

Reproductive and Developmental Toxicology Specialty Section

ANNUAL REPORT: 2021-2022

May 1, 2021 to April 30, 2022

I. Officers/Committees:

<u>Officers</u>	<u>2021-2022</u>	<u>2022-2023</u>
President:	Bethany R. Hannas	Caren M. Villano
Vice President:	Caren M. Villano	Sarah Campion
Vice President-Elect:	Sarah Campion	Almudena Veiga-Lopez
Secretary/Treasurer:	Pragati Coder	Pragati Coder
Past President:	Reza John Rasoulpour	Bethany R. Hannas
Councilors:	Edward Dere	AtLee Watson
	AtLee Watson	Shuo Xiao
New Career Councilor:	Daniel J. Spade	Pallavi Bhuyan McElroy
PDA Representative:	Michelle Kossack	Michelle Kossack
Grad Student Representative:	Vasiliki Mourikes	Danielle L. Kozlosky
Committees:	If applicable.	

II. 2021 Membership total: 370

III. Activities:

- 2022 SOT Virtual Annual Meeting Activities:
 - Reproductive and Developmental Toxicology Specialty Section Meeting**
Date and Time: 03 May 2022
Summary: The virtual event included a presentation of the annual activities and an awards ceremony.
 - 2022 SOT Annual Meeting Virtual CE Courses and Symposia offered:**

Title	Format
RDTS Primary Endorsement	
Importance of Sexual Maturity and Reproductive Senescence in Laboratory Animal Models	Continuing Education
Juvenile Toxicology Testing Assessing Pediatric Safety	Continuing Education
Hypertensive Disorders of Pregnancy: Biomarkers, Models, and Environmental Influences	Symposium
State of the Science on Thyroid Hormone Regulation and Disruption During Neurodevelopment	Symposium
The Microbiome in Toxicity and Disease: A Yin and Yang Duality for the Host Throughout the Lifespan	Symposium
Role and mechanisms of persistent epigenetic alterations in toxicological responses	Symposium
Technological Advancements and Strategic Approaches in Developmental and Reproductive Toxicity Assessments	Workshop
Human Neural Tube Defects: basic embryology to predictive toxicology	Workshop
RDTS Secondary Endorsement	
Developmental origins of inflammatory and immune diseases: identifying the effects of in utero stress on immunological competency	Symposium

Cadmium and the Developmental Origins of Disease: The Implication of Early Life Exposures on Health Later in Life	Symposium
Current Status and Future Outlook on Developmental Immunotoxicity Testing	Workshop

President's Report

The 2022 SOT Annual Meeting was held in person in San Diego, CA, with an option for remote attendance at scientific sessions and posters. The RDTSS reception was held onsite during the meeting in San Diego and was hosted as a networking and gathering event without the business meeting component. A webinar-style virtual business meeting was held following the annual meeting to accommodate the option for all RDTSS members to attend. The awards were announced virtually through the webinar and recognized. Officers who finished their terms in 2022 and new officers were recognized virtually and will also be thanked at the in person 2023 RDTSS reception. Award checks, plaques and certificates were mailed to recipients following the webinar business meeting.

The RDTSS received 13 applicants (3 postdoc, 10 graduate students) for the Ed Carney Trainee Award. All applications were reviewed by the review committee which was a joint effort between RDTSS and the Society for Birth Defects Research and Prevention (BDRP). Judges included: Bethany Hannas (2021-22 RDTSS President), Reza Rasoulpour (2021-22 RDTSS Past President), Caren Villano (2021-22 RDTSS Vice President), Sue Makris (2021-2022 BDRP President), Kembra Howdeshell (2021-22 BDRP Awards Committee Chair), and Melissa Beck (2021-22 BDRP Student Affairs Committee Chair). Two awardees were identified and notified in December 2021 of the award to support their travel to the 2022 SOT meeting in San Diego. The Ed Carney Trainee Award plaques and checks were picked up in person in San Diego by the awardees from the 2022 cycle and from the deferred 2020 award cycle. The awardees were also announced and recognized during the 2022 virtual business meeting. The 2022 awardees were:

