



UNIVERSITY OF GEORGIA

Interdisciplinary Toxicology Program

2022 Newsletter



Interdisciplinary
Toxicology Program
UNIVERSITY OF GEORGIA

The Interdisciplinary Toxicology Program

College of Veterinary Medicine

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John Wagner, Interim Director

Nick Filipov, Graduate Coordinator

Wanda Darden, Administrative Specialist II

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Greetings fellow ITP colleagues,

The Interdisciplinary Toxicology Program faculty and student members have carried on with their work and achieved much this past year as we have all attempted to re-engage and move towards normalcy. Both the Spring '22 Workshop (held in the Coverdell Building) and our Welcome Back ITP event during the Fall '22 semester (held at the Flinchum's Phoenix meeting facility) were held in-person. These events serve to connect ITP students & faculty across our many participating Colleges and Schools, allow us to welcome new program participants and enjoy some good food together! Thanks to Wanda for her hard work in coordinating these events and to the students for again providing some challenging "Tox Trivia" entertainment at the Fall social event.

The ITP faculty membership has grown since our last newsletter was published, please review the listing on page 6 to see the current participating members. New faculty joining in 2022 include Dr. Arthi Kanthasamy (Physiology & Pharmacology). I also encourage all of you faculty members to continue to support the efforts and activities of our trainees as they progress through their academic careers here at UGA and beyond, their accomplishments are the highlights of the ITP!

As you are all aware, the ITP administrative team is undergoing a change in leadership in 2023. I am excited to report that Dr. Nick M. Filipov (Physiology & Pharmacology) is the newly appointed ITP Director as of February 1st. The search for the next Graduate Coordinator for the ITP is currently ongoing. Ms. Wanda Darden is continuing in her role as Administrative Specialist II for the ITP.



Finally I want to acknowledge the support of the Graduate School Staff Members and the many individuals within the ITP membership (students & faculty) that participate and support the program in so many different ways. Without your active participation, the ITP cannot effectively continue in its efforts to promote training and research in the discipline of toxicology here at the University of Georgia.

Once again, thanks to you All!

A handwritten signature in black ink that reads "John J. Wagner". The signature is written in a cursive, flowing style.

John J. Wagner, Past Interim Director of ITP

Graduate Coordinator Notes

The following is a brief summary of the ITP for 2021-2022 academic year:

Ph.D. degrees (2) earned this past year:

Yaye Wang (Dr. Qingguo “Jack” Huang), Crop and Soil Sciences, CAES

Katherine Kearns (Dr. Luke Naeher), Crop and Soil Sciences, CAES

Advanced to Doctoral Candidacy (1) this year:

Naomi Kramer (Dr. Brian Cummings), Pharmaceutical & Biomedical Sciences, Pharmacy

Hannah Xu (Dr. Tai Guo), Biomedical Sciences, CVM

ITP accepted 11 new students for Summer/Fall 2021-22

Alejandra Bagues Carot (Dr. Kanthasamy), CNDR, Physiology and Pharmacology, CVM

Seth Currie (Dr. Lili Tang), Environmental Health Sciences, CPH

Ignacio Llada (Dr. Nikolay Filipov), Physiology and Pharmacology, CVM

Taylor Martin (Dr. Xiaoqin Ye), Physiology and Pharmacology, CVM

Michael O'Brien (Dr. J.S. Wang), Environmental Health Sciences, CPH

Alyssa Otto (Dr. Kanthasamy), CNDR, Physiology and Pharmacology, CVM

Fabian Tejedor Rojas (Dr. John Wagner), Physiology and Pharmacology, CVM

Yufei Sui (Dr. Qingguo “Jack” Huang), Crop and Soil Sciences, CAES

Kylie Tager (Dr. Charles Easley), Environmental Health Science and Regenerative Bioscience Center, CPH

Fatma Eldefrawy (Dr. Tai Guo), Biomedical Sciences, CVM

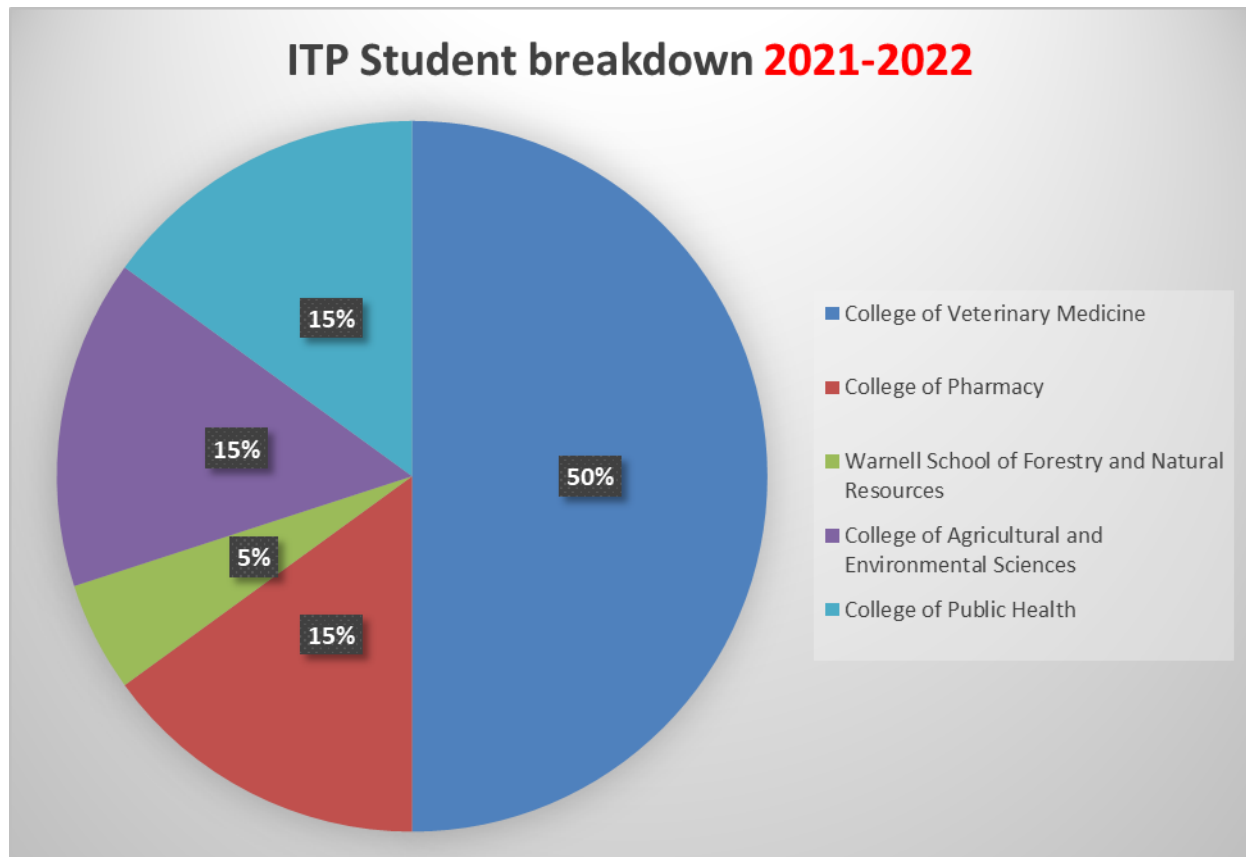
Ethan Shealy (Dr. Ben Parrott), Savannah River Ecology Lab and Odum School of Ecology



