

CARCINOGENESIS

Specialty Section | Society of Toxicology | Founded 1986

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Letter from the President

The observation that chemicals can cause cancer has been documented since mid 18th century and studying this phenomenon has always been at the forefront of toxicology. Thus, it is not surprising that Carcinogenesis Specialty Section (CSS) was one of the first Specialty Sections organized within SOT and continues to be an important component. I am excited to be leading this group for one year from 2019-2020. I have been part of CSS as a graduate student, as a postdoctoral fellow and as a junior faculty. I have seen myself grow within CSS and I am sure this absolutely amazing group of scientists will continue to inspire other young scientists. We have an ambitious agenda for this year which includes reviving old traditions such as this newsletter and starting some new such as initiating a regular webinar series. Earlier in the summer, we were trusted to host the newly formed James A. Swenberg Endowment, which will provide awards for outstanding junior faculty. As you know there are several student awards in SOT but this will be the first and unique award given only by CSS. We are excited to grow this endowment and setup the award as we go into the awards season. A major challenge in front of us is to attract new members to



our specialty section and also to re-engage our existing membership to invigorate our meetings. To that end, we have made some changes in by laws which will allow us to elect the trainee representative on our executive council, who will further help in engaging new students and postdoctoral fellows. These efforts will not be successful without support and active participation from all of you, which I am sure I will have. If you have ideas to spruce up our annual reception, increase member engagement, please feel free to reach out to the executive council members. I am looking forward to the years activities and staying in touch with you. Have a great Fall season everybody!!!

Udayan Apte, PhD, DABT
President of CSS



Officer Introduction

President

Udayan Apte, PhD, DABT

Associate Professor

University of Kansas Medical Center

Dr. Apte received his doctorate from the University of Louisiana at Monroe in 2003. He completed postdoctoral appointments at Texas A&M University from 2003 to 2004, as well as the University of Pittsburgh from 2004 to 2008. His research interests include understanding mechanisms of liver cancer pathogenesis, liver regeneration, and persistent organic pollutant-induced chemical carcinogenesis.

How did you first get interested in toxicology?

While working on my masters degree in Zoology my project was looking at curative effect of Indian Ayurvedic medicines on liver fibrosis. We used a Carbon Tetrachloride-induced liver fibrosis model for this. I got super interested in finding out why Carbon Tetrachloride induced liver fibrosis rather than how to cure it. Since then, I am obsessed with how and why chemicals injure the liver. An interesting paper I've read this year is "Hepatocyte-Specific β -Catenin Deletion During Severe Liver Injury Provokes Cholangiocytes to Differentiate Into Hepatocytes" by Russell et al in Hepatology.

Vice President

Zemin Wang, MD, PhD, DABT

Toxicologist

US Food and Drug Administration

Dr. Wang serves as toxicology subject matter expert in an advisory capacity for both regulatory and research projects and conducts research in supporting safety assessment of cosmetic ingredients regarding their human health risks, in particular cancers, within the FDA Cosmetics Division. Prior



to joining FDA in November 2017, he was a research scientist at Indiana University studying the modes of action of chemical induced tumors in rodents and their relevance to human health risks. Dr. Wang received his medical training and master's degree in Pathology from China. He obtained his doctorate in Environmental Toxicology from Texas Tech University in 2007, and subsequently worked as postdoc fellow in chemical carcinogenesis at Indiana University School of Medicine, and cancer genetics and genomics at LSUHSC. Dr. Wang holds American Board of Toxicology certification since 2013 and has been a member of SOT since 2004. He authored over 45 peer reviewed articles in cancer and toxicology journals, 3 book chapters, and over 50 conference presentations. He has served SOT in a number of other capacities including vice president elect, councilor/chair of

SOT CSS

award committee for CSS, award committee for RASS, councilor/secretary for AACT-SIG and chair of the AACT award committee.

How did you first get interested in toxicology?

When I was at medical school studying pathology, which evaluates changes produced in cells, tissues and organs, I developed a strong interest in understanding the mechanisms by which hazardous substances cause harm to human health and this led me further study and career in toxicology. An interesting paper I've read this year is "Carcinogenicity assessment: Addressing the challenges of cancer and chemicals in the environment" by Madia et al in Environment International.

Vice President Elect

Chris Corton, PhD

Senior Research Biologist

US Environmental Protection Agency

Dr. Corton works in the Center for Computational Toxicology and Exposure in the Office of Research and Development of the US EPA. He received his doctorate in Biochemistry from the University of Kansas Medical Center, followed by a post-doctoral research fellowship at Duke University. From 1989 to 2002, he was a staff scientist at CIIT in Research Triangle Park. He was a visiting scientist in the "Orphan Nuclear Receptor" group at Karolinska University, in Huddinge, Sweden from 1994 to 1995. He is on the editorial boards of 6 journals including as the Associate Editor for Toxicological Sciences and has been a reviewer and/or chair on over 30 peer review committees for NIH/NIEHS grants. Dr. Corton has been an active member of SOT since 1992, serving as Chair of the Continuing Education and Current Concepts in Toxicology Committees, in addition to past President of the Molecular Biology Specialty Section. He was the recipient of the SOT 2010 AstraZeneca Traveling Lectureship award. He has organized and co-chaired numerous symposia, roundtables, and CE courses held at SOT meetings. He has studied chemical carcinogenesis for almost 30 years focusing on the use of toxicogenomics to determine mechanisms of nongenotoxic carcinogens. Lately, his group has developed methods for the prediction of cancer using gene expression profiling after short-term exposures.



