Spring 2007

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The University of Georgia

Interdisciplinary Toxicology Program

DIGEST

The Interdisciplinary Toxicology Program at the University of Georgia is comprised of graduate students, faculty, staff scientists, and post-doctoral fellows from several departments within the University. The program is committed to a high quality graduate education and excellence in research, and both faculty and graduate students have received national recognition for their endeavors. Our goal is to provide strong interdisciplinary graduate training, research and service programs in toxicology.

This is accomplished by encouraging cooperation and sharing of resources and faculty in the Colleges of Public Health, Pharmacy, Veterinary Medicine, Forestry and Natural Resources and Agricultural and Environmental sciences. The Director and Graduate Coordinator administer the program under the advisement of a coordinating committee.

www.toxicology.uga.edu

toxinfo@uga.edu

Editor
Miles Buzbee

Contributors
Jeff Fisher
Heather McEachern
Edward Roller
Jay Overmyer
Brian Cummings
Matthew Henderson
Hongbo Ma

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ITP ADMINISTRATION

Director
Dr. Jeff Fisher

Graduate Coordinator
Dr. Julie Coffield

Program Coordinator
Ms. Heather McEachern

Fellow Colleagues,

Greetings and welcome to our 2007 edition of the toxicology newsletter. We have several updates and additions that have happened since our last edition. We hope you enjoy catching up with your fellow colleagues in the program.

The Interdisciplinary Toxicology Program (ITP) at the University of Georgia is now housed in the Graduate School under the leadership of Dean Maureen Grasso. Student interest in our program remains very strong with many more qualified students applying for acceptance into our program than we can support. Graduate education in Toxicology remains a prestigious accomplishment, providing students with several employment options. Within the next 5 years a shortage of interdisciplinary trained toxicologists is predicted in the US because of the aging workforce in industry, and federal and state agencies. The ITP has twenty-nine graduate students enrolled, seven of which are on track to graduate this spring. Six of our students are MS students and the remainder are Ph.D students.

The ITP recently lost two long-time active faculty, Drs. Tom Murray and Raghu Sharma. Dr. Murray accepted a Chair position in the Department of Pharmacology at Creighton University and Dr. Sharma retired after more than a 10 year career at UGA. Also, Dr. Duncan Ferguson, who recently became active in the ITP, accepted a Chair position in the Department of Veterinary Biosciences at the University of Illinois and remains an adjunct at UGA. We wish these individuals the best in their future endeavors.

This year a subcommittee of the ITP, chaired by Dr. Brian Cummings, evaluated the ITP curriculum. Recommendations to update the class offerings included a new graduate biostatistics class and the creation of a graduate molecular toxicology class. Also of note, the Department of Environmental Health Science is offering two new graduate toxicology classes (Developmental and Reproductive Toxicology and Physiologically Based Pharmacokinetic Modeling).

One of the ITP founding faculty members, Dr. Jim Bruckner, was seated on the prestigious Committee of Toxicology, an arm of the National Academy of Sciences, National Research Council, after years of subcommittee service.

In closing, the future of toxicology is bright for faculty and students. The challenges are great requiring the best trained student of toxicology to integrate information from the fast paced 'omic' revolution in molecular biology, technological advances in materials such as nano sized particles and computational tools such as bioinformatics and PBPK modeling.

Best Regards,

Dr. Jeff Fisher

Program Grants of Interest

Dr. Marsha Black - Environmental Health Science

- U.S. Fish and Wildlife. Study of bioaccumulation of metals by bivalves in the Altamaha river system.

Dr. Julie Coffield - Physiology and Pharmacology

- National Institutes of HEalth NIEHS. Neuromuscular targets of Botulinum toxin

Dr. Cham Dallas - Pharmaceutical and Biomedical Scieces

- Health Resource Service Administration. "National Disaster LifeSupport Mass Casualty Training"
- Centers for Disease Control and Prevention. " Center for Mass Destruction Defense"
- State of Georgia Division of Public Health. "Regional Coordinating Hospital Emergency Preparedness Exercises"
- State of Georgia Division of Public Health. "State-wide Hospital Pandemic Flu Exercises"

Dr. Jeff Fisher - Environmental Health Science

- Air Force Office of Scientific Research. Development of a PBPK model to describe systemic uptake of inhaled jet fuel aerosol droplets and vapors.
- Centers for Disease Control/ATSDR. Development of a biologically based model to predict alternations in the hypothalamic-pituitary-thyroid (HPT) axis of rodents after exposure to mixtures of thyroid active chemicals.
- U.S. Environmental Protection Agency. Development of a biologically based model to describe alternations in the (HPT) axis of maturing rats and link (HPT) changes with neurodevelopment outcomes caused by hypothyroidism.

Dr. Travis Glenn - Savannah River Ecology Lab

- Georgia Power. "Bioavailability of Metals in Two Former Ash Settling Basins from Coal-fired Power Plants: Capping vs. Natural Attenuation"
- NOAA - Oceans and Human Health Program. "The Role of Metal Contamination in the Proliferation of Antibiotic Resistance in Coastal Water-borne Pathogens"
- U.S. Dept. of Energy Low Dose Program. "Transgenerational Effects of Chronic Low-Dose Irradiation in a Medaka Fish Model System"
- U.S. EPA-NCER & NSF-NIOSH. "The Bioavailability, Toxicity, and Trophic Transfer of Manufactured ZnO Nanoparticles: a view from the bottom"
- U.S. Civilian Research and Development Foundation. "Genetic Effects of Radiation Exposure on Amphibian Populations from Chornobyl Exclusion Zone"