Dr. Nikolay Filipov

Graduate Coordinator of the Interdisciplinary Toxicology Program

Graduate Coordinator Report



- **20 Students**
- **4 Incoming students**
- **90:10 %; PhD: MS**
- **55:45 %; F:M**
- **70:30 %; US: International**
- **14 mentors; 7 departments**

College of Agricultural and

Environmental Sciences

Sayed Hassan, Crop & Soil Sciences
Qingguo (Jack) Huang, Crop & Soil Sciences
Steve Stice, Director, Regenerative Bioscience Center
William Vencill, Crop & Soil Sciences
Franklin West, Animal & Dairy Science

College of Public Health

Marsha Black, Environmental Health Science (Ret)
Chas Easley, Environmental Health Science
Travis Glenn, Environmental Health Science
Wentao Li, Environmental Health Science
Erin Lipp, Environmental Health Science
Luke Naeher, Environmental Health Science
Mary Alice Smith, Environmental Health Science (Ret)
Lili Tang, Environmental Health Science
Jia-Sheng Wang, Department Head, Environmental Health Science
Phillip Williams, Dean Emeritus, College of Public Health

College of Veterinary Medicine

Julie Coffield, Physiology & Pharmacology
Gaylen Edwards, Department Head, Physiology & Pharmacology
Paul Eubig, Physiology & Pharmacology
Nikolay Filipov, Physiology & Pharmacology
Robert Gogal, Biomedical Sciences
Tai Guo, Biomedical Sciences
Steve Holladay, Department Head, Biomedical Sciences
Elizabeth Howerth, Pathology
Anumantha Kanthasamy, Physiology & Pharmacology
Arti Kanthasamy, Physiology & Pharmacology
S. Mark Tompkins, Infectious Diseases
Ralph Tripp, Infectious Diseases
Maria M. Viveiros, Physiology & Pharmacology
John J. Wagner, Physiology & Pharmacology
Xiaoqin Ye, Physiology & Pharmacology

Franklin College of Arts and Sciences

Anne O. Summers, Dept. of Microbiology

Odum School of Ecology

Stacey Lance, Savannah River Ecology Lab
Ben Parrott, Savannah River Ecology Lab

R.C. Wilson College of Pharmacy

Michael Bartlett, Pharmaceutical & Biomedical Sciences
James Bruckner, Pharmaceutical & Biomedical Sciences (Ret)
Arthur Roberts, Pharmaceutical & Biomedical Sciences
Randall L. Tackett, Clinical & Administrative Pharmacy
Catherine White, Pharmaceutical and Biomedical Sciences
Jason Zastre, Pharmaceutical & Biomedical Sciences

Warnell School of Forestry & Natural Resources

Robert Bringolf, Warnell School of Forestry & Natural Resources
Tracey Tuberville, Savannah River Ecology Lab
Xiaoyu Xu, Savannah River Ecology Lab
Peter Hazelton, Warnell School of Forestry & Natural Resources

Auburn University, AL

Robert Arnold, Auburn Univ., Dept. of Drug Discovery and Development

USDA

Ronald T. Riley, Ret., Toxicology & Mycotoxin Research, Retired
Kenneth A. Voss, Toxicology & Mycotoxin Research, Retired

Wayne State University, MI

Brian Cummings, Wayne State University College of Pharmacy & Allied Health Sciences

New ITP Faculty



Arthi Kanthasamy, Ph.D.

Professor

Center for Neurological Disease Research

Department of Physiology and Pharmacology

College of Veterinary Medicine

Anumantha G. Kanthasamy, Ph.D.

