu R, Li-Muller A, Mohapatra A, Petrovic S, Meek ME. 2016. Framework for human health risk assessment of non-cancer effects resulting from short-duration and intermittent exposures to chemicals. *J. Appl. Toxicol.* 36:1077-1089.

2016 Top Papers Advancing the Science of Risk Assessment

Chauhan V, Kuo B, McNamee JP, Wilkins RC, Yauk CL. 2016. Transcriptional benchmark dose modeling: Exploring how advances in chemical risk assessment may be applied to the radiation field. *Environ. Mol. Mutagen.* 57:589-604.

Zabinski JW, Garcia-Vargas G, Rubio-Andrade M, Fry RC, Gibson JM. 2016. Advancing Dose-Response Assessment Methods for Environmental Regulatory Impact Analysis: A Bayesian Belief Network Approach Applied to Inorganic Arsenic. *Environ. Sci. Technol. Lett.* 3:200-204.

Farmahin R, Williams A, Kuo B, Chepelev NL, Thomas RS, Barton-Maclaren TS, Curran IH, Nong A, Wade MG, Yauk CL. 2016. Recommended approaches in the application of toxicogenomics to derive points of departure for chemical risk assessment. *Arch. Toxicol.* DOI 10.1007/s00204-016-1886-5.

Labib S, Williams A, Yauk CL, Nikota JK, Wallin H, Vogel U, Halappanavar S. 2016. Nano-risk Science: application of toxicogenomics in an adverse outcome pathway framework for risk assessment of multi-walled carbon nanotubes. *Particle Fibre Toxicol.* DOI 10.1186/s12989-016-0125-9.

Liu R, Yu X, Wallqvist A. 2016. Using Chemical-Induced Gene Expression in Cultured Human Cells to Predict Chemical Toxicity. *Chem. Res. Toxicol.* 29:1883-1893.

McDonough K, Casteel K, Itrich N, Menzies J, Belanger S, Wehmeyer K, Federle T. 2016. Evaluation of anionic surfactant concentrations in US effluents and probabilistic determination of their combined ecological risk in mixing zones. *Science of the Total Environment* 572:434-441.

Wills JW, Johnson GE, Doak SH, Soeteman-Hernández LG, Slob W, White PA. 2016. Empirical analysis of BMD metrics in genetic toxicology part I: in vitro analyses to provide robust potency rankings and support MOA determinations. *Mutagenesis* 31:255-263.

Zhang Y, Wong YS, Deng J, Anton C, Gabos S, Zhang W, Huang DY, Jin C. 2006. Machine learning algorithms for mode-of-action classification in toxicity assessment. *BioData Mining* DOI 10.1186/s13040-016-0098-0.

2016 SOT Annual Meeting Courses/Sessions endorsed by RASS:

Sponsored 3 Symposia, 4 Workshops, 1 Roundtable, 1 Informational Session, 2 Continuing Education Courses

Newsletters (October 2016, March 2017)

Endowment Fund Details:

RASS is the benefactor of three existing funds and one new fund, each of which supports student travel awards. Each of the award recipients, identified above, received a travel award (\$1,000 each for the John Doull Endowment Student Award, both the Student and Post Doc Perry Gehring Endowment Awards; and for the Robert J. Rubin Endowment Student Travel Award with an additional \$500 award for a second Rubin fund award). All awards going forward will be \$1,500.

| Fund | Beginning Balance (July 1, 2016) | Income | Gain on Investments | Disbursements | Revenue over Expenses | March 31, 2017 Balance |
|-----------------------------------|-------------------------------------|----------|---------------------|---------------|-----------------------|------------------------|
| Doull | \$41,160 | \$1,000 | \$3,408 | \$1,000 | \$3,408 | \$44,568 |
| Gehring | \$44,805 | \$700 | \$3,664 | \$1,821 | \$2,572 | \$47,377 |
| Rubin | \$41,438 | \$1,000 | \$3,372 | \$1,500 | \$2,872 | \$44,311 |
| Clewell & Andersen Training Award | \$0 | \$50,200 | \$580 | \$0 | \$580 | \$50,780 |

Newsletters:

October 2016
March 2017


Webinars:

- Another successful proposal to procure financial support
 - Thanks again to *SOT Council Subcommittee for Non-SOT Meeting Funding*
- Series notes
 - 4 in Fall (Sept – Dec) and 4 in Spring (Jan, Feb, April, May)
 - Average attendance: 60 lines
 - Diverse set of cutting-edge topics and speakers across all sectors
 - Recordings can be found at:
<https://www.toxicology.org/groups/ss/RASS/downloads.asp>
- Special stats:


- MixSS continues to co-sponsor 1 each season:
 - Fall (September) and Spring (January)
- First-ever co-sponsorship with International Society for Exposure Science (ISES):
 - December 2016 and upcoming in May 2017

Webinar May 10, 2017: [Putting Exposure Back in Risk Assessment \(Or: The Dose Makes the Poison\)](#) 

- [Webinar Recording](#)

