Message from the President

Dear HOT Members,

It is my pleasure to invite you to the many SOT and HOT activities during the 2018 SOT Annual Meeting in San Antonio! In this special 50\textsuperscript{th} issue you will find information about HOT Member Research being presented at the meeting, the HOT mentoring lunch, and the HOT Poster that includes our annual achievements. Also in this issue is information on our SOT Annual Meeting highlight event, which is the 2018 HOT Business Meeting and Reception where we recognize HOT’s generous Sponsors and present our Student, Postdoctoral, and Special Zika Research (new in 2018) Travel Awards, and our HOT Distinguished Toxicologist Scholar Award (and lecture). I encourage you to visit the HOT Member presentations throughout the week, and especially to attend the HOT Reception for networking, establishing potential collaborations, and just plain fun. Also, come visit the HOT leadership at the Pavilion! We look forward to seeing you there!

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Building Bridges Through Toxicology

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We would like to thank all the members who contributed to the development of Toxenlaces since it was created. Your support has been invaluable for HOT. Our 50th issue is an achievement that belongs to all of us.
Congratulations!

2018 HOT DISTINGUISHED TOXICOLOGIST AWARD

Tomas R. Guilarte
PhD, Fellow ATS
Dean, Robert Stempel College of Public Health and Social Work
Florida International University

2018 HOT TRAVEL AWARDS

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Systems Biology
Harvard Medical School

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Andres Henriquez-Coria
University of North Carolina Chapel Hill/US EPA

Teresa Anguiano
University of Pittsburgh

Yazmin Godinez Solis
Centro de Investigacion y Estudios Avanzados
Instituto Politecnico Nacional

Eva Vitucci
University of North Carolina Chapel Hill/US EPA

Carolina Manganeli Polonio
Department of Immunology
Universidade de Sao Paulo

2018 HOT OUTSTANDING OFFICER AWARD

Jose Francisco Delgado Jimenez, BS
National Institutes of Health
Toxenlaces Editor-in-chief

Alejandro Ramirez Lee, PhD
Universidad Autonoma de San Luis Potosi
Toxenlaces Editor Assistant and Graphic Designer
Transitioning from Postdoctoral Fellow to a Faculty Position
By Verónica Ramírez-Alcántara, vramirez@health.southalabama.edu

Three years ago I reached that point in my scientific career, I was appointed as Research Assistant Professor. It was an exciting moment and I started to think about all the responsibilities but also opportunities I was acquiring with my new position. A postdoctoral fellow friend of mine asked me how did I reach that point? How did I go from a Postdoctoral position to a Faculty position? After my friend asked me that question I started to think really how that happened. Although, there is not a unique way or timing to make that transition, I realized that what dictates that transition is a combination of factors that make you mature enough to be ready for it. It is like marriage, you don’t just jump into that serious commitment, several factors prepare you for that, and somehow, you know that you are ready.

I was able to identify 3 key factors that prepared me for a Faculty position. In this article of Toxenlaces I am sharing those factors that were important to me so they could help you to move your scientific career to that point too if you are planning to stay in academia.

1. Building skills

One of the purposes for doing a postdoctoral training is to get a specific knowledge into the research field in which you are interested in. But also, during this period of your scientific career, it is important you can build your skills in terms of techniques and scientific writing. Get exposed to different and new techniques as well as the knowledge of their principles, build enough experience in those that later you could apply to your own research.

In terms of writing, look for any opportunity for practicing your scientific writing. You will do that when writing your papers, but you also need to develop your grant-writing skills. This is a little different because you need to be able to express clear and condensed ideas in few short paragraphs; most grants allow a limited number of pages for the Research Plan section where you write the background, aims, methods and pitfalls of your proposed project.

So look for opportunities to help your adviser to write a part of the grant he/she is preparing. It could be that part of the grant where your method/project is being used, or the animal experiments you are performing. A good resource for this skill are the grant writing seminars provided by NIH; usually those seminars are presented during the national meetings of scientific societies. Also, some universities provide seminars related with that skill, check on your university. Don’t forget that also organizing and presenting your data for laboratory meetings, and preparing and presenting posters or talks on scientific meetings could help you because you always will need to express clear and condensed ideas of your project. In addition, if you belong to a scientific society, for example HOT, volunteer for submitting a small scientific article to their newsletter or blog. Keep practicing! The goal is to get writing experience to express clear and condensed scientific ideas in a few short paragraphs.

