Stem Cells Specialty Section

Fall 2020 Newsletter

Dear Stem Cells Specialty Section members,

My name is Mike Clements, and I am the Stem Cell Specialty Section (SCSS) President for 2020-21. If our paths have not crossed yet, I look forward to meeting you "virtually" in the coming year. I say "virtually" since the 2021 SOT Annual Meeting will now be a virtual event. Although we had hoped to be able to hold a traditional, in-person meeting in Orlando, Florida, it has become clear that this will not be feasible.

I am sure you will agree that the application of stem cells and their derived models is one of the most exciting and promising research areas in toxicology. It is our goal to ensure that the SCSS remains an active forum for us to share ideas and champion our field. In March, it will be two years since we last gathered with our friends and colleagues. If we are to maintain, and hopefully expand, the influence of our group it is imperative that we embrace the digital tools available to us.

As a step in this direction, we have an expanded Fall Newsletter for you this quarter, featuring a new Researcher Highlights section to promote exciting new researchers, and a job board with available roles in the field of stem cell toxicology. We have also just launched a new Stem Cells Specialty Section page on LinkedIn. Please follow us and share relevant content with our followers using the hashtag **#SOTStemCell**. Furthermore, our SCSS website is in the process of being redesigned, and we will hopefully be able to share this with you before the end of the year.

Finally, if you would like to play a more active role in the SCSS, or have ideas about how we can better serve the stem cell community within SOT, I would encourage you to contact me via email to discuss this further (mclements@axionbio.com). I look forward to working with you all to help build another exciting program for 2021 SOT.

We hope you enjoy our Fall 2020 Newsletter,

Mike

This quarter's Q&A

Please submit questions to our councilors Li Pang and Nicole zur Nieden for your Toxicology and Stem Cell Related questions. The Q&A section will be featured in the newsletter. To email the Stem Cells Specialty Section Leadership, please send an email to SOTHQ@toxicology.org.

Can you explain how to apply for a SCSS annual award?

The Stem Cell Specialty Section awards two Graduate students and two Postdoc fellows for the SCSS Excellence in Research Award. First, the applicant must be a SCSS member and work in a field related to Stem Cell Toxicology. The application materials consist of an extended abstract (to be presented at the annual meeting); a letter from the applicant's advisor detailing the applicant's role on the project and status as a student/fellow during the time of the project; and the applicant must be the first author on the abstract. There will be a 1st and 2nd place awardee for both Graduate student and Postdoctoral categories. The awardees will receive a certificate of recognition and monetary award.

The competition submission is now open, and all materials are due by January 10th, 2021.
Email the application to Dr. Mike Clements mclements@axionbio.com. Go to the SCSS website for more information.

Will the 2021 SOT Virtual Event feature a stem cells-themed session?

The program for the 2021 SOT Virtual Event is still being finalized, but we are pleased to report that a stem cell-themed symposium has been provisionally accepted as part of the scientific program. We'll be able to provide more details next quarter.

I would like to get more involved in the Stem Cells Specialty Section. Could you tell me how?

That sounds great. We are always looking for help growing the participation in the SCSS. Please contact us at SOTHQ@toxicology.org and we can discuss this further.

News, Research, and Reviews

Keep up to date with the latest happenings in the field!

Congratulations to our very own Patrick Allard! He has joined the editorial board of Environmental Health Perspectives as an Associate Editor.

October 2020

Antiviral activity and safety of remdesivir against SARS-CoV-2 infection in human pluripotent stem cell-derived cardiomyocytes.

Choi, Shin, Park, et al.

J.Antiviral.2020.104955

September 2020

Assessment of cardiotoxicity with stem cell-based strategies.

Stoter, Hirt, Stenzig, Weinberger

Clin Ther. S0149-2918(20)30391-X

April 2020

Profiling the ToxCast library with a pluripotent human (H9) stem cell line-based biomarker assay for developmental toxicity.

Zurlinden, Saili, Rush, et al.,

Tox Sci. 174(2):189-209

March 2020

Perfluorooctane sulfonate (PFOS) and perfluorooctanoate (PFOA) acutely affect human $\alpha_1\beta_2\gamma_{2L}$ GABA$_A$ receptor and spontaneous neuronal network function *in vitro*.