- First Place; \$1000: Cassandra Meakin, Postdoctoral Fellow, Rutgers University
- Second Place; \$750: Kendall Langsten, Postdoctoral Fellow, Wake Forest School of Medicine

Vice President's Report

Dr. Villano created and led the RDTSS Program Committee which generated proposal ideas and reviewed submissions for the SOT 2022 program. This committee was comprised of RDTSS officers and additional volunteers. Dr. Villano coordinated receipt and pre-review of the proposals and these activities resulted in the request for endorsement of 1 CE Course, 2 Symposia, and 1 Workshop provided by SOT HQ, along with the instructions for providing scoring and comments.

The members of the RDTSS Program Committee then emailed Dr. Villano their scores and comments. Individual comments were consolidated for each proposal. Dr. Villano entered the final scores and comments on the SOT proposal ranking website.

2022 SOT Annual Meeting Courses/Sessions:

Among the proposals submitted for endorsement for 2022 SOT program, all were tentatively accepted into program as of July 2021. Sessions submitted from RDTSS are listed in the following table:

Title	Format
RDTSS Primary Endorsement	
Non-Traditional In Vivo Animal Models in Developmental, Reproductive, and Juvenile Toxicology	Continuing Education
Tackling the Challenge of Assessing Human Relevant Thyroid Disruption	Symposium
Placenta as a Target of Environmental Exposures: From Bench to Bedside	Symposium
Placental Biology, Toxicology, and <i>In Vitro</i> Modeling for Predictive Developmental Toxicology	Workshop

Dr. Villano also coordinated the New Career Scientist Award sponsored by Covance. The award recognizes an active, regular member of the RDTSS for outstanding research and scientific contribution completed since graduate and/or postdoctoral training. The criteria for the award are originality, discovery, and excellence in the field of Reproductive and Developmental Toxicology as evidenced by peer-reviewed manuscripts in journals of high caliber, teaching, mentorship, contributions to regulatory DART practice/guidelines, and/or other commensurate evidence of expertise in the field. Individuals working in academia, government, and industry will be equally eligible to compete for this award. Candidates must be no more than ten years from the date of their last formal training.

A sub-committee to judge applicants consisted of:

Dr. Sarah Campion, Pfizer

Dr. Kary Thompson, Janssen

Dr. Bethany Hannas, Eli Lilly

Dr. AtLee Watson, Inotiv

Three applicants were considered, and the 2022 award was present to Dr. Shuo Xiao, Rutgers University.

Vice President-Elect's Report:

Dr. Campion coordinated the Student/Postdoctoral Fellow Poster Awards. This award recognizes undergraduate and graduate student members of SOT with exceptional poster presentations based on original work that is significant to the field of reproductive toxicology. The criteria for the award include overall poster appearance, quality of content, as well as presentation skills.

A sub-committee of judges was created, consisting of:

Dr. Sarah Campion, Pfizer

Dr. Caren Villano, Boehringer Ingelheim

Dr. Daniel Spade, Brown University

Dr. Pallavi McElroy, Janssen Pharmaceuticals

Dr. Shuo Xiao, Rutgers University

Dr. Natasha Catlin, Pfizer

Dr. Bethany Hannas, Eli Lilly

Dr. Vicki Sutherland, NIEHS-NTP

Dr. Chris Bowman, Pfizer

This year, 8 postdoc and 15 student applicants' posters were considered and the 2022 awardees were:

Graduate Student Awardees

1st place: Amy Tran, University of Southern California

Characterizing the Effects of Early Postnatal Acetaminophen and Ibuprofen Administration on Immediate and Long-Term Male Reproductive Development

2nd place: Alex Haimbaugh, Wayne State University

Insight into TCDD-Induced Disruption of Zebrafish Spermatogenesis via Single Cell RNA-Seq

3rd place: Madeline Tompach, University of Massachusetts Amherst

Examining PFOS-Induced Dyslipidemia and Use of Alpha Lipoic Acid (ALA) as a Potential Mitigation Strategy in Zebrafish (Danio rerio)

