



Neurotoxicology Specialty Section

Fall Newsletter - November 12, 2013

DEAR NTSS MEMBERS:

As leaves turn colors in this beautiful fall season and Thanksgiving approaches, the NTSS Executive Committee would like to provide updates on key activities of our specialty section from the past few months. We hope you were able to take advantage of the extended deadline for abstract submission for the upcoming 2014 SOT meeting in sunny Phoenix, Arizona.

The Dr. Toshio Narahashi Neurotoxicology Fellowship Award Update:

As you may be aware, NTSS has established the Toshio Narahashi Neurotoxicology Fellowship Award Fund to honor Dr. Narahashi's lifetime contributions to neurotoxicology research as well as his devotion to training successful neurotoxicologists. Proceeds from the Fund will be used to support annual travel stipends and awards for graduate students and postdoctoral fellows who demonstrate outstanding neurotoxicology research. Award recipients will be selected by the executive committee of the NTSS. Awards will be bestowed at the NTSS social event held during the SOT Annual Meeting. Your contributions to the Toshio Narahashi Neurotoxicology Fellowship Award Fund will enable NTSS to continue the legacy of Prof. Narahashi for future graduate students and postdoctoral fellows. The SOT Endowment Policy stipulates that we need to reach \$25,000 by the end of December 2013 in order for the Fund to convert to an NTSS-specific Endowment. We currently have raised about \$13,085 and WE NEED YOUR contributions (which are tax-deductible) to make this a reality! Click on <http://www.toxicology.org/ai/csot/contribute.asp> to access the donor form. Be sure to select Toshio Narahashi Neurotoxicology Fellowship Award under named funds. Recommended donation levels: **Paracelsus:** \$500-more; **Gold:** \$250-\$499; **Silver:** \$100-249; **Bronze:** \$40-\$99.

Notable Quotes from Current Donors:

"The recognition from winning an SOT award can be extremely important for bright young students. Those of us who received help in developing our careers, I believe, are obliged to help others on the way up. This is our responsibility. I am delighted to help in this way."

—Dr. William Boyes, EPA

"Participation in the NTSS poster competition was one of my first activities as a neurotoxicologist (I had shifted into the neuro side during my postdoc). The interaction with NTSS has been instrumental in my career development. Given his outstanding contributions to our field, including his devotion to mentoring trainees, I can think of no better way to honor Dr. Narahashi. My monthly billpay contribution to this fund has no expiration date."

Dr. Gary W. Miller, Emory University, Editor-in-Chief, Toxicological Sciences

"In the past applying to poster awards added a special level of excitement and motivation to the SOT meeting, and the chance to talk to several amazing NTSS members about my work has left a lasting positive impression on me. As a graduate student my donation may be small, but I hope to help pass on this motivation to future students in any way I can."

—Caroline Moore, Ph.D. candidate, University of California, Davis

"A vibrant and active student contingent is essential to the future of NTSS. We have an obligation to foster the career development of our young scientists and support of the Toshio Endowment Fund provides an excellent venue to do so. A fine tribute to a great man that serves to enhance the significance of the award to the recipient"

—Dr. Mary Gilbert, EPA

"As a graduate student working day after day, experiment after experiment, I still distinctly recall presenting my first poster at the NTSS/SOT. The bigger picture of my dissertation work dawned on me as individuals visited my poster and spoke the same language. It was an exciting and delightful experience to be recognized."

—Dr. Deepa Rao, NIEHS

"I donated to the Toshio Narahashi Neurotoxicology Fellowship Award because I am proud to be a past poster award recipient and was honored to have the opportunity to give back. The NTSS student and postdoctoral poster competition provides the opportunity for young scientists to be challenged, stand out among their peers, and network with experienced leaders in the field"

—Dr. Kristen Ryan, National Toxicology Program, NIEHS

"The work of Toshio Narahashi motivated many of us over the years. Establishing an endowment in his memory towards graduate student and postdoc awards will continue to inspire future neurotoxicologists for years to come. Proud to be a part of this effort."

—Dr. Anumantha Kanthasamy, Iowa State University

"The establishment of this endowment is a fitting tribute to one of the great scientists in the field of Neurotoxicology who was also a truly inspirational mentor to students and colleagues alike. It will continue the legacy of Dr. Narahashi by recognizing the efforts of the future great scientists in the discipline he worked so hard to nurture."

