The CIT is proud to announce the Center for Research on Ingredient Safety (CRIS) has officially been established and will be located at the Food Safety and Toxicology Building on the campus of MSU. Embedded within the Center for Integrative Toxicology and in partnership with the MSU Department of Food Science and Human Nutrition, the Grocery Manufacturers Association and the University of Michigan Risk Science Center, the CRIS will be an academic, science-based center, that will serve as a reliable and unbiased source for information, research, training and analysis on the safe use of chemical ingredients in consumer packaged goods including foods, beverages, cosmetics and household consumer products.

“CRIS provides a unique opportunity for both MSU and CIT as it will be the first formal program in food and consumer product ingredient safety of its kind. Specifically, CRIS is a collaboration between academia and private industry encompassing research, graduate training and communication focused on toxicological issues pertaining to food and consumer products,” explains Norbert Kaminski, Director for the CIT. “There has been an especially strong need for educational programs in the area of food toxicology and risk assessment. Although CRIS will be broader than just food, nevertheless, it will fulfill a critical need within the discipline of...continued on page 2
CRIS provides a unique opportunity for both MSU and the CIT as it will be the first formal program in food and consumer product ingredient safety of its kind.

- Norbert Kaminski, CIT Director

That safe and secure food and consumer products truly change the world,” said Fred Derksen, chairperson of MSU’s Department of Food Science and Human Nutrition. “In addition to the support of methods and strategies for evaluating the safety of ingredients in food, packaging, cosmetics and household care products.

- Establish a graduate training program that prepares scientists for a career in assessing the safety and toxicology of ingredients in food, packaging, cosmetics and household care products that includes training in risk assessment and U.S. and international regulatory policies.

- Inform the public, health professionals, regulators and the scientific community on research matters reflecting the state-of-the-science pertaining to the safety and toxicology of ingredients in food, packaging, cosmetics and household care products.

The endowed chair search will begin immediately and the CIT looks forward to showcasing the progress of the new program.

CIT STUDENTS SHINE AT 53RD SOT MEETING

Students of the MSU Center for Integrative Toxicology were highly honored at this year’s 53rd annual Society of Toxicology (SOT) meeting in Phoenix, Arizona with numerous abstracts presented and many special honors awarded.

The SOT annual meeting is the largest toxicology meeting and exhibition in the world, attracting more than 6,500 scientists from industry, academia, and government from various countries around the globe. This year’s meeting was held March 24 – 27 at the Phoenix Convention Center in Phoenix, Arizona.

The following students in the MSU-CIT’s Environmental and Integrative Toxicological Sciences (EITS) training program received awards or honors:

- Alexandra Colon-Rodriguez, training with Dr. Bill Atchison, received a Travel Award from the Hispanic Organization of Toxicologists of the SOT.
- Nikita Joshi, training with Dr. James Luyendyk, was a recipient of the 2014 Marcos Rojkind - American Society for Investigative Pathology Trainee Travel Award for her abstract titled, “Platelet Function Inhibits Liver Injury and Fibrosis Induced by a Bile Duct Toxicant.” She also received honorable mention for the Carl C. Smith Graduate Student Award from the Mechanisms Specialty Section of the SOT.

- Ashley Maiuri, training with Dr. Robert Roth, won the In Vitro and Alternative Methods Specialty Section Student Award for her abstract, “NSAIDs Synergize with Inflammatory Cytokines to Kill Hepatocytes: Implications in Idiosyncratic Reactions.”...continued on page 3
Kazuhisa Miyakawa, training with Dr. Robert Roth, won the Roger O. McClellan Student Award for his abstract, “Contribution of Par-4 and Thrombin to Acetaminophen Hepatotoxicity in Mice.” The award is given jointly by the Comparative and Veterinary Specialty Section and the Toxicologic and Exploratory Pathology Specialty Section. Miyakawa gave brief talks at receptions for both specialty sections. Miyakawa also won 1st place in the Emil A. Pfitzer Student Award Poster Competition from the Drug Discovery Toxicology Specialty Section and 1st place for the Ronald G. Thurman Student Travel Award from the Mechanism Specialty Section.

Joe Zagorski, training with Dr. Cheryl Rockwell, received the Immunotoxicology Specialty Section's Best Student Presentation Award for his presentation, "Inhibition of IL-2 production by the Nrf2 Activator tBHQ Correlates with NFkB Activation in Activated Jurkat T cells."