How did you first get interested in toxicology?

To be honest, initially I was more interested in trying to figure out how transcription factors recognize specific DNA sequences than I was in toxicology! I was in a postdoctoral fellowship in yeast molecular biology at Duke University when I was hired by the Chemical Industry Institute of Toxicology (CIIT) to set up yeast models for

dissecting the dioxin receptor pathway. At the time, I had little formal toxicology training. Joining CIIT was eye opening, and I will be forever grateful to the scientific staff who guided me to become a toxicologist. An interesting paper I've read this year is "Cross-species comparison of CAR-mediated procarcinogenic key events in a 3D liver microtissue model" by Plummer et al in Toxicology Reports. The group found that the rat, but not human, hepatocyte-nonparenchymal cultured microtissues have a proliferative response to phenobarbital, although both species exhibited expected increases in xenobiotic metabolizing genes. Use of the organotypic models in conjunction with genomics approaches will increasingly be used to prioritize chemicals for further testing and help to reduce reliance on the 2-year bioassay.

Secretary/Treasurer

Jamie Bernard, PhD

Assistant Professor

Michigan State University

Dr. Bernard joined the Department of Pharmacology and Toxicology at MSU in March 2015 after receiving her doctorate in Toxicology at the University of Rochester and completing postdoctoral fellowships at the University of California San Diego and Rutgers University. The Bernard Laboratory studies mechanisms of early-stage carcinogenesis, caused by extrinsic risk factors such as diet, obesity and environmental exposures. Her laboratory discovered that dysfunctional visceral adipose tissue (adipose tissue from obese humans or high-fat diet-fed mice) releases a growth factor, which stimulates the malignant transformation of non-tumorigenic, albeit, vulnerable cells. She recent received the New Investigator Award from the American Society of Pharmacology and Experimental Therapeutics, recognizing excellent original research by early career investigators. In 2018 she received the Jean P. Schultz Endowed Biomedical Research award, for her work on breast cancer prevention. Dr. Bernard is highly involved in service to SOT and is a member of the American Association for Cancer Research, and the Society of Investigative Dermatology. She is also involved in directing and teaching the Dermatology intercession in the College of Human Medicine at MSU.



How did you first get interested in toxicology?

I was interested in learning about normal human biology and disease from an interdisciplinary perspective. I wanted to understand the applied nature of risk benefit analysis. The understanding of toxicology provides a valuable perspective on exposures and human health. An interesting paper I've read this year is "Lipid-Associated

Councilor

Chad Brocker, PhD

Toxicologist

US Food and Drug Administration

I'm originally from Kansas City and moved to Colorado to attend Colorado College as an undergraduate. I graduated with a bachelor's degree in Biochemistry and joined the Toxicology graduate program at the University of Colorado in 2006. My graduate advisor was Dr. Vasilis



Vasiliou and my primary research project focused on the protective role of aldehyde dehydrogenases during oxidative stress. I received my Ph.D. in 2012 and moved to Bethesda, MD to work under Dr. Frank Gonzalez at the National Cancer Institute (NCI) at the National Institutes of Health (NIH). In Dr. Gonzalez's laboratory, my work focused on how hepatic nuclear receptors influence metabolism and contribute to liver cancer progression. I left NCI in 2018 to work as a Toxicologist in the Office of Science at the Center for Tobacco Products at the U.S. Food and Drug Administration (FDA).

How did you first get interested in toxicology?

While working as a research assistant in a basic sciences laboratory after receiving my undergraduate degree, toxicology sat right at the interface of basic sciences, public health, and clinical science. At the time, I wasn't sure exactly which direction to go with my career and felt a degree in toxicology would allow me to pursue my interest in mechanistic science while also providing a lot of options for future careers (... academia, industry, government). An interesting paper I've read this year is "Up-regulation of FOXO1 and reduced inflammation by β -hydroxybutyric acid are essential diet restriction benefits against liver injury."

Councilor

James Kim, PhD

Associate Vice President

American Cleaning Institute

Dr. Kim graduated with a doctorate in 2001 from the Johns Hopkins School of Hygiene and Public Health, Department of Environmental Health Sciences, Division of Toxicological Sciences. His advisor was Thomas Sutter and he worked on the expression and metabolic activity of



human cytochromes P450 of the 1 family (1A1, 1A2, and 1B1). He then spent 7 years working as a consultant for Sciences International and 5 years at the Health and Environmental Sciences Institute managing committees on Developmental and Reproductive Toxicology, Genetic Toxicology, and DNA Adducts. Dr. Kim went on to work as a Toxicologist in the Office of Information and Regulatory Affairs at the Office of Management and Budget, located within the Executive Office of the President in 2012. In 2018, he began working in Science and Regulatory Affairs for the ACI, a trade association for the cleaning products industry, on the safety and efficacy testing of active ingredients in hand sanitizers and soaps.

How did you first get interested in toxicology?

During the summers of my undergraduate education at Johns Hopkins University, I worked for Juan Troncoso in the School of Medicine's Neuropathology Department, on understanding free radical mechanisms underlying Alzheimer's Disease. A collaboration with Michael Trush of the School of Hygiene and Public Health, changed my research focus to immunotoxicology.