Professor

John H. "Johnny" Isakson Chair for Parkinson's Research
and Georgia Research Alliance Eminent Scholar

Director, Center for Neurological Disease Research

Department of Physiology and Pharmacology

College of Veterinary Medicine



Publications

- Zhang, X., Ye, Y., Sun, J., Xu, Y., Huang, Y., **Wang, J.-S., Tang, L.**, Ji, J., Chen, B.-Y., Sun, X. (2022) Polygonatum sibiricum polysaccharide extract relieves FB1-induced neurotoxicity by reducing oxidative stress and mitochondrial damage in *Caenorhabditis elegans*. *Food Biosci.*, 49, 2022, 101939; <https://doi.org/10.1016/j.fbio.2022.101939>
- Zhang X, Ye Y, Sun J, **Wang J-S, Tang L, Xu Y**, Ji J, Sun X (2022). Abnormal neurotransmission of GABA and serotonin in *Caenorhabditis elegans* induced by Fumonisin B1, *Environmental Pollution* 304:11141, July 2022
- Marroquin-Cardona, A. G., Deng, Y., Garcia-Mazcorro, J. F., Johnson N. M., Nicolle J. Mitchell, N. J., **Tang, L., Wang, J.-S.**, Harvey, R. B., Phillips, T. D. (2022). Aflatoxin B₁ Sorption and Safety of Dietary Sodium Bentonite in Sprague-Dawley Rats. *Clays and Clay Minerals*, Published in 22 Feb 2022.
- Andrews-Trevino, J., Webb, P., Shrestha, R., Pokharel, A., Acharya, S., Chandyo, R., Davis, D., Baral, K., **Wang, J.-S., Xue, K.**, and Ghosh, S. (2022). Exposure to Multiple Mycotoxins, Environmental Enteric Dysfunction and Child Growth: Results from the AflaCohort Study in Banke, Nepal. *Maternal & Child Nutrition*, 2022;18:e13315.
- Xu J., Ye Y, Ji J, Sun J, **Wang J-S**, Sun X (2022). Untargeted Metabolomic Profiling Reveals Changes in Gut Microbiota and Mechanisms of Its Regulation of Allergy in OVA-Sensitive BALB/c Mice. *J. Agric. & Food Chemistry* 70(10):3344-3356.
- Wang T, Ye Y, Ji J, Yang X, Xu J, **Wang J-S**, Han X, Zhang T, Sun X (2022). Diet composition affects long-term zearalenone exposure on the gut–blood–liver axis metabolic dysfunction in mice. *Ecotoxicol & Environ Safety* 236:113466, May 2022
- Ma, X., Ye, Y., Sun, J., Ji, J., **Wang, J.-S.**, Sun, X. (2022). Coexposure of Cyclopiazonic Acid with Aflatoxin B1 Involved in Disrupting Amino Acid Metabolism and Redox Homeostasis Causing Synergistic Toxic Effects in Hepatocyte Spheroids. *J. Agric. & Food Chemistry* Article number acs.jafc.2c01608
- Ashraf, W., Rehman, A., Ahmad, M-U-D., Rabbani, M, Mushtaq, M. H., Aamir, K., Xue, K. S., **Wang, J.-S.** (2022). Assessment of aflatoxin B1-lysine adduct in children and its effect on child growth in Lahore, Pakistan. *Food Additives & Contaminants: Part A*, DOI: 10.1080/19440049.2022.2080871.
- Ashraf, W., Rehman, A., Ahmad, M-u-D., Rabbani, M., Mushtaq, M. H., Aamir, K., Akhtar, F. and **Wang, J.-S.** (2022). Assessment of aflatoxin M1 exposure and associated determinants in Children from Lahore, Pakistan. *Food Additives & Contaminants: Part A*; DOI: 10.1080/19440049.2022.2138559
- Li, F., Duan, X., Zhang, D., Zhao, X., Meng, E., Yi, R., Liu, C., Li, Y., **Wang, J.-S.**, Zhao, X., Li, W., Zhou, J. (2022). Mycotoxin surveillance on wheats in Shandong province, China, reveals non-negligible probabilistic health risk of chronic gastrointestinal diseases posed by deoxynivalenol. *Environ. Sci., and Pollution Res.* <https://doi.org/10.1007/s11356-022-20812-y>.
- Andersen, C.L., Byun, H., Li, Y., Shuo, S., Miller, D.M., Wang, Z., Viswanathan, S., Hancock, J.M., Bromfield, J., and **Ye, X.*** (2021) Varied effects of doxorubicin (DOX) on the corpus luteum of C57BL/6 mice during early pregnancy. *Biol Reprod.* (PMID: 34554181) DOI: 10.1093/biolre/ioab180

Publications

Kramer NE, Barnett LMA, Cummings BS. (2022) Nephrotoxicity of Flame Retardants: An Understudied but Critical Toxic Endpoint. *Current Opinion in Toxicology*. doi: 10.1016/j.cotox.2022.100359

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Dockman, R. L. , J. M. Carpenter, A. N. Diaz, R. A. Benbow, and N. M. **Filipov**. (2022). Sex differences in behavior, response to LPS, and glucose homeostasis in middle-aged mice. *Behavioural Brain Research*. **418**: 113628. Epub: 20 October 2021. PMID: **34687827**

Mote, R. S. , N. S. Hill, J. H. Skarlupka, J. M. Carpenter, J. M. Lourenco, T. R. Callaway, V. T. Tran, K. Liu, M. R. Smith, D. P. Jones, G. Suen, and N. M. **Filipov**. (2022). Integrative interactions applied to Bovine Fescue Toxicosis. *Scientific Reports*, 12(1): 4899. Epub: March 22, 2022. PMID: 35318361

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Bisphenol Exposure Disrupts Cytoskeletal Organization and Development

of Pre-Implantation Embryos

by Luhan Yang¹, Claudia Baumann¹, Rabindranath De La Fuente^{1,2} and Maria M. Viveiros ^{1,2,*}

¹ Department of Physiology and Pharmacology, College of Veterinary Medicine, University of Georgia, Athens, GA 30602, USA

² Regenerative Biosciences Center (RBC), University of Georgia, Athens, GA 30602, USA