—Dr. Pamela Lein, University of California, Davis

NTSS Poster Awards:

The predoctoral and postdoctoral poster competition at the 2013 SOT meeting at San Antonio was truly impressive. There were a large number of posters (26 predoctoral and 4 postdoctoral), and all contestants are to be congratulated for their professional presentations. Congratulations to the following trainees who were selected to receive awards:

Predoctoral Student Poster Awards:

1st Place: Aaron Lulla
University of California, Los Angeles

The dithiocarbamate fungicide ziram results in endogenous synuclein aggregation, dopaminergic cell loss, and reduced locomotor behavior in a zebrafish model of Parkinson's disease (Mentor: Jeff Bronstein)

Aaron Lulla is a Ph.D candidate at University of California, Los Angeles in the Department of Molecular Toxicology. He is working on his dissertation project in the lab of Dr. Jeff Bronstein studying the neurotoxic effects of pesticides and their connections to Parkinson's disease. Aaron completed his B.S. in biochemistry at Rutgers University in 2010. In the summers of 2007 and 2008 he interned at Colgate Palmolive working on quality control and research and development projects. Throughout his undergraduate and graduate career he has utilized zebrafish as a model system for studying environmental toxicants.

2nd Place: Dilshan Harischandra
Iowa State University

Manganese exposure induces release of α -synuclein and promotes exosome-mediated cell-to-cell transmission of α -synuclein aggregates in neurotoxicity models (Mentor: Anumantha Kanthasamy)

Dilshan Harischandra is a third year Toxicology graduate student at Iowa State University. Dilshan's research focuses on the interaction between divalent manganese and α -synuclein protein to promote a prion-like propagation of α -synuclein aggregates, which may contribute to the progression of neurodegenerative processes in Parkinson's disease models. Dilshan took second place for his poster entry in the NTSS graduate student poster competition for work showing the exosomal release of α -synuclein aggregates during manganese exposure in neurotoxicity models of Parkinson's disease.

3rd Place: Kevin Kumar
Vanderbilt University

Optimization of fluorescence assay of cellular manganese status for high-throughput screening (Mentor: Aaron Bowman)

Kevin Kumar is a Medical Scientist Training Program (MSTP) and Neurosciences Graduate Student at Vanderbilt University. Kevin is spearheading a high-throughput screen (HTS) for small molecule modifiers of neuronal manganese status using a fura2 fluorescence reporter-based approach. His poster, which took 3rd place, showed his work to optimize this assay to achieve a bi-direction factor of >0.5 (required for HTS approaches) at toxicologically relevant Mn exposure conditions. His optimization assay permits an HTS screen of $>40,000$ small molecules that both increase and decrease neuronal manganese levels following a 125 μ M exposure.

Postdoctoral Poster Award:

1st Place: Karin Streifel
University of California, Davis

Structurally-distinct dopaminergic neurotoxins acutely decrease ATP-dependent calcium signaling in astrocytes by inhibiting TRPC3 (Mentors: Ron Tjalkens/ Pamela Lein)

Karin Streifel is currently a postdoctoral fellow in the Autism Research Training Program at the University of California-Davis. She received her Ph.D in toxicology from Colorado State University for her research on the effects of manganese on neuroinflammation in juvenile mice. This research motivated her to expand her experience in developmental and immune responses to central nervous system toxicant exposures. Her postdoctoral training in the laboratory of Dr. Pamela Lein examines gene-environment interactions that converge on neuron-specific genetic vulnerabilities in Autism Spectrum Disorders.

Sincere thanks also to the judges who had the difficult task of identifying the winners:

Chair: Gary Miller (Emory University)

Jeff Johnson (University of Wisconsin)
Michael Caudle (Emory University)
Don Smith (UC Santa Cruz)
Tim Shafer (EPA)
Richard Nass (Indiana University)
Wei Zheng (Purdue University)
Anu Kanthasamy (Iowa State University)
Aaron Bowman (Vanderbilt University)
Tom Guilarte (Columbia University)
Jason Richardson (UMDNJ-Rutgers)
Chris Curran (Northern Kentucky University)
Arthi Kanthasamy (Iowa State University)
Jason Cannon (Purdue University)
Steve Lasley (University of Illinois)
Bill Mundy (EPA)
Kristen Ryan (NIEHS)
Debbie Cory-Slechta (University of Rochester)
Nick Filipov (University of Georgia).