Postdoc Representative

Rance Nault, MS, PhD

Research Associate

Michigan State University

Dr. Nault's research efforts have focused on the role of environmental contaminants and food contaminants on liver metabolism and toxicity by leveraging novel high-throughput techniques and the availability of high-performance computing resources. He completed a master's in



Physiology and Toxicology at the University of Ottawa, examining the energetic costs of AhR activation in rainbow trout primary hepatocytes. This was followed by pursuing a doctorate in Biochemistry and Molecular Biology and Toxicology and Integrative Toxicology at Michigan State University, leveraging high-throughput and computational techniques to further understanding of AhR-mediated disruption of hepatic metabolism in mammalian models. As a postdoctoral researcher, he is exploring how these technologies can be used to better inform formal regulatory decisions using the recently identified ubiquitous food contaminant and rat liver carcinogen acetamide.

How did you first get interested in toxicology?

I was first exposed to the field of toxicology as part of an undergraduate research program where I had the opportunity to join a lab which explored the impact of environmental contaminants on fish metabolism. Gaining an understanding on the role that anthropogenic chemicals can perturb normal physiology of organisms, and how this can be used to better understand aspects of biology fascinated me and led me to pursue graduate research in toxicology.

As part of my graduate work I was increasingly exposed to emerging 'omic' technologies such as transcriptomics and metabolomics and how these can be used to tackle some of the biggest challenges in toxicology such as the imbalance between traditional bioassays and the vast number of novel compounds continuously identified or developed. Consequently, I pursued a research career in the field of toxicogenomics to help push the field forward in hopes that we can improve how risk assessment can be accomplished. An interesting paper I've read this year is "Landscape of Intercellular Crosstalk in Healthy and NASH Liver Revealed by Single-Cell Secretome Gene Analysis" by Xiong et al in Mol Cell.

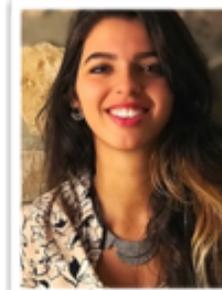
Student Representative

Luma Melo, MS

PhD Student

Indiana University

Ms. Melo is currently pursuing her doctorate in the Environmental Health Department at Indiana University. Her research interests include carcinogenesis and exercise oncology.



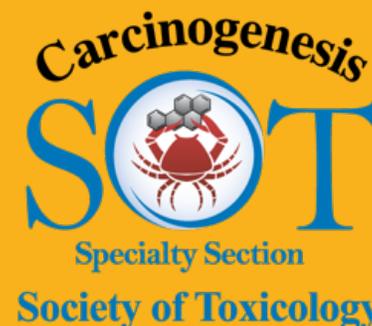
After doing my masters in biophysics, I wanted to pursue an area that had industry and academia well connected, and toxicology is a fascinating area with this two worlds together. An interesting paper I've read this year is "Modeling of xenobiotic transport and metabolism in virtual hepatic lobule models" by Fu et al in PLoS one.

Click [here](#) for info on how to apply for the following awards by **November 22:**

Dharm V. Singh Carcinogenesis Graduate Student Endowment Award

Postdoctoral Fellowship and Young Investigator Award

Environmental Carcinogenesis Travel Award



2019 SOT 58th Annual Meeting Highlights

Successfully endorsed proposals by CSS

Workshop Session: *A Herculean Switch? Rethinking Chemical Carcinogenicity Assessment*

Monday, March 11, 1:45 PM to 4:30 PM, CC Room 314

Chairpersons:

Sabitha **Papineni**, Corteva Agriscience, Indianapolis IN
Amy **Clippinger**, PETA International Science Consortium Ltd, Norfolk VA

Primary Endorser: Risk Assessment Specialty Section

Other Endorser: **Carcinogenesis Specialty Section**

Symposium Session: *Progress toward Charting the Course for Improving Carcinogenicity*

Wednesday, March 13, 8:00 AM to 10:45 AM, CC Ballroom I
Assessments of Human Pharmaceuticals and Pesticides

Chairpersons:

Jan Willem **van der Laan**, Medicines Evaluation Board, Utrecht, Netherlands
Frank D. **Sistare**, Merck & Co, Kenilworth NJ

Primary Endorser: **Carcinogenesis Specialty Section**

Other Endorser: Regulatory and Safety Evaluation Specialty Section

Symposium Session: *New Mechanistic Insights into Causes and Outcomes of Epigenetic Dysregulation by Carcinogenic Metals*

Thursday, March 14, 8:30 AM to 11:15 AM, CC Ballroom III

Chairpersons:

Chunyuan **Jin**, New York University School of Medicine
J. Christopher **States**, University of Louisville, KY

Primary Endorser: Metals Specialty Section

Other Endorsers: **Carcinogenesis Specialty Section** & Mechanisms Specialty Section

Treasury Report

The CSS will enter 2020 with a balance of \$6,142. We have 250 members with 70 members that have yet to renew since 2018. Please encourage your friends and colleagues to either join or renew their membership. For 2019-2020, the Dharm V. Singh Student award endowment fund has \$1,927 that is to be disbursed. The Environmental Carcinogenesis Research Fellowship Award Endowment Fund is in spend down mode and at least \$1,000 of the balance will be spent annually until the funds are exhausted, with a target closure of 2027. This fund will provide awards for research that integrates emerging science into studies focused on mechanisms of susceptibility to, and prevention of, carcinogenesis.

