

Interdisciplinary Toxicology Program

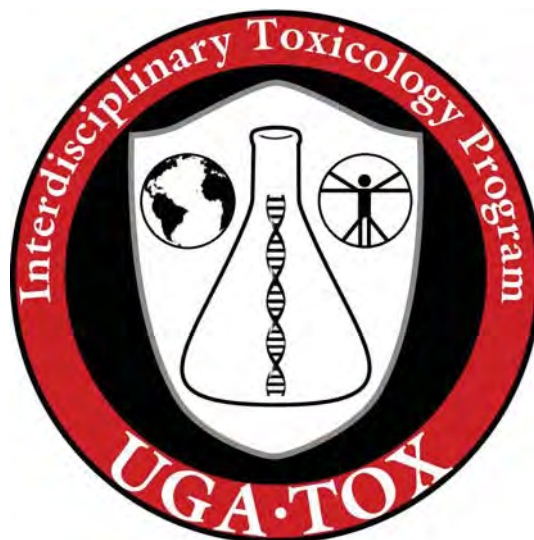
DIGEST



UNIVERSITY OF GEORGIA

# Interdisciplinary Toxicology Program

Summer 2017



[WWW.TOXICOLOGY.UGA.EDU](http://WWW.TOXICOLOGY.UGA.EDU)

College of Pharmacy  
 250 W. Green St., Rm. 341, Pharmacy S.  
 Athens, GA 30602  
 www.toxicology.uga.edu  
 706-583-0058  
 Brian Cummings, Director

**Executive Committee**

Brian Cummings  
 John Wagner  
 Robert Bringolf  
 Nick Filipov  
 Ron Riley  
 Steve Stice  
 J.S. Wang  
 Cathy White

**Admissions Committee**

John Wagner  
 Tai Guo  
 John Yu  
 Jason Zastre

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Dear Colleagues,

This past year has been one of transitions for the Interdisciplinary Toxicology Program (ITP). We received positive feedback on our 7 year review, with praise for our training mission and our students. The review also indicated the growth and change for ITP over the recent years. For example, several of our “Founding Faculty” have recently retired, including Drs. James Bruckner, Ron Riley and Mary Alice Smith. As a result we have several new members on our Executive Committee, including those from Agriculture and Pharmacy. Curriculum-wise, ITP saw the advent of a new Principle’s in Toxicology course to replace the long standing Introduction to Toxicology course previously coordinated by Dr. Bruckner. The new course, coordinated by Dr. J-S Wang, had a very successful kickoff, and included several ITP members from Public Health, Veterinary Medicine, the Pharmacy and Forestry. ITP students were also able to gain instruction in Ecotoxicology thanks to a new offering from Dr. Robert Bringolf. Dr. Nick Filipov took over the reins as the Coordinator for Organ Systems Toxicology. This is in addition to Dr. Xiaoqin Ye’s continuing efforts in Molecular Toxicology. On top of all this, Dr. John Wagner started his first full term as the Graduate Coordinator for ITP.

Scientifically, our annual retreat was headlined by talks from nationally recognized scientists. This includes Dr. Ron Hines, the Associate Director for Health in the Office of Research and Development in the National Health and Environmental Effects Research Laboratory at the Environmental Protection Agency. Our other speaker was Dr. Roger Little, Deputy Director of the Division of Neuroscience and Behavior at the National Institute on Drug Abuse. ITP was also represented by both students and faculty at the Southeastern Society of Toxicology Annual Meeting, the National Meeting in Baltimore, MD, as well as many others meetings. Several faculty also participated in a NSF training grant, in collaboration with Dr. Celia Dodd of Fort Valley State University. This grant supported the training of undergraduates from Fort Valley State University.

Our students continue to shine as you will see by the many awards and presentations listed in this newsletter, and our faculty continue to be leaders in the field. Please take moment to review their publications by accessing the link in this newsletter. I once again thank Ms. Joanne Mauro for her efforts on behalf of our program, as well as the leadership by Dean Suzanne Barbour of the Graduate School and the Graduate School Staff Members. Finally, we are always looking to increase our Foundation Funds, which allow both faculty and students to invite and support national and internationally known Toxicologists for seminars, and support programs that enhance ITP faculty and student experiences. Donations are tax-deductible and information on how to give can be found in this newsletter and at: <http://www.toxicology.uga.edu>



Dr. Brian S. Cummings  
 Director, ITP

# GRADUATE COORDINATOR NOTES

The following is a brief summary of our student's accomplishments from the 2016/17 academic year:

**Ph.D. degrees (9) were earned this past academic year by:**

Anna Adetona (Luke Naeher, Environmental Health Science)  
Manoj Amaraneni (Jim Bruckner, Pharmaceutical and Biomedical Sciences)  
Donna Glinski (Marsha Black, Environmental Health Science)  
Forrest Goodfellow (Steve Stice, Animal and Dairy Science)  
Jincheng Wang (Jia-sheng Wang, Environmental Health Science)  
Rachel Worley, (Jeff Fisher, Physiology and Pharmacology)  
Xian Wu (Steve Stice, Animal and Dairy Science)  
Kathy Xue (Jia-sheng Wang, Environmental Health Science)  
Ahmed Ezat ElZowalaty (Xiaoqin Ye, Physiology and Pharmacology)

Both Rong Li (Xiaoqin Ye, Physiology and Pharmacology) and Rahat Wadhwa Desai (Mary Alice Smith, Environmental Health Science) earned their degrees in August and participated in the December graduation.

**6 students were advanced to Doctoral Candidacy this year:**

Yingjia Chen (Tai Guo, Veterinary Biosciences & Diagnostic Imaging),  
Hunter Connell (Jason Zastre, Pharmaceutical & Biomedical Sciences),  
Shangtao Liang (Jack Huang, Crop and Soil Sciences),  
Adrian Moore (Robert Bringolf, Forestry and Natural Resources),  
Matthew Urich (Robert Bringolf, Forestry and Natural Resources).  
Jun Zhou (Jia-sheng Wang, Environmental Health Science)

ITP students Christian Andersen (2016), Davis Reardon (2016), and Lillie Marie Barnett (2017) were chosen to participate in the GS LEAD program.

**ITP has accepted 6 new students for Summer/Fall 2017:**

Lillie Marie Barnett, (Brian Cummings, Pharmaceutical and Biomedical Sciences)  
Katherine Kearns, (Luke Naeher, Environmental Health Science)  
Alexander Pelletier, (Robert Bringolf, Forestry and Natural Resources)  
Jacob Siracusa, (John Yu, ENvironmental Health Science)  
Yaye Wang, (Jack Huang, Crop and Soil Sciences)  
Shibo Xu, (Tai Guo, Veterinary Biosciences & Diagnostic Imaging)

Congratulations to these students for their achievements and  
Welcome to our incoming students!