Postdoctoral Fellow Awardees

1st place: Jing Zheng, University of Calgary

Gestational Low Dose Bisphenol A Exposure Disrupts the Sexually Dimorphic Development of Vasopressinergic System in Mice

2nd place: Michelle Kossack, Brown University

Identifying the Cellular and Molecular Targets of 2,3,7,8-Tetrachlorodibenzo-p-dioxin-Induced Infertility in Female Zebrafish

3rd place: Lauren Walker, Rutgers University

Human Placental Macrophage Responses to Cadmium Exposure

Senior Councilor's Report:

Dr. Dere coordinated the best paper award process which evaluated papers published in print during 2021 in Toxicological Sciences. To be considered for the award, a paper must:

- Have at least one member of RDTSS as an author
- Be in a subject relevant to the specialty section
- Be a primary research publication (review articles were not considered)

Dr. Dere queried the 2021 membership roster by name and affiliation on the Toxicological Sciences Table of Contents website. Twenty-one manuscripts in the areas of Reproductive or Developmental Toxicology appeared in Toxicological Sciences in 2021, and thirteen manuscripts by RDTSS members were eligible for the award.

Fifteen RDTSS Members made up the judging committee. Any conflicts were addressed, and papers were randomly distributed. Each paper was reviewed by at least 2 individual judges. Each judge reviewed up to 3 papers each.

The judging committee members were:

- | | | |
|--------------------------|---------------------------|--------------------|
| • Enrica Bianchi* | • Aileen Keating* | • Caitlin Murphy |
| • Justin Conley | • Susan Laffan | • Jessica Plavicki |
| • Jodi Flaws* | • Chris Lau* | • Vicki Sutherland |
| • Alan Hoberman | • Barry MacIntyre* | • Kary Thompson |
| • Natalie Johnson | • Jeff Moffit* | • Pei-Lei Yao |

*Second round judging members

Manuscripts were judged on the following 4 criteria, each on a scale of 1 to 10:

- Originality (Novelty/Innovation)
- Scientific Quality (Experimental Approach)
- Relevance to the field
- Contribution/Significance to the field

Three (3) individual scores for each manuscript were averaged, and totals were calculated for each manuscript. The top 4 manuscripts from Round 1 were identified and were redistributed to 6 judges. Same criteria were applied, and scores were averaged and ranked. The manuscript with the highest number of Rank 1 scores in Round 2 was selected as the winner, with the same criteria being used for second and third place winners.

Third Place:

Yan, H., and **Hales, B. F.** (2021). Effects of an Environmentally Relevant Mixture of Organophosphate Esters Derived From House Dust on Endochondral Ossification in Murine Limb Bud Cultures. *Toxicol Sci* **180**(1), 62-75.

Second Place:

Land, K. L., Lane, M. E., Fugate, A. C., and **Hannon, P. R.** (2021). Ovulation is Inhibited by an Environmentally Relevant Phthalate Mixture in Mouse Antral Follicles In Vitro. *Toxicol Sci* **179**(2), 195-205.

First Place:

Gillette, R., Tiwary, R., Voss, J., Hewage, S. N., and **Richburg, J. H.** (2021). Peritubular Macrophages Are Recruited to the Testis of Peripubertal Rats After Mono-(2-Ethylhexyl) Phthalate Exposure and Is Associated With Increases in the Numbers of Spermatogonia. *Toxicol Sci* **182**(2), 288-296.

Junior Councilor's Report:

Dr. Watson coordinated nominations for the Lifetime Scientific Achievement Award from the RDTSS membership. RDTSS member for lifetime achievement or for the contribution of a particularly influential body of work to the field of reproductive and developmental toxicology.

The awardee is selected from among membership nominations by a committee formed by the RDTSS Executive Committee. Nominations included a short narrative or list of the accomplishments upon which the nomination was based, a CV, and letter(s) of support. The Scientific Achievement Award winner was selected based on lifetime achievement or for the contribution of a particularly influential body of work in the field of reproductive and developmental toxicology, contributions to the RDTSS and SOT (Leadership/Service), and role in mentoring new scientists. Nomination packages were reviewed by a 6-member RDTSS Sub-committee for overall ranking and selection of the awardee and presented for final approval to the RDTSS Executive Committee.