Dr. Luke Naeher - Environmental Health Science

- Athens Community Wellness Council and the Athens Tobacco Prevention Coalition
- US Poultry & Egg Association. "Monitoring Ammonia and Particulate Matter Concentrations at Property Fence Lines"

USDA Forest Service Grants:

- Prescribed forest burn downwind monitoring
- Human health and biological markers of PM2.5 exposure in a cohort of fire fighters doing prescribed forest burns in the southeastern United States
- Radiological content in forest burn smoke
- Airborne Fine Particle Levels Following Prescribed Burns at the Francis Marion National Forest

Dr. Jay Overmyer - Entomology

- U.S. Environmental Protection Agency. "A Multifaceted Approach for Detecting Human-induced Insults in the Waters of the Mobile/Tensaw Delta and Mobile Bay"

Dr. Ron Riley - USDA

- USDA-ARS National Project 108 Food Safety. "Biocontrol of Fumonisin and other Mycotoxins in Corn and Tall Fescue with Microbial Endophytes"
- USDA-ARS National Project 108 Food Safety. "Minimizing the Adverse Health and Economic Impacts of Mycotoxins and Plant Toxins in Foods"

Dr. Mary Alice Smith - Environmental Health Science

- American Meat Institute Foundation. "Refinement of *Listeria monocytogenes* Low Dose Data from Pregnant Guinea Pigs for Human Risk Assessment"
- Center for Food Safety. "Cytokines as a Predictor of Low Dose Exposure to *Listeria monocytogenes* in Pregnant Guinea Pigs"
- International Life Science Institute. "Mouse Strains for Assessing *Enterobacter sakazakii* infections"
- U.S. Environmental Protection Agency. "Distribution of 8-2 Telomer Alcohol and its Oxidation Metabolites in the Female and Pregnant Female Mouse"
- U.S. Food and Drug Administration. "Development of a Risk Assessment Dose-Response Model for Food Borne *Listeria monocytogenes*"

Dr. Ralph Tripp - Infectious Diseases

- NIH-BAA-NIAID-DMID-07-20: NIAID Centers of Excellence for Influenza Research and Surveillance
- R01-AI069275-01. "Antibody Inhibition of Respiratory Syncytial Virus G Protein Activity"
- Research Agreements with Alnylam Pharmaceuticals, Trellis Biosciences & Smithfield, Inc.
- Department of Defense. "Nanostructured Microarrays for Respiratory Virus Detection"
- Alnylam Pharmaceuticals. "Development of RNAi-based Anti-virals for Influenza Virus"
- Centers for Disease Control, MedImmune, UGA. "Aerosol Delivery of Live Attenuated Influenza Virus Vaccines"
- National Institutes for Health. "Immunobiology of Influenza Virus"

Dr. Ken Voss - USDA

- National Food Products Association Research Foundation. "Fate of the Mycotoxin Deoxynivalenol (DON) During the Production of Wheat Products"
- USDA-ARS National Project 108 Food Safety. "Minimizing the Adverse Health and Economic Impacts of Mycotoxins and Plant Toxins in Foods"
- USDA, CREES National Research Initiatives Competitive Grant. "Chemical and Toxicological Evaluation of Fumonisin B1 in Extruded Corn Grits"

Dr. John Wagner - Physiology and Pharmacology

- National Institutes for Health- NIDA. "Cocaine-induced Metaplasticity in the Hippocampus"

Dr. Phillip Williams - Environmental Health Science

- Georgia Power. "Bioavailability of Metals in Two Former Ash Settling Basins from Coal-fired Power Plants: Capping vs. Natural Attenuation"
- U.S. Environmental Protection Agency. "The Bioavailability, Toxicity, and Trophic Transfer of Manufactured ZnO Nanoparticles"

Graduate Update
Class of 2006
Matthew Henderson, Ph.D.

Matthew graduated from UGA's College of Public Health with a Ph.D. in Toxicology during December of 2006. Matthew's doctoral research focused on the mammalian metabolism and toxicology of perfluorinated chemicals which are used by industry to coat paper, textiles, plastic products and for other manufacturing processes. He has presented his research at several national meetings including events sponsored by the Society of Toxicology and the Teratology Society. Matthew has won numerous research and presentation travel awards. One of his greatest honors was being nominated and accepted as an attendee to the NATO sponsored workshop for training young scientists in the management of biological, chemical and nuclear weapons. Matthew spent three weeks in Istanbul, Turkey with students representing over twenty countries worldwide.

Matthew began working at the U.S. Environmental Protection Agency (EPA) in 1999 under the Student Career Experience Program. Upon graduation, Matthew accepted a full time position with the U.S. EPA's National Exposure Research Laboratory; Ecosystems Research Division under the Office of Research and Development as a Research Toxicologist. Although Matthew continues his work with perfluorinated chemicals, he has also joined the Computational Toxicology Team at the EPA and works with both the Metabolism and Metabolomics groups. His current research efforts involve using *in vitro* systems to model and understand the metabolism of azole fungicides as well as using advanced chromatographic techniques (i.e. nuclear magnetic resonance spectrometry) to investigate the mechanism of disruption of endocrine active compounds in both fish and mammals. Matthew's work with the Computational Toxicology Team involves collaboration with industry, academia and other federal agencies. In addition to his research, Matthew is also in his third year as the assistant coach of the UGA Spirit Program.

SETAC
SOCIETY OF ENVIRONMENTAL TOXICOLOGY AND CHEMISTRY

Professional societies offer many opportunities to the scientific community. One of the more alluring perks of maintaining a membership is the invitation to attend annual gatherings. Recently the local South Carolina and Southeast chapters of SETAC hosted their annual event at the Georgia Center for Continuing Education. Aimed at sharing current research findings in the fields of environmental science, toxicology and chemistry, scientist from numerous disciplines joined in mass to contribute their own knowledge to the ever growing store. On April 11th-14th, fourteen Colleges and Universities were represented by 16 platform speakers and 22 poster presenters from six of Georgia's closest neighbors.

