President's Message
by Yvonne Dragan

Colleagues and Members of CTTSS,

As the seasons progress into Fall and thoughts turn again to the SOT Annual Meeting, the executive team has endorsed three exciting symposia. Please find the abstracts and speakers provided later in the newsletter.

The executive team is essential for the smooth functioning of the CTTSS section. The current team is amazing and consists of the VP, Kai Kehe, the VP-Elect, Harmut Jaeschke, Secretary/Treasurer, Emma Ciel, Councilor 1, Deidre Dalmas, Councilor 2, Bill Mattes, Milan Prajapati, Postdoctoral Representative, and Danielle Kozlosky our Graduate Student Representation. The hard work of this team keeps the section moving forward. Please provide any suggestions to members of this team. We are looking for volunteers for the open positions for 2022. These include Councilor, Secretary/Treasurer, VP-Elect, and our Postdoctoral Representative. Please volunteer for one of these opportunities. These opportunities will be described later in the newsletter.

Your executive team has been busy preparing for the upcoming Annual Meeting and we are excited by the possibility of seeing each of you face to face. Our last face to face meeting was held over the lunch hour and because of its success we will use the same format again this year. We plan to have a guest speaker (details to come) and announcement of our postdoctoral scholar and graduate student award recipients, as well as our annual business meeting.

We endorsed three exciting proposals for symposia and workshops for 2022. The request for new proposals will come soon after the Annual Meeting. It would be great to start a discussion for areas to develop and endorse for 2023. Reach out early to discuss ideas, speakers, and strategies for proposal development and submission. I look forward to an exciting 2022 and beyond!

Stay safe,

Yvonne Dragan, PhD
Yvonne.dragan@takeda.com
President, CTTSS ’21
Request for Volunteers!

Open positions on the CTTSS Executive Team

We need YOU to volunteer for one of the open roles on the CTTSS Executive Team. We run on volunteer time and activity, get involved, the CTTSS is OUR organization. The Bylaws https://www.toxicology.org/groups/ss/cttss/bylaws.asp define the roles and responsibilities of each of the positions within the CTTSS leadership team.

To apply provide a bio sketch using the following format and send to yvonne.dragan@takeda.com. Self-nominations are accepted! The current positions are open and we are accepting nominations:

VP-Elect
Secretary/Treasurer
Councilor 1
Postdoctoral Scholar

Biosketch Format

[Full Name, including degrees and affiliations]
Dr. [Last Name] is a/the [Current position] at [Place of employment], where he/she/they [Summary of work]. He/She/They received a doctorate in [Field] from [School/University] in [Year] and was a postdoctoral scholar at [Institution] from [Years, i.e., 1995-1998]. Dr. [Last Name] has served on the [Study sections, Panels, etc.] at the [Organization, i.e., NIH, EPA, etc.]. He/She/They is author/co-author of [Number] [Publications including peer-reviewed articles and/or book chapters, etc.]. He/She/They has been a member of the SOT since [Year] and has served the SOT in the following capacities: [Offices/positions held].
Important Deadlines

Mark your calendars and spread the word about these important upcoming deadlines

Nominations for CTTSS Executive Team
See page 2 for details. Email yvonne.dragan@takeda.com for details

11/19

SOT Abstracts for 2022 Annual Meeting Due
https://www.toxicology.org/events/am/am2022/abstracts-presenters.asp

12/1

CTTSS Student and Postdoc Award Deadline
Check out the CTTSS website for details. Applications due to deidre.dalmas@gsk.com

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Dear CTTSS,

We’d like to enlist your help. SOT has many programs and continues to investigate ways to keep constituents informed about opportunities. The Committee on Diversity Initiatives (CDI) and Faculty United for Toxicology Undergraduate Recruitment and Education (FUTURE) Committee have a variety of activities to help engage undergraduates in the pursuit of toxicology careers. You have the means to help us promote these opportunities.

Thank you for your support and assistance in sharing this opportunity and encouraging outstanding students to apply for this program.

Larissa Williams, FUTURE chair
Kymberly Gowdy, CDI Chair
Sneak Peak: CTTSS-Endorsed Events at the 2022 Annual Meeting

The CTTSS has endorsed three sessions that were selected for in the 2022 Annual Meeting. Here is a sneak peek of what to expect.
Abstract:
The vascular network has long been known to be a target of toxicity following exposure and absorption. Furthermore, overall health and well-being of the cardiovascular system is highly dependent on a functional vascular network that can respond dynamically to ever changing physiological demands. However, the difficulty of measuring functional and structural changes in the vascular network can limit toxicological findings. This course will specifically deal with methodology related to quantitating vascular toxicity at the cellular, tissue and whole network levels. This course will be divided into 5 presentations that will describe techniques to elucidate functional vascular outcomes from cellular to system-wide. After a brief introduction on advanced physiology of the vascular system including structure, function, fluid dynamics, and pathology, the first talk with focus on isolated vascular and cellular techniques in rodent models to determine changes in vascular reactivity, vasomotor responses, and barrier integrity in isolated tissue and cells, as well as reactivity of these models to absorbed serum toxicants. This talk is followed by a specific discussion of the endothelial cell and vascular remodeling in the cerebrovascular network. The third presentation will focus intravital microscopy as a mechanism for functional assessment of intact tissues in a diverse set of vascular beds. The next talk will cover utilization of ultrasonography to determine in vivo uterine artery blood flow during gestation. The last presentation will outline the methodology aspects of endothelial cell function non-invasely as well as cell harvesting from human volunteers. This course will be of interest to a broad scope of scientists that are increasingly being requested to consider the impact of novel compounds and toxicants on the physiology of the vascular network. Furthermore, this CE course builds on a previous course from 2013, and a platform session from 2019.

