President’s Message

Dear Stem Cell Specialty Section Colleagues,

This has certainly been an exceptional year in which we were all called to demonstrate great flexibility in the way we approach our scientific endeavors. I want to first thank our outgoing president, Mike Clements, for his exceptional leadership and enthusiasm he brought to this office. Undeterred by the news of the 2020 cancellation of an in person 2020 Annual Meeting, he organized a virtual SCSS meeting during our 2021 annual meeting, distributed graduate student and postdoctoral scholar excellence in research awards, organized our own LinkedIn account and a quarterly Newsletter. Of course, all of this would not have been possible without the effort of the whole SCSS leadership team, and I would like to thank all the members for their time, enthusiasm, commitment, and camaraderie during the last year. I would like to extend a special thank-you to Nicole R. Sparks for collating all the great content featured in our quarterly newsletters!

Now we are all looking forward to a new year and I would like to thank all of you who volunteered to be on the ballot to serve on this year’s SCSS leadership team. Please join me in congratulating our new team members Blake, Sanket, Nicole, and Amy! I would further like to thank the SCSS membership for your confidence and support of the SCSS leadership team.

SCSS provides a forum for SOT members interested in stem cell research and their application to the research activities of SOT. Some of our goals for SCSS for this year include to continuously share our enthusiasm of the myriad of opportunities stem cell biology brings to the field of toxicology by increasing our social media and web presence, growing our membership and to actively contribute to the overall efforts of SOT to promote awareness of the field of toxicology and to promote careers in toxicology.

I am very much looking forward to an exciting new year in the field of stem cell biology as it applies to toxicology. Please stay tuned, follow our Newsletter and LinkedIn site (https://www.linkedin.com/company/stem-cell-specialty-section-society-of-toxicology/) and please do reach out to us with any questions or ideas you may have, we are here to represent you!

With kindest regards,
M. Diana Neely, PhD
President, Stem Cell Specialty Section

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Vice President
Petra Haberzettl, University of Louisville

Vice President-Elect
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Councilors
Nicole zur Nieden, University of California, Riverside
Sanket Gadhia, SafeBridge Consultants

Postdoctoral Representative
Nicole R. Sparks, University of California, Riverside

Student Representative
Amy Tran, University of Southern California
Officers for 2021

Meet the new SCSS Officers starting May 2021.

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2021 SOT Meeting
Did you miss the SCSS endorsed symposium session “Opportunities for Human-Induced Pluripotent Stem Cell–Derived Neurons in In Vitro Neurotoxicity Safety Testing”? You can watch this session and all others on-demand until May 31, 2021

2022 Session Proposals
SCSS highly encourages members to submit session proposals for the 2022 SOT Annual Meeting. Final proposals are due to the SOT by May 17, 2021

Postdoc Members
Check out the latest Spring 2021 The Post-y Newsletter
Apply for the NEXT program award due May 21, 2021

Graduate Student Members
Apply for the STEP awards due May 21, 2021

Publications
Continuous Monitoring of Tau-Induced Neurotoxicity in Patient-Derived iPSC-Neurons.
Oakley, Klickstein, Commins, et al. J Neurosci JN-RM-2590-20

Development and validation of dual-cardiotoxicity evaluation method based on analysis of field potential and contractile force of human iPSC-derived cardiomyocytes / multielectrode assay platform.

Profiling the Tox21 Chemical Collection for Acetylcholinesterase Inhibition.
Li, Zhao, Huang, et al. Environ Health Perspect 2021 Apr;129(4):47008

Exploring the biological domain of the neural embryonic stem cell test (ESTn): Morphogenetic regulators, Hox genes and cell types, and their usefulness as biomarkers for embryotoxicity screening.
Leeuw, Pennings, et al. Toxicology 2021 Apr 30;454:152735
Ayeshia Morris, Rutgers University

