



Newsletter Fall/Winter 2017

International Neurotoxicology Association



Message from the President

Dear INA members,

INA has members all over the world, but mostly on the Northern hemisphere. So for most of us, days are getting shorter and colder. Some like this change of season, but personally, I already look forward to the Spring of 2018! There will be exciting meetings in 2018, for example the 57th Society of Toxicology (SOT) meeting in sunny San Antonio, Texas, USA.. The coming year will also be important for further shaping the 17th INA meeting, to be held in Dusseldorf, Germany in 2019. You will find updates on both meetings in this newsletter!

While it is important to look forward, it is also important to look back. We can look back at a successful meeting in Florianopolis (see previous newsletter) and there were additional successes. Some small, some large. INA currently has over 100 active members who paid their dues. While this is an all-time high, we will continue to increase the number of active members, as well as student members of course! A success on a different level: INA is now officially affiliated with NeuroToxicology! You can read all about it below.

Also in this newsletter, we have again a "Researcher in the spotlight": Jason Richardson received the 2017 SOT achievement award and in the spotlight, he will tell you all about his exciting research. In our "Young researcher series", Anke Tukker gives us some interesting insights in her research. She is one of the two winners of the David Ray Award at the 17th INA meeting in Florianopolis.

Wishing you a happy reading, a wonderful fall/winter season and look forward to meeting you (again) in 2018!

Remco Westerink,
President (2017-2019) International Neurotoxicology Association

Current INA Officers

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Councilor & Website editor	Helena Hogberg	hhogber2@jhu.edu

A short message from the Treasurer's office

Dear colleagues,

It's my pleasure to inform you that I received a record-breaking number of dues payments for the '16-'17 period: 105. Many thanks to all people who responded to the call and paid their dues, as a treasurer this makes me happy!

Given our total number of members and the fact that the last payment was received only 2 weeks ago, there is still room for improvement. So, as an experiment to make our lives (both your life as a dues paying member and mine as a treasurer) easier, you will receive in due course an invoice via Paypal for the next membership period ('18-'19). Please do not worry, this invoice can also be paid via other routes than Paypal, and of course, the regular route via wire transfer remains a possibility as well. Let's see if this helps to break this year's record number!

Yours financially,

Harm Heusinkveld, Treasurer

INA – NeuroToxicology affiliation

After quite some negotiations, INA and Elsevier reached an agreement at the end of the summer! Backdated to 31st of January 2017, INA is affiliated with the journal *NeuroToxicology*.

This affiliation has several benefits for INA. Specifically, Elsevier, publisher of *NeuroToxicology*, will provide conference support for our biannual meetings, including the Jacob Hooisma Lecture, Best NEUTOX-INA Poster Awards, and NEUTOX-INA Young Investigator Educational Enhancement Travel Award. The affiliation will also ensure publication of Special Issues regarding our meeting in *NeuroToxicology*.

Exclusively for you as INA member, we are proud to introduce the annual INA-*NeuroToxicology* Best Paper Award! *NeuroToxicology* therefore invites you to submit your best work to the journal.

For details on *NeuroToxicology* see <http://www.journals.elsevier.com/neurotoxicology>

Membership application

The International Neurotoxicology Association (INA) is an active organization of scientists with members from all over the world working in the field of neurotoxicology. Becoming a member has a number of important benefits, including a discounted rate for attending our biannual INA meetings, and, due to the recent affiliation of INA with NeuroToxicology (Elsevier), the possibility to win the annual INA-NeuroToxicology Best Paper Award! Yet, our dues are very low: only €50 or \$60 for two years, while a student membership is even without charge! So, if you are not a member yet:

Please join us and fill out the application form at <http://www.neurotoxicology.org/membership/>

57th SOT meeting in San Antonio, USA

The annual SOT meeting will be held in San Antonio, TX, USA from March 11-15. Every year, the SOT meeting offers a huge amount of neurotoxicology data that may be of interest to you. In 2018, there will be at least six sessions that are endorsed by the Neurotoxicology Specialty Section (NTSS):