Presenters:
- **Endothelial cell role in mediating toxicity, inflammation, and pathology: Implications for study design.** Matthew Campen, University of New Mexico.
- **Assessing toxicity in the cerebral microvasculature.** Amie Lund, University of North Texas.
- **Methodological Principles of Microvascular Toxicology.** Timothy Nurkiewicz, Institution West Virginia University.
- **The role of uterine arterial remodeling in fetal development and adverse pregnancy outcomes.** Colette Miller, U.S. Environmental Protection Agency.
- **Evaluating Endothelial Cell Function- From Bedside to Bench.** Jessica Fetterman, Boston University, School of Medicine.
Abstract:
Environmental causes of cardiovascular diseases (CVDs) and potential health consequences are leading global health issues. In particular, a link between metal exposure and CVDs has become apparent. Although the association of general CVDs to increased exposure to low-dose heavy metals occupationally and residentially has received attention and is increasing, there remains a lack of causal evidence for such link to certain types of CVDs, particularly pulmonary hypertension, atherosclerosis, and cardiomyopathy. Therefore, this symposium will focus on the epidemiological and clinical evidence for such associations and pre-clinical animal model-derived and mechanism-based evidence. To this end, we will provide the following presentations: (1) epidemiological information by the first speaker Dr. Katherine James, regarding the potential risks of individuals exposed occupationally and environmentally to heavy metals for CVDs and/or metabolic syndromes; (2-3) followed by two clinical studies focusing on the potential link of heavy metals to pulmonary artery hypertension: Dr. Jiapeng Huang’s presentation of altered blood metal concentrations of both non-essential and essential metals in pulmonary artery hypertension and Dr. Karim El-Kersh’s presentation of the association between Antimony levels and hemodynamic markers of PAH’s disease severity; (4) Dr. Koren Mann’s presentation of arsenic-induced atherosclerosis via inflammatory cells in mouse model and finally (5), Dr. Lu Cai’s presentation regarding the pathogenic effects on the heart by adult chronic exposure to very low-dose cadmium via epigenetic mechanisms and whole life exposure to low dose cadmium via exacerbating high-fat-diet-lipotoxicity.

Presenters:
- **Chronic exposure to low-moderate levels of naturally occurring metals and the risk for cardiometabolic outcomes in a rural community**, Katherine A. James, University of Colorado.
- **Metallomics profile in pulmonary hypertension patients**, Jiapeng Huang, University of Louisville Hospital; Degranin Therapeutics LLC.
- **Plasma level of antimony correlates with pulmonary hypertension severity**, Karim El-Kersh, University of Nebraska Medical Center.
- **Arsenic mediated effects on immune cells leading to atherosclerosis**, Koren Mann, McGill University.
- **Chronic exposure to low-dose Cd induces or exacerbates obese-induced cardiac pathogenesis in mouse model**, Lu Cai, University of Louisville School of Medicine.
Novel Approaches to Finding Better Antidotes for Cyanide Toxicity

Chair Name: David A. Jett, National Institutes of Health
Co-Chair Name: Gennady Platoff, National Institutes of Health, NIAID

Abstract:
Cyanide is a well-known industrial chemical that has also been used as a deadly poison throughout modern history and antiquity. Cyanide is a public health concern because of exposure after industrial accidents, and it is a serious complication of smoke inhalation. Also, the United States (U.S.) Departments of Health and Human Services and Homeland Security have identified cyanide as a public health threat because of its potential deliberate use to cause harm and mass causalities. Several cyanide-containing compounds including hydrogen cyanide, potassium cyanide, and methyl isocyanate are highly toxic. Cyanide disrupts cellular oxidative phosphorylation via the inhibition of cytochrome c oxidase. Cyanide also inhibits several other enzymes, induces oxidative stress, and increases cellular calcium. Mitochondrial toxicity and other effects lead to death, usually from cardiopulmonary paralysis. Non-lethal chronic effects include deficits in motor neuron functionality, like those reported after consuming cyanogenic cassava root (Konzo disease) and the parkinsonism reported in survivors of cyanide poisoning. The wealth of knowledge gained from decades of research on the mechanisms of cyanide toxicity has resulted in the development of therapeutics for individual exposures including the recently FDA-approved drug Cyanokit®. These antidotes work well if they are administered before lethal acute toxicity, however, the unmet need discussed in this session is the lack of safe and effective therapeutics for treating many individuals at once after deliberate or accidental release. The currently available antidotes can be effective and relatively easy to use by trained professionals to treat individual poisonings. However, they can require reconstitution before administration, and all available FDA-approved cyanide antidotes must be delivered by intravenous injection, which is difficult and timeconsuming. These and other features of current antidotes may not be ideal for rapid treatment of many individuals at once, and the use of Cyanokit® in the prehospital setting is uncommon in the U.S. This session will describe the unmet need for better cyanide antidotes during mass causality events and provide specific examples of current innovative research on the discovery of new lead compounds and the development of drug candidates.

Presenters:
- **Overview of research gaps in cyanide research and novel approaches**, David A. Jett, National Institutes of Health
- **Novel cyanide countermeasures discovered via phenotypic screening**, Calum Macrae/Randy Peterson, Harvard University, BGH/University of Utah.
- **Combination approach with new cobalt complexes and NO donors**, James Peterson, University of Pittsburgh.
- **Cobinamide and Sodium Tetrathionate for Treating Cyanide Poisoning**, Gerry Boss, UC San Diego.
- **Update on development of dimethyl trisulfide (DMTS) as a nonintravenous cyanide medical countermeasure**, Gary Rockwood, United States Army Medical Research Institute of Chemical Defense.