NTSS Poster Competition for the 2014 SOT meeting:

We are continuing with the new judging procedure for the NTSS poster competition implemented during the 2013 SOT meeting. To participate in the 2014 poster competition, you will need to submit an extended abstract by February 25, 2014. The extended abstract will consist of the abstract originally submitted to SOT, 2-4 sentences describing the impact of the research, up to one page of key figures or data, and a 3-5 sentence conclusion (total of 3 pages). The extended abstracts will be reviewed by a committee prior to the meeting and will comprise 50% of the score. The remaining portion of the score will be based on the face-to-face interviews at your posters on Monday late afternoon. At this point we anticipate at least 3 judges will evaluate each poster. More detailed information will be posted on the NTSS website:

<http://www.toxicology.org/isot/ss/NTSS/awards.asp>.

Eligibility requirements for the NTSS poster competition:

1. Graduate students and postdoctoral research fellows/associates must be in attendance at the 2014 annual meeting.
2. Trainees must meet SOT criteria for classification as a graduate student or postdoctoral fellow at the time of the annual meeting.
3. Graduate students and postdocs MUST be members of NTSS or show evidence of application for membership. Graduate students or postdocs giving platform presentations at the annual meeting are also eligible if they prepare a poster summarizing their talk. Advisors or mentors who are not members are strongly encouraged to join NTSS.

Submission requirements:

1. An extended abstract as defined above (3 pages).
2. A letter of support from the graduate student's advisor or postdoctoral mentor outlining the independence and role of the candidate in the research must be submitted to Pamela Lein (pjlein@ucdavis.edu), Chair of the NTSS Student and Postdoctoral Awards Committee by February 25, 2014. Participants will also be required to send a PDF of their completed poster to Dr. Lein by March 17, 2013 to facilitate the judging (this presubmission of the poster need not be the final version presented at the 2013 Annual Meeting).

In addition to recognition plaques for each winner, monetary prizes will be awarded for first, second and third place. Winners will be announced at the annual NTSS Business Meeting in Phoenix.

NTSS members interested in judging either extended abstracts and/or posters should contact Pamela Lein (pjlein@ucdavis.edu).

Upcoming Election of NTSS Officers - Call for Nominations:

Early in 2014, NTSS will elect a Vice-President-Elect, a Treasurer/Secretary, a Counselor plus graduate student and postdoctoral representatives. It is time to gather nominations for candidates to run for those offices. Gary Miller will chair the Nominating Committee this year as the past Past-President, and requests your suggestions. Please carefully consider your nominations – no particular expertise is required of candidates, but they should be dedicated to service for NTSS. Remember that the future success of the Specialty Section will depend on these people. It is best if the nominator knows the candidate is willing to serve, but the Chair and other Nominating Committee members will make those contacts. Please forward the names and contact information of all nominees to Gary Miller (gary.miller@emory.edu) by December 15, 2013.

Also, Dr. Stephen Lasley has been nominated for the SOT Nominating Committee. Dr. Lasley received his Ph.D. from the University of Louisville in 1979, and was a postdoctoral fellow in Environmental Health at the Univ. of Cincinnati College of Medicine from 1979-1982. He joined the Dept. of Cancer Biology and Pharmacology at the Univ. of Illinois College of Medicine in 1986. He is Course Director of the Medical Pharmacology course, has chaired the local IACUC since 1995, has served on numerous grant review panels for NIH/NIEHS, and is an Associate Editor for NeuroToxicology. He was Councilor for the Neurotoxicology Specialty Section (2004-2006). Dr. Lasley also has served as Director of the SOT Placement Service (1996-97) and Chair of the SOT Animals in Research Committee (2004-05). Most recently, he served in the NTSS V-P-Elect/V-P/President/Past President queue from 2008-2012. His research interests concern the neurotoxicity resulting from chronic exposure to heavy metals, and the effects on the processes of neurotransmission underlying synaptic plasticity.

NTSS members cannot win SOT-wide elections without strong support from the specialty section. Please support our member candidates.