The conference kicked off on Wednesday afternoon with a short course on endocrine disrupters and toxicogenomics taught at the Riverbend South Auditorium, a short drive down College Station Road. For this course three instructors, one each from the Southern Nevada Water Authority, CDC, and Syngenta Crop Protection provided the lively lectures as participants anticipated the day of talks to come. On Thursday morning, Dr. Jay Overmyer of UGA and Dr. Tim Rice of the University of South Alabama welcomed everyone to the first full day of the chapters' annual event. This gave way to Dr. J. Bruce Wallace, representing UGA as the keynote speaker. His talk focused on the issues related to coal mining in the central Appalachian mountains. By mid-morning, platform presentations were going full force. Like clock work, every twenty minutes a speaker would quickly explain their research and its implications to the respective field. After each talk a few minutes were permitted for any questions.

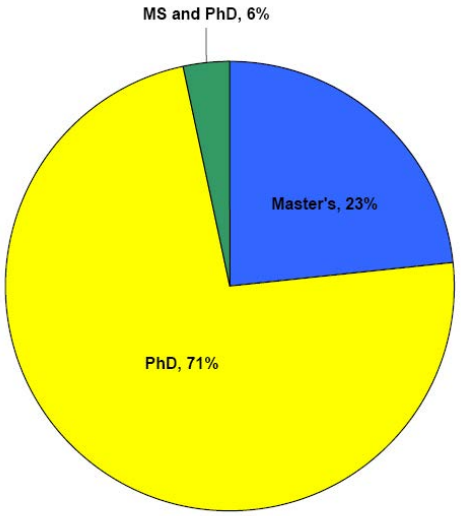
The Interdisciplinary Toxicology Program was represented by three platform speakers. Dr. Jay Overmyer spoke on the "Toxicological interaction of sertraline with acetylcholinesterase inhibiting insecticides." Ph.D. candidate Aaron Wilson provided a very strong presentation of "Trace elements in the Altamaha river system: connections and collaborations." And Ph.D. candidate Kyu-Bong Kim spoke on his work with the "Toxicokinetic and tissue distribution study of deltamethrin in adult Sprague-Dawley rats."

The day concluded with a Bar-B-Q at the UGA Bee Lab. The food served was very complimentary to fellowship shared. The following morning of the SETAC conference, the poster viewings were scheduled to begin at 8:30 a.m. As the crowd trickled into the viewing area, the atmosphere was pleasantly relaxed. The 22 students presenting their research on posters were eager to answer questions and continued to be impressive with their thoroughness of the material.

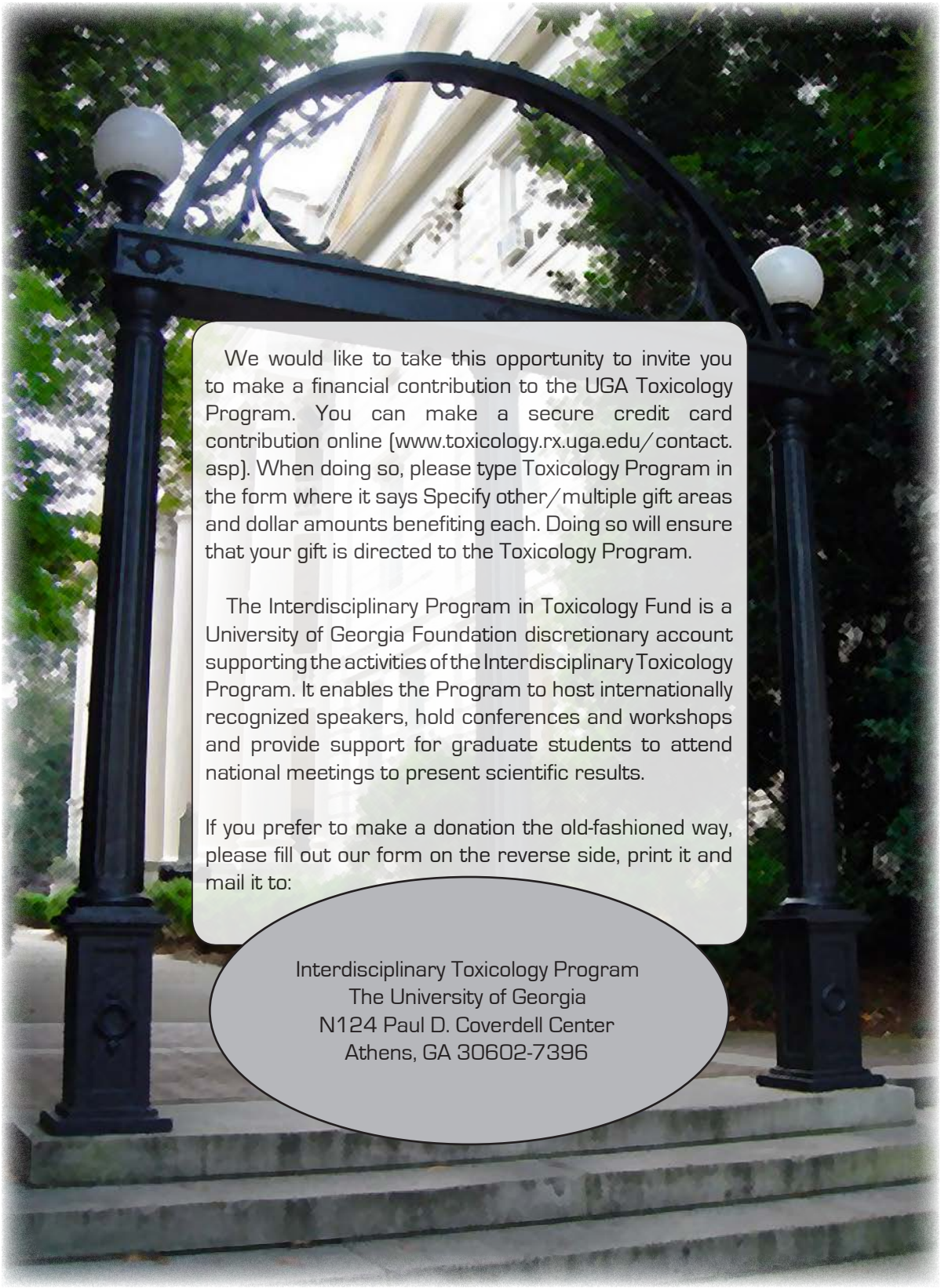
By the time everyone had made their rounds in the poster viewing area it was time for the Regional Chapter Business meeting. This portion gave members a chance to have a say in how the society functions (another great advantage of membership with an organization). With the close of the business meeting, it was time to recognize the individuals who performed outstanding work. Truly, all the work was worthy of extra praise and as the closing ceremony commenced many of the participants stayed around to further discuss their various research topics.