2022 Award Recipient - Dr. John Rogers, ToxStrategies

The members of the 2022 Achievement Award Sub-committee were:

- Dr. Reza Rasoulpour (Corteva Agriscience)
- Dr. Sarah Campion (Pfizer)
- Dr. Vicki Sutherland (NIEHS/NTP)
- Dr. Kary Thompson (Janssen Pharmaceuticals)
- Dr. Bethany Hannas (Corteva Agriscience)
- Dr. Caren Villano (Boehringer Ingelheim)

New Career Councilor's Report:

Dr. Spade coordinated nominations for the Inotiv Stephen B. Harris Mid-Career Scientist Award from the RDTSS membership to recognize an active regular member of the RDTSS for outstanding research and scientific contributions. The award stipulates that candidates be between at least ten years and no more than twenty years from the date of their last formal training (including post-doctoral experience). Packages for two total nominees were submitted in the current year or prior years, within the three-year window during which applications will be considered for the award. The two eligible applications were reviewed by a 6-member committee, consisting of the RDTSS New Career Councilor (Spade), a representative from Inotiv (Murphy), and four other members chosen from the RDTSS membership, including the prior three award winners.

The members of the 2022 Stephen B. Harris Mid-Career Award Sub-committee were:

- Chris Bowman (Pfizer)
- Kembra Howdeshell (NIEHS)
- Aileen Keating (Iowa State University)
- Caitlin Murphy (Inotiv)
- Daniel Spade (Brown University)
- Kary Thompson (Janssen)

The overall rankings and selection of the awardee were presented to the RDTSS Executive Committee. The award winner was presented with a plaque and check.

Award winner: Dr. Heather Patisaul (North Carolina State University)

Secretary/Treasurer's Report:

Membership increased slightly from last year but remained consistent with historical trends.

Membership Type	July 2019	July 2020	July 2021	July 2022
Full	250	237	249	235
Associate	24	28	24	32
Emeritus/Retired	1	3	3	7
Student	51	56	58	47
Postdoctoral fellow	40	29	29	22
Total	366	353	363	343

A summary of RDTSS finances as of Apr 30, 2022.

RDTSS Funds 70-854-0	Jun 30, 2020	June 30, 2021	May 31, 2021
Income			

Contributions	\$6,500	\$9,700	\$7,700
Membership Dues	\$5,880	\$6,085	*Pending
Interest	\$1,385	\$1,903	*Pending
Expense			
Awards	\$2,500	\$7000	\$8,350
Plaques	\$211	\$285	\$338
Contributions	\$175	\$0	\$0
Miscellaneous	\$0	\$32	\$271
Reception	\$0	\$0	\$9,496
Revenue Over Expenses	\$10,879	\$10,371	(\$10,754)
Net Assets Beginning of Year	\$18,214	\$29,593	\$39,964
Net Assets End of Year	\$29,093	\$39,964	\$29,209

* Income from Membership Dues and Interest is expected by End of Financial Year 2022 (Jun 2023).

Summary of RDTSS Endowment Fund (Edward Carney Trainee Award Fund) as of **March 31, 2022**.

Endowment Fund 85-039-1	Jun 30, 2020	June 30, 2021	Mar 31, 2022
Income			
Contributions	\$1000	\$750	\$750
Employer Matching Funds	-	-	-
SOT Matching Funds	-	-	-
Gain (Loss) on Investments			
Interest and Dividends	\$2,792	\$4,960	\$4,703
Gain/(Loss)	(\$1,136)	\$20,305	(\$4,703)
Expense			
Awards	\$1000	-	\$3,500
Revenue Over Expenses	\$1,657	\$26,015	(\$2,750)
Transfers between Funds	\$21	-	-
Net Assets Beginning of Year	\$98,402	\$100,079	\$126,095
Net Assets End of Year	\$100,079	\$126,095	\$123,345

Student/Postdoc Report

There are no significant or outstanding information for this section in 2021.