<https://www.mdpi.com/2073-4409/11/20/3233/htm>



Alejandra Barges Carot



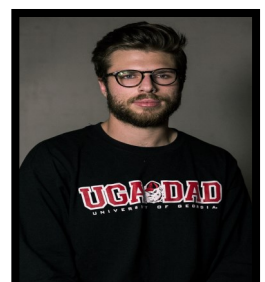
Jiaqi Chen



Seth Currie



Fatma Eldefrawy



Jonny Hancock



Naomi Kramer



Ignacio Llada



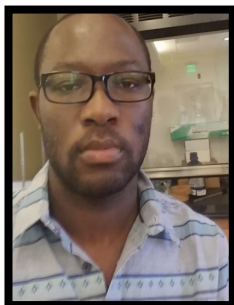
Danielle Ludwig



Taylor Martin



Michael Mazingo



Gershon Akese Kum Mensah



Erick Mollinedo



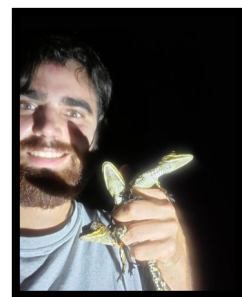
Michael O'Brien



Alyssa Otto



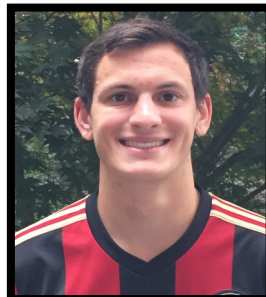
Fabian Tejedor Rojas



Ethan Shealy



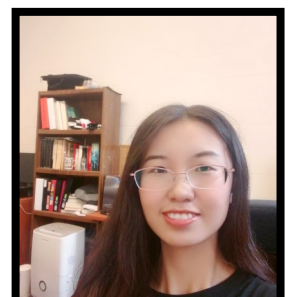
Hannah Xu



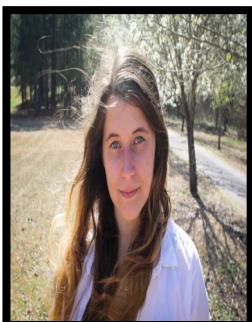
Jacob Siracusa



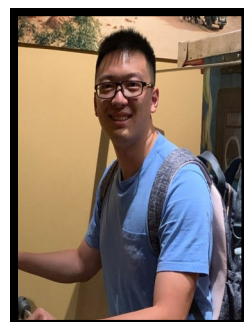
Jake Smith



Yufei Sui



Kylie Tager



Yuqing Ji

ITP 2021—2022 CLASS

Fall 2022 Orientation



Fall 2022 ITP Retreat/Meeting



Spring Retreat and Workshop 2022



2022 Interdisciplinary Toxicology Program Workshop University of Georgia



Student Awards and Recognitions

Spring 2022 ITP Workshop:

Platform presentation winners:

- Gershon A.K. Mensah** **First Place** Unravelling the stimulating effect of cholesterol on p-glycoprotein mediated efflux of chemotherapeutic agents. Advisor: **Arthur Roberts**
- Katherine Kearns** **Second Place** Estimating airborne exposures and urinary biomarkers of plastic waste incineration among adolescent girls in rural Guatemala. Advisor: **Luke Naher**

Posters presentation winners:

- Ignacio Llada** **First Place** Physiological parameters and behavioral changes in Angus steers consuming toxic during late fall in Georgia. Advisor: **Nikolay Filipov**
- Naomi Kramer** **Second Place** Exposure to the Brominated Flame Retardant hexabromocyclododecane results in systemic changes in polyunsaturated fatty acid metabolism within phospholipids of mice. Advisors: **Brian Cummings and John Wagner**
- Jacob Siracusa** **Second Place** The Association between Perfluorooctane Sulfonic Acid and metabolic alterations associated with non-alcoholic fatty liver adult male and. Advisors: **Tai Guo and Robert Gogal**

Local Awards:

- Naomi Kramer** Graduate Student Travel Award – *University of Georgia, Spring and Fall 2022*
Innovative and Interdisciplinary Summer Research Grant - *University of Georgia, Spring 2022*
George Hugh Boyd Memorial Scholarship - *University of Georgia, Spring 2022*
Innovative and Interdisciplinary Summer Research Grant - *University of Georgia, Spring 2021*
- Jonathan Hancock** Emerging Leader - *University of Georgia Graduate School, Spring 2022*
Summer Research Grant - *University of Georgia, Summer 2022*
Graduate Student Travel Award - *University of Georgia, Summer 2022*
- Taylor Martin** Emerging Leader - *University of Georgia Graduate School, Spring 2022*
- Jacob Siracusa** Summer Research Grant—*University of Georgia, Summer 2022*
- Hannah Xu** Summer Research Grant—*University of Georgia, Summer 2022*
- Katie Kearns** Summer Research Grant—*University of Georgia, Summer 2022*
- Ignacio Llada** Summer Research Grant—*University of Georgia, Summer 2022*

Student Awards and Recognitions

Regional Awards:

Naomi Kramer Platform Presentation Award 1st place, *Southeastern Society of Toxicology, December 2021*

Taylor Martin Poster Presentation Award 3rd Place, *Southeastern Society of Toxicology, November 2021*

National Awards:

Naomi Kramer Three Minute Thesis Award—*Society of Toxicology, March 2022*
Toshio Narahashi Neurotoxicology Award—*Society of Toxicology, February 2022*
Experimental Biology Conference Travel Award—*Experimental Biology, January 2022*

David Haskins Chris Lee Award—*Society of Environmental Toxicology and Chemistry and the International Copper Association, 2022*



UGATOX Officers 2022-2023



Pictured L to R:

Networking Chairs —Alyssa Otto and Naomi Kramer

Secretary —Alejandra Bargues Carot

Vice President—Seth Currie

Treasurer —Taylor Martin

President —Jonny Hancock

UGATOX Interview with an ITP Alum:

Featuring Dr. Vic Johnson



Tell us a bit about yourself! Can you give us a brief introduction of your background and hobbies?