Ayeshia Morris is a PhD candidate at Rutgers University in Piscataway in the Joint Graduate Program in Toxicology. Her research utilizes patient-derived induced pluripotent stem cells (iPSCs) to model environmental and genetic factors involved in potentiating Alzheimer’s disease (AD). AD is the most prevalent form of dementia, accounting for 6-8 of every 10 cases and is associated with increased cognitive impairment, molecular accumulation of amyloid beta plaques and phosphorylated tau protein. The incidence of the disease can be affected with increasing age, genetics, and environmental factors such as an introduction of pesticides. There is substantial evidence that the strongest genetic risk factor for developing AD is the E4 variant of APOE. There were also environmental contributions observed in another study exposing a positive correlation between AD and increasing levels in serum DDE, a metabolite of the organophosphate pesticide DDT. Together, these factors, the E4 variant of APOE and exposure to DDT, have been observed to produce more cognitive impairment in AD patients. However, there are limited studies observing this phenomenon and the mechanism behind it because it is difficult to study this human disease in animal models. To bridge this gap, my project utilizes stem cell-derived neurons, the only way of studying human neurons, to explore the mechanistic interactions between APOE and DDT and how they can synergistically enhance the risk of developing AD by increasing hallmarks of AD. A better understanding of this can provide insight to the pathogenesis of Alzheimer’s disease which can ultimately lead to the identification of novel mediators relating to the disease. This awareness also has the potential in opening doors for targeting different stages of AD.

Valeria Chichagova, Newcells Biotech Ltd

Dr. Chichagova is an Associate Director, iPSC Technology at Newcells Biotech Ltd. Her career has focused on harnessing the potential of pluripotent stem cells in the study of human development and disease, and in drug discovery. After graduating from the University of Edinburgh with a Masters in Integrative Neuroscience, she moved to Newcastle University to pursue a PhD investigating the effect of a common mitochondrial DNA mutation on the development of pigmentary retinopathy using patient-derived induced pluripotent stem cells (hiPSCs) as a model. She then continued her research on retinal diseases moving on to do a postdoc investigating the disease mechanisms of Retinitis Pigmentosa using retinal organoids derived from patient hiPSCs. An exciting opportunity came up to join the fast-growing startup, Newcells Biotech, to continue the development of the retinal organoid platform, characterizing it and scaling up for in vitro safety and efficacy screening. The organoids are currently being used across a range of projects commercially and
through academic collaborations as a tool for gene therapy and toxicology evaluations. Two other platforms that Dr Chichagova manages include liver sinusoid and lung upper airway hiPSC derived models. The liver development program is aimed at confirming its functionality and demonstrating ability to support viral infections with a particular focus on developing a model suitable for testing the safety of the Yellow Fever vaccine. In addition, the model is being evaluated for applications in hepatotoxicity assays and disease modelling. The upper airway hiPSC derived model is being qualified against its response to a range of known toxins.

Francesco Faiola, Chinese Academy of Sciences

Dr. Faiola is an expert in stem cell biology and currently in charge of the Stem Cell Toxicology Group at the Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences (CAS), Beijing, China. In 2015, he was selected for the CAS “One Hundred Talent” program, and in 2019 recognized as a “Special Foreign Talent” by CAS. He has actively devoted himself to the assessment of environmental pollutants’ health risks, particularly during early stages of human development, by implementing a stem cell-based toxicology research platform in China. Dr. Faiola has already established several stem cell toxicology models, in 2D and 3D settings, for embryonic, cardiac, hepatic, lung, pancreatic, skin, and neural developmental/functional toxicity evaluations. Furthermore, his lab employs several bioinformatics tools addressing changes in gene expression and lineage fate decisions, as well as molecular biology techniques, to dissect the underlying molecular mechanisms of chemical toxicity, and potential links to human diseases. The research systems he established have been widely utilized in the fields of environmental toxicology and drug safety.

Careers

Check out the latest job announcements. Do not forget that SOT has a job bank [https://jobbank.toxicology.org/](https://jobbank.toxicology.org/). Please email us if you would like to post about a job.