The Use of Advanced Imaging and Microscopy Techniques to Detect, Determine and Treat Disease and Retinotoxicity in Man and Experimental Models
Toxicological Implication of Copper in Neurodegenerative Diseases
Decoding Oxidative Stress from Inflammation: Implications for Exposure, Toxicity, and Disease
Mechanisms of Autophagic Function and Dysfunction in Neurotoxicity and Neurodegeneration
Reaching Hazard Conclusions for Endocrine Disrupting Chemicals: Adapting Systematic Review Methods to Critically Assess the Evidence
A Search for Biomarkers of Neurotoxicity: A Practical Approach

If you plan on visiting the SOT in 2018, remember that there are award opportunities!

Toshio Narahashi NTSS Trainee Conference Endowment Award	November 6, 2017	Graduate Students and Postdoctoral Fellows must be members of NTSS or show evidence of application for membership. Undergraduates and Post-Baccalaureates need not be members, but submitted abstract must be neurotoxicology focused. All applicants must be in attendance at the 2018 annual meeting, www.toxicology.org/groups/ss/NTSS/awards.asp .
Distinguished Neurotoxicologist Award	December 8, 2017	Full, Retired, or Emeritus members of NTSS nominated by two full members of SOT, one of whom must be a member of NTSS, www.toxicology.org/groups/ss/NTSS/awards.asp .
Toshio Narahashi Neurotoxicology SS Graduate Student and Postdoctoral Fellow/Associate Poster Award	Phase 1: February 12, 2018 Phase 2: March 2, 2018	Graduate students and postdoctoral research fellows/associates who are NTSS members or show evidence of application for membership, and must be in attendance at the 2018 annual meeting, www.toxicology.org/groups/ss/NTSS/awards.asp .

See the SOT website or NTSS newsletter for further details.

Of note for those of you that are also SOT member, the SOT has now become a FASEB member society. For details see: <http://faseb.org/Resources-for-the-Public/News-Room/Article-Detail-View/tabid/1014/ArticleId/1521/Society-of-Toxicology-Becomes-FASEB-Member.aspx>

Next to these scientific sessions and award opportunities, there is of course the **INA business meeting!** Mark your agenda: the INA business meeting will be on Monday, March 12, 12:30-1:30 PM.

Hopefully we will meet in San Antonio!

Call for special issues - NeuroToxicology

Given the recent affiliation of INA with the journal *NeuroToxicology*, you are invited to organize a Special Issue for this journal. Special Issues can be focused on:

- A specific topic of broad interest to the field of neurotoxicology,
- 'Integrated neurotoxicology' like neuro-immune, neuro-endocrine and other topics that integrates multiple organ systems including the CNS/PNS, or on
- Convergent mechanisms of neurotoxicity, like neuroinflammation, oxidative stress, brain-gut axis, peripheral nervous system, etc.

For details on *NeuroToxicology* see <http://www.journals.elsevier.com/neurotoxicology>.

For specific questions or sending your proposal for a Special Issues, please contact Pam Lein (pjlein@ucdavis.edu) or Remco Westerink (r.westerink@uu.nl).

Membership news

Our valued INA members have been active and successful again! Here's a selection of successes:

- **Lucio Costa** was elected as Vice-President Elect of the Neurotoxicology Specialty Section of the Society of Toxicology. He will move on to NTSS-President in due time. Recently, Lucio was also awarded with a new R01 grant for five years by NIEHS on "Gene-environment interactions in the developmental neurotoxicity of air pollution".
- **Pam Lein/Remco Westerink** are the new Editors-in-Chief of NeuroToxicology (Elsevier). **Joan Cranmer** is now enjoying (just slightly more) free time as Editor in Chief Emerita.
- **Deborah Cory-Slechta** received the SOT 2017 Distinguished Neurotoxicology Award!
- **William Boyes** was selected to receive the SOT 2017 Ocular Toxicology Specialty Section Career Achievement Award!
- **Stephen Gilbert** was selected to be a Global Senior Scholar Exchange Program (GSSEP) Host for SOT!
- **Rosemarie Bowler et al** published 'Validation of self-reported concentration of memory problems' which shows that patients who report having concentration or memory problems did not score impaired in neuropsychological tests but instead were depressed.
- **Sarah Blossom** and **Jamie DeWitt** (editors of the Molecular and Integrative Toxicology book series (Springer)) are currently formulating ideas for new books for the series, e.g. on toxicant insults and neuroinflammation or other areas relevant to neurotoxicology. You are invited to submit a book proposal form and can contact Sarah (BlossomSarah@uams.edu) for details.

Do you have exciting news for us to share? Just let us know!

Researcher in the Spotlight: Jason Richardson

Jason R. Richardson, DABT (Professor and Acting Chair, Dept. Pharmaceutical Sciences, Northeast Ohio Medical University-USA) - Recipient of the 2017 SOT Achievement Award.



I grew up in a farming family in Louisiana and Mississippi, who taught me the value of a strong work ethic. My Bachelor's degree is from Northeast Louisiana University (now University of Louisiana at Monroe) where I majored in Toxicology. I did graduate work at Mississippi State University with Dr. Janice Chambers, where I received my MS and PhD degrees. Following receipt of my PhD, I completed postdoctoral training at Emory University with Dr. Gary Miller. My first faculty position was at Robert Wood Johnson Medical School and the Environmental and Occupational Health Sciences Institute at Rutgers. Next to my current position at Northeast Ohio Medical University, I am also Associate Dean for Research in the College of Pharmacy and the Founding Director of a University-wide Research Focus Area in Neurodegenerative Disease and Aging.

Research in my laboratory has resulted in over 90 published manuscripts and book chapters in the areas of developmental neurotoxicology, neurodegenerative disease, and pesticides. I am also active as a member of several review committees and Editorial boards and I am an Associate Editor for *NeuroToxicology*. I am honored to have previously received the Outstanding New Environmental Scientist Award from NIEHS and the inaugural Young Investigator Award from the Toxicology Division of ASPET, and been recently elected a Fellow of the Academy of Toxicological Sciences (ATS). Most recently, I was extremely honored and humbled to have received the 2017 SOT Achievement Award for research on how environmental pollutants and genes may interact in the development of neurodegenerative diseases like Parkinson's and Alzheimer's.

Research leading to receipt of this award represents my laboratory's primary focus on determining the role of environmental exposures and their interactions with genetic susceptibility as contributors to neurological disease using translational approaches. Using a combination of epidemiological, molecular, and behavioral approaches, we recently found that developmental pyrethroid pesticide exposure is associated with significantly increased risk for ADHD in children. Further, developmental exposure of mice to doses at or below the NOAEL altered the dopamine system and reproduced neurochemical and behavioral features of ADHD (see <https://www.neomed.edu/directory-profile/richardson-jason-70255/> for references and details).

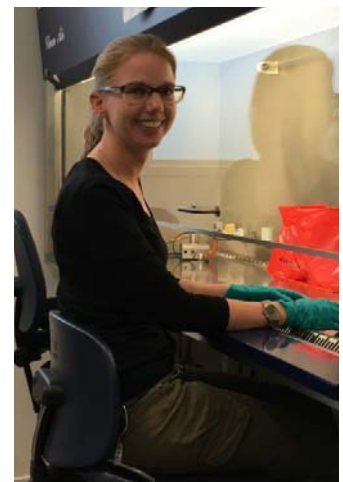
Most recently, my laboratory and our collaborators established that serum levels of DDE, the metabolite of the organochlorine pesticide DDT, is significantly higher in the serum of Alzheimer Disease (AD) cases and is associated with increased risk of AD diagnosis (Richardson et al., 2014 *JAMA Neurology*). Further, individuals harboring a polymorphism in APOE and having high serum levels of DDE performed worse on a cognitive task than either those with just the polymorphism or high DDE levels. Finally, we identified that DDT and DDE increase levels of amyloid precursor protein, suggesting a possible mechanism by which DDT exposure may contribute to AD. We are now in the