# ITP FACULTY

## 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  
**Chas Easley**, Environmental Health Science  
**Travis Glenn**, Environmental Health Science  
**Erin Lipp**, Environmental Health Science  
**Luke Naecher**, Environmental Health Science  
**Lili Tang**, Environmental Health Science  
**Jia-Sheng Wang**, Department Head, Environmental Health Science  
**Phillip Williams**, Dean, College of Public Health  
**John Yu**, Environmental Health Science

## COLLEGE OF VETERINARY MEDICINE

**Julie Coffield**, Physiology & Pharmacology  
**Gaylen Edwards**, Department Head, Physiology & Pharmacology  
**Nikolay Filipov**, Physiology & Pharmacology  
**Robert Gogal**, Veterinary Biosciences & Diagnostic Imaging  
**Tai Guo**, Veterinary Biosciences & Diagnostic Imaging  
**Keith Harris**, Interim Dean, Department Head, Pathology  
**Steve Holladay**, Department Head, Veterinary Biosciences & Diagnostic Imaging  
**Elizabeth Howerth**, Pathology  
**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  
**Tracey Tuberville**, Savannah River Ecology Lab

## R. C. WILSON COLLEGE OF PHARMACY

**James Bruckner**, Emeritus, Pharmaceutical & Biomedical Sciences  
**Brian Cummings**, Pharmaceutical & Biomedical Sciences  
**Arthur Roberts**, Pharmaceutical & Biomedical Sciences  
**Randall L. Tackett**, Clinical & Administrative Pharmacy  
**Catherine White**, Pharmaceutical & Biomedical Sciences  
**Jason Zastre**, Pharmaceutical & Biomedical Sciences

## WARNELL SCHOOL OF FORESTRY & NATURAL RESOURCES

**Robert Bringolf**, 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  
**Kenneth A. Voss**, Toxicology & Mycotoxin Research

More than 150 articles have been published by our faculty over the past 12 months. Please visit our website for a complete list of faculty publications during the last year.

<http://toxicology.uga.edu/news/publications/>

# FACULTY RESEARCH HIGHLIGHTS

Chas Easley, Reproductive and Developmental Toxicology

Dr. Easley's lab focuses on 3 major themes: 1) Impacts of Environmental Exposures on Human Spermatogenesis, 2) Regenerative Medicine, and 3) Drug Discovery. The Easley lab primarily uses human pluripotent stem cells and our novel in vitro model of spermatogenesis to examine the effects of environmental exposures on spermatogenesis. Dr. Easley has also begun pairing epidemiological-based studies with his in vitro model to highlight the impacts of real-world exposures on patient samples while using the in vitro spermatogenesis model to delineate sub-cellular mechanisms of how environmental toxicants disrupt normal spermatogenesis. Understanding these underlying mechanisms can potentially lead to treatment options for men exposed to certain environmental toxicants. Additionally, our in vitro model is being utilized to identify potential male contraceptives. In our regenerative medicine portfolio, we use non-human primate pluripotent stem cells as a platform to begin deriving stem cell-based therapies for the future development of treatments for male factor infertility. Outside of regenerative medicine, this non-human primate in vitro model will enable the Easley lab to understand how paternal preconception exposures to various toxicants impact development across multiple generations. Dr. Easley's lab is funded through by grants from the National Institutes of Health (National Institute of Environmental Health Science and the Office of the Director) and from the Bill and Melinda Gates Foundation.



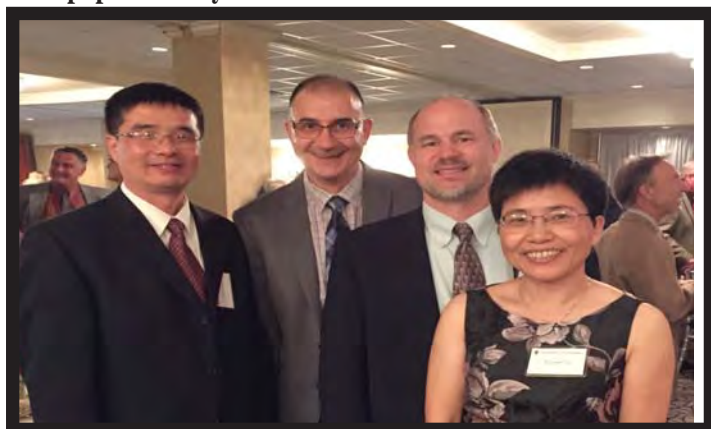
Chas Easley

Stacey Lance, Ecotoxicology and Genotoxicology Research

My research has always been driven by a desire to both preserve variation and to understand the evolutionary factors involved in its maintenance. That interest has led me to study a broad array of questions addressing the evolution of mating systems, conservation genetics, physiological ecology, and evolutionary toxicology. Recently, I have been focusing on the impact of environmental and natural stressors on amphibian populations—with a particular interest in sublethal responses. Research in my lab takes advantage of the presence of both metal-contaminated and clean wetlands on the Savannah River Site. We have focused on copper, coal combustion wastes, and mercury because they are not only prevalent on the SRS, but are global issues for wildlife. With regards to copper, so far we have examined the within and among population variation in response across multiple species and are currently looking at interactions between copper exposure and response to emerging diseases, especially ranavirus. That area of research remains a primary interest in my lab and we are collaborating with others to directly assess the impact of metal stressors on the immune response. Right now we are also intrigued by the role of wetland hydroperiod on rates of mercury methylation and the subsequent effects on wetland biota. In addition, we are investigating the role of contaminated wetlands on population dynamics and asking questions such as: Do they serve as ecological sinks or traps? Is there evidence of local adaptation to metals? Do they act as barriers to gene flow on the landscape? To understand how contaminants affect amphibians it is crucial to know how their populations behave in the absence of contaminants and my lab collaborates with David Scott at SREL to continue the long-term Rainbow Bay amphibian study which was started in 1978. We are using tissues and data from this study to ask questions about effects of climate change, temporal changes in effective population size, and metapopulation dynamics.