Please renew your NTSS membership:

<http://www.toxicology.org/script/loginredirect1.asp?page=dues>



Join the Student & Post-Doc Facebook Group!

We want to remind you that a new Facebook group has been created for NTSS Students

and Post-doctoral fellows by the former NTSS graduate student representative Josh Allen (University of Rochester).

Join today by going to: www.Facebook.com/groups/117643265035584

Everyone can “like” NTSS on Facebook at www.Facebook.com/neurotoxicology



Meeting of potential interest to NTSS members:

On 9-13 June 2013, the 14th International Neurotoxicology Association Meeting ‘Neurodevelopmental Basis of Health and Disease’ was held in the Netherlands. The following topics were discussed during this conference: Developmental neurotoxicity, Alternative methods and animal 3Rs, Neuroendocrine toxicity, Metabolic syndrome and CNS diseases, New (*in vivo*) approaches in neuropathology, Translational neurotoxicology and Neurotoxicity of nanoparticles. Several NTSS members presented their work at the INA meeting. Dr. Michael Aschner secured an R13 grant from NIEHS for partial travel support for US speakers at the conference. For more information please go to the conference website: www.INA14.org

The Fourth International Conference on Alternatives for Developmental Neurotoxicity Testing (DNT) meeting will be held May 12-14, 2014 in Philadelphia, Pennsylvania. Developmental neurotoxicity from chemical exposures is a growing concern and the developing human nervous system is susceptible to pharmaceuticals and environmental contaminants, and exposure during development is known to cause lasting neurological deficits. This conference will bring together diverse stakeholders from around the globe, including research scientists, regulators, industry representatives, academics, and pediatricians.

For more information please visit the website: <http://caat.jhsph.edu/dnt4>

Obituary of notable NTSS members:

We lost a great neurotoxicologist earlier this year. Dr. Toshio Narahashi made seminal contributions to neurotoxicology by studying the mechanisms of action of insecticides and other neurotoxins. Dr. Narahashi served as Chair of Pharmacology at Northwestern University for 17 years and was also a faculty member at Duke University. He had a distinguished career in neurotoxicology and published hundreds of papers in the area of insecticide toxicology, heavy metals, therapeutic agents and natural toxicants. He also trained over 140 research professionals, postdoctoral fellows and graduate students. He won several notable awards including Javets Neuroscience Investigator Award from the National Institutes of Health (1986–1993; Merit Award from the Society of Toxicology (1991); Otto Kraye Award from the American Society for Pharmacology and Experimental Therapeutics (2000); First Distinguished Investigator Lifetime Achievement Award in Neurotoxicology from the Society of Toxicology Neurotoxicology Specialty Section (2001); and the Distinguished Toxicology Scholar Award from the Society of Toxicology (2008). Dr. Narahashi was the First President of NTSS and a strong supporter of the Neurotoxicology journal. He will be greatly missed. To honor Dr. Narahashi's contribution to Neurotoxicology, NTSS is in the process of establishing a neurotoxicology Fellowship Endowment (see above).

To access the detailed obituary: http://www.toxicology.org/ISOT/SS/ntss/doc/Toshio_obituary_Neurotoxicology2013.pdf



Toshio Narahashi



Karen Steinmetz

It is with sadness we report the passing of NTSS member, Karen Louise Steinmetz, Ph.D., D.A.B.T. on August 19, 2013 after a year-long battle with uterine cancer. Karen worked at SRI International since 1982, beginning as a Biological Technician, but then quickly rising through the organization to become the first non-Ph.D. to be promoted into the scientist category in the history of the Life Sciences Division. She developed new assays to assess genotoxicity and cell proliferation using *in vitro* systems, and she published seminal papers describing the mechanism of carcinogenicity of methapyriline and paradichlorobenzene. While working at SRI full-time she obtained her M.A. in toxicology from San Jose State University in 1986. In 1991, Karen left SRI to enter a doctoral program at Indiana University in the laboratory of Dr. Jim Klaunig where she researched the role of transforming growth factor- α in liver carcinogenesis. She received her Ph.D. in 1996, followed by a postdoctoral fellowship in the lab of Dr. Henry Pitot at the McArdle Laboratory for Cancer Research at the University of Wisconsin. Karen then returned to the San Francisco Bay Area where she held positions as Toxicologist at Alza Corporation; Head of the Toxicology and Pharmacology Group at Xenogen Corporation; and Associate Director