Tukker, Bouwman, van Kleef, Hendriks, Legler, Westerink

Sci Rep. 10(1):5311

January 2020

Towards animal-free neurotoxicity screening: Applicability of hiPSC-derived neuronal models for *in vitro* seizure liability assessment.

Tukker, Van Kleef, Wijnolts, De Groot, Westerink

ALTEX 37(1):121-135

November 2019

Cardiotoxicity screening of illicit drugs and new psychoactive substances (NPS) in human iPSC-derived cardiomyocytes using microelectrode array (MEA) recordings.

Zwartsen, de Korte, Nacken, de Lange, Westerink, Hondebrink

J Mol Cell Cardiol. 136:102-112

Researcher Highlights

Our pick of exciting researchers in Stem Cell Toxicology

A new addition to the SCSS newsletter, is the Researcher Highlights section. Individuals are selected recognized for their research efforts and commitment to the field. The aim of this section of the newsletter is to highlight the field of Stem Cell Toxicology through the research of scientists at every career stage. Recommendations can be suggested by email.

Amy Tran is a PhD candidate at the University of Southern California's Molecular Pharmacology and Toxicology program. Her research focuses on characterizing the role of the eicosanoid cascade in spermatogonia stem cell (SSC) development. She is aiming to determine how pharmacological and environmental compounds targeting the eicosanoid pathway can impact cellular differentiation and self-renewal processes, and whether prostaglandins can act as chemical messengers to facilitate the differentiation of SSCs. As the eicosanoid pathway is not well studied in neonatal male germ cells, a greater understanding of this system can aid in defining the toxicological impact of administering commonly used analgesic drugs such as acetaminophen and ibuprofen to male infants, particularly in relation to infertility and testicular cancer. She has earned a master's degree in Regulatory Science prior to starting her doctorate program and is currently the Pharmacy Graduate Alliance Chair of Professional Development at USC. She is passionate about this field and is working towards Regulatory Toxicology for her future career.

Lisa Prince, PhD is a Postdoctoral Research Associate at Purdue University in the laboratory of Dr. Aaron Bowman. Her research utilizes a human-induced pluripotent stem cell model, differentiated into specific regional neuronal lineages (e.g. cortical forebrain or nigral mesencephalic) to understand how developmental stage and neuronal cell type impact sensitivity to developmental methylmercury exposure and the mechanisms that convey these sensitivities. Furthermore, her research aims to understand how early-life exposure may lead to persistent and/or latent effects of methylmercury toxicity, through examining the cross-talk and perpetuity in the disruptions of key homeostatic signaling pathways implicated by single-cell RNAseq based pathway analyses. Although methylmercury is a well-known and ubiquitous neurotoxicant, populations continue to be exposed to it through dietary and other routes, especially in people who rely on fish as a main and vital source of nutrition. Overall, the goals of her research are to better understand how to balance the risks of

MeHg exposure with the essential benefits of fish consumption, as well as to prevent persistent or latent neurological damage from MeHg toxicity, as no known treatments exist.

Dr. Erik J. Tokar is the Leader of the Stem Cell Toxicology Group in the National Toxicology Program Laboratory at NTP/NIEHS.
His lab investigates the role of stem cells in disease manifestation induced by exposure to environmental agents. They use 3D (i.e. organoids, embryoid bodies, spheres) and 2D model systems of human pluripotent stem cells to screen and help predict possible developmental toxicants, embryotoxicants, and teratogens. They also use multipotent or adult stem cells to characterize the toxic responses to known or possible carcinogens, including inorganic carcinogens (i.e. arsenic and cadmium) to elucidate mechanisms and identify the role of stem cells and progenitor cells during the carcinogenic process. These studies currently focus on epigenetic mechanisms and effects on the microenvironment.

Careers

Hey SCSS members! Check out the latest job announcements. Do not forget that SOT has a job bank https://jobbank.toxicology.org/. Please email us if you would like to post about a job.

Postdoctoral Position in Stem Cell Toxicology and Molecular Biology – **NTP/NIEHS** Durham, North Carolina, United States

Veterans Preferred – Mammalian Toxicologist and Risk Assessor Specialist – **DuPont** Wilmington, Delaware, United States

Biologist/Ecologist/Toxicologist/Chemist – Durham, North Carolina, United States

Finally…

Don't forget to follow us on LinkedIn!