Stacey Lance



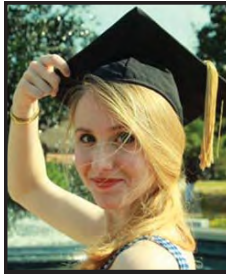
## ITP FACULTY PROMOTIONS

4 Faculty members were promoted to Professor this year. Pictured L to R: Qingguo Huang, Nikolay Filipov, Brian Cummings and Xiaoqin Ye

# STUDENTS



Christian Andersen



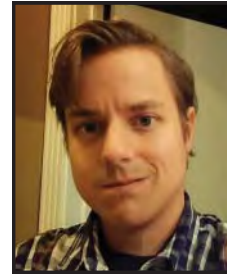
Lillie Barnett



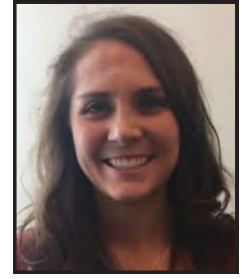
Kyle Brown



Yingjia Chen



Jarad Cochran



Hunter Connell



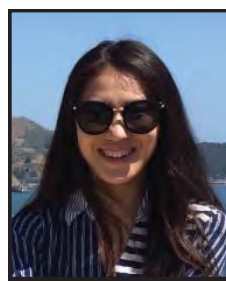
David Haskins



Katherine Kearns



Ramya Kolli



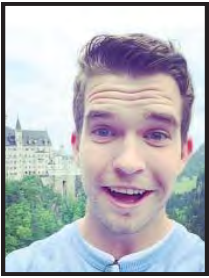
Shangtao Liang



Marie McKenzie



Adrian Moore



Ryan Mote



Alexander Pelletier



Collin Preston



Davis Reardon



Jacob Siracusa



Matthew Urich



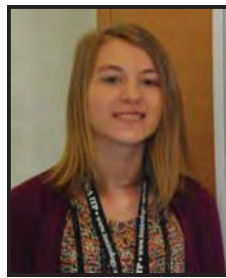
Yaye Wang



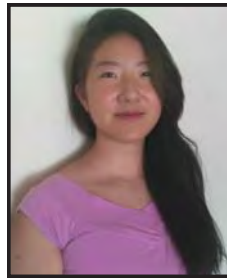
Zidao Wang



Robby Williams



Joella Xu



Shibo Xu



Jun Zhou

## ITP 2017—2018 CLASS



# ALUMNI UPDATE



Joe Iburg, Pest Abatement Manager, Bullhead City , AZ

Joe Iburg is Bullhead City, AZ's pest abatement manager, a newly created position to battle mosquitoes and caddisflies along the Colorado River. Joe graduated from the Interdisciplinary Toxicology Program with a PhD in 2014. Having spent his entire life in Georgia, Joe discovered the Bullhead City area when attending the North American Blackfly Association conference in Laughlin.

The Pest Abatement District (PAD) in Bullhead City, AZ, was formed in the 1980's in response to the large population of nuisance black flies that develop in the Colorado River. The Pest Abatement Program is the result of the inter-governmental agreement between the Bullhead City Pest Abatement District and the City of Bullhead City. It is a division of the Human Services department in Bullhead City. The goal is to research and control nuisance pests in Bullhead City and surrounding areas. In

particular, they are concerned with disease vectors as well as insects that can cause economic loss due to their nuisance behavior. The program is also in place to fulfill the districts role in the inter-local contract for aquatic pest abatement services between Clark County, NV Vector Control and the Bullhead City Pest Abatement District Board. We take an IPM (Integrated Pest Management) approach to pest control. This strategy emphasizes the use of multiple techniques to control pests such as biological control, habitat manipulation, and changing cultural practices. The use of pesticides is kept at a minimum and, when possible, only biologically-based products that have minimum toxicity towards humans or beneficial insects are used. The district has an agreement with nearby Clark County, Nevada, whereby the funds collected by the PAD are used by Clark County Vector Control to apply the biologically-based larvicide, Bti, to the river on a routine basis.

Until recently the PAD has only focused on black fly control. Over the last few years the population of caddisflies has increased to nuisance levels. Mosquito populations have also been increasing in the area prompting petitions to the city to do something about it. The nuisance insects were having a negative impact on the local economy and the quality of life of the residents.

The black fly program has been very successful under the leadership of Chris Bramley with Clark County Vector Control. He recognized that the PAD needed someone to start a program in Bullhead City if the district was going to do something about the new insect problems. I was hired by the city to start a new program funded by the PAD. My responsibilities include the routine surveillance and control of mosquitoes and black flies as well as researching the caddisflies. I work with multiple agencies including Clark County, Mohave County, Bullhead City, Arizona Game and Fish, US Fish and Wildlife, The Fort Mojave Indian Tribe, and many others. I am currently developing a citizen science program that will allow me to gather more data and involve the community.

Pest Abatement Manager, Bullhead City, AZ  
Office: (928) 763-0109

Dr. Olorunfemi Adetona is an environmental health scientist with expertise in air quality. His research focuses on the characterization of exposures to air pollution and understanding the physiological and molecular basis for its adverse health impacts among human populations. His current research interests relate to the unique exposures of wildland firefighters and populations in developing countries to vegetative biomass smoke and their associated respiratory and systemic effects. His research interests include: Air Pollution, Environmental and Occupational Health, Inhalation Toxicology, Molecular Epidemiology, and Environmental Risk Assessment. He is an Assistant Professor at Ohio State University College of Public Health, Columbus, OH.

Phone: 614-247-8123 Email: adetona.1@osu.edu

Publications for 2016-2017 include:

Adetona AM, Adetona O, Gogal RM Jr, Diaz-Sanchez D, Rathbun SL, Naeher LP. Impact of Work Task-Related Acute Occupational Smoke Exposures on Select Proinflammatory Immune Parameters in Wildland Firefighters. *J Occup Environ Med.* 2017 Jul;59(7):679-690.

Adetona O, Simpson CD, Li Z, Sjodin A, Calafat AM, Naeher LP. Hydroxylated polycyclic aromatic hydrocarbons as biomarkers of exposure to wood smoke in wildland firefighters. *J Expo Sci Environ Epidemiol.* 2017 Jan;27(1):78-83.