Dharm Singh Carcinogenesis
Endowment Graduate Student
Award Fund
2018 Net Assets: **\$43,772**
2019 Net Assets: **\$48,164**
Environmental Carcinogenesis
Research Endowment
Fellowship Fund
2018 Net Assets: **\$7,994**
2019 Net Assets: **\$8,293**



Click [here](#) to contact us and receive more information about a career in toxicology and carcinogenesis!

Click [here](#) to join the SOT Carcinogenesis Specialty Section!

If you are interested in volunteering or submitting a news worthy item for the next newsletter, please contact the CSS at chad.brocker@fda.hhs.gov

CSS Award Recipients

Dharm V. Singh Carcinogenesis Endowment Graduate Student Award

First Place

Keshav Karki

Texas A&M University

Abstract: "Nuclear Receptor 4A2 (NR4A2) as a Drug Target for Treating Glioblastoma"

Recently, I have been investigating the immune suppressive function of programmed death ligand-1 (PD-L1) and development of small molecules that can target PD-L1 in breast cancer. PD-L1 in cancer cells bind with PD-1 in immune cells and thereby escapes T-cell mediated immunosurveillance. In breast cancer patients, the overall survival rate decreased with increased tumor expression of PD-L1 suggesting PD-L1 as a negative prognostic factor. Blocking PD-L1/PD-1 interactions with PD-1 monoclonal antibodies has shown promising clinical responses in some patients. Despite the remarkable success of immunotherapies, there are still concerns with respect to the numbers of patients that do not respond, the duration of the responses, the developments of immunotherapy resistance, and toxicities associated with immune checkpoint inhibitors. Our laboratory has been extensively investigating the pro-oncogenic role of NR4A1 in cancer and bis-indole- derived NR4A1 ligands that acts as NR4A1 antagonists and exhibit anti-cancer properties in cancer cells. A role for NR4A1 in regulating PD-L1 expression was initially investigated by treating cancer cell lines with the NR4A1 antagonist DIM-C-pPhOH (CDIM8) and CDIM 8 buttressed analog 3-chloro-5-methoxy substituents (CLOCH3). The PD-L1 gene promoter contains a proximal GC-rich site, and it was reported that Sp1 regulated expression of this gene. Since NR4A1 regulates expression of multiple Sp-regulated genes, we initially used RNA interference to knockdown Sp1 and NR4A1 in human MDA-MB-231 and mouse mammary tumor 4T1 cells and the results shows that both knockdown decreased PD-L1 expression. The interaction of NR4A1/Sp1 on the GC-rich site of PD-L1 promoter was confirmed using ChIP analysis; treatment with CDIM8 and CLOCH3 inhibits the interaction of NR4A1/Sp1 and also inhibits transcription of PD-L1 in MDA-MB-231 and 4T1 cells. These drugs also decreased the transactivation of PD-L1 in both cancer cells transfected with pGL3/PD-L1 promoter. This led to the hypothesis that bis-indole derived NR4A1/Sp1 ligand CDIM 8 and CLOCH3 inhibit PD-L1 in breast cancer. CLOCH3 decreased the primary tumor burden in BALB/c mice injected with mouse mammary tumor 4T1-luc cells in mammary fat pad region, increased T_{eff}/T_{reg} ratio and also inhibits the metastasis of luciferase tagged 4T1 cells.

NR4A1 is overexpressed in colon, pancreatic, breast and rhabdomyosarcoma and high expression of NR4A1 is a negative prognostic factor. Our laboratory has been extensively investigating the functional role of NR4A1 in breast cancer, lung cancer and rhabdomyosarcoma either by knockdown or overexpression. NR4A1 regulates cancer cell proliferation, survival, cell cycle progression, migration and invasion in lung, melanoma, lymphoma, colon, cervical, rhabdomyosarcoma and gastric cancer cell lines. Our laboratory has recently published an article demonstrating NR4A1 antagonists CDIM8 and CLOCH3 inhibits breast cancer by inhibiting several NR4A1 regulated cancer cell proliferation, survival, cell cycle progression genes.

My career goal is to work in a laboratory environment focused on drug discovery and development in cancer. It is a huge motivation for my research and scientific career.



First Place

Sumira Phatak

Utah State University

Abstract: "Impact of Thermally Abused Oil on Gut Inflammation, Colon Tumorigenesis, and Hepatic Gene Expression in Mice Fed a Standard Diet or the Total Western Diet"

Having earned my bachelor's degree with great honors from Northeastern Illinois University, I am currently a doctoral candidate in toxicology at Utah State University. My lifelong interests include understanding how nutrient-gene interactions influence diseases of Westernized society, and identifying favorable dietary intervention strategies. The overall objective of my dissertation is to determine how exposure to the Western dietary pattern across multiple generations impacts colorectal cancer (CRC) outcome, epigenome programming, and gut microbiome composition. Immediately after arriving at USU, I began a multigenerational preclinical project, investigating the influence of dietary intake across generations on CRC.

Growing up an athlete, I have practiced a healthy lifestyle for as long as I can remember. As an avid outdoor enthusiast and self-taught chef, eating and living healthfully are my easily my favorite pastimes. I thoroughly enjoy taking others out into nature for the first time, whether it be hiking, skiing, or kayaking; sharing my love of the great outdoors is very fulfilling, as is serving an exotic, gourmet dish or teaching others how to cook. Although inspiring others to share my lifelong hobbies is rewarding, ambition motivates me to push further.