I am an immunotoxicologist by training, and work for a small CRO called Burleson Research Technologies, Inc., which focuses on the immune system and immunotoxicity safety assessment. We provide these services to pharmaceutical, chemical, and government agencies. I did a Bachelor's degree in Biology and a Master's degree in immunotoxicology, which led me to the University of Georgia where I did my PhD in immunotoxicology. I'm from a small town in Saskatchewan, Canada, and that's the land of the frozen. So it was quite a shock for me to move down to Georgia! It took about four years to get used to the heat. I have four children – one is in college and the other three have graduated and have careers of their own. One of the things I like to do outside of Toxicology/work is play hockey. I play in a couple of adult hockey leagues. My son plays with me on one of my teams. It's a fun tension release and you get to hang out with great groups of guys and really have fun exercising. One of the things I love to do around home is woodworking – making various pieces of furniture, restoring old furniture, turning things into something new. Rather than throwing things out and buying a new piece, I like to say "well, this might look better in a different color, so let's paint it" or take some of the parts off and make it look different.

What is your favorite piece of Toxicology trivia?

I don't know if it's really trivia, but the microbiome has only in the past 20 years or so been recognized for the impact it has on the field. The microbiome plays a critical role in development and responses of the immune system and an integral role in immunotoxicology. It is the gatekeeper of exposure and should be considered as an organ capable of first pass metabolism as it encounters our environment first and has great metabolic capacity. It can detoxify and toxify the exposures we face in daily life. We have to respect the microbiome as part of our toxicology approach.

What has your career trajectory looked like since completing your PhD? What struggles and successes did you have during this process?

My career trajectory started well before obtaining my PhD. It kind of goes back to that decision point in my final year of my Bachelor's. One of my last classes in undergrad in Saskatchewan was an introduction to toxicology. I was fascinated by the section on immunotoxicology and the writings of Dr. Michael Luster. From that point forward, I pursued a career in immunotoxicology. I received an opportunity to join the Master's program within the vet program at the university of Saskatchewan. I was fortunate enough to join the lab of Dr. Barry Blakely, who did a lot of work for the Canadian government, testing the effects of environmental chemicals on the immune system. It opened the door to the world of immunotoxicology. This led to my opportunity to go to the University of Georgia for my PhD. Beyond that, I set of goal of working under the mentorship of Dr. Luster. I was presented the opportunity to meet him while I was at UGA for my PhD, we met for lunch at the American Association of Immunology meeting in Atlanta in 2001. He encouraged me to interview at NIOSH where he was Branch Chief of the Toxicology and Molecular Biology Branch. Long story short, I joined Dr. Luster's lab as a Postdoc to practice immunotoxicology. We continue to work together to address issues in immunotoxicology for the betterment of human health risk assessment.

How well do you feel that your UGATox PhD prepared you for your career?

At UGA, I studied under the mentorship of Dr. Raghubir Sharma, the Fred C Davidson Chair and an internationally respected immunotoxicologist. It opened so many doors for me! It taught me the value of not being shy and actually putting yourself out there as a toxicologist. Meeting people, networking, presenting and defending your work – it was instrumental to my career and I owe a debt to him. The program of learning at UGA and the faculty and staff were equally instrumental in strengthening and broadening my understanding of immunotoxicology. Together, I think they really provided me the foundation for a very successful and fruitful career in immunotoxicology. It gave me the confidence to formulate hypotheses, test them, understand what the outcomes were, present that work and defend it, and learn from the constructive criticism that I received doing that. I am forever grateful for Dr. Sharma and UGA – they are a big part of my career.

What is a day in the life of your current career like?

Over time, my roles at Burleson Research Technologies (BRT) have changed significantly. I started out as a study director, leading individual studies and developing and executing safety assessments in immunotoxicology. I then became principal investigator of the NIEHS Immunotoxicology Contract, which I continue to be. When I was a study director in the pharma industry, everything was novel. Everything was proprietary – you don't have a body of literature to look at and understand how to design a study. But when we got the National Toxicology Program (NTP) contract, we were able to really invest in what was already known about environmental compounds. We got the opportunity to address key questions that were either data gaps or unknowns for most compounds. It kind of changed the way we went about conducting safety assessments.

Now, I'm Director of Operations at BRT and my role has changed again. I continue to be a study director for all of the studies on the NIEHS Immunotoxicology Contracts and support the other study directors in their pursuit of safety assessment of pharmaceuticals. But I also have other roles, like keeping the building operating. I make sure that we have the staff, resources, and commitment to deliver high quality research for our clients. That involves mentoring and training staff, strengthening the skills that they have, developing new skills in them so we can meet the challenges of daily work at BRT, and all along continue to serve as study director. So that and all the writing of reports and manuscript drafting, and publications is really what I do on a daily basis.

What are the most rewarding and frustrating parts of your career?

There are a couple of things [that are rewarding] – it's very rewarding for me to see the growth in the staff that we have. They come in with some idea of what science is, and we have to teach them what science really is and how to go about conducting it. Some of them really take hold of that and end up going to graduate school and extending their education at the PhD level. Being asked to write reference letters for staff that want to pursue higher education is very rewarding. The other is now that we have this contract, being able to publish the data and get it out to the public and the toxicology community. This allows us to put face value to the research that we do and really get it out into the public so they can benefit from what we find and what we spend money on.