process of identifying the mechanism(s) by which DDT exposure interacts with APOE genotype to increase AD risk, using a combination of humanized mice and isogenic iPSC cell lines expressing various APOE genotypes. Our ultimate hope with this project is that we can identify how these risk factors interact at the mechanistic level so that therapeutic interventions can be designed based on the individual patient's genetic background and risk factors.

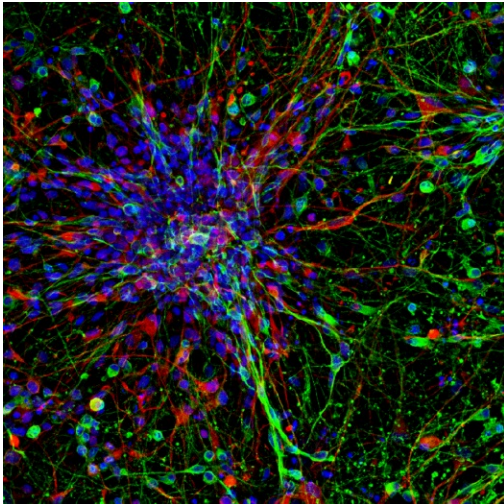
As can be seen from the description of our research above, I genuinely value the collaborative approach to science. I have been very fortunate in my career to have a number of mentors, both formal and informal, that have been very generous with their time and wisdom. Many of these come from our neurotoxicology community that I am extremely proud to be a part of. I hope to be able to pay forward the tremendous support I have received from these individuals to our next generation of neurotoxicologists. I have also been very fortunate to have numerous outstanding students, postdocs and collaborators that drive me to be a better scientist every day. They also help keep things in perspective and have become great friends in addition to being colleagues. It's an exciting time to be a neurotoxicologist and I'm looking forward to the impact that neurotoxicology research will have on improving the health and lives of individuals around the world.

Young researcher series: Anke Tukker

Two years ago, I was considering packing my bags and moving to Central America. My idea at that time was to start growing my own coffee. I had spent some time at a Nicaraguan coffee plantation and was fascinated by finding the right balance between the environment, protecting your coffee trees and the health of the people working with those crops. Answering questions like: do I use pesticides and, if so, which ones and how would they affect the people working with them, are very important to me. On top of that it seemed a great way to combine my passion for coffee, nature, outdoor life and my professional interest in interactions between the environment and human health. However, real life happens while you make other plans.



Currently, I am not writing this piece from a Nicaraguan coffee plantation, but from my desk at the Institute for Risk Assessment Sciences at the Utrecht University. While dreaming about growing coffee, I got the opportunity to start a PhD project at the neurotoxicology research group under supervision of Dr. Remco Westerink. Since I performed an internship in this group, I was already familiar with this very interesting field. I knew that in this group I could still study the topics that I am interested in. Therefore, I had no doubts and took this great opportunity.



Immunostain of hIPSC-derived neuronal network (green: neurons, red: astrocytes, blue: nuclei).

My project focuses on the development of new *in vitro* models that can be used to detect the potential adverse outcomes of chemicals. Current neurotoxicity testing still relies heavily on expensive, time consuming and ethically debated animal experiments, used either as *in vivo* or *ex vivo* models. As a result, there is a clear need for innovative high-throughput *in vitro* screening strategies as a replacement. Ideally, these strategies should make use of human cells in order to circumvent inter-species translational problems. Therefore, the main goal of my project is to develop and characterize a human induced pluripotent stem cell (hIPSC)-derived neuron model for improved neurotoxicity screening.