My long-term career goal is to attain a tenured faculty position at a major research university, answering essential questions about how diet influences disease states, while optimizing lifestyle intervention strategies. As a young scientist in training with novel ideas and great motivation, I am enthusiastic about making my own mark on the world. Ultimately, I see myself running my own research program and anticipate many challenges will need to be addressed in establishing an ideal platform for training the next generation of young researchers. I am honored to be selected for such a prestigious award that greatly facilitates my attendance at the upcoming SOT meeting. My long-term career goal is to attain a faculty position at a major research university, optimizing lifestyle intervention strategies that influence cancer outcome. Recognition by experts in my field is humbling and reignites my motivation to continue working hard towards accomplishing my career goals.



Second Place

Sreedhar Suthe, BPharm

Texas Tech University

Abstract: "RON Receptor-Targeted Antibody-Drug Conjugate Therapy Eliminates Cancer Stem-Like Cells and Induces Long-Term Tumor Regressions in Preclinical Models of Triple-Negative Breast Cancer (TNBC)"



Third Place

Sharavan Ramachandran, BS, MS

Texas Tech University

Abstract: "Pimavanserin Tartrate, a Novel Anti-Parkinson Drug Suppresses Pancreatic Tumor Growth by Inhibiting Akt/Gli-1 Signaling Axis"



Postdoctoral Fellowship and Young Investigator Award

Rance Nault, Michigan State University

Abstract: "Application of Toxicogenomics for the Risk Assessment of the Food Contaminant Acetamide"

My postdoctoral research applies high-throughput 'omic' technologies to improve our understanding of toxicant mechanisms and help define dose-dependent responses for application in risk assessment. Specifically, I have been exploring how the persistent environmental contaminant 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) and the food contaminant acetamide perturb liver metabolism and contribute to hepatotoxicity including non-alcoholic fatty liver disease and hepatocellular carcinoma.

I chose this area of research as it was becoming increasingly evident that technologies such as transcriptomics and metabolomics would have a significant impact on how research is accomplished and the vast amounts of information that could be gained from individual experiments. Prior to entering this area of research I had already been working in liver toxicology examining the disruption of energy metabolism using individual assays to determine metabolite, protein, and gene levels. Looking to employ some computational modeling to gain further insight into metabolic disruption it was clear that these could be improved by including more experimental endpoints. Therefore, I entered the toxicogenomics field in the hopes that I can make significant contributions that will ultimately help us better protect environmental and human health.

I hope to pursue a career in toxicology as a principal investigator at an academic institution where I can continue to use emerging technologies and computational tools for answer critical questions in drug and chemical mode of action and safety. Receiving this award indicated to me that the field of toxicology is motivated to examine how new technologies can be used to further our understanding of chemical carcinogenesis. It demonstrates that experts in the field can see some of the challenges that we may face with the large numbers of chemicals that are continuously identified or developed, and that toxicogenomics could be an important tool to help tackle it.



James A. Swenberg Carcinogenesis Merit Award Fund

CSS is excited to announce a new endowment fund and award established to encourage junior faculty members to conduct mechanistic research in the field of carcinogenesis. Aptly named, Professor Swenberg had a distinguished career in toxicology and made seminal contributions to the field of biomarkers of DNA damage and understanding of how environmental agents may cause cancer through genotoxic mechanisms. He has been a very active member of the Society of Toxicology since 1979, serving as CSS President from 1989 to 1990. His career included appointments at the Chemical Industry Institute of

Toxicology and as the Director of the Center for Environmental Health and Susceptibility at the University of North Carolina at Chapel Hill. Dr. Swenberg has had an immensely positive impact on the careers of numerous mentees, including students, postdoctoral fellows, junior staff, and colleagues.

This fund will provide an opportunity for the CSS community to return Dr. Swenberg's investment in the future of carcinogenesis mechanism research by encouraging junior faculty members. CSS will begin accepting applications for this award in the fall of 2020 and inaugural awards will be presented at SOT 2021 in Orlando, Florida.

Additional award information will be added to the CSS website in the upcoming months.

Please consider making a donation to help initiate this fund. SOT has matching funds available but they are limited so... **the sooner you donate, the better!**

1. start by clicking [here](#)
2. select the "donate" button
3. **log in** to the SOT site
4. select the "James A. Swenberg Carcinogenesis Merit Award Fund"
5. select the "continue" button at bottom of page
6. **Enter a large monetary amount and proceed to check out!**

Carcinogenesis 2019 Reception

Tuesday, March 12, 2019 in Hilton Baltimore Key 9



Approximately 50 people were in attendance. Dr. Fennell called the meeting to order at 6:45 PM, and welcomed members and guests, and introduced the officers. In the absence of Dr. Bernard (Secretary Treasurer), Dr. Fennell presented the Treasurers report. Dr. Brocker announced the graduate and postdoctoral awards. Dr. Fennell thanked Dr. Wang for his service as councilor and in his new role as Vice President. Dr. Fennell then turned the meeting over to the incoming President Dr. Apte, who in turn thanked Dr. Fennell for his service. Dr. Apte thanked the assembled group for attending. He requested that the audience participate actively in the activities of the Specialty section, by volunteering as officers, and by contributing proposals for symposia, roundtables and workshops. Under discussion of business, there was an introduction of the candidates for Vice President and Councilor, and that the election for these offices was ongoing, and would be announced several weeks following the meeting. There was discussion of the numbers of members, the finances of the SS, and the need to engage members, and new members.