The most frustrating part is you always want to focus your investment on cool, new things – new equipment, getting new ways to find out new information or provide new opportunities to do safety assessments that you couldn't do before. But there's also a building that needs to stay operational. Parts and pieces of that age out.

Could you share a little advice about teaching people and learning from others?

Open-mindedness and humbleness are keys to being a good leader. You have to be able to listen in order to lead – otherwise we're dictators, and that's not leadership.

Take the risk to put yourself out there and present your research. The more public speaking you do, the more you learn your communication style. You have to incorporate that into your leadership skills.

Opportunities to help teach others is great - if you have an opportunity to TA, take it! It will be invaluable for your career if you want to be a leader and a mentor/educator of others. It forces you to integrate your knowledge and synthesize it into something you can deliver to someone and effectively teach them to do it.

What other career paths do you think UGATox students are well-positioned to pursue?

A postdoc is a great opportunity for new graduates. You can do postdocs not just in academic institutions – you also can do a postdoc in a federal government agency like NIEHS. They employ postdocs all the time! If you go to a federal governmental agency, you're more involved in the development of hypotheses, planning experiments, and then synthesizing the information that comes out of those experiments. Most government agencies use contracts, so you're managing those contracts, the outcomes, and preparing monographs of the toxicity of a compound or class of compounds.

Going out into industry, you can get straight into the R&D or the regulatory chain with a PhD. The sky is the limit when you get into industry. The more aggressive you are at climbing the ladder, the faster you get up into the role of being a study monitor, then a program leader, then director of some area of research in the company. At CROs (Contract Research Organizations), with a PhD you can be hired on as a study director. You're not going to get a postdoc experience at a CRO, necessarily - you'll be designing, writing protocols, getting your staff to execute those protocols, dealing with deviations, and then synthesizing, analyzing, and writing for your clients.

Do you have any recommendations for current UGATox students, and what they can do to prepare themselves for the future? Are there any particular extracurriculars or activities you would recommend?

Networking is going to be very important for students as they develop. Not only formulating their research plan and their PhD plan, but also how to transition from that into the workplace. Joining Society of Toxicology is quite important. It provides a wealth of opportunities to network, present your research, network with other scientists, and get to know what else is out there. Joining the specialty section that your research fits into – whether it's *in vitro*, or immunotoxicology, joining that specialty section will bring you closer to other researchers that do similar things to what you're interested in.

In addition to the national society, I encourage students to join their local chapter of the Society of Toxicology because it provides an opportunity to reach the local scientists that do Toxicology research. There's a lot of committees that need to operate to keep these societies and specialty sections alive. As a student, you have an opportunity to be involved in that – you can join the society as a student representative. You can be involved in all the inner workings of these societies and specialty sections and your voice will be heard. You will represent the student body in what that society wants to do. It can be invaluable for developing leadership skills.

How has the field of Toxicology changed in the past 20 years? Have you noticed any recent trends? What do you believe is the future of Toxicology?

The field of Toxicology has been steadily changing toward incorporating and adopting non-animal alternatives for safety testing. The European Union under REACH were first with the ban of animal testing for cosmetic ingredients in 2013. This solidified the need for alternative approaches and lead to the development of a toolbox of *in vitro* assays for the assessment of skin sensitization, now fully validated and an accepted replacement for the local lymph node assay. The pressure to replace animals in toxicology research continues to be a powerful force that is shaping the future of toxicology. *In vitro* models are going to be an integral part of the future of toxicology and well-designed models can provide valuable information on toxicity that can inform hazard identification and risk assessment. However, we must recognize that many diseases and toxicities that are mediated by the immune system are complex and interactive and require intact immune systems to study. We must keep this in mind and understand the value and the limitations of non-animal alternative approaches. A combination will be the future of toxicology .

Let's talk about networking a bit. Our goal is to improve the connection that current UGATox students have with alumni from the program. What would be the best way for a current student to approach a UGATox alumnus? What are some Do's/Don'ts?

Networking is essential to prosperity in toxicology. It can open doors to collaboration and mentorship that will be invaluable to your career. Again, international meetings provide face-to-face opportunities to interact with other toxicologists and forge professional relationships that can lead to collaboration. Presenting your work is a big step in meeting other toxicologists with similar interest. Have a game plan. Know who you want to network with and do some research on the topics that interest them. Go to their presentations/posters and ask questions. Take the opportunity to introduce yourself, they will provide you time and love to discuss toxicology.

[with respect to reaching out]: There are so many things you can email. It's kind of ridiculous and difficult. It may not be the best way to get in touch with somebody because there's a lot of junk that comes through that is very time consuming and so sometimes it won't get its fair share of attention. If you have the opportunity to at least become a student member of societies (local or national or international), it provides you the face opportunity to speak with those people. Face to face is probably more successful in fostering some networking and future networking. But email is not impossible! Represent yourself as a part of the student body at the University of Georgia *in the subject line* of your email. That will have an impact on how that email is received. "Hey, do you have an opportunity to discuss" is often looked at as phishing. Phrase it the right way in your subject line – "I'm a current student at the University of Georgia. I would like to reach out about...".

Social media is becoming part of daily life. LinkedIn communications is a potential way of reaching out. Some pay more attention to LinkedIn to others. I would encourage you that if you really want to get in touch with someone, use as many means of communication as possible.

Your alumni association should probably help you by trying to maintain an accurate database of where people are. That can also be through national societies and memberships – you can search for members. For example, if you look for Vic Johnson in the Society of Toxicology, my information will be up to date in that. Another way is to look at publications. The most recent publications will be your best bet at finding where they are today. Then, you can use social media and email to reach out. Talk to your alumni association. There are guest lectures for part of a class or seminar series. You can invite someone you're interested in to talk.