# UGATOX - 2016-2017



**2016-2017 UGATOX OFFICERS**

Pictured, L to R:

**VICE-PRESIDENT COLLIN PRESTON; TREASURER FORREST GOODFELLOW;  
SECRETARY HUNTER CONNELL; PRESIDENT ADRIAN MOORE**

UGATOX spent the 2016-2017 year building on the work of the previous leadership, reestablishing our commitment to ITP community. We continued several of our traditions, such as the annual Thanksgiving potluck, to provide opportunities for socializing. We continued the UGATOX Outstanding Student Paper Award, altering goals of this award to better fit the UGATOX mission. We established the Student Mentor Program, which exists to help new students transition into UGA and the ITP, laying necessary groundwork to continue this program in the coming year. We helped with the implementation of the SESOT meeting, hosted in Athens, including the planning of an evening social for students. UGATOX also continued to host speakers, in conjunction with the ITP, to provide academic and career related seminars for the broader academic community. Elections for the new UGATOX executive board were moved to spring this year, allowing for a smoother transition for the new leadership. I want to recognize Hunter Connell, Forrest Goodfellow, and Collin Preston for all the work put in to improving UGATOX this year. Collin is stepping up to serve as Chair this coming year, with Ryan Mote, David Haskins, and Kyle Brown joining him on the executive board. I am excited about the participation and enthusiasm of ITP students this past year and look forward to seeing where the new leadership will take this organization. Your outgoing UGATOX chair,

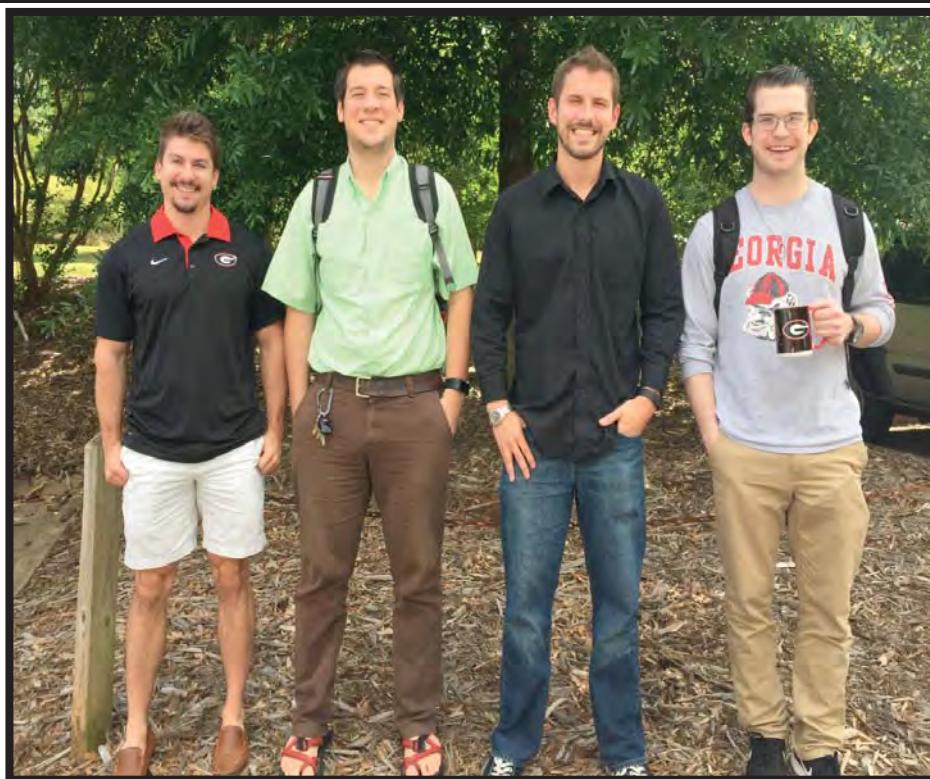


**Fall Retreat 2016 - Door Prize Winners!**

*Adrian*



# UGATOX - 2017-2018



**2017-2018 UGATOX OFFICERS**

Pictured, L to R:

**PRESIDENT COLLIN PRESTON; SECRETARY DAVID HASKINS;  
TREASURER KYLE BROWN; VICE PRESIDENT RYAN MOTE;**

“UGATOX is excited to contribute to another year of growth and progress of the Interdisciplinary Toxicology Program here at UGA. We have many plans for the upcoming year to cultivate relationships within the program as well as with professionals from outside of UGA in an effort to aid in professional, educational, and social development. To promote professional development, we intend to host research seminars and career development sessions with speakers from both industry and academia that are of interest to students in the Toxicology program; we highly encourage students and faculty to contact us with potential speakers for these talks. On the social side of things, we will again host our Thanksgiving potluck,

other small social gatherings, and hopefully form a few ITP intramural sports teams to help students connect outside of a laboratory setting. We look forward to working with both students and staff to further improve the cohesiveness of our interdisciplinary program and as always encourage students to reach out to the UGATOX officers with any ideas they may have for the upcoming year.”



**UGATOX - First Year Odyssey Pizza Party**

*Collin*

# STUDENT PRESENTATIONS

## REGIONAL

### **SOUTHEASTERN SOCIETY OF TOXICOLOGY, ATHENS GA**

- Anna Adetona** Impact of Work Task-Related Acute Occupational Smoke Exposures on Select Proinflammatory Immune Parameters in Wildland Firefighters.  
Advisor: Luke Naeher
- Christian Andersen** Effects of mycotoxin zearalenone (ZEA) on placental labyrinth cellular proliferation and apoptosis. Advisor: Xiaoqin Ye
- Yingjia Chen** Dietary Glycotoxins Promote Prostate Tumorigenesis through Inducing Immunotoxicity.  
Advisor: Tai Guo
- Hunter Connell** The Adaptive Regulation of Vitamin B1 Homeostasis Genes in Cancer Facilitate Malignant Growth During Supplemental Conditions.  
Advisor: Jason Zastre **FIRST PLACE PLATFORM**
- Ahmed E. El Zowalaty** RhoA regulates cholesterol transport for progesterone synthesis in corpus luteum.  
Advisor: Xiaoqin Ye
- Forrest Goodfellow** Zika Virus Induced Mortality and Microcephaly in Chicken Embryos.  
Advisor: Steve Stice
- Ramya Kolli** Bromate Induced Alterations in the Renal Expression of Cyclin-Dependent Kinase Inhibitors via Epigenetic Mechanisms. Advisor: Brian Cummings
- Adrian Moore** Effects of nitrate and an estrogen singly and in combination on freshwater mussel metamorphosis. Advisor: Robert Bringolf
- Ryan Mote** Physiological aberrations caused by wild-type toxic tall fescue grazing and/or changing environmental temperature and humidity conditions in Angus steers.  
Advisor: Nikolay Filipov
- Collin Preston** Persisting effects of stress or cocaine on LTP in the ventral hippocampus of mice.  
Advisor: John Wagner **THIRD PLACE POSTER**
- Jincheng Wang** The Dynamics of Gut Microbiome in Response to Long-Term Treatment with Green Tea Polyphenols in Rat Advisor: Jia-sheng Wang
- Zidao Wang** RhoA in uterine gland development. Advisor: Xiaoqin Ye
- Joella Xu** Bisphenol A Unique Age And Sex-dependent Effects on Type 1 Diabetes in Non-obese Diabetic (NOD) Mice. Advisor: Tai Guo