Member News

CSS Papers:

- Buxton S**, Garman E, Heim KE, Lyons-Darden T, Schlekot CE, Taylor MD, Oller AR. Concise review of nickel human health toxicology and ecotoxicology. *Inorganics*. 2019; 7(7): 89.
- Gupta P, Gupta N, Fofaria NM, Ranjan A, and **Srivastava SK** (2019). HER-2 mediated GLI2 stabilization promotes anoikis resistance and metastasis of breast cancer cells. *Cancer Letters*, 442, 68-81.
- Gupta N, Gupta P, **Srivastava SK** (2019). Penfluridol overcomes paclitaxel resistance in metastatic breast cancer. *Scientific Reports*, 2019, 9(1):5066 PMID: 30911062.
- Gupta N and **Srivastava SK** (2019). Atovaquone: An antiprotozoal drug for the management of breast cancer. *Molecular Cancer Therapeutics*, 18(10), 1708-1720. PMID: 31270151.
- Harris KL, Myers MB, McKim KL, Elespuru RK and **Parsons BL**. Rationale and Roadmap for Developing Panels of Hotspot Cancer Driver Gene Mutations as Biomarkers of Cancer Risk. *Environ. Mol. Mutagen*. 2019; doi.org/10.1002/em.22326
- Kaushik I, Ramachandran S, and **Srivastava SK** (2019). CRISPR-Cas9: A multifaceted therapeutic strategy for cancer treatment. *Seminars Cell Develop. Biol.* Doi:org/10.1016/j.semcd.2019.04.018.
- Melo, L.**, Hagar, A. How to train a mouse-methodological issues in pre-clinical exercise oncology. *Am J Cancer Res* 2019 9(6):1246-1253
- Moore, M. M., Gollapudi, B., Nagane, R., Khan, N., Patel, M., Khanvilkar, T., Roy, A. M., Ramesh, E., Bals, B., Teymouri, F., **Nault, R.** and Bringi, V. The food contaminant acetamide is not an in vivo clastogen, aneugen, or mutagen in rodent hematopoietic tissue. *Regul Toxicol Pharmacol*. 2019; 108: 104451.
- Prasad S and **Srivastava SK** (2019). Mutations in cancer driver genes: an insight into prostate cancer progression. *Annals of Urologic Oncology*. Doi:org/10.32948/auo.2019.09.12.
- Prasad S, Ramachandran S, Gupta N, Kaushik I and **Srivastava SK** (2019). Cancer cell stemness: A doorstep to targeted therapy. *Biochem. Biophys. Acta Mol. Basis Dis.* Pii: S0925-4439 (19)3007 1-7. Doi: 10.1016/j.bbdis.2019.02.019. PMID: 30818002.
- Wu J, **Ferragut** Cardoso AP, States VAR, Al-Eryani L, Doll M, Wise SS, Rai SN, States JC. Overexpression of hsa-miR-186 induces chromosomal instability in arsenic-exposed human keratinocytes. *Toxicol Appl Pharmacol*. 2019 Sep 1;378:114614. doi: 10.1016/j.taap.2019.114614. Epub 2019 Jun 6. PMID: 31176655

CSS Officer Accomplishments:

- Benham V, Bullard B, Dexheimer TS., **Bernard M.P.**, Neubig RR, Liby KT, Bernard JJ. Identifying chemopreventive agents for obesity-associated cancers using an efficient, 3D high-throughput transformation assay. *Scientific Reports*. 2019. Jul 16;9(1):10278. PMID 31311976.
- Corton JC**, Witt KL, and Yauk CL. Identification of p53 Activators in a Human Microarray Compendium. *Chem Res Toxicol*. 2019 Sep 16;32(9):1748-1759. doi: 10.1021/acs.chemrestox.9b00052. Epub 2019 Sep 3. PMID:31397557
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- Kim D, **Brocker CN**, Takahashi S, Yagai T, Kim T, Xie G, Wang H, Qu A, Gonzalez FJ. Keratin 23 Is a Peroxisome Proliferator-Activated Receptor Alpha-Dependent, MYC-Amplified Oncogene That Promotes Hepatocyte Proliferation. *Hepatology*. 2019 Jul;70(1):154-167. doi: 10.1002/hep.30530. Epub 2019 Mar 20. PMID: 30697791
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Platform Presentations:

- Samuel **Buxton**. Cancer mode of action for nickel in the EU regulatory context. XXIII Charles Heidelberger Symposium on Cancer Research. September 23-28, 2019, Sardinia, Italy.
- Amy **Wang**. Overview of genotoxic and non-genotoxic modes of carcinogenicity. Genetics and Environmental Mutagenesis Society of North Carolina 2019 Fall Meeting. October 30, 2019. Durham, North Carolina, USA.
- Amy **Wang**. Examples of using key characteristics of carcinogens in cancer hazard identification by National Toxicology Program. Society for Risk Analysis 2019 Annual Meeting. December 8-12, 2019. Arlington, Virginia, USA.
- Amy **Wang**, Joanne Trgovcich, Kristine L. Witt, Andrew Ewens, Jessica Geter, Sanford Garner, Gloria Jahnke, Stephanie L. Smith-Roe, Ruth Lunn. Mechanistic evidence integration case study: using ten key characteristics of carcinogens and a systematic review approach for antimony trioxide (Sb2O3) cancer hazard identification. Systematic Review Community of Practice Meeting. October 15, 2019. Via webinar. (Organizing committee is mostly in Washington DC, USA)
- Phatak S**. Impact of the total Western diet for rodents on colon mucosal gene expression in a multigenerational murine model of colitis-associated colorectal cancer." Three Minute Thesis at the American Society for Nutrition (first place). June 9, 2019, Baltimore MD.