- **Postdoctoral Fellow** – **Western University of Health Sciences**, Pomona, California, United States
- **Postdoctoral Genomic Toxicology Position, Division of Preclinical Innovation** – **NIH, National Center for Advancing Translational Sciences**, Rockville, Maryland, United States
- **Postdoctoral Fellowship Opportunity in Reproductive Biology & Toxicology** – **The University of Texas at Austin**, Austin, Texas, United States
- **Scientist/Senior Scientist, Toxicology** – **Loxo Oncology at Lilly**, Boulder, Colorado, United States
Professional Development Corner

Career Pre-Flight Checklist: 3 Ways to Make the Most of Your Graduate Years

We talked with Lauren Walker, PhD, a postdoctoral scholar from Rutgers University in Piscataway and SOT member, on ways to get the most out of your graduate school career.

When was the last time you did a holistic skill inventory? During your graduate years, it can feel like your sole objective is to acquire and hone a very specific set of technical knowledge and abilities. There is more to becoming a great scientist than pipetting accuracy and statistical prowess, however. In fact, 3 of the top 10 non-technical skills that employers seek—curiosity, resilience, and a coaching mindset—can be readily developed while completing your thesis research.

By adopting a strategic mindset and volunteering for extracurricular professional service, you can readily position yourself to be a competitive applicant by your final defense date. Here are 3 keyways on how you can jumpstart your journey to becoming a well-rounded applicant:

1. Do not shy away from collaborative and team projects.
   While the words “group project” often strike fear and vexation into the heart of many a student, the chief benefit of team endeavors is learning to work together to accomplish a common goal. In a research context, “team science” aims to capitalize on the unique strengths of each team member to accomplish complex or multifaceted research problems. To be successful in this, however, each team member needs to be adept at communication, collaboration, and leadership.

   I challenged myself to work on each of these skills as a graduate student by joining the Women in Toxicology Executive Committee and Graduate Student Leadership Committees as a Student Representative. Through each group’s efforts to plan webinars and annual meeting events, I interacted with a diverse array of communication styles and became more flexible in my collaboration style. Moreover, by “trying on” different leadership roles, I had the space to develop a confident leadership style that I regularly rely on now as a postdoctoral trainee.

2. Remember that research does not become more forgiving, you become stronger.
   If you have ever performed a western blot, cultured stem cells, tried to breed research animals, or done an experiment ever, then you are likely aware that experiments do not always go as planned. Experiments going awry is part of the process (that is why it is called re-search and not just “search”) and sometimes cannot be helped. What is most important is how you respond to setbacks and challenges.

   Early in my graduate career, I was working on a model to study the impact of gestational diabetes on early embryonic development. After investing a year into this project, the funding was not renewed for additional studies. It pained me to have to give the project up, though I decided to channel that energy into building a stronger project out of the work that later formed my dissertation. Setbacks do happen, but never forget that you are the pilot of your own research career.
3. Try new things, ask questions, and make connections. 
Finishing your coursework and passing qualifying exams does not mean that you are done learning. 
Being able to demonstrate a desire to continuously learn in a dynamic environment is a highly desirable asset for any field. It shows that you are a long-term asset capable of growing in any context and distinguishes you among other well-qualified applicants.

Unsure what to explore? Chase what interests you and do not be afraid to ask your network if they have any leads. You never know who your colleagues know. As a trainee, I also found that many doors opened for me from a simple cold email. I secured an internship at my university’s strategic communications office by simply inquiring if I could work with someone to practice non-technical science communication writing. During my short time as an intern, I learned to write press releases, conduct interviews, and write op-eds and wrote 3 pieces for HuffPost. When I was interviewing for postdoctoral positions, my non-technical writing experience helped me to stand out and made an impression on potential employers.

By leveraging your graduate years strategically, you can develop the critical technical and non-technical skills to make you a competitive applicant for any research context. SOT and your home institutions are excellent starting points for seeking out opportunities to start building your skills, though I encourage you to broaden your search as well. This list is by no means exhaustive, and I recommend looking into numerous other pieces written on this subject. Do not be afraid to search for opportunities, the results may surprise you.

Finally... don’t forget to follow us on LinkedIn!