**Adrian Moore presents David Haskins with the 2017 UGATOX Outstanding Student Paper Award, Spring Retreat 2017.**



**Dr. Cummings and Dr. Chas Easley present Marie McKenzie the 3rd Place Poster Award, Spring Retreat 2017.**

# STUDENT PRESENTATIONS

## NATIONAL

### **AMERICAN ASSOCIATION OF IMMUNOLOGISTS, WASHINGTON, D.C.**

**Yingjia Chen** Dietary Early Glycation Products Promote Prostate Tumorigenesis through Modulating Microphages. Advisor: Tai Guo

### **AMERICAN CHEMICAL SOCIETY ANNUAL MEETING, PHILADELPHIA, PA**

**Shangtao Liang** 1. Electro-oxidation of Telracycline by a Magneli Phase Ti407 Anode: Kinetics, Transformation products, and Toxicity Presentation. 2. Laccase-Catalyzed Degradation of sulfadimethoxine (SDM) in the Presence of Soybean\_Meal. Advisor: Qingguo Huang

### **BIOREMEDIATION SYMPOSIUM, MIAMI, FL**

**Shangtao Liang** Coupling Technology Approach to Treat High Levels of PFAS in Regenerant Wastes. Advisor: Qingguo Huang

### **FRESHWATER MOLLUSK CONSERVATION SYMPOSIUM, CLEVELAND, OH**

**Adrian Moore** Effects of nitrate and an estrogen singly and in combination on freshwater mussel metamorphosis. Advisor: Robert Bringolf

### **SOCIETY OF ENVIRONMENTAL TOXICOLOGY AND CHEMISTRY, ORLANDO, FL**

**Adrian Moore** Effects of nitrate and an estrogen singly and in combination on freshwater mussel metamorphosis. Advisor: Robert Bringolf

### **SOCIETY FOR INTEGRATIVE AND COMPARATIVE BIOLOGY, NEW ORLEANS, LA**

**David Haskins** Effects of selenium on the hematology, innate immunity, and metabolic rate of 3 yellow-bellied sliders (*Trachemys scripta scripta*). Advisor: Tracey Tuberville

### **SOCIETY FOR THE STUDY OF REPRODUCTION, WASHINGTON D.C.**

**Christian Andersen** Mycotoxin zearalenone (ZEA) induces toxicity and alters microRNA expression in C57BL/6 mouse placenta. Advisor: Xiaoqin Ye

### **SOT CCT TOXICOEPIGENETICS ANNUAL MEETING, TYSONS CORNER, VA**

**Ramya Kolli** High-Throughput Analysis of DNA Methylation and Histone Modifications: Mediating Alterations in the Renal Expression of p21 Induced by Chronic Bromate Exposure. Advisor: Brian Cummings

### **SOUTHERN TRANSLATIONAL EDUCATION AND RESEARCH CONFERENCE, ATHENS, GA**

**Hunter Connell** The Effects of Thiamine Pyrophosphokinase-1 on Malignant Growth. Advisor: Jason Zastre

### **TERATOLOGY SOCIETY**

**E. Marie McKenzie** Developmental neurotoxicity after exposure to pesticides: Adding a metabolic component impacts the pathways affected in human neural progenitor cells (hN2)The Wildlife Society. Advisor: Steve Stice

### **THE WILDLIFE SOCIETY**

**David Haskins** Accumulation and immunological costs of trace element contaminants in yellow-bellied sliders (*Trachemys scripta scripta*). Advisor: Tracey Tuberville

### **USFS AT SOUTHERN RESEARCH STATION, AIKEN, SC**

**Anna Adetona** Impact of Work Task-Related Acute Occupational Smoke Exposures on Select Proinflammatory Immune Parameters in Wildland Firefighters Advisor: Luke Naeher

## INTERNATIONAL

### **INTERNATIONAL SOCIETY OF EXPOSURE SCIENCES, UTRECHT, NL**

**Anna Adetona** Differences in Fine Particulates and Estimated Pulmonary Ventilation Rate with Respect to Work Tasks of Wildland Firefighters-A Repeated Measures Study. Advisor: Luke Naeher

# STUDENT PRESENTATIONS

## SOCIETY OF TOXICOLOGY 55TH ANNUAL MEETING, BALTIMORE, MD

- Yingjia Chen** Dietary Early Glycation Products Promote Prostate Tumorigenesis through Modulating Microphages. Advisor: Tai Guo
- Ramya Kolli** Bromate Induced Alterations in the Renal Expression of Cyclin-Dependent Kinase Inhibitors via Epigenetic Mechanisms. Advisor: Brian Cummings
- Marie McKenzie** Using Metabolomic Profiles to Determine Developmental Neurotoxicity of Chlorpyrifos in Neural Progenitor Cells With or Without Media Preconditioned with C3A Hepatocytes. Advisor: Steve Stice
- Ryan Mote** Effects of Ergot Alkaloid-containing, Wild-type Toxic Tall Fescue Grazing and/or Changing Environmental Temperature and Humidity on Thermoregulation and Respiration Rates in Angus Steers. Advisor: Nik Filipov
- Collin Preston** Persisting effects of stress or cocaine on LTP in the ventral hippocampus of mice. Advisor: John Wagner
- Jincheng Wang** The Dynamics of Gut Microbiome in Response to Long Term Treatment with Green Tea Polyphenols in Rats. Advisor: Jia-sheng Wang
- Joella Xu** Adult Bisphenol A Exposure Has Been Identified As A Unique Window Of Susceptibility Of Type 1 Diabetes In Female Non-obese Diabetic (NOD) Mice. Advisor: Tai Guo
- Jun Zhou** Metabolomic Analysis on Gut-Microbiota Functional Metabolites of F334 Rats. Advisor: Jia-sheng Wang

## SPECIAL RECOGNITION:

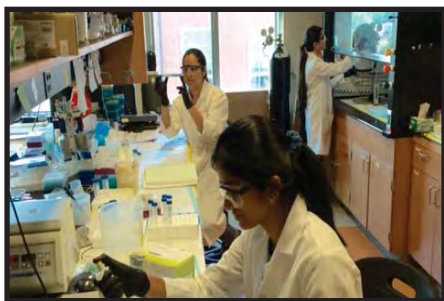
**Christian Andersen** was elected Student Representative for the Southeastern Society of Toxicology. **Marie McKenzie** was the student participant in the Society of Teratology's 5 Year Strategic Planning Session.

## GS LEAD

Three current ITP students have taken part in the Graduate School's "Graduate Scholars Leadership, Engagement and Development Program." **Christian Andersen** and **Davis Reardon** attended in the summer of 2016 and **Lillie Marie Barnett** attended in the summer of 2017.