Poster Presentations:

- Amy **Wang**, Joanne Trgovcich, Kristine L. Witt, Andrew Ewens, Jessica Geter, Sanford Garner, Gloria Jahnke, Stephanie L. Smith-Roe, Ruth Lunn. A case study using a systematic review approach for cancer hazard identification that incorporates the 10 key characteristics of carcinogens. Society of Toxicology (SOT) Annual Meeting. March 10-14, 2019. Baltimore, Maryland, USA.
- Amy **Wang**, Ulla Stenius, Johan Högberg, Imran Ali, Simon Baker, Ruth Lunn, Anna Korhonen. CRAB: Automatic Text Mining of PubMed for Cancer Mechanism/Mode of Action (MoA). Converging on Cancer Workshop. April 29-30, 2019. Washington D.C., USA.
- Alex Borrel, Amy **Wang**, Lara Handler, Nickle Kleinstreuer. Semi-automated systematic review to map assays and biomarkers to hallmarks of cancer and key characteristics of carcinogens. Converging on Cancer Workshop. April 29-30, 2019. Washington D.C., USA.
- Gloria D. Jahnke, Amy **Wang**, Stanley Atwood, Ruth M. Lunn. Use of the 10 Key Characteristics of Carcinogens (KCs) in Report on Carcinogens (RoC) Cancer Hazard Assessments. Converging on Cancer Workshop. April 29-30, 2019. Washington D.C., USA.
- Amy **Wang**, Joanne Trgovcich, Kristine L. Witt, Andrew Ewens, Jessica Geter, Sanford Garner, Gloria Jahnke, Stephanie L. Smith-Roe, Ruth Lunn. Mechanistic evidence integration case study: using ten key characteristics of carcinogens and a systematic review approach for antimony trioxide (Sb2O3) cancer hazard identification. Evidence Integration Workshop. June 3-4, 2019. Washington D.C., USA.
- Amy **Wang**, Dori Germolec, Alison Harrill, Arun Pandiri, Erik Tokar, Warren Casey. The Environmental Cancer Prevention Initiative at National Toxicology Program (ECPI@NTP). 2019 Triangle Global Health Annual Conference. October 16, 2019, Durham, North Carolina, USA.
- Amy **Wang**. The Environmental Cancer Prevention Initiative at National Toxicology Program (ECPI@NTP). Genetics and Environmental Mutagenesis Society of North Carolina 2019 Fall Meeting. October 30, 2019. Durham, North Carolina, USA.
- Phatak S**, A Thomas, R Kaundal, R Jones, K Hintze, A Benninghoff. Impact of the Total Western Diet for Rodents on Colon Mucosal Gene Expression in a Multigenerational Murine Model of Colitis-associated Colorectal Cancer (OR04-03-19), Current Developments in Nutrition, Volume 3, Issue Supplement_1, June 2019, nzz030.OR04-03-19, https://doi.org/10.1093/cdn/nzz030.OR04-03-19

CSS Awards

The deadline for all CSS awards is **November 22, 2019**. All application materials should be sent to Dr. Zemin Wang (zemin.wang@gmail.com). Also, feel free to contact Zemin if you have any questions or need any additional information.

Dharm V. Singh Carcinogenesis Graduate Student Endowment Award

The CSS Officers encourage graduate students to submit their abstracts for competition for best abstract awards. To qualify, your work must be related to the field of carcinogenesis. The due date for submission is November 22. Applicants should submit an electronic version of their abstract, a 1-2 page narrative describing their research hypothesis, background and significance, and a letter of recommendation from their advisor (not to exceed 2 pages) as a pdf document. Confirmation of receipt of the award documents will be sent to each applicant by email. While student abstracts may be submitted for multiple SOT awards, the CSS student awards will not be given to a student receiving another award for the same abstract. Graduate students who have received a First Place award from CSS within the last 3 years are also not eligible. The First Place winner will receive the Dharm V. Singh Endowment Award. He/she will receive a plaque and check (amount TBD). Second, third and fourth place graduate student winners will receive certificates as well as checks for amounts to be determined. Awards will be announced during the CSS meeting at the SOT Annual Meeting.

Postdoctoral Fellowship and Young Investigator Award

The CSS Officers encourage postdoctoral fellows and young investigators who have received their PhD within the past 3 years to submit their abstracts for competition for best abstract award. To qualify, your work must be related to the field of carcinogenesis. The due date for submission is November 22. Applicants should submit an electronic version of their abstract, a 1-2 page narrative describing their research hypothesis, background and significance, and a letter of recommendation from their advisor or supervisor (not to exceed 2 pages) as a pdf document. Confirmation of receipt of the award documents will be sent to each applicant by email. One awardee will be selected and will receive \$500 and a plaque. Award will be announced during the CSS meeting at the SOT Annual Meeting.