2. Independence

As a postdoctoral fellow you are in the middle between a PhD student and a faculty member, so if you are targeting to stay in academia, in terms of responsibilities you come from an environment where, most likely, your adviser directed a substantial portion of your research project, and now you want to go to an area where you will be responsible for your own projects. Therefor, as a postdoctoral fellow you need to cultivate the sense of independence. Evidently at this point of your scientific career you already have the sense of responsibility for developing your postdoctoral research project. However, an important characteristic to cultivate your independence is to have initiative. Be proactive and propose new experiments with new techniques for your project. You even could propose some alterations or changes in the direction of the line of research; however, be careful, those suggestions still need to cover the line of research of the laboratory but complement it because at this point you still need the advice, support and experience of your adviser.
Another important area to cultivate your sense of independence is finding opportunities for funding your postdoctoral project. Look for fellowships or grant opportunities from the government or private organizations or foundations or even from your Department or University. There are also grants that apply for transition from postdoctoral fellow to junior faculty. When becoming a faculty, you acquire the responsibility of getting grants to support your projects, so starting to obtain grants as a postdoctoral fellow in the research field of your interest will help you because the scientific community on that area will start to know you. Remember that even a small fellowship or grant counts. Also, look for opportunities for Travel Awards to attend scientific meetings. If you go to your adviser with all the information for such funding or award opportunity, he/she will see your enthusiasm and will be willing to support you for such an application. Applying for funding opportunities also will be an opportunity for you to practice your writing-grant skills.

Another area where you can achieve the sense of independence is taking on responsibilities in your laboratory. For example, volunteer to take after a PhD or summer student, take charge of part of a project, run a piece of equipment or a specific assay needed in the laboratory. Each of these activities will carry on the need for development of a research plan, strategies to overcome pitfalls, and commitment to obtain successful results. When you volunteer to do these activities you are building trust, reputation for reliability to complete tasks and, in the process, you are cultivating aptitudes needed when pursuing your independence as faculty.

3. Progress

One thing that your postdoctoral advisor will value the most when supporting your transition from postdoc to faculty is your ability to go from talking, proposing, suggesting, to show results, progress in all you are involved in the laboratory. It is easy to get lost and get unproductive if you get loaded with so many responsibilities/projects in your laboratory. You could solve that by prioritizing them or making a timeline; communicate that to your adviser so he/she will know when you may have results for a specific task. Try to focus on a few things at the time and make progress. Learning how to handle many responsibilities is important because you will need that ability when becoming a faculty.

Good communication with your adviser is important. Report to your adviser the progress you are making on your paper, your project, your student’s project, your fellowship application, your grant application, etc. Manage to meet with him/her every two weeks or once a month to discuss your progress. Your adviser will see your commitment and will not hesitate when considering your promotion.

I hope this article provided you useful tips if you are planning your transition from postdoctoral fellow to faculty. The take home message is: don’t rush, instead, build your research skills and reputation for reliability to develop your own research plan, and importantly, build your publication records. Therefore, during the process, somehow, you will know when it is time to move forward to a faculty position.

About the author

Dr. Verónica Ramírez-Alcántara is a pharmacologist, with research experience in the area of mechanistic toxicology, biochemical and enzymatic methods development, and cancer chemoprevention. She has research work on NSAID-enteropathy, ulcerative colitis, and on NSAIDs anti-tumor activity for preclinical development. She is currently a Research Assistant Professor in the Drug Discovery and Development Lab, Mitchell Cancer Institute, University of South Alabama.

Source: https://www.researchgate.net/profile/Veronica_Ramirez-Alcantara
It is currently estimated that 1 in 250 infants are born with malformations due to toxic environmental exposures (Gluckman and Hanson, 2004). Potently teratogenic toxicants such as lead, mercury, and thalidomide are well characterized (Stern, 1981). Currently, however, the challenge lies in understanding how developmental disorders evident later in life can be connected to toxicant exposure in utero. It is therefore critical to characterize not only the mechanism of action of such toxicants but also to understand how they can cross the placental barrier and what factors influence their disposition.