To be predictive for human brain function, hIPSC-derived neurons need to differentiate into multiple cell types (excitatory and inhibitory neurons as well as supportive cells). They also need to form functional neuronal networks. We are developing different hIPSC-derived neuron models and confirm with immunocytochemistry, multi-well microelectrode arrays (mwMEA) and calcium imaging the presence of functional neuronal networks. If a model seems promising, we perform physiological and pharmacological modulations for a basic characterization. Following this, we perform a toxicity screen focusing especially on seizurogenic compounds.

This research offers me many opportunities to learn new techniques. At this moment, I perform a lot of mwMEA and immunocytochemistry experiments. However, focus is now shifting towards calcium imaging experiments and exploring the possibilities of multiplexing assays. In my work, I culture multiple cell types such as primary rat cortical cells, but also different hIPSC-derived neurons. On top of that, my research provides me with many challenges in data analysis, which allows me to not only expand my laboratory skills but also to gain valuable statistical knowledge.

This year I participated in the INA-16 meeting in Brazil and I was very honored to receive the David Ray award. Now, I am thankful for getting the opportunity to share my project in this newsletter. I find working in the neurotoxicology field very inspiring and I hope to get a chance to stay in this world in my future professional endeavors. If that does not work out, I can still consider starting that coffee farm!

Best regards,
Anke Tukker

Invitation to submit a paper from INA-16 for inclusion in a Special Issue of NeuroToxicology

Devoted to papers presented at the 16th International Neurotoxicology Association meeting convened May 20-23, 2017 in Florianopolis, Brazil, entitled:

“From Molecular Mechanisms to Functional Impact: Developing Integrated Analysis in Neurotoxicology”

Every participant presenting a paper at this conference - from symposia or poster - is encouraged to submit a paper for inclusion in the peer-reviewed proceedings that will be published in a special issue of the international journal NeuroToxicology. Your paper may be Original Research, a mini-Review, a Short Communication, or a Commentary.

The length of your paper may be as long as necessary to present and support the data; 15-20 typewritten pages are average. Papers will be rapidly peer-reviewed. Note: that the submission of a manuscript is not a guarantee of acceptance for publication in the journal. All manuscripts are subjected to the regular peer-review process of NeuroToxicology. According to these high quality standards not all papers will be accepted; some might be rejected while others will need revisions.

The EXTENDED DEADLINE for receipt of INA 2017 manuscripts is November 30, 2017

Please SUBMIT YOUR MANUSCRIPT ONLINE. Go to: <http://ees.elsevier.com/neutox/> and click on “Author Gateway”. When selecting your Article Type, click on the drop down box and choose INA 2017 Special Issue. In your cover letter, please indicate your manuscript type, such as Original Research Article, Mini-Review, Short Communication, Vision Report, Commentary, or other. If you have questions during electronic submission email support@elsevier.com.

Contact one of the Guest Editors or Publisher with questions or comments:

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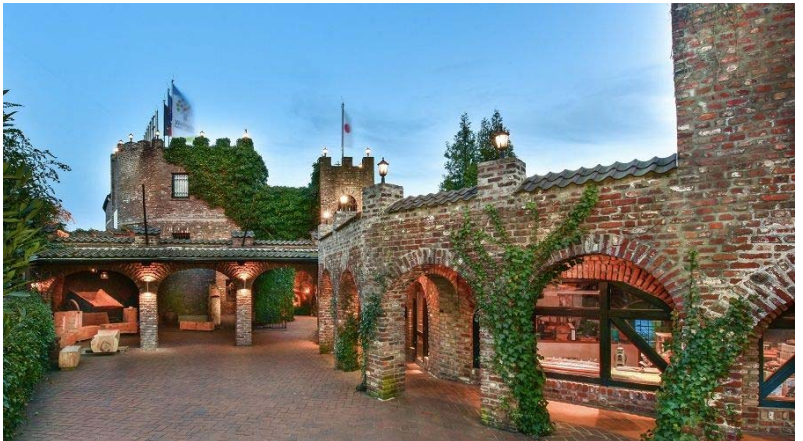
Nithya Sathishkumar – Elsevier Editorial contact
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INA-17, Düsseldorf, Germany in 2019

After two joint meetings in North and South America, the INA members decided to have their 17th biannual meeting in Europe. After having a successful INA meeting in 2003 in Dresden-Germany, the local organizers (Ellen Fritsche and Christoph van Thriel) are happy to host another INA meeting in Germany.