Program Fact

Distribution of Degree Seekers



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 (www.toxicology.rx.uga.edu/contact.asp). When doing so, please type Toxicology Program in the form where it says Specify other/multiple gift areas and dollar amounts benefiting each. 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 to present scientific results.

If you prefer to make a donation the old-fashioned way, please fill out our form on the reverse side, print it and mail it to:

Interdisciplinary Toxicology Program
The University of Georgia
N124 Paul D. Coverdell Center
Athens, GA 30602-7396

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 to 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, N124 Paul D. Coverdell Center, Athens, GA 30602.

You may also make a secure credit card donation via our website at

http://www.toxicology.uga.edu.

Thank you for your support of the program!

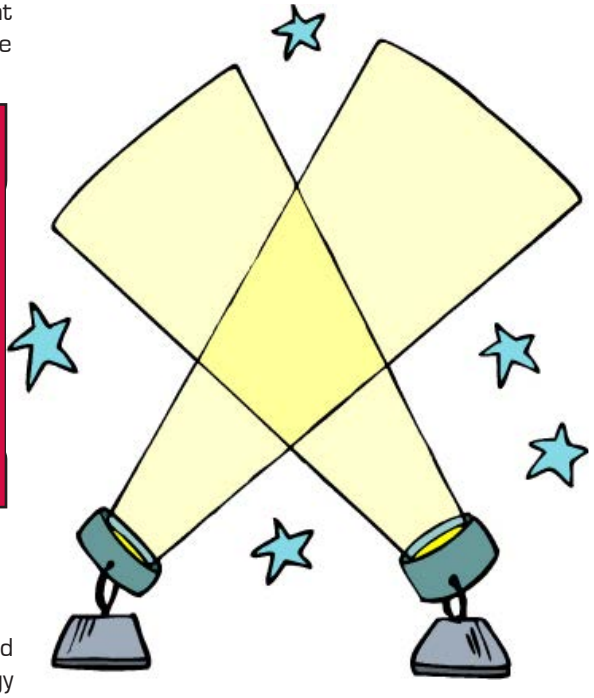
Heather McEachern

Heather began her career at the University of Georgia in 1997 in the Counseling and Testing Center as their senior secretary after completing her degree in advertising. Since that time she has served a number of departments including the Department of Philosophy, the Department of Environmental Health Science, and currently serves as the Student Services Director for the newly formed College of Public Health (CPH) and Program Coordinator for the Interdisciplinary Toxicology Program.

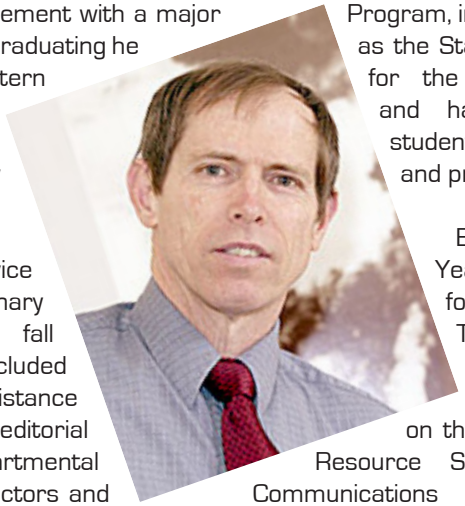
As Student Services Director, Heather serves as the information resource for students, faculty, and staff in the College of Public Health. She maintains undergraduate records and matters related to the CPH undergraduate programs. She is responsible for admissions, recruitment, and graduation for all undergraduate students within the College. She is also the webmaster for CPH.

In her role as Program Coordinator for ITP, Heather serves as the assistant to the Graduate Coordinator, Dr. Julie Coffield and as administrative assistant to the director, Dr. Jeff Fisher. She is the information resource for new and prospective students to the toxicology program. She handles all application materials, student data and files, purchasing, and special event coordination for the program. She is also the toxicology program webmaster. When asked her thoughts on the ITP program, Heather responded by saying "I love my job with the toxicology program. It is interesting to see how multiple departments can come together with a common goal to advance the field of toxicology." She also noted, "I enjoy getting to know all of the faculty and students. They are all a joy to work with."