The placenta is the physical and biochemical barrier between the maternal and fetal blood supply. It regulates the flow of nutrients in and waste out, shields the fetus from the potentially hostile maternal immune system, and synthesizes hormones crucial for a successful pregnancy (Burton and Jauniaux, 2015). It is also a barrier against toxic insult, but particular compounds can traffic across the placenta (Eshkoli et al., 2011). In general, small (<600 Da), hydrophobic molecules cross more easily, and often by passive diffusion (Eshkoli, et al., 2011). Emerging in this field is the critical role of uptake and efflux transporters expressed in syncytiotrophoblasts.

The breast cancer resistance protein (BCRP) is an ATP-dependent efflux transporter expressed in the gut, liver, blood-brain barrier, testis, and, importantly, the placenta (Mao, 2008). BCRP is of particular significance in the placenta because it is highly expressed on the apical membrane of syncytiotrophoblasts and serves to prevent the fetal accumulation of certain toxicants (Mao, 2008). BCRP transports a number of developmental toxicants typically encountered during pregnancy. For instance, placent al BCRP has been shown to transport glyburide, a hypoglycemic agent commonly prescribed for gestational diabetes (Bircsak et al., 2016).

Normally, glyburide does not cross the placenta. If BCRP activity is compromised, however, either through genetic or dietary factors, glyburide can enter the fetal circulation leading to neonatal hypoglycemia and potentially metabolic disorders later in life (Goode et al., 2016; Song et al., 2017). BCRP has also been shown to transport zearalenone, a potently estrogenic mycotoxin produced by the Fusarium genus of fungi, which is prevalent on cereal crops (Xiao et al., 2015). Zeranol, a synthetic chemical analogue of zearalenone, is also used by the beef industry to increase the feed to gain ratio because of its estrogenic activity. These chemicals are not broken down by the cooking process have been detected in cereal, popcorn, and beef, and have been detected in urine in a number of studies (Bullerman and Bianchini, 2007; Fleck et al., 2016; Iqbal et al., 2014; Ok et al., 2014). Because of their estrogenic properties, these chemicals have been shown in humans to interfere with pubertal development (Bandera et al., 2011).

BCRP activity can be compromised by a number of dietary, environmental, and genetic factors. For instance, our lab has shown that BCRP activity can be inhibited by soy isoflavones, hypoxia, and low cholesterol (Bircsak and Aleksunes, 2015; Francois et al., 2017; Szilagyi et al., 2017). BCRP expression has also been shown to be lower in preeclampsia, HELLP syndrome (hemolysis, elevated liver enzymes, low platelet count), and intrauterine growth restriction (Evseenko et al., 2007; Gormley et al., 2017; Jebbink et al., 2015; Nishizawa et al., 2011). While the causes of these diseases are not entirely understood, abnormal placental function and development is a central component. To date, however, there is no work characterizing how diseases of pregnancy affect BCRP-mediated drug disposition.
While there exists a clear gap in our understanding of placental physiology, a class of lipid signaling molecules termed endocannabinoids is emerging as a critical regulator of the placentation process and a potential mediator of placental diseases. The endocannabinoids anandamide and 2-arachidonyl glycerol act on the cannabinoid receptors, so named because they interact with tetrahydrocannabinol, the active compound in cannabis, are known to regulate mood, appetite, and memory (Kirkham and Tucci, 2006). Recently, these compounds have also been shown to regulate trophoblast differentiation, apoptosis, invasion, hormone production, and fetal endothelial function (Costa, 2016). Further, in the instance of preeclampsia, changes in the expression of endocannabinoid synthesis and breakdown enzymes as well as the CB1 receptor have been observed, ultimately leading to an increase in endocannabinoid signaling (Aban et al., 2013; Bienertova-Vasku et al., 2011; Fugedi et al., 2014). Hypoxic conditions, like those seen in preeclampsia, can also lead to an increase in endocannabinoid signaling (Aban et al., 2016). There are currently no studies examining the effect of endocannabinoids on BCRP expression and activity, but it has been shown that phytocannabinoids reduce BCRP expression in trophoblast cell lines in vitro (Feinshtein et al., 2013). Aberrant endocannabinoid signaling may therefore be the mechanism that drives BCRP expression down in diseases of pregnancy, and our lab is currently working to characterize the effect of endocannabinoids on BCRP expression.