The 17th biannual meeting of the International Neurotoxicology Association (INA-17) will be held from September 29th until October 3rd 2019 in Düsseldorf, Germany. To avoid an overlap with the XV International Congress of Toxicology in Honolulu, Hawaii, the executive committee of INA and the local organizers (Ellen Fritsche and Christoph van Thriel) decided to have an early fall meeting in 2019.

The congress venue (Land Gut Hoehne; <http://www.guthoehne.de/en/about-land-gut-hoehne>) is close to the Neander Valley, the place that gave our archaic sisters and brothers, the *Homo neanderthalensis* (40ka–250ka) its name. At least the DNA of these Neanderthals is still alive in the DNA of modern humans and researchers are currently investigating the geographic Neanderthal admixture in modern humans. An excursion to the Neander Valley Museum will be part of the recreational activity.



With respect to science, the call for symposia proposals will be launched soon and as announced in the last newsletter a diversity of scientific topics will be expected during this call. As the format will be more “traditional”, avoiding parallel sessions, having time for discussion, providing platforms for students and young researchers, the number of these reorganized symposia will be limited. The Scientific Committee will select only the best proposals!

We hope to get your input to cover the “hot topics” that are relevant for our society and we are looking forward seeing you in Düsseldorf, Germany.

Kind regards,
Ellen and Christoph

Call for Proposals for the INA-18 Meeting in 2021!

We just finished our excellent INA-16 meeting in Florianopolis (Brazil) together with the Neurotoxicity Society. We are well along in planning our INA-17 meeting in Dusseldorf (2019, Germany). Now, believe it or not, it is already time to start thinking about our INA-18 meeting in 2021!

As is our tradition, we ask for proposals from INA members for the location and plan for our meeting. Please provide a proposal, five pages maximum, with a description of the location and theme for the meeting, including information about hotel and meeting spaces, cost estimates, proposed financial support and people on the local organizing committee.

Submit these to INA President Remco Westerink r.westerink@uu.nl by **November 30, 2017**. Then the completed proposals will be sent out to INA members for a vote for our 2021 location for INA-18.

We look forward to receiving your proposals!

Other meetings of interest:

Second International Meeting on Environmental Health in Strasbourg

November 29-December 1, 2017

Air pollution, an unknown threat to brain and child

You are invited to participate in the 2nd RISE
The topics for this second edition will cover the latest research in
air pollution, health and emerging medical issues
with particular emphasis on threats to the human brain.

Venue: Council of Europe, Strasbourg, France

Air pollution is an increasing concern for Humanity. The subject urgently needs more attention by medical scientists and society alike. Air pollution has long been recognized as a major health threat with multiple impacts, increasing mortality and morbidity. Cancer, pulmonary and cardio-vascular diseases are well known outcomes. Brain impacts are an emergent challenge as are epigenetic changes and child's developmental issues.

This conference will tackle these issues and for the first time, examine possible remediation and actions that should be taken. Our goal is to bring together basic researchers, epidemiologists, public health specialists and physicians to assess current knowledge and identify key gaps that mandate further research. A session will be dedicated to societal and institutional concerns.

Topics include:

1. The mechanistic approach to air pollution: basic science principles
2. Links with child and adult brain disease: epidemiology & clinical findings
3. Residential and occupational indoor air pollution: neurotoxic illnesses
4. Environmental particulate air pollution: acute and chronic health impacts
5. Behavioral, economic & institutional approaches to air quality regulation

Contact Dr. Jacques Reis for further information: jacques.reis@wanadoo.fr