GS LEAD includes a summer-long, student-centered leadership academy that fosters the development of critical skills through an innovative approach that infuses doctoral training with experiential learning. This is followed in the fall by GRSC 8400, the Grand Challenge Course, in which students work in teams to apply the learning from the Summer Academy to real-world community challenges.

The Summer Leadership Academy – facilitated by the Fanning Institute – is part of a National Science Foundation funded program to train doctoral students in problem solving, interdisciplinary teamwork, leadership, communication and engagement.



**Ramya Kolli in the lab**



**Dr. Tai Guo and students at Spring Retreat**

# 2017 SPRING WORKSHOP

## UGATOX OUTSTANDING STUDENT PAPER AWARD

**David Haskins** Accumulation of coal combustion residues and their immunological effects in the yellow-bellied slider (*Trachemys scripta scripta*). Advisor: Tracey Tuberville

## PLATFORMS

**Yingjia Chen** Dietary Early Glycation Products Promote Prostate Tumorigenesis More Than Advanced Glycation End-Products–Function Of Macrophages. Advisor: Tai Guo **SECOND PLACE**

**Hunter Connell** The Adaptive Regulation Of Thiamine Pyrophosphokinase-1 In Cancer Facilitates Malignant Growth During Supplemental Conditions. Advisor: Jason Zastre **FIRST PLACE**

**Adrian P. Moore** Use of Partial Lifecycle Tests To Determine Effects of Nitrate and an Estrogen On Freshwater Mussels. Advisor: Robert Bringolf

## POSTERS

**Christian Andersen** Mycotoxin zearalenone (ZEA) induces toxicity and alters microRNA expression in C57BL/6 mouse placenta. Advisor: Xiaoqin Ye

**Forrest Goodfellow** Zika Virus Induced Mortality and Microcephaly in Chicken Embryos A comparison of Asian and African Strains. Advisor: Steve Stice

**Ramya Kolli** Epigenetic Mechanisms Mediating Altered p21 Expression in Human and Rat Kidney Cells after Sub-chronic Bromate Exposure. Advisor: Brian Cummings

**Marie McKenzie** Using Metabolomic Profiles to Determine Developmental Neurotoxicity of Chlorpyrifos in Neural Progenitor Cells With or Without Media Preconditioned with C3A Hepatocytes. Advisor: Steve Stice **THIRD PLACE**

**Tanzir Mortuza** Age-Dependent Toxicokinetics (TK) of Cis- and Trans-Permethrin (CIS and TRANS) in Adult and Juvenile Sprague-Dawley Rats Advisor: James Bruckner, Cathy White

**Ryan S. Mote** Beef Cattle Microbiome Response to Toxic Tall Fescue Grazing. Advisor: Nik Filipov

**Collin Preston** Persisting effects of stress or cocaine on LTP in the ventral hippocampus of mice. Advisor: John Wagner

**Matthew Urich** Metabolic Profiles of Intersex Largemouth Bass: Toward Development of a Non-lethal Biomarker. Advisor: Robert Bringolf **SECOND PLACE**

**Zidao Wang** RhoA in uterine gland development. Advisor: Xiaoqin Ye

**Robert Williams** Ingestion of a single 2.3 mm lead pellet by laying Roller pigeon hens reduces egg size and adversely affects F1 generation hatchlings. Advisor: Robert Gogal **FIRST PLACE**

**Joella Xu** Adult Bisphenol S Exposure Results in Dysglycemia And Altered Insulin Sensitivity In Non-obese Diabetic (NOD) Mice - A Type 1 Diabetes Model. Advisor: Tai Guo

**Jun Zhou** Metabolomic Analysis on Gut-Microbiota Functional Metabolites of F344 Rats Exposed to Aflatoxin B1. Advisor: Jia-sheng Wang

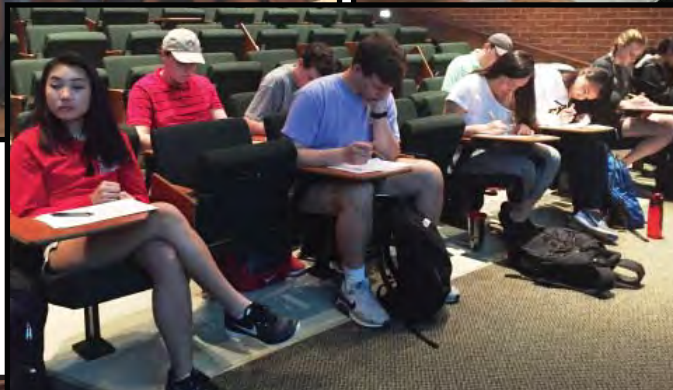


**Dr. White and Tanzir Mortuza who won the SOT John Doull Risk Assessment Award 2017.**

# FIRST YEAR ODYSSEY

This year the ITP participated in the First Year Odyssey Program. Anne Marie Zimeri, Environmental Health Science, led this effort for ITP. The First-Year Odyssey seminars allow students to engage with faculty and other first-year students in a small class environment to learn about the unique academic culture the University offers. Faculty share their passion for research, teaching and service. Participating faculty included: Dr. Cummings, Pharmaceutical & Biomedical Lab; Dr. John Yu, Environmental Health Science Lab; Dr. Robert Bringolf, Department of Forestry; Dr. Travis Glenn, Environmental Health Science Department; Dr. Sayed Hassan, Laboratory for Environmental Analysis, Dr. John Wagner, Physiology and Pharmacology Lab, and Dr. Charles Easley, Environmental Health Science Department

The series culminated with a Three Minute Thesis competition. The first year students served as judges. ITP students presenting included: Hunter Connell, Ramya Kolli, Marie McKenzie, Adrian Moore, Tanzir Mortuza, Collin Preston, and Robby Williams. Winner of a \$500.00 Research Grant was Hunter Connell.



Both the First Year Odyssey students and ITP students enjoyed pizza's after the event. Hosted by UGATOX



# Infusion of Toxicology into the Biology Program at FVSU

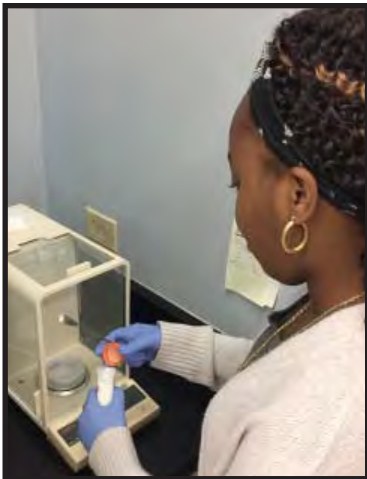
2017 was the 2nd year ITP participated in the Ft. Valley State summer research projects.