Environmental Carcinogenesis Travel Award

The CSS Officers invite graduate students and postdoctoral fellows (within their first 3 years of training) to submit their abstracts for competition for the newly established Environmental Carcinogenesis Travel Award. To qualify, your research 1) must be related to the field of environmental carcinogenesis and 2) integrate emerging sciences such as genomics, transcriptomics, epigenetics, metabolomics, microbiomics, exposomics, etc. into studies that help define mechanisms of, susceptibility to, and prevention of carcinogenesis. Applicants should submit a copy of their SOT research abstract, a copy of your current CV, a letter of recommendation from their major advisor, and a research narrative describing the hypothesis, background and significance. The narrative should be no longer than two pages not including 1-2 figures. Applications should be submitted as a single pdf document to Zemin Wang before the deadline. One graduate student and one postdoctoral fellow will be selected and will each receive \$500 and a plaque. Award will be announced during the CSS meeting at the SOT Annual Meeting.

Early Career Trainee Opportunities in SOT

ToxScholar Outreach

Grant: to promote toxicology careers through the interaction of toxicologists with student audiences.

apply here

international deadline: October 9

domestic deadline: ongoing

STEP Award

Supplemental Training in Education

Program: to pursue training in identified areas of professional or scientific development that is necessary to achieve career goals, but outside immediate scope of research program.

apply here

deadline: May & October

GIFT Award

Graduate Intern Fellowship in

Toxicology: to engage in internships within industry, government, and non-profit organizations

apply here

deadline: February 15

NEXT Award

New Experiences in Toxicology:

to obtain training outside of their current sector with support from their postdoctoral mentor.

Save the date!

when: March 15-19, 2020

where: Anaheim, CA

abstract submission:

10.18.2019

late breaking abstract:

01.14.2020

early-bird registration:

01.17.2020

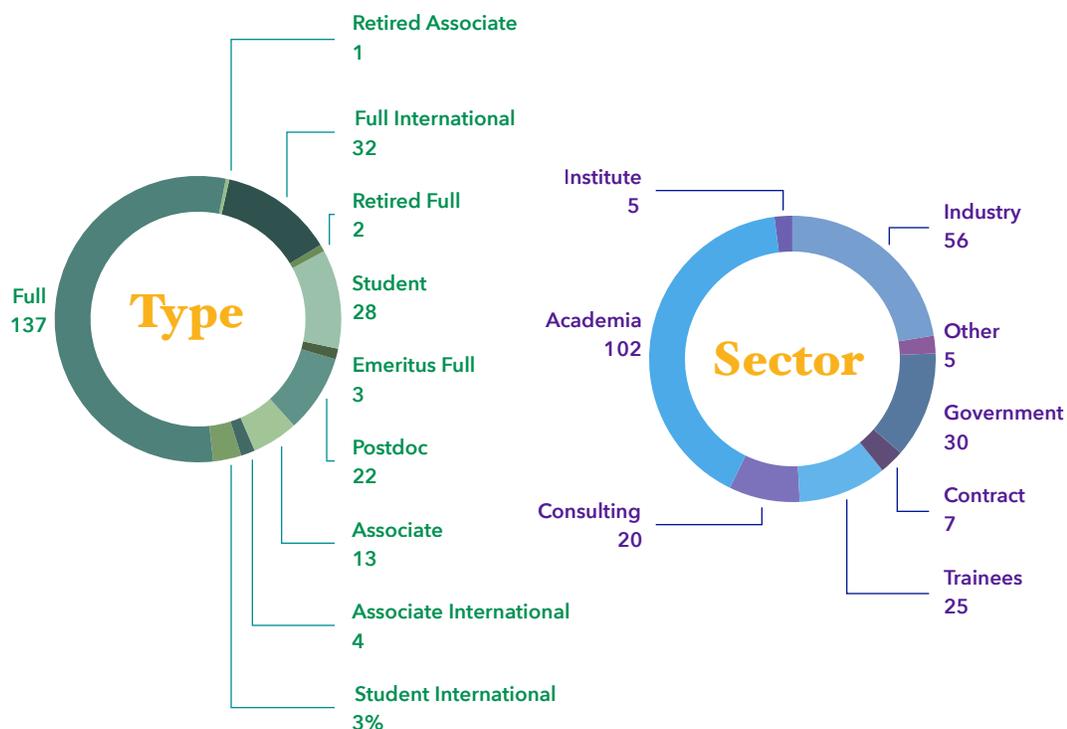
standard registration:

02.07.2020

housing deadline:

02.14.2020

CSS Member Demographics



Webinars

CSS is sponsoring the upcoming webinar: "New tools and approaches for carcinogenicity assessment" which will be held on **January 24** and **February 19**.

The webinar series will focus on two key areas: mechanistic assessment of carcinogenicity, and modernization of cancer risk assessment. Speakers include Drs. Mirjam Luijten (RIVM), Chris Corton (US EPA), Warren Casey (NIEHS/NTP), and Sabitha Papineni (Corteva Agriscience). For each of these webinars, we will address the relevant aspects of emerging technology, strategic and tactical issues, and regulatory guidance relevant to safety and risk assessment. The focus of these webinars will be to demonstrate opportunities to modernize chemical carcinogenicity assessment to provide human health protection while reducing testing on animals.

For more details and registration information, please click [here](#) for the 'Mechanistic Assessment of Carcinogenicity' webinar and [here](#) for the 'Modernization of Cancer Risk Assessment' webinar.