Several undergraduate students working in the labs of CIT affiliated faculty members also received recognition at this year’s meeting. Four out of the eleven students who received the Pfizer SOT Undergraduate Travel Award were from MSU.

Lukas Gora, working in the lab of Dr. Robert Roth, received the Pfizer SOT Undergraduate Travel Award for his presentation, "NSAIDs Synergize with Inflammatory Cytokines to Kill Hepatocytes: Implications in Idiosyncratic Reactions." Gora is a student at the University of Dusseldorf and is at MSU for the year on a study abroad program.

Kelly VanDenBerg, working in the lab of Dr. Cheryl Rockwell, received the Pfizer SOT Undergraduate Travel Award for her presentation, "Inhibition of early T cell cytokine production by arsenic occurs independently of Nrf2."

Ricardo Rivera-Soto, working in the lab of Dr. John LaPres, received the Pfizer SOT Undergraduate Travel Award for his presentation, "The Role of HIF1a in Regulating Cobalt-Induced Cytokine Expression in Alveolar Type II Cells."

Kia Z. Perez-Vale, working in the lab of Dr. William Atchison, received the Pfizer SOT Undergraduate Travel Award. Also from Dr. Atchison's lab, Zuileirys Santana received Honorable Mention for the Perry Gehring Award, and Crystal Colon and Celizbets Colon received student travel awards.

Barbara J. Avalos Cavero, working in the lab of Dr. Norbert Kaminski, received a travel award for her presentation, "Suppression by 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) of IL-2 plus IL-21-Induced B Cell Activation."

Photos provided by Dr. Robert Roth and the SOT.
CIT FACULTY TAKE HOME TOP HONORS FROM SOT MEETING IN ARIZONA

The CIT-affiliated faculty were awarded a number of highly prestigious honors at this year’s 53rd annual SOT meeting in Phoenix, Arizona. Five affiliated faculty members were chosen to receive awards this year from the SOT itself and from individual specialty sections within the society as well:

» **Dr. Jay Goodman**, was the 2014 SOT Merit Award recipient. The Merit Award is presented to a member of the Society of Toxicology in recognition of distinguished contributions to toxicology throughout an entire career in areas such as research, teaching, regulatory activities, consulting and service to the Society. As a professor in the Department of Pharmacology and Toxicology, Dr. Goodman is also a Diplomate of the American Board of Toxicology and a Fellow of the Academy of Toxicological Sciences. His research interests are focused on discerning epigenetic mechanisms underlying carcinogenesis and other chemical-induced toxicities, and testing the hypothesis that the capacity to maintain the normal epigenetic status is related inversely to susceptibility to carcinogenesis. Extensively involved in the training of the next generation of toxicologists, scientists and physicians, Dr. Goodman has served as a mentor and advisor for many Ph.D. students and postdoctoral fellows.

» **Dr. William Atchison**, received the 2014 SOT Undergraduate Educator Award. The Undergraduate Educator Award, sponsored by CIT FACULTY TAKE HOME TOP HONORS FROM SOT MEETING IN ARIZONA

At left: CIT-affiliated faculty award winners, Dr. William Atchison, Dr. Patricia Ganey, and Dr. Jay Goodman.

**Bottom left:** Dr. Norbert Kaminski receiving the gavel to take the reins as the president of the SOT for the coming year.

**Bottom right:** Dr. Patricia Ganey with her undergraduate student, Lukas Gora, Pfizer SOT Travel Award winner.

Photos on both pages provided by Dr. Robert Roth and the SOT.
the SOT Endowment Fund and first presented at the SOT 50th Anniversary Annual Meeting, is presented to an SOT member who is distinguished by outstanding contributions to the teaching of undergraduate students in toxicology and toxicology-related areas, and whose efforts support SOT’s strategic efforts to "Build for the Future of Toxicology." Dr. Atchison currently serves as the Associate Dean for Research and Graduate Studies in the College of Veterinary Medicine. Dr. Atchison's passion is to provide opportunities for undergraduate education in the biomedical sciences coupled with research experiences aimed at under-represented minority students. In collaboration with the University of Puerto Rico, he developed and established an NIH, NINDS-funded R25-Diversity Education grant that provides research experiences for Hispanic undergraduates, since 2005. Dr. Atchison makes annual visits to campuses of the University of