of Toxicology at Sugan Inc. She rejoined SRI as Director of Mammalian Toxicology in 2003, where she won several important new contracts, including an NIA-funded program for preclinical development of drugs for treatment of Alzheimer's disease, and an NICHD-funded program for development of new contraceptive drugs. She became widely known and respected in a broad range of fields including cancer models, Alzheimer's disease, neurotoxicity testing and juvenile animal models. Karen served on many committees and in leadership roles of the Society of Toxicology including Carcinogenesis Specialty Section (SS) Councilor (2001–2002), Neurotoxicology SS Secretary/Treasurer (2006–2008), and on the Finance Committee (2011–present). She also was very active in the Northern California (NorCal) Regional Chapter of SOT, serving as both a Councilor (2007–2009) and as President (2011–2012). Her warm and generous spirit will be greatly missed by those who knew her as a colleague and friend.



NTSS-related events at the 2014 Annual SOT meeting:

The NTSS Business Meeting and Reception will be held Wednesday, **March 26 from 6:00-7:30 PM**. Please mark your calendars and plan to attend; enjoy food and drinks while visiting with your NTSS colleagues. A short business meeting will be held at approximately 6:45 PM. If you have an item for the business meeting agenda, please contact Anumantha Kanthasamy (akanthas@iastate.edu).

Record number of NTSS sponsored scientific programs at the 2014 Annual SOT meeting in Phoenix:

NTSS was extremely successful in getting the symposium and workshop proposals accepted by the SOT Program Review Committee for NTSS-sponsored programs this year. The pre-review team of Dr. Pam Lein (Past-NTSS President), Anumantha Kanthasamy (NTSS President) and Aaron Bowman (NTSS Vice-President) worked hard and provided feedback on all initial proposals submitted to NTSS for sponsorship. Final proposals were evaluated and ranked by an NTSS proposal selection committee members consisting of Anumantha Kanthasamy, Pam Lein and Aaron Bowman. Of those 13 NTSS-sponsored proposals, 8 proposals (4 symposia and 4 workshops) were accepted for the 2014 Annual Meeting:

SYMPOSIUM

Molecular mechanisms involved in neuro/glial toxicity: from oxidative stress to redox signal transduction. Chairs: Franco (University of Nebraska-Lincoln) and Block (Virginia Commonwealth University)

SYMPOSIUM

Is neuroimmune crosstalk important to neurotoxicology? Critical insight from animal and human studies. Chairs: Larson (University of Wisconsin) and McLoughlin (NIOSH)

SYMPOSIUM

Methylmercury's modes of action: new approaches to understanding an old problem. Chairs: Ralston (University of North Dakota) and Aschner (Vanderbilt University)

SYMPOSIUM

Neurobehavioral impacts of early-life manganese exposure: linking human and animal model studies. Chairs: Smith (University of California Santa Cruz) and Lucchini (Icahn School of Medicine at Mount Sinai)

WORKSHOP

Is manganese-induced Parkinsonism mediated via dopamine neuron degeneration or dysfunction? Chairs: Zheng (Purdue University) and Guilarte (Columbia University)

WORKSHOP

Advances in the application of imaging technologies to developmental toxicology. Chairs: Makris (USEPA) and Sutherland (Bristol-Myers Squibb)

WORKSHOP

Application of the adverse outcome pathway (AOP) concept to neurotoxicology: a challenging approach. Chairs: Fritsche (IUF - Leibniz Research Institute for Environmental Medicine) and Price (The Joint Research Center of the European Commission)

WORKSHOP

The promise of translational imaging in nonclinical safety assessment. Chairs: Paul (US Food and Drug Administration) and Chen (ILSI Health and Environmental Sciences Institute)

Congratulations to the Chairs of these successful proposals and we are looking forward to great talks at the annual meeting.

In closing, please donate to the Dr. Toshio Narahashi Neurotoxicology Fellowship Award Fund (click <http://www.toxicology.org/ai/csot/contribute.asp> to access the donor form) to establish the endowment by the end of this year, and continue making great discoveries in Neurotoxicology!

Happy Thanksgiving!!

*Anumantha Kanthasamy, Ph.D.
President, NTSS*