

NAME OF SPECIALTY SECTION Risk Assessment

ANNUAL REPORT: 2015-2016

May 1, 2015 to April 30, 2016

I. Officers/Committees:

<u>Officers</u>	<u>2014-2015</u>	<u>2015-2016</u>
President:	John DeSesso	Hugh A Barton
Vice President:	Hugh Barton	Sean M Hays
Vice President-Elect:	Sean Hays	Elaina M Kenyon
Secretary/Treasurer:	George Woodall	Daniele Staskal Wikoff
Past President	Laurie C Haws	John M DeSesso
Councilors:	Anna Lowit	Michael H Lumpkin
	Michael Lumpkin	John Norman
PDA Representative:	Michelle DeSimone	Kausar Begam Riaz Ahmed
GSLC Representative:	Allison Franzen	Allison C Franzen

II. Activities:

2016 SOT Annual Meeting Reception was held in New Orleans, Louisiana on Wednesday, March 16, 2016.

Approximately 325 people were in attendance.

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

Business Meeting Speaker: None

Meeting Minutes: Dr. Barton 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. The RASS Endowment Fund stewards (Laura Plunkett, David Szabo, and Anne Loccisano) were introduced to members and spoke about the three RASS endowment fund. They also organized sale of raffle tickets during the meeting to raise awareness and money for the funds. RASS members receiving SOT awards were recognized, including Melvin Andersen (Merit Award), Gary Ginsberg (Public Communications), and Rachel Church (Best Paper Toxicological Sciences). Elaina Kenyon and Michael Lumpkin presented the 2015 Award Winners with plaques and award checks. Handouts were available on tables listing all award winners and Top 10 selections. The networking opportunities and reduced formal portion of the meeting seemed to be very well received and appreciated by the RASS membership.

Awards:

2016 RASS Award Winners

John Doull Award

Julia Tobacyk, Michele La Merrill, Shaoke Luo, and Alison H. Harrill. University of Arkansas, Little Rock, AS. The Role of Genetic Background on Adverse Health Effects due to Prenatal Exposure to Environmental Obesogen Tributyltin

Abstract # 2545 in Platform Session: Qualification of “New” DART Tools for Hazard Identification
Tuesday, March 15, 2:00 PM

Advisor: Alison Harrill

Perry Gehring Postdoc Award

Marjory Moreau and A. Nong. Health Canada, Ottawa, ON. Comparison of Hexabromocyclododecane (HBCD) Biomonitoring Data and High Throughput Screening Dose-Responses Using Pharmacokinetic Modeling.

Abstract # 3617 in Poster Session: Late Breaking 2

Thursday, March 17, 9:30 AM to 12:45 PM

Advisor: Andy Nong

Perry Gehring Student Award

Brittany A. Weldon, Elaine M. Faustman, Günter Oberdörster, Tomomi Workman, William C. Griffith, Carsten Kneuer, Il Je Yu. University of Washington, Seattle, WA. A Framework for the Derivation of a Health-Based Occupational Exposure Limit for Silver Nanoparticle

Abstract # 1498 in Poster Session: Nanotoxicology: General

Monday, March 14, 1:15 PM to 4:30 PM

Advisor: Elaine M. Faustman

Robert J. Rubin Student Travel Award (winner and runner-up)

Dana Lauterstein, Pamella Tijerina, Kevin Corbett, Terry Gordon, Catherine B Klein, Judith T Zelikoff. NYU School of Medicine Tuxedo, NY. E-cigarette Exposure Induces Neuro-alterations In Mice Exposed During Early Life

Abstract #1165 in Poster Session: Neurotoxicology—Developmental Neurotoxicity

Monday, March 14, 9:30 AM to 12:45 PM

Kristin M Bircsak, N. Memon, B.I. Weiberger, A.M. Vetrano, L.M. Aleksunes. Rutgers University, New Brunswick, NJ. Interindividual Regulation of the BCRP/ABCG2 Transporter in Human Term Placentas

Abstract #3235 in Poster Session: Reproductive Toxicology

Wednesday, March 16, 1:15 PM to 4:30 PM

2016 Best Abstract

Innovative Strategies for Agrochemical Safety Assessments: Use of Toxicokinetic Data for Arylex™ and Rinskor™

Lynea Murphy¹, Sabitha Papineni², Manoj Aggarwal², Michael J. Bartels¹, Reza Rasoulpour²

¹The Dow Chemical Company, Midland, MI; ²Dow AgroSciences, Indianapolis, IN.

Abstract #2458 in Non-Pharmaceutical Safety Assessment, Tuesday Afternoon, March 15

“Top Ten” Abstracts

Linking High Resolution Mass Spectrometry Data with Exposure and Toxicity Forecasts to Advance High-Throughput Environmental Monitoring

Julia E. Rager¹, Mark J. Strynar², Shuang Liang¹, Rebecca McMahan¹, Ann M. Richard³, Christopher M. Grulke⁴, John F. Wambaugh³, Kristen K. Isaacs², Richard Judson³, Antony J. Williams³, Jon R. Sobus²

¹US EPA, ORISE, Research Triangle Park, NC; ²NERL, US EPA, Research Triangle Park, NC;

³NCCT, US EPA, Research Triangle Park, NC; ⁴Lockheed Martin, Research Triangle Park, NC

Abstract #3539 in Emerging Technologies, Thursday Morning, March 17

The Most Scientifically-Supported Approach for Assessing the Carcinogenicity of Oral Exposure to Hexavalent Chromium: Non-Linear, Non-Threshold versus Threshold Approaches

Joseph T. Haney

Toxicology Division, Texas Commission on Environmental Quality, Austin, TX

Abstract #1536 in Metal Toxicity, Monday Afternoon, March 14

Extrapolating Salivary Acinar Cell *In Vitro* Pesticide Transport to Whole Animals Using Computational Modeling

Charles Timchalk, Zana A. Carver, Thomas J. Weber, Jordan N. Smith

Pacific Northwest National Laboratory (PNNL), Richland, WA

Abstract #1129 in Biomonitoring, Monday Morning, March 14

An Approach to Skin Sensitization Quantitative Risk Assessment using a Bayesian Integrated Testing Strategy to Derive Potency

Cynthia Ryan¹, Joanna Jaworska², Petra Kern³, G. Frank Gerberick¹

¹The Procter & Gamble Company, Mason, OH; ²The Procter & Gamble Company, Strombeek-Bever, Belgium; ³The Procter & Gamble Company, Beijing, China

Abstract #2195 in Alternative Models for Ocular and Skin Toxicity, Tuesday Afternoon, March 15

A Next Generation Benchmark Dose Computation System

Kan Shao¹, Andy Shapiro²

¹Department of Environmental Health, Indiana University, Bloomington, IN; ²Independent consultant, Durham, NC

Abstract #2165 in Risk Assessment 1, Tuesday Morning, March 15

An Evaluation of Transplacental Carcinogenesis for Human Health Risk Assessment

Brenda Foos¹, Michelle Mabson², John Rogers³, Bob Sonawane¹, Gary Ginsberg⁴

¹US Environmental Protection Agency, Washington, DC; ²Oak Ridge Institute for Science and Education, Washington, DC; ³US Environmental Protection Agency, Research Triangle Park, NC; ⁴Connecticut Department of Health, Hartford, CT

Abstract #2717 in Risk Assessment 3, Wednesday Morning, March 16

Multimodal Screening of Functional and Structural Drug Toxicities Using Human Stem Cell-Derived Cardiomyocytes

Mathew Brock, Julia Heidmann, Ariel Kauss, Dinah Misner

Safety Assessment, Genentech, South San Francisco, CA

Abstract #1743 in Pluripotent Stem Cells in Cardiovascular Research, Monday, March 14 (3:20 PM)

A Case Study on the Utility of a Tiered Surrogate Approach in Quantitative Risk Assessment of 2,4,6-Trinitrophenol

Lucina E. Lizarraga¹, Q. Jay Zhao²

¹Oak Ridge Institute for Science and Education, Cincinnati, OH; ²U.S. EPA, National Center for Environmental Assessment, Cincinnati, OH

Abstract #2160 in Risk Assessment 1, Tuesday Morning, March 15

Developing An In Vitro Assay To Measure Key Signaling Events In Estrogen-initiated Pathways and Guide Risk Assessment

Michelle M. Miller, Daniel L. Doheny, Pergentino Balbuena, Susan M. Ross, Chad Deisenroth, Rebecca A. Clewell, The Hamner Institutes for Health Sciences, RTP, NC

Abstract #1867 in Endocrine Toxicology, Tuesday Morning, March 15

Best Published Papers in 2015 Advancing the Science of Risk Assessment

Outstanding Paper (Tie)

Ivy Moffat, Nikolai L Chepelev, Sarah Labib, Julie Bourdon-Lacombe, Byron Kuo, Julie K Buick, France Lemieux, Andrew Williams, Sabina Halappanavar, Amal I Malik, Mirjam Luijten, Jiri Aubrecht, Daniel R Hyduke, Albert J Fornace, Carol D Swartz, Leslie Recio, and Carole L Yauk Comparison of toxicogenomics and traditional approaches to inform mode of action and points of departure in human health risk assessment of benzo[a]pyrene in drinking water. (2015) Critical Reviews in Toxicology, vol. 45 (1) pp. 1-43

Richard A Becker, Gerald T Ankley, Stephen W Edwards, Sean W Kennedy, Igor Linkov, Bette Meek, Magdalini Sachana, Helmut Segner, Bart Van Der Burg, Daniel L Villeneuve, Haruna Watanabe, and Tara S Barton-Maclaren Increasing Scientific Confidence in Adverse Outcome Pathways: Application of Tailored Bradford-Hill Considerations for Evaluating Weight of Evidence. 2015 Regulatory Toxicology and Pharmacology, vol. 72 (3) pp. 514-537

Top Ten Papers

Elisabet Berggren, Patric Amcoff, Romualdo Benigni, Karen Blackburn, Edward Carney, Mark Cronin, Hubert Deluyker, Francoise Gautier, Richard S Judson, Georges E N Kass, Detlef Keller, Derek Knight, Werner Lilienblum, Catherine Mahony, Ivan Rusyn, Terry Schultz, Michael Schwarz, Gerrit Schüürmann, Andrew White, Julien Burton, Alfonso M Lostia, Sharon Munn, and Andrew Worth. Chemical Safety Assessment Using Read-Across: Assessing the Use of Novel Testing Methods to Strengthen the Evidence Base for Decision Making. Environ Health Perspect, 2015 vol. 123 (12) pp. 1232-1240.

Julie A Bourdon-Lacombe, Ivy D Moffat, Michelle Deveau, Mainul Husain, Scott Auerbach, Daniel Krewski, Russell S Thomas, Pierre R Bushel, Andrew Williams, and

Carole L Yauk. Technical guide for applications of gene expression profiling in human health risk assessment of environmental chemicals. *Regul Toxicol Pharmacol*, 2015 vol. 72 (2) pp. 292-309.

Patience Browne, Richard S. Judson, Warren M. Casey, Nicole C. Kleinstreuer, and Russell S. Thomas Screening Chemicals for Estrogen Receptor Bioactivity Using a Computational Model *Environ Sci Technol* 2015 Jul 21;49(14):8804-14

Hiroshi Kimura, Takashi Ikeda, Hidenari Nakayama, Yasuyuki Sakai, and Teruo Fujii. An on-chip small intestine-liver model for pharmacokinetic studies. *J Lab Autom*, 2015 vol. 20 (3) pp. 265-273.

Grace Patlewicz, Ted W Simon, J Craig Rowlands, Robert A Budinsky, and Richard A Becker. Proposing a scientific confidence framework to help support the application of adverse outcome pathways for regulatory purposes. *Regul Toxicol Pharmacol*, 2015 vol. 71 (3) pp. 463-477.

Franco Scinicariello and Christopher Portier. A simple procedure for estimating pseudo risk ratios from exposure to non-carcinogenic chemical mixtures. *Arch Toxicol*, 2015 pp. 1-11.

Sheppard A Martin, Eva D McLanahan, Philip J Bushnell, E Sidney Hunter, and Hisham El-Masri. Species extrapolation of life-stage physiologically-based pharmacokinetic (PBPK) models to investigate the developmental toxicology of ethanol using in vitro to in vivo (IVIVE) methods. *Toxicol Sci*, 2015 vol. 143 (2) pp. 512-535.

C Terry, R J Rasoulpour, S Knowles, and R Billington. Utilizing relative potency factors (RPF) and threshold of toxicological concern (TTC) concepts to assess hazard and human risk assessment profiles of environmental metabolites: a case study. *Regul Toxicol Pharmacol*, 2015 vol. 71 (2) pp. 301-317

Best Published Papers in 2014 Demonstrating an Application of Risk Assessment

Outstanding Paper

Scott M Arnold, Alistair Morriss, Joseph Velovitch, Daland Juberg, Carol J Burns, Michael Bartels, Manoj Aggarwal, Torka Poet, Sean Hays, and Paul Price Derivation of human Biomonitoring Guidance Values for chlorpyrifos using a physiologically based pharmacokinetic and pharmacodynamic model of cholinesterase inhibition. *Regulatory Toxicology and Pharmacology*, 2015 vol. 71 (2) pp. 235-243

Top 10 Papers

Edward L Croom, Timothy J Shafer, Marina V Evans, William R Mundy, Chris R Eklund, Andrew F M Johnstone, Cina M Mack, and Rex A Pegram. Improving in vitro to in vivo extrapolation by incorporating toxicokinetic measurements: a case study of lindane-induced neurotoxicity. *Toxicol Appl Pharmacol*, 2015 vol. 283 (1) pp. 9-19.

Haney J Jr. Use of dose-dependent absorption into target tissues to more accurately predict cancer risk at low oral doses of hexavalent chromium. *Regul Toxicol Pharmacol*. 2015 Feb;71(1):93-100.

Haney J Jr. Consideration of non-linear, non-threshold and threshold approaches for assessing the carcinogenicity of oral exposure to hexavalent chromium. *Regul Toxicol Pharmacol*, 2015 vol. 73 (3) pp. 834-852.

M José Gómez-Lechón, Laia Tolosa, and M Teresa Donato. Metabolic activation and drug-induced liver injury: in vitro approaches for the safety risk assessment of new drugs. *J Appl Toxicol*, 2015 Dec 22. doi: 10.1002/jat.3277.

Kevin McNally and George D Loizou. A probabilistic model of human variability in physiology for future application to dose reconstruction and QIVIVE. *Front Pharmacol*, 2015 vol. 6 (Pt 1) p. 213.

Rik Oldenkamp, Mark A J Huijbregts, and Ad M J Ragas. Uncertainty and variability in human exposure limits - a chemical-specific approach for ciprofloxacin and methotrexate. *Crit Rev Toxicol*, 2015 pp. 1-18.

M Trantallidi, C Dimitroulopoulou, P Wolkoff, S Kephalopoulos, and P Carrer. EPHECT III: Health risk assessment of exposure to household consumer products. *Sci Total Environ*, 2015 vol. 536 pp. 903-913.

John A Troutman, David L Rick, Sharon B Stuard, Jeffrey Fisher, and Michael J Bartels. Development of a physiologically-based pharmacokinetic model of 2-phenoxyethanol and its metabolite phenoxyacetic acid in rats and humans to address toxicokinetic uncertainty in risk assessment. *Regul Toxicol Pharmacol*, 2015 vol. 73 (2) pp. 530-543.

Valcke M, Haddad S. Assessing human variability in kinetics for exposures to multiple environmental chemicals: a physiologically based pharmacokinetic modeling case study with dichloromethane, benzene, toluene, ethylbenzene, and m-xylene. *J Toxicol Environ Health A*. 2015;78(7) pp 409-31

2016 SOT Annual Meeting Courses/Sessions endorsed by RASS:

Continuing Education (3)

Genetics and Population Variability in Chemical Toxicity: The What, the How and So What?
Adverse Outcome Pathway (AOP) Development and Evaluation
Human Health Risk Assessment: A Case Study Application of Principles

Roundtable (2)

Is a 'Thresholdable' Carcinogen Still a Delaney Carcinogen? (Monday, March 14, 2016)
(Monday, March 14, 2016)

Trichloroethylene Exposures Resulting from Vapor Intrusion: What Do the Data Tell About Potential Health Risks to Pregnant Women
(Monday, March 14, 2016)

Symposia (3)

Unknown, Unknowns: Exploring the Unidentified Fraction of Complex Mixtures
(Tuesday, March 15, 2016)

High-Content Imaging for predictive toxicology: Discriminating between adverse and adaptive outcomes
(Wednesday, March 16, 2016)

Use of the Adverse Outcome Pathway (AOP) concept to link epidemiological to mechanistic data on the correlation of pesticide exposures and Parkinson's disease
(Wednesday, March 16, 2016)

Workshop (9)

The Cancer Risk Assessment for Ingested Hexavalent Chromium: Challenges and Controversies
(Monday, March 14, 2016)

Moving beyond prioritization towards true in vitro-based safety assessment
(Monday, March 14, 2016)

Quantitative Cumulative Risk Assessment: Is it Feasible Today?
(Monday, March 14, 2016)

Scientific Reproducibility: Does this Pose a Problem for 21st Century Toxicology?
(Monday, March 14, 2016)

Bioactivity-Based Margin of Exposure Safety Assessment: The Next Stop along the Road to 21st Century Safety Assessments
(Tuesday, March 15, 2016)

Read-across: Building scientific confidence in the development and evaluation of read-across for regulatory purposes using Tox21 approaches
(Tuesday, March 15, 2016)

Advanced Techniques in PBPK Modeling to Improve Quantitative Risk Assessment for Infants and Children
(Wednesday, March 16, 2016)

Beyond Benchmark Dose: Advancing Probabilistic and Bayesian Approaches in Hazard Characterization
(Thursday, March 17, 2016)

Bringing More Science into the Process of Risk Assessment for Endogenous Chemicals with Exogenous Exposures
(Thursday, March 17, 2016)

Regional Interest Session (1)

The Toxicological Implications of the Gulf Oil Spill: Research Accomplishments and Research Needs

(Monday, March 14, 2016)

Endowment Fund Details:

RASS is the benefactor of three funds, 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).

Fund	Beginning Balance (July 1, 2015)	Income	Gain on Investments	Disbursements	Revenue over Expenses	March 31, 2016 Balance
Doull	38,660	3300	0	1,000	2300	40,960
Gehring	45,526	1100	0	1821*	(721)	44,805
Rubin	41,838	1100	0	1,500	(400)	41,438

* Although two \$1,000 awards were given, there was a limit of 4% of endowment funds which were available; the remainder (\$179) came from RASS General Funds.

Newsletters:

June 2015
October 2015
March 2016

Webinars:

June 10, 2015:
Quantitative Evidence Integration to Facilitate the Use of Tox21 Data for Rapid Risk Screening
(Erin E. Yost and Ingrid L. Druwe)

September 9, 2015:
Mechanisms of Action for Arsenic in Cardiovascular Toxicity and Implications for Risk Assessment (Mandeep Sidhu and Heather Lynch)

October 14, 2015:
The Integration of LNT and Hormesis for Cancer Risk Assessment Optimizes Public Health Protection (Edward J. Calabrese)

November 18, 2015:
Framework for Human Health Risk Assessment of Noncancer Effects Resulting from Short-Duration and Intermittent Exposures to Chemicals (Lynne Haber)

December 9, 2015:

Highly fluorinated chemicals: A Legal and Technical Challenge (Stefan Posner)

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 Epidemiology Studies”) (Thomas F. Webster)

February 10, 2016:

Characterization of Murine Hepatocarcinogenesis Induced by the Nitrification Inhibitor Nitrapyrin: Mode of Action, Human Relevance Framework and Risk Assessment Implications. (Kerry Hastings, Jessica LaRocca, Matthew LeBaron)

April 13, 2016:

Studying Biology to Understand Risk: Dosimetry Models and Quantitative Adverse Outcome Pathways (Rory Conolly)

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 2015 and 2016 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 representative organized a mentoring luncheon 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, 2015 and December 31, 2015 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 14, 2016. – 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 comprised 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 conference calls to co-ordinate activities, including program proposal reviews, awards committees, the annual meeting reception, newsletters, and website updates.

Newly Elected Officers for 2015-2016 include: George Woodall, Vice President-Elect; Betina Lew, Councilor; Sloane Tilley, Student Representative.