In conclusion, proper fetal development is reliant on the health of the placenta to not only regulate the flow of nutrients and waste but also prevent exposure to developmental toxicants present in the maternal circulation. Placental transporters such as BCRP are important to limit trans-placental toxicant trafficking. Therefore, it is a central concern to distinguish the factors that influence placental transporter activity and, therefore, toxicant disposition during pregnancy.

References
References


About the author

John is currently a PhD candidate in the field of toxicology in the Joint Graduate Program in Toxicology (JGPT) in Rutgers University. He is developing his thesis around characterizing the role of ATP binding cassette efflux transporters in trans-placental transfer of xenobiotics and fetal development.

Source: https://www.linkedin.com/in/john-t-szilagyi-51666961

11th Iberian and 8th Iberoamerican Congress of Environmental Pollution and Toxicology


More info click here
My name is José Zavala and I obtained my PhD in Environmental Sciences and Engineering from the University of North Carolina at Chapel Hill. After 4 years, my postdoctoral tenure at the US EPA is coming to an end. My graduate and postdoctoral research has been at the nexus of engineering, air pollution, and toxicology. I have developed instrumentation that is used to expose cultured cells at the air-liquid interface directly to airborne pollutants to better mimic human inhalation exposures.

What’s going on?

The use of in vitro dosing methods to assess the toxicological activity of aerosols, vapors, and gases has increased over the past 15 years. Organizations like the US National Academy of Sciences and the European Union Reference Laboratory for Alternatives to Animal Testing have called for reduction of animal use in toxicology studies (1). Assessments of airborne contaminants are challenging because traditional in vitro dosing methods require the addition of particulate matter (PM), PM extracts, or chemicals in dimethyl sulfoxide (DMSO) or water into cell culture medium; altering the physical/chemical characteristic of the material (2).

Additionally, ~10% of chemicals nominated for study in the US Environmental Protection Agency’s (EPA) Toxic Substances Control Act (TSCA) chemical substance inventory are insoluble in DMSO, water, or are volatile (3), thus cannot be tested using traditional in vitro dosing methods. Exposure of cells at an air-liquid interface (ALI) is a better respiratory model as it permits a direct air-to-cell interaction while preserving the test substance in its natural state. I have developed ALI exposure systems that can be useful to the field of inhalation toxicology (4). I am preparing my recent work for publication showing the higher efficiency of my exposure systems over those currently available. In an effort to disseminate this much-needed technology, my next endeavor will be to commercialize my ALI exposure systems.

References

3. EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory: https://www.epa.gov/tsca-inventory
On April 12th of 2018, the Red Española para el Desarrollo de Métodos Alternativos a la Experimentación Animal (REMA) organizes a meeting about The Activity of European Commitees related to Chemical Risk.

All public is invited. For more info click [here](#).
Postdoctoral Assembly Luncheon

**Tuesday, March 13th, 2018, 12:00 – 1:00 PM**

**Henry B. Gonzalez Convention Center**

**900 E Market St, San Antonio TX 78205 CC Room 215**

**Chairperson(s):** Samantha J. Snow, US EPA, Chapel Hill, NC

**Hosted by:** Postdoctoral Assembly

The Postdoctoral Assembly (PDA) Luncheon is a casual event that encourages engagement and networking among postdoctoral scholars. Finishing up a discussion from your morning poster session? Leaving early to set up a poster or attend another meeting? That’s no problem; stop in when you can! Enjoy a buffet lunch while networking with others, including PDA officers, Postdoctoral Representatives, and SOT Councilors. This is the time for postdocs to relax, celebrate achievements, and have fun. At 12:45 pm, there will be a short program, which will include recognition of the Best Postdoctoral Publication Award recipients and the welcoming of the 2017–2018 PDA officers. Door prizes add even more fun to this lively event. Postdocs should reserve a ticket for $10 when registering for the Annual Meeting.