In the Spotlight



Edward Roller



Ed graduated from the University of Georgia in 1976 with a Bachelor of Science in Forest Resource Management with a major in Wildlife Biology. After graduating he worked for the Southeastern Cooperative Wildlife Disease Study in the College of Veterinary Medicine.

Ed began his service with the Interdisciplinary Toxicology Program in fall of 1995. His duties included supervising the distance learning program, editorial assistance for departmental media, scheduling instructors and speakers for Toxicology courses and seminars, training others in the UGA Right-To-Know Plan, Hazardous Materials and Radiation Safety, program recruitment, co regional toxicology meetings, and developing educational materials. Ed also coordinated studies between units of the Toxicology Program, including overseas, served as the Staff Safety Representative for the College of Pharmacy, and has assisted numerous students in research projects and presentations and posters.

Ed was Employee of the Year in 2003 & 2004 for the Interdisciplinary Toxicology Program and for the College of Pharmacy. He has served on the Georgia Agroterrorism Resource Subcommittee and the Communications Committee for the Strategic National Stockpile. Ed has assisted with training in Disaster Life Support and also teaches Disaster Training for Health Professionals in the College of Pharmacy.

In his spare time Ed is an Amateur Extra Class Radio operator and gladly helps with emergency and public service communications. He is presently the Emergency Coordinator for the Clarke County Amateur Radio Emergency Service and assists a wide variety of local agencies in their emergency communications. He has completed Skywarn Training through the National Weather Service and the 3 levels of Emergency Communications Courses offered by the American Radio Relay League and has become an Accredited Volunteer Examiner.

Ed likes spending his time with his family fishing, working on cars, dog training, hiking, and traveling to watch his daughters compete in various activities. Ed and his wife home schooled their 3 daughters and his wife teaches at Master's Academy.

Spring Toxicology Retreat

Clockwise from top: Brianna explains her findings; gathering for the group photo; Eva discussing her poster; sitting down for lunch; Matt talking with Dr. Riley and Dr. Voss; Dr. Edwards speaks; our four prize winners.
Center: Everyone viewing the posters.

Above: The crowd chats between platform presentations

Each spring

the Interdisciplinary Toxicology Program dusts off the party hats and rolls out the red carpet. The annual spring retreat provides an opportunity for the ITP students to showcase their current research developments amongst one another and faculty members. On the Monday after spring break, ITP students, faculty and staff diligently arrived at the Georgia Center for Continuing Education to continue on with this tradition. By nine o'clock that morning all of the posters were secure and the last of the scholars were finding their seats. Dr. Jeff Fisher started the event by providing the director's update on the state of the program. This public service announcement highlighted the ITP's intention to revamp it's bylaws and the ongoing challenges of maintaining the curriculum. With this, Dr. Fisher handed the microphone over to Dr. Gaylen Edwards.

Dr. Edwards took the floor to discuss the development of UGA's Intedsiciplinary Neuroscience Program. He outlined some of the program's intentions and provided answers to those with questions. For some, Dr. Edwards was the first to inform us of the coming plans for UGA to serve as a surrogate campus during the first two years of medical school for select students attending the Medical College of Georgia. With Dr. Fisher reporting on the immediate status of the Interdisciplinary Toxicology Program and Dr. Edwards foretelling the forces that will shape the future direction of the program, many of us were eager to discuss our opinions during the much anticipated refreshment break. Like the many times before, the retreat was wonderfully catered by the Georgia Center. Drinks and food were deliciously waiting as we came rambling out of the conference room and into the lobby.

Talks & Posters

In the seats of the conference room, attendees prepared themselves for the four scheduled talks from graduate students representing the College of Public Health, Pharmacy, and Veterinary Medicine. With roughly fifteen minutes to introduce listeners to developments in their current research, each speaker tactfully outlined the progress of their current graduate work. Each presentation provided a glimpse into their unique discipline of Interdisciplinary Toxicology research. If nothing else, the talks challenged the judges as they reluctantly selected a student worthy of the honor, "Most Outstanding Platform Presentation." Hongbo Ma edged out the three other participants for this distinction.

Following the conclusion of the platform presentations, all attendees of the retreat were asked to exit the conference room into the foyer. The presenters were now given the chance to answer questions from the other attendees. Each of the 13 students responded quickly to the challenging questions thrown at them by professors. With such a strong group of students, the future of Interdisciplinary Toxicology Program looks extremely positive. The abilities of the young professionals reflects greatly upon the talents of the faculty and staff who provide the environment so crucial for academic development.

Platform Speakers

"Formulation-dependent toxicokenetics explains differences in the GI absorption, bioavailability and acute neurotoxicity of deltamethrin in rats."

Kyu-Bong Kim

"Use of metallothionein: GFP transgenic Caenorhabditis elegans to elevate metal bioavailability and toxicity."

Hongbo Ma 1st

"Brain, liver, and thyroid biomarkers reflect enhanced sensitivity of the developing rat to thyroid hormone depletion."

Matt Taylor

"The Altamaha River: connections and collaborations."