To round out the interview, we want to ask – is there anything that you would like to tell us that we haven't talked about yet?

As a graduate student, learn to incorporate flexibility into your research plan. If you have a solid goal, you have to be flexible in how to achieve it. Learning flexibility early and dealing with adversity and change can be invaluable for your career. Flexibility will allow you to recognize opportunities that are out there. Opportunities are not going to come and bite you – you're going to have to go out there and bite them! When you figure out which opportunities will fit into your grand plan and career, you'll be better off for it. You never know where an opportunity will take you.

Congratulations to our most recent graduates



Congratulations to Yaye Wang, an ITP student based in the Crop and Soil Sciences, Griffin Campus of the University of Georgia's College of Agricultural and Environmental Sciences. Who, on April 8, 2022, successfully defended her dissertation titled: "Electrochemical Oxidation of Per-And Polyfluoroalkyl Substances on Titanium Suboxide Anodes"

Yaye's Major Professor was Dr. Qingguo (Jack) Huang, her graduate advisory committee was comprised of Drs. Jia-Sheng Wang, Sayed M. Hassan and Ke Li.

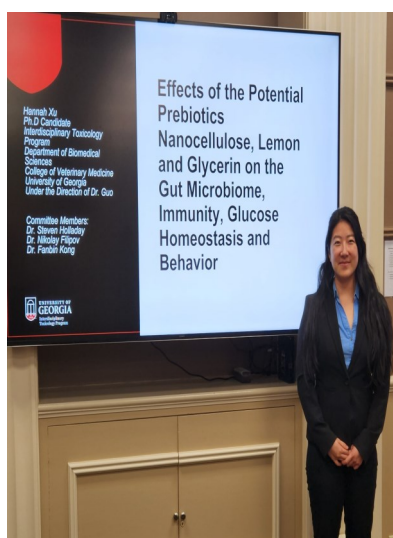
Congratulations Dr. Wang!



Congratulation to Katherine Kearns, an ITP student based in the Environmental Health Science department of the University Of Georgia College Of Public Health. Who, on July 11, 2022, successfully defended her dissertation titled: "Assessing Exposures to Household Air Pollution in Women Across Four Diverse Countries as Part of a Multi-Country Cookstove Intervention Trial."

Katherine's Major Professor was Dr. Luke Naeher, her graduate advisory committee was comprised of Drs. Jia-Sheng Wang, Stephen Rathbun, John McCracken and Travis Glenn.

Congratulations Dr. Kearns!



Congratulations to Hannah Xu, an ITP student in the Department of Biomedical Sciences of the University of Georgia College of Veterinary Medicine. On December 15, 2022, she successfully defended her dissertation titled: "Effects of the potential Prebiotics Nanocellulose, Lemon and Glycerol on the Gut Microbiome, Immunity, Glucose Homeostasis and Behavior."

Hannah's Major Professor was Dr. Tai Guo; her graduate advisory committee comprised of Drs. Nick Filipov, Steven Holladay and Fanbin Kong.

Congratulations, Dr. Xu!

Toxicology Alumni

Olorunfemi	Adetona	PHD-Doctor of Philosophy	2011
Anna	Adetona	PHD-Doctor of Philosophy	2016
Augustine	Agyekum	PHD-Doctor of Philosophy	2013
Manoj	Amaraneni	PHD-Doctor of Philosophy	2016
Christian	Andersen	PHD-Doctor of Philosophy	2021
Amber	Bacom	MS-Master of Science	2004
Lillie Marie	Barnett	PHD-Doctor of Philosophy	2021
Elizabeth	Barnwell	PHD-Doctor of Philosophy	2008
Kyle	Brown	PHD-Doctor of Philosophy	2021
Jason	Boyd	PHD-Doctor of Philosophy	2003
Windy	Boyd	PHD-Doctor of Philosophy	2002
Heather	Brant	MS-Master of Science	2004
Tantiana	Burns	PHD-Doctor of Philosophy	2008
Jerry	Campbell	PHD-Doctor of Philosophy	2004
Ilho	Cho	MS-Master of Science	1998
Russell	Cole	MS-Master of Science	2003
Deanna	Conners	PHD-Doctor of Philosophy	2004
Amy	Delinsky	PHD-Doctor of Philosophy	2004
Gregory	Dooley	MS-Master of Science	2002
Shashank	Dravid	PHD-Doctor of Philosophy	2003
Ahmed	El Zowalaty	PHD-Doctor of Philosophy	2017
Nikolay	Filipov	PHD-Doctor of Philosophy	1998
John	Finger	PHD-Doctor of Philosophy	2014
Kristi	Folden	MS-Master of Science	2003
Donna	Glinski	PHD-Doctor of Philosophy	2017
Forrest	Goodfellow	PHD-Doctor of Philosophy	2017
Eric	Goolsby	PHD-Doctor of Philosophy	2016
Neera	Gopee	PHD-Doctor of Philosophy	2002
Cory	Gresham	PHD-Doctor of Philosophy	2013
Xianglu	Han	MS-Master of Science	2004
Curtis	Harris	PHD-Doctor of Philosophy	2008
David	Haskins	PHD-Doctor of Philosophy	2021
Peter	Hazelton	PHD-Doctor of Philosophy	2013
Quanren	He	PHD-Doctor of Philosophy	2004
William	Henderson	PHD-Doctor of Philosophy	2006
Ofia	Hodoh	MS-Master of Science	2002
Ryan	Holem	MS-Master of Science	2005
Joseph	Iburg	PHD-Doctor of Philosophy	2014
Deborah	Iwanowicz	PHD-Doctor of Philosophy	2007
Arena	Jackson	PHD-Doctor of Philosophy	2010
Victor	Johnson	PHD-Doctor of Philosophy	2002
Ghanashyam	Joshi	MS-Master of Science	2010
Minsu	Kang	PHD-Doctor of Philosophy	2016
Lakshmi	Kelamangalath	PHD-Doctor of Philosophy	2008