Student/Postdoctoral Scholar Mixer

**Sunday, March 11**

**7:30 PM to 9:00 PM**

**Convention Center Hemisfair Ballroom 1**

**Ticket Required**

**Hosted by:** Graduate Student Leadership Committee (GSLC)

This opportunity is for all students and postdoctoral scholars to gather, meet new colleagues, and reestablish relationships in an informal atmosphere at the beginning of the meeting. Learn about being involved in SOT by speaking with student leaders at the SOT component group posters. The GSLC Outstanding Leadership Award is presented during this event. Tickets are obtained at no cost by registering for the Mixer on the Annual Meeting Registration Form. Ticket and meeting badge are required. Complimentary refreshments and a cash bar will be available.
If your Hispanic Organization is planning a Toxicology meeting or if you are organizing a Toxicology event intended for a primarily Hispanic audience, and want to promote it, send an email to María Cárdenas González (Councilor for Sister Organizations) at Mariana_CardenasGonzalez@hms.harvard.edu for more information for its inclusion in upcoming Toxenlaces issues.
Position Summary

The Department of Pharmacology & Toxicology at Michigan State University seeks to fill two academic-year, tenure-system Assistant/Associate Professor positions. (Both positions are available at the Assistant or Associate Professor rank depending on qualifications and experience.) For one position, applicants with expertise in toxicology or a related research area are particularly encouraged to apply. For the other position, the ideal candidate will have expertise in one of the broad areas of current research in the department, including, but not limited to neuropharmacology, neurotoxicology, cardiovascular pharmacology, inflammation, cancer, and drug discovery. For both positions, mechanistic research that utilizes cutting-edge molecular methodology, e.g., gene editing and/or genetic manipulation by viral vectors, epigenetic analyses and single-cell approaches is highly desirable.

The successful applicant will be expected to maintain an extramurally-funded research program, engage in MSU’s highly collaborative research environment and contribute to the teaching mission of the department.

Required Degree

Doctorate- Pharmacology/Toxicology, Related Areas of Research

Minimum Requirements

Candidates must have a doctoral degree (PhD, ScD, DVM, DO, MD or equivalent) with relevant, productive research experience.

Desired Qualifications

Candidates with a record of outstanding scholarship and extramural funding are encouraged to apply.

Required Application Materials

Michigan State University has an on-line, centralized application procedure and all candidates should submit a package including letter of intent, curriculum vitae, a statement of research goals, up to five relevant reprints, as well as full names and contact information (phone numbers, e-mail, postal address) of three individuals acting as references. Applicants should submit a letter of application, curriculum vitae, a statement of research goals, up to five relevant reprints and a statement of teaching philosophy as well.

Special Instructions

Questions can be directed to Dr. Cheryl E. Rockwell, Search Committee Chairperson (rockwelc@msu.edu). Application review will begin February 1, 2018 and continue until suitable candidates are identified.
Toxenlaces is the newsletter that informs Hispanic toxicologists in the United States and the international Spanish and Portuguese-speaking scientific communities about important toxicological events and issues occurring in our countries. It is electronically published and distributed to our membership and Sister Organizations in Ibero-America. Toxenlaces disseminates critical dates for events, health perspectives, and funding and training opportunities. It serves as a toxicology forum for our members and other partner organizations, engages in educational outreach to the Hispanic communities and provides the essential elements to support networking among Hispanic toxicologists. Toxenlaces is open to receive collaborations from HOT and SOT members, and Sister Organizations. You can collaborate with short scientific articles, news or notes related with toxicology. Other ways to collaborate is by nominating your peers or yourself for the sections Trainee Section and When I Grow Up. For more information about collaborating with Toxenlaces send an email to Jose Delgado (Toxenlaces Editor) at jose.delgadojz@gmail.com.

The views expressed in this Toxenlaces issue do not necessarily represent those of the Hispanic Organization of Toxicologists (HOT) or Society of Toxicology (SOT).