Aaron Wilson

Poster Presentations

Toxicological Evaluation of *Fusarium verticilliodes* Culture Material Nixtamalized in the Presence and Absence of Corn Matrix

Tantiana Burns 3rd

The Involvement of Nmda Receptors in the Effects of Extinction on the Reinstatement of Cocaine Seeking Behavior

Lakshmi Kelamangalath

Toxicokenetic and Tissue Distribution Study of Deltamethrin in Adult Sprague-Dawley Rats

Kyu-Bong Kim

Bioavaliability And Toxicity of Nanosized ZnO Particles in the Nematode *Caenorhabditis elegans*

Hongbo Ma

BBPK Model of the Hypothalamic-Pituitary-Thyroid Axis in Adult Male Rats

Eva McLanahan 1st

Development of BBPK Radio-Labeled Submodels for the HTP Axis in PND 14 Sprague-Dawley Rat Pups

Libby Myers

Differential Effects of Ca^{+2} Independent Phospholipase A_2 Inhibition on Oxidant-Induced Cell Death in Primary Neocortical cells

Brianna Peterson 2nd

Bayesian Analysis of Physiologically Based Pharmacokinetics Modeling of Perchlorethylene in Humans

Junshan Qui

Neonatal Mice as Models for Premature Infants Infected with *E. sakazakii*-Contaminated Infant Formula

Arena Richardson

Brain, Liver, and Thyroid Biomarkers Reflect Enhanced Sensitivity of the Developing Rat to Thyroid Hormone Development

Matt Taylor

The Effects of Hops Extract on the Gut of Microfloral Profile of Broilers at Day 22

Glenn Tillamn

Immunochemical Charaterization of Cultured Mouse Spinal Motor Neurons

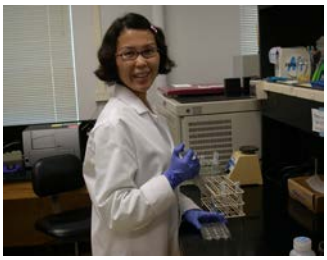
Aswani Vunnava

Dose Response, Infectivity and Stillbirths in Pregnant Guinea Pigs Inoculated with *Listeria monocytogenes*

Denita Williams

Hongbo Ma

is a third year Ph.D. student in the Toxicology Program. Under Dr. Phillip Williams, her research focuses on using the nematode *Caenorhabditis elegans* as a model organism for conducting toxicological studies. Hongbo strongly believes entering the UGA Toxicology Program has been a career defining decision. The toxicology program has given Hongbo an unique experience and it has exposed her to the many highly specialized research fields with in toxicology. Hongbo especially enjoyed the annual Spring Toxicology Retreat. This year Hongbo shone brightly among the other students as she earned the honor of top platform speaker. Previously, Hongbo has also earned the third place recognition in the poster category during the 2006 ITP retreat. The past few years at UGA have been highlighted by a particularly unique experience for Hongbo. In 2006, she was given the opportunity to travel to her home country of China. Beijing hosted the 2006 SETAC Asia/Pacific meeting where Hongbo gave two presentations on the *C. elegans* research she has been conducting. Besides receiving very positive feedback on her work, Hongbo simply enjoyed the chance to extend her work to those in China and ultimately improve environmental toxicology studies there. After graduating in Fall of 2008, Hongbo would like to become a professor in environmental toxicology at one of China's major Universities.



Shall we eat?

After all the wonderfully delivered talks and after all the questions had been asked of the poster presenters, everyone began to gather down stairs for the group photo. The photographer quickly corralled the crowd into an organized mass just long enough to snap a few shots. The lure of lunch had already entered the minds and stomachs of everyone and as quick as the camera flashed, the group scattered onward to their seats in the beautifully decorated banquet hall. The friendly chatter was temporarily silenced by Dr. Fisher as he welcomed and thanked the College of Public Health's Dean, Dr. Phillip Williams, for taking time out to attend our annual event. Like the many times before, Dr. Williams, in return, humbly thanked us for hosting such a praiseworthy function.

The okay was given and lunch began with a delightful salad followed by a chicken or vegetarian plate, depending on preference. The goal was to eat as much as possible, saving just enough space for the fluffy angelfood cake smothered with strawberries, sauce and whipped creme.

As people around the room began to lean back and reflect on the tasty lunch they had just eaten, Dr. Fisher again stood, this time to announce the judges' decisions on which talk and which posters were deserving of further recognition. Hongbo Ma was selected as the most outstanding Platform Presenter. For the poster presentations, Eva McLanahan earned the top honor. First runner-up Brianna Peterson, and Second runner-up Tantiana Burns gladly accepted their awards too as all four winners posed for a quick photo taken by Heather McEachern. With nothing more to cover, Dr. Fisher applauded all the participants for their marvelous efforts and again graciously thanked everyone for helping to make the ITP an unique and rewarding experience year after year.

Graduate Update

Class of 2002

Jay Overmyer, Ph.D.

Jay started his Ph.D. study in 1998 under the direction of Dr. Ray Noblet in Entomology. Jay's dissertation research focused on the effects of lawn-care chemicals on aquatic invertebrates. In the lab, Jay looked at the toxic effects of pesticide mixtures and pulsed exposures using black fly larvae as test organisms. In the field, he assessed the macroinvertebrate communities of six streams receiving pesticide runoff from lawns in various neighborhoods of Peachtree City, GA. Jay is currently an Assistant Research Scientist in the Department of Entomology at UGA. His current research involves the use of aquatic insects as bioindicators to assess the effects of environmental contaminants in freshwater systems. Field studies focus on assessing changes in macroinvertebrate assemblages as a result of point and/or non-point source pollutants. Laboratory studies focus on exposure bioassays to assess contaminant effects on life history endpoints such as growth and development in addition to biochemical effects such as disruption of hormone and enzyme systems. The laboratory studies rely heavily on a colony of black flies, *Simulium vittatum* IS-7, maintained in the laboratory producing thousands of organisms per week for testing purposes. Accessibility to the colony material also allows for extending research into the areas of black fly biology, vector control and disease transmission. Jay is currently collaborating on research with other scientists at UGA, various Universities throughout the US and Canada, US EPA and NOAA. Jay is an active member of the Society of Environmental Toxicology and Chemistry and is currently serving as President of the Southeast Regional Chapter. He is also a member of the North American Benthological Society, the Entomological Society of America, the Georgia Entomological Society, and the North American Black Fly Association.