Kristen	Kellock	PHD-Doctor of Philosophy	2013
Kyu-Bong	Kim	PHD-Doctor of Philosophy	2007
Jiyoung	Kim	PHD-Doctor of Philosophy	2004
John	Kind	PHD-Doctor of Philosophy	2000
Ramya	Kolli	PHD-Doctor of Philosophy	2017
Brad	Konwick	MS-Master of Science	2005
Sookwang	Lee	PHD-Doctor of Philosophy	2007
Karen	Lehocky	MS-Master of Science	1999
Rong	Li	PHD-Doctor of Philosophy	2016
Shangtao	Liang	PHD-Doctor of Philosophy	2017
Zhoumeng	Lin	PHD-Doctor of Philosophy	2013
Liyun	Liu	PHD-Doctor of Philosophy	2016
Suyang	Liu	MS-Master of Science	2010
Michael	Lumpkin	PHD-Doctor of Philosophy	2002
Hongbo	Ma	PHD-Doctor of Philosophy	2009
Audrey	Majeske	MS-Master of Science	2003
Carrie	Marr	MS-Master of Science	2000
Sheppard	Martin	PHD-Doctor of Philosophy	2010
Judy	Mathew	MS-Master of Science	1999
Callie	McDonough	MS-Master of Science	2021
Eva	McLanahan	PHD-Doctor of Philosophy	2007
Brooks	Mcphail	PHD-Doctor of Philosophy	2008
Emily	McReynolds	PHD-Doctor of Philosophy	2013
Paul	Melstrom	PHD-Doctor of Philosophy	2007
Dean	Meyer	PHD-Doctor of Philosophy	2015
Adrian	Moore	PHD-Doctor of Philosophy	2018
Ryan	Mote	PHD-Doctor of Philosophy	2020
Michelle	Norris	MS-Master of Science	2008
Taras	Oleksyk	PHD-Doctor of Philosophy	2001
Jay	Overmyer	PHD-Doctor of Philosophy	2002
Tonia	Parrott	PHD-Doctor of Philosophy	2005
Palak	Patel	PHD-Doctor of Philosophy	2014
Christopher	Peredney	MS-Master of Science	1999
Jennifer	Peterson	MS-Master of Science	2005
Brianna	Peterson	PHD-Doctor of Philosophy	2007
Collin	Preston	PHD-Doctor of Philosophy	2020
Guoqing	Qian	PHD-Doctor of Philosophy	2012
Junshan	Qiu	PHD-Doctor of Philosophy	2008
Bradley	Reinhart	MS-Master of Science	2003
Elizabeth	Richardson	MS-Master of Science	2004
Emily	Rogers	MS-Master of Science	2004
David	Rouse	MS-Master of Science	2008
Slawomir	Rzucidlo	PHD-Doctor of Philosophy	1998
Suparna	Sarkar	PHD-Doctor of Philosophy	2001
Molly	Schaefer	MS-Master of Science	2006
Daniel	Schoeffner	PHD-Doctor of Philosophy	1998
Natalie	Scholpa	PHD-Doctor of Philosophy	2015

Sarah	Schrenk	MS-Master of Science	2002
Pankaj	Sethi	PHD-Doctor of Philosophy	2013
Neelesh	Sharma	PHD-Doctor of Philosophy	2005
Patricia	Shaw-Allen	PHD-Doctor of Philosophy	2002
Soo	Shin	MS-Master of Science	2020
William	Shoults-Wilson	PHD-Doctor of Philosophy	2008
Gideon	St. Helen	PHD-Doctor of Philosophy	2011
Bin	Sun	PHD-Doctor of Philosophy	2010
Matthew	Taylor	PHD-Doctor of Philosophy	2008
Glenn	Tillman	MS-Master of Science	2007
Chi-Yen	Tseng	MS-Master of Science	2013
Masashi	Tsunoda	PHD-Doctor of Philosophy	1998
Olga	Tsyusko	PHD-Doctor of Philosophy	2004
Jason	Unrine	PHD-Doctor of Philosophy	2004
Matthew	Urich	PHD-Doctor of Philosophy	2019
Kelley	Van Vreede	MS-Master of Science	1997
Tara	Vogelien	MS-Master of Science	2004
Aswani	Vunnava	MS-Master of Science	2007
Rahat	Wadhwa-Desai	PHD-Doctor of Philosophy	2016
Angel	Wall	MS-Master of Science	2004
Jincheng	Wang	PHD-Doctor of Philosophy	2017
Zidao	Wang	PHD – Doctor of Philosophy	2020
Hongye	Wei	MS-Master of Science	2015
Robert	Wentworth	PHD-Doctor of Philosophy	1998
Clyde	Whitworth	MS-Master of Science	1956
Lonnie	Williams	PHD-Doctor of Philosophy	2006
Denita	Williams	PHD-Doctor of Philosophy	2010
Robert	Williams	PHD-Doctor of Philosophy	2017
Rachel	Worley	PHD-Doctor of Philosophy	2016
Xian	Wu	PHD-Doctor of Philosophy	2016
Shuo	Xiao	PHD-Doctor of Philosophy	2013
Li	Xu	PHD-Doctor of Philosophy	2010
Joella	Xu	PHD-Doctor of Philosophy	2019
Kathy	Xue	PHD-Doctor of Philosophy	2017
Neera	Young	MS-Master of Science	2004
Fei	Zhao	PHD-Doctor of Philosophy	2014
Jun	Zhou	PHD-Doctor of Philosophy	2018



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Spring Workshop/Meeting
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