Webinar April 12, 2017: [Crowdsourcing Scientific Perspectives with SciPinion™: Hexavalent Chromium as a Case Study](#) 

- [Webinar Recording](#)

Webinar February 8, 2017: [How Can Mechanistic Data from Systems Approaches Improve our Understanding of Carcinogenic Risk for Mixtures?](#) 


- [Webinar Recording](#)

Webinar January 11, 2017: [German Environmental Survey and Environmental Specimen Bank and the Use of Human Biomonitoring Data for Risk Assessment](#) 

- [Webinar Recording](#)

Webinar December 14, 2016: [Aggregate Exposure Pathway \(AEP\): An Organizational Approach for Advancing Exposure Science Research and Applications](#) 

- [Webinar Recording](#)

Webinar November 9, 2016: [Improving Causal Inference in Cumulative Risk Assessment Using Directed Acyclic Graphs](#) 


- [Webinar Recording](#)

Webinar October 12, 2016: [Overview of TSCA Reform and Introduction to Key Provisions in the New Lautenberg Law](#) 

- [Webinar Recording](#)

Webinar September 14, 2016: [Incorporating Non-Chemical Stressors into Cumulative Risk Assessment \(CRA\)](#) 


- [Webinar Recording](#)

Webinar May 11, 2016: [Unconventional Gas and Oil Drilling Is Associated with Increased Hospital Utilization Rates](#) 

- [Webinar Recording](#)

Webinar April 13, 2016: [Studying Biology to Understand Risk: Dosimetry Models and Quantitative Adverse Outcome Pathways](#) 

- [Webinar Recording](#)

Webinar February 10, 2016: [Characterization of Murine Hepatocarcinogenesis Induced by the Nitrification Inhibitor Nitrpyrin: Mode of Action, Human Relevance Framework and Risk Assessment Implications](#) 

- [Webinar Recording](#)

Webinar January 13, 2016: [Health Effects of Mixtures: Comparing Approaches in Epidemiology and Toxicology \(with a discussion of the July 2015 NIEHS Workshop entitled “Statistical Approaches for Assessing Health Effects of Environmental Chemical Mixtures in](#)

White Papers: None

Contributions to SOT website: The RASS website was updated several times during the year to provide current information for members. Newsletters, award winners, and photographs from 2016 and 2017 meetings were posted. RASS webinars and recordings are posted to the website for each presentation.

Other Specialty Section 2015-2016 Activities:

RASS GSLC and PDA representatives organized a mentoring luncheon at the annual SOT meeting for students and post-docs to learn more about careers in risk assessment. It was well attended by about 30 mentors and mentees. Invited mentors each spoke briefly describing their career paths in risk assessment and perspectives on opportunities and skills of importance.

With the assistance of an appointed committee of 18 members, RASS reviewed all potentially relevant papers published between January 1, 2016 and December 31, 2016 for consideration of two RASS Best Paper Awards – 1) Best Paper Demonstrating an Application of Risk Assessment and 2) Best Paper Advancing the Science of Risk Assessment. Winners were selected, along with the top papers in each category, and awards were presented during the RASS mixer.

With the assistance of an appointed committee of 15 members, RASS reviewed all potentially relevant risk assessment abstracts accepted for the 2015 Annual meeting. A winner was selected, along with the top 10 abstracts and ribbons were presented to all winners at their oral/poster presentations. Winners were also recognized during the RASS mixer.

With the assistance of an appointed committee of 12 members, RASS reviewed all applications received from candidates for the RASS student and postdoc awards. Winners were selected, ribbons were presented to all winners at their oral/poster presentations, and winners were presented with plaques and monetary awards at the RASS mixer.

Developed a poster that contained details of sponsored/endorsed sessions, award winners and other information pertinent to RASS’ annual meeting activities; poster displayed at SOT Pavilion, at GLSC and PDA receptions, and at RASS Mixer.

Officer’s breakfast meeting Monday, March 13, 2017. – Of specific note is that the dates/times and locations of RASS’ award winning abstracts were identified and RASS officers volunteered to present award ribbons to presenters at their posters. In coming officers were invited so they could meet current officers.

At the request of SOT, RASS established an Endowment Fund Steward Committee to raise money for the three named award funds. A goal was established of bringing each fund up to \$50,000 over the next year.

Outreach to new SOT members potentially interested in RASS.

A RASS program committee composed of officers and approximately 15 RASS members provided reviews for proposals for the coming year SOT meeting. Pre-reviews were provided to those sharing their draft proposals early to provide RASS perspectives and suggestions for improvements. Proposals submitted to SOT requesting RASS sponsorship were reviewed by the committee, rated, and ranked and comments provided back to the SOT Program Committee.

RASS officers held monthly or bimonthly conference calls to co-ordinate activities, including program proposal reviews, awards committees, the annual meeting reception, newsletters, and website updates.

Newly elected officers were:

Gary Minsavage – Vice President Elect

Kan Shao – Secretary/Treasurer

Nathan Pechacek – Councilor

Cissy Li – Post Doc Representative