Program Fact

Countries Represented

Bulgaria
Canada
China
India
Japan
Poland
Russia
South Korea
Trinidad
USA

FACULTY HIGHLIGHT

Dr. Brian S Cummings

Dr. Cummings is an Assistant Professor in Pharmaceutical and Biomedical Sciences in the College of Pharmacy, and a member of the Interdisciplinary Toxicology Program. Dr. Cummings received his B.S. from Eastern Michigan University in 1994, where he double majored in Biochemistry and Toxicology. For his Ph.D. studies, Dr. Cummings moved the 40 miles east to Wayne State University in Detroit, where in 1999 he completed his dissertation in the laboratory of Dr. Lawrence H. Lash. His then research focused on the toxicity and metabolism of a common ground water contaminant, trichloroethylene, in human and rodent kidney cells. His work led to the identification of a glutathione-*S*-transferase isoform responsible for the bioactivation of trichloroethylene, as well as the first report of cytochrome P450 4A11 expression in human kidneys.

Following his doctoral studies Dr. Cummings joined the laboratory of Dr. Rick Schnellmann as a Postdoctoral Fellow at the University of Arkansas for Medical Sciences in Little Rock. There Dr. Cummings received a National Research Service Grant Award from NIH to study the role of Ca^{2+}-independent phospholipase A_2 in renal cell death. Again, Dr. Cummings found himself moving to the Medical College of South Carolina in Charleston in July of 2001, when his advisor was appointed as the Departmental Chair of Pharmaceutical Sciences (MCSC). Moving to Charleston was a great experience for him. "We lived about a mile from the ocean and I got a lot of fishing in," Dr. Cummings said with a smile. He did manage to get some work completed as well, publishing 7 peer-reviewed papers in only 4 years. Nearly all of the papers studied the expression of Ca^{2+} independent phospholipase A_2 in the kidney, and it's role in oxidant- and chemotherapeutic-induced cell death.

Towards the end of his Postdoctoral Fellowship, Dr. Cummings' interests shifted to the effect of Ca^{2+} independent phospholipase A_2 on the phospholipid architecture of cancer cells. He is currently funded by the Georgia Cancer Coalition to study the role of Ca^{2+}-independent phospholipase A_2 in the mechanisms of cancer cell death and growth. This work investigates how inhibitors of these enzymes increase the toxicity of established chemotherapeutics to cultures of human lung, prostate, brain, and kidney cancer cells. The mechanisms involved include rearrangement of the cellular lipid profile and altered cell-signaling cascades.

Dr. Cummings' work incorporates molecular biology, cell signaling techniques, and analytical chemistry to test his hypothesis. Students, definitely learn a variety of techniques in his laboratory. Sometimes this means having to become proficient in a new area or collaborating with other labs. Dr. Cummings credits the diverse expertise in the Department of Pharmaceutical and Biomedical Sciences in facilitating this multi-disciplinary approach. When grant funding is tight, any project crossing multiple disciplines is going to be more competitive. "That is why it's really nice to be part of a Department where you can just walk down the hall and get expert

(Continued on next page)

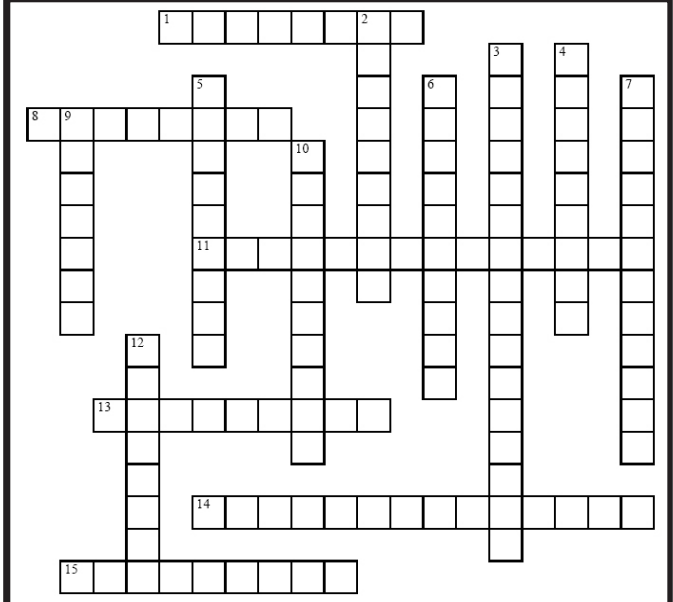
advice in analytical chemistry, G-protein signaling, apoptosis, drug delivery, or *in vivo* animal studies. It's great to have colleagues that are willing to share ideas, experiences, or just listen."

Dr. Cummings plans to further collaborate with Dr. Jeff Fisher, a member of the ITP program and Environmental Health Sciences. They recently received a 2-year grant to study the bromate-induced carcinogenesis and cell death in kidney and liver cells. This project brings Dr. Cummings back to his graduate and Postdoctoral studies focusing on renal toxicity.

Dr. Cummings recently graduated his first Ph.D. student, Dr. Brianna Peterson, who accepted a position in Forensic Toxicology in the Criminal Science Investigation Unit for the state of Washington. His two current graduate students, Bin Sun and Xiaoling Zhang are both in their first year of study and are also members of the ITP. In addition, he has numerous undergraduate researchers in the laboratory. His teaching duties include Anatomy and Physiology, Pathophysiology, and a small amount of Pharmacokinetics. He is an active member of the ITP Curriculum and Admissions Committees.