Dr. Bob Gogal's lab hosted Danielle Henry for a project titled, "Evaluating the sub-acute effects of a commercial nutraceutical supplement in a Th-1 biased murine model, pre and post vaccine challenge."

Dr. Guo's lab hosted Deja Clay. Their project was titled, "Immunotoxicology of glycation products and environmental chemicals."

Dr. Jason Zastre's lab hosted Mikirra Bullard for a project titled, "Intestinal inflammation as a consequence of alcohol consumption down-regulates thiamine transporter expression in the intestine."

Dr. Stacey Lance's lab hosted Demetrius Calloway for a project examining mercury levels in the sediments and biofilms of ephemeral wetlands at the Savannah River site.



Deja Clay



Danielle Henry



Mikirra Bullard

**Danielle Henry:** "I am majoring in Biology, as I continue my studies in aspirations of becoming a Doctor of Veterinarian Medicine. I have learned a lot about Immunology that I did not know before. The hands-on experience I received here will be beneficial to me. In addition to being hands-on, I have gained knowledge on different lab techniques I did not know before entering this internship. Although, I have been to University of Georgia many times, I never truly explored Athens. With the internship held at University of Georgia in Athens, GA, I had the pleasure to explore Athens in depth and saw what Athens has to offer. I must say, Athens is a beautiful city."

**Deja Clay:** "The discipline of toxicology was an incognizant entity to me before I had the chance to enroll in the Principles of Toxicology course in the Fall of 2016. My professor's exuberant, erudite lectures made me realize that I liked the process of risk assessment and hazard identification. Furthermore, I enjoyed learning about the biochemistry and organic chemistry involved in biotransformation of a chemical, which can lead to adverse effects to an organism's physiology."

**Mikirra Bullard:** "My ultimate career goal is to become an OB/GYN following medical school. After working in a hospital for a few years, I plan to open a practice of my own and potentially open a number of non-profit clinics in underprivileged areas to help make healthcare more affordable for women and children. I've been given the opportunity to learn so many lab techniques, such as western blotting, RT-PCR, and cDNA reactions, just to name a few. I've also been able to apply certain microbiological skills that I've learned in the classroom, which is what the learning process is all about."

**Demetrius Calloway:** "The program was very insightful; It serves as a foundation to me as I look to develop a career in herpetology. The experience was very unique and very fun. It was hard work and challenging but very rewarding in the end, with the networking and hand-on activities. I recommend it to future scientists."

# GUEST LECTURERS



**Ron Hines, PhD, Associate Director for Health**  
US EPA, NHEERL

Dr. Hines research focuses on mechanisms whereby exposures to environmental toxicants or drugs alter gene regulation and the genetic basis for interindividual differences in response to exposures. Over the past 13 years, his research turned to elucidating how and through what mechanisms the enzymes involved in toxicant and drug disposition change during early life stages and the interaction of genetic variation with this normal development process.



**Roger Little, PhD, National Institutes of Health**

Dr. Little has over 17 years experience in neuroscience, genetics, and psychiatric and neurological disorders. Ten years of which have been at NIH. He is the Deputy Director of the Division of Basic Neuroscience and Behavioral Research at the National Institute on Drug Abuse, where he helps over see the NIDA extramural research portfolio in neuroscience research in addiction, pain, and HIV-Aids.



Pictured: Dr. Brian Cummings, Dr. Ron Hines, and Dr. John Wagner



Pictured: Dr. Brian Cummings, Dr. Roger Little, and Dr. John Wagner



**Paul A. Nony, PhD, Senior Toxicologist and Certified Industrial Hygienist at the Center for Toxicology and Environmental Health, L.L.C. (CTEH)**

Dr. Nony has 20 years of training and professional experience in the fields of chemical emergency response, worker health and safety, environmental toxicology, and cancer research. He is consulted for his expertise in worker chemical exposure incidents and is asked to convey toxicological information to workers, supervisors, and health care providers to improve the communication of health risks to workers and employers.



# 2016-17 GRADUATES



Luke Naecher and Dr. Anna Adetona



Dr. Manoj Amaraneni, Jim Bruckner, Brian Cummings, Randall Tackett, Cathy White, and Michael Bartlett



Dr. Donna Glinski and Marsha Black



Steve Stice and Dr. Forrest Goodfellow



Dr. Rong Li and Xiaoqin Ye



Dr. Rahat Wadhwa Desai and Steve Stice



Jia-sheng Wang and Dr. Jincheng Wang



Dr. Rachel Worley and James Bruckner



Steve Stice and Dr. Xian Wu

Jia-sheng Wang and Dr. Kathy Xue



Mary Alice Smith, R. De La Fuente, Dr. Ahmed Ezat ElZowalaty, Xiaoqin Ye, and Nik Filipov

**Congratulations!**

# Support the Interdisciplinary Toxicology Program

We would like to take this opportunity to invite you to make a financial contribution to the UGA Toxicology Program. You can make a secure credit card contribution online: <https://gail.uga.edu/page.aspx?pid=458>. Type Interdisciplinary Toxicology Program in the “Special Instructions/Comments” field. Doing so will ensure that your gift is directed to the Toxicology Program.

The Interdisciplinary Program in Toxicology Fund is a University of Georgia Foundation discretionary account supporting the activities of the Interdisciplinary Toxicology Program. It enables the Program to host internationally recognized speakers, hold conferences and workshops and provide support for graduate students to attend national meetings and present scientific results.

If you prefer to make a donation the old-fashioned way, please fill out this form, print it and mail it to our address below. All contributions are tax deductible.

Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Phone: \_\_\_\_\_ EMail: \_\_\_\_\_

I would like to contribute to the University of Georgia Foundation. My gift will be designated for the Interdisciplinary Program in Toxicology Fund.

The Interdisciplinary Program in Toxicology Fund is a University of Georgia Foundation discretionary account supporting the activities of the Interdisciplinary Toxicology Program. It enables the Program to host internationally recognized speakers, hold conferences and workshops and provide support for graduate students to attend national meetings and present scientific results.

Funds of this type are essential to the expansion and success of this campus-wide interdisciplinary training program.

Enclosed is my gift for \$ \_\_\_\_\_

Signature: \_\_\_\_\_

Please send this form with your check, made payable to the University of Georgia Foundation, to the Interdisciplinary Toxicology Program, Rm. 341, Pharmacy South, 250 W. Green St., Athens, GA 30602. You may also make a secure credit card donation via our website at <http://www.toxicology.uga.edu>.

*Thank you!!*



# INTERDISCIPLINARY TOXICOLOGY PROGRAM ALUMNI

## 1997

Jerry Campbell, M.S.  
Kelley Ann Boyle Van Vreede, M.S.

## 1998

Ilho Cho, M.S.  
Nikolay Miltchev Filipov, Ph.D.  
Wu Li, Ph.D.  
Slawomir Jacek Rzucidlo, Ph.D.  
Daniel John Schoeffner, Ph.D.  
Jeannie Lee Stephenson, M.S.  
Masashi Tsunoda, Ph.D.  
Robert Wesley Wentworth, Ph.D.

## 1999

Judy S. Mathew, M.S.  
Christopher Lee Peredney, M.S.  
Karen Marie Zepp, M.S.

## 2000

Beverly Schleppe Arnold-Hill, Ph.D.  
Kevin Anthony Holloman, Ph.D.  
John Kind, Ph.D.  
Carrie Hamilton Marr, M.S.

## 2001

Neera Vintra Gopee, Ph.D.  
Taras K. Oleksyk, Ph.D.  
Suparna Ajoy Sarkar, Ph.D.

## 2002

Windy Ann Boyd, Ph.D.  
Gregory Patrick Dooley, M.S.  
Ofia B. Hodoh, M.S.  
Vic Johnson, Ph.D.  
Michael Harrison Lumpkin, Ph.D.  
Jay Paul Overmyer, Ph.D.  
Sarah Suzanne Rentz, M.S.  
Patricia Lynn Shaw-Allen, Ph.D.  
Lonnie Dwayne Williams, M.S.

## 2003

Jason Lamar Boyd, Ph.D.  
Russell David Cole, M.S.  
James Claude Cumbee Jr., M.S.  
James Claude Cumbee Jr., M.S.  
Shashank Draid, Ph.D.  
Kristi Manning Folden, M.S.  
Sang Hyun Kim, Ph.D. Audrey Jean  
Majeske, M.S.  
Bradley David Reinhart, M.S.

## 2004

Tara Lynn Almekinder, M.S.  
Heather A Brant, M.S.  
Jerry Lamar Campbell Jr., Ph.D.  
Deanna Erin Connors, Ph.D.  
Amy Dixon Delinsky, Ph.D.  
Amber Lynn Graves, M.S.  
Xianglu Han, M.S.  
Quanren He, Ph.D.  
Jiyoung Kim, Ph.D.  
Brad Konwick, M.S.  
Elizabeth Ann Richardson, M.S.  
Emily Dawn Rogers, M.S.  
Olga Vasylivna Tsyusko, Ph.D.  
Jason M. Unrine, Ph.D.  
Angel K. Wall, M.S.  
Neera Chhabra Young, M.S.

## 2005

Kathy Dietzel, M.S.  
Ryan Richard Holem, M.S.  
Catherine J King, M.S.  
Gregory N Quinn, M.S.  
Tonia Marie Parrott, Ph.D.  
Jennifer Hoffman Peterson, M.S.  
Neelesh Sharma, Ph.D.

## 2006

William Matthew Henderson, Ph.D.  
Carey C Hines, Ph.D.  
Molly Visser Schaefer, M.S.  
Denita Williams, M.S.  
Lonnie Dwayne Williams, Ph.D.

## 2007

Deborah Iwanowicz, Ph.D.  
Kristen Kellock, M.S.  
Kyu-Bong Kim, Ph.D.  
Sookwang Lee, Ph.D.  
Eva Daneke McLanahan, Ph.D.  
Paul Melstrom, Ph.D.  
Brianna Peterson, Ph.D.  
Glenn Tillman, M.S.  
Aswani Vunnavu, M.S.

## 2008

Tantiana Donata Burns, Ph.D.  
Curtis Andrew Harris, Ph.D.  
Elizabeth Irvin, Ph.D.  
Lakshmi Kelamangalath, Ph.D.  
Brooks McPhail, Ph.D.  
Michelle Warner Norris, M.S.  
Junshun Qiu, Ph.D.  
David Robert Rouse, M.S.  
Matthew Aaron Taylor, Ph.D.  
William Shoults-Wilson, Ph.D.

## 2009

Susan Baird, M.S.  
Suzy Ritger Crowell, Ph.D.  
Hongbo Ma, Ph.D.  
Leenal Malayil, M.S.

## 2010

Ghanashyam Joshi, M.S.  
Suyang Liu, M.S.  
Sheppard Martin, Ph.D.  
Arena Richardson, Ph.D.  
Bin Sun, Ph.D.  
Denita Williams, Ph.D.  
Li Xu, Ph.D.

## 2011

Olorunfemi Adetona, Ph.D.  
Gideon St. Helen, Ph.D.  
Shirley Zhang, Ph.D.

## 2012

Adwoa A. Commodore, Ph.D.  
Quoging Qian, Ph.D.

## 2013

Kwaku Agyekum, Ph.D.  
Cory Gresham, Ph.D.  
Peter Hazelton, Ph.D.  
Kristen Kellock, Ph.D.  
Zhoumeng Lin, Ph.D.  
Emily McReynolds, Ph.D.  
Pankaj Sethi, Ph.D.  
Chi-yen Tseng, MS.  
Shuo Xiao, Ph.D.

## 2014

John Finger, Ph.D.  
Joseph Iburg, Ph.D.  
Madhusudhanan M.  
Keralapurath, Ph.D.  
Palak Patel, Ph.D.  
Fei Zhao, Ph.D.

## 2015

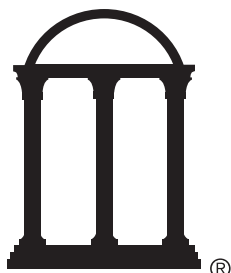
Chen Chen, M.S.  
Elizabeth Dudley, M.S.  
Dean Meyer, Ph.D.  
Qi (Lisa) Luo, Ph.D.  
Natalie Scholpa, Ph.D.  
Hongye Wei, M.S.

## 2016

Anna Adetona, Ph.D.  
Manoj Amaraneni, Ph.D.  
Eric Goolsby, Ph.D.  
Min-su Kang, Ph.D.  
Rong Li, Ph.D.  
Liyun Liu, Ph.D.  
Rahat Wadhwa Desai, Ph.D.  
Rachel Workey, Ph.D.  
Xian Wu, Ph.D.

## 2017

Donna Glinski, Ph.D.  
Forrest Goodfellow, Ph.D.  
Jincheng Wang, Ph.D.  
Kathy Xue, Ph.D.  
Ahmed Ezat El Zowalaty, Ph.D.



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