Outside of UGA, Dr. Cummings spends time with his wife, Jennifer of 14 years, and his four-year old daughter Ashleigh. He also plays on 2 different softball teams and tries to get in a round of golf, or some fly fishing, when he can. "Right now my daughter's really into board games, so that's what a lot of my spare time is going towards," he laughs. "She really loves Memory. It helps that it's the Disney version. She usually gets more matches than I do."

Classy Words



ACROSS

1. Pathogen associated with dairy products
8. Don't eat your catch from this southern lake
11. Type of pesticide; e.g. Dioxin
13. Money set aside for national priority site clean up
14. Initiation, proliferation, progression
15. Rate of excretion

DOWN

2. Oral exposure
3. TCE
4. Xenoestrogens can disrupt this system
5. Congenital malformations
6. P450
7. Relationship between effect and concentration
9. Caused "Blackfoot Disease"
10. Father of toxicology
12. Too much bilirubin

For a great laugh check out this video on YouTube

"MTD Blues" YouTube Broadcast Yourself™

http://www.youtube.com/watch?v=5Fx1rDOsDLo

Cut

Alumni Contact Information Update

Name: _____

Address: _____

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_____

Phone: _____

E-mail: _____

Employer: _____

_____

Job Title: _____

_____

Work phone: _____

Comments: _____

_____

_____

(Please fill out and return by mail or e-mail to toxinfo@uga.edu)

CURO SCHOLAR 2006-2007

Lisa Rivard's

research as a CURO scholar focused on perchlorate. Using ion chromatography and equilibrium dialysis, Lisa was able to study how this molecule binds to proteins in rat blood serum. The study was very similar to ongoing perchlorate research conducted at the Centers for Disease Control in Atlanta. This May, Lisa will culminate her CURO experience by delivering a talk to the scientific community at the CURO International Research Symposium in Costa Rica. Lisa is also set to graduate this spring from the UGA honors program *Summa Cum Laude* with her B.S. in Environmental Health Science. When Lisa manages to escape her studies, she often devotes her time to the YoungLife program on UGA's campus and at Clarke Central High school. Lisa has most certainly exemplified the integrity and mission of the CURO scholar program during her time as the recipient.

Alumni of the Interdisciplinary Toxicology

1997
Kelley Ann Boyle Van Vreede, M.S.

1998
Nikolay Miltchev Filipov, Ph.D.
Slawomir Jacek Rzucidlo, Ph.D.
Masashi Tsunoda, Ph.D.
Robert Wesley Wentworth, Ph.D.
Ilho Cho, M.S.
Jeannie Lee Stephenson, M.S.

1999
Judy S. Mathew, M.S.
Christopher Lee Peredney, M.S.
Karen Marie Zepp, M.S.

2000
Beverly Schleppi Arnold, Ph.D.
Kevin Anthony Holloman, Ph.D.
Carrie Hamilton Marr, M.S.

2001
Taras K. Oleksyk, Ph.D.
Suparna Ajoy Sarkar, Ph.D.

2002
Windy Ann Boyd, Ph.D.
Neera Vintra Gopee, Ph.D.
Vic Johnson, Ph.D.
Michael Harrison Lumpkin, Ph.D.
Jay Paul Overmyer, Ph.D.
Patricia Lynn Shaw-Allen, Ph.D.

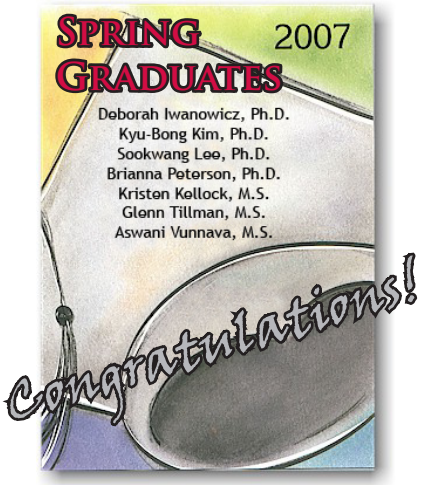
2002 (cont.)
Gregory Patrick Dooley, M.S.
Ofia B. Hodoh, M.S.
Sarah Suzanne Rentz, M.S.
Lonnie Dwayne Williams, M.S.

2003
Jason Lamar Boyd, Ph.D.
Shashank Dravid, Ph.D.
Sang Hyun Kim, Ph.D.
Russell David Cole, M.S.
James Claude Cumbee Jr., M.S.
Kristi Manning Folden, M.S.
Audrey Jean Majeske, M.S.
Bradley David Reinhart, M.S.

2004
Jerry Lamar Campbell Jr., Ph.D.
Deanna Erin Conners, Ph.D.
Quanren He, Ph.D.
Jiyoung Kim, Ph.D.
Olga Vasylivna Tsyusko, Ph.D.
Jason M. Unrine, Ph.D.
Tara Lynn Almekinder, M.S.
Heather A Brant, M.S.
Amber Lynn Graves, M.S.
Xianglu Han, M.S.
Elizabeth Ann Richardson, M.S.
Emily Dawn Rogers, M.S.
Angel K. Wall, M.S.
Neera Chhabra Young, M.S.

2005
Tonia Marie Parrott, Ph.D.
Neelesh Sharma, Ph.D.
Kathy Dietzel, M.S.
Ryan Richard Holem, M.S.
Catherine J King, M.S.
Brad Konwick, M.S.
Gregory N Oquinn, M.S.
Jennifer Hoffman Peterson, M.S.

2006
William Matthew Henderson, Ph.D.
Carey C Hines, Ph.D.
Lonnie Dwayne Williams, Ph.D.
Molly Catherine Visser, M.S.
Denita Williams, M.S.



Interdisciplinary Toxicology Program
The University of Georgia
N124 Paul D. Coverdell Center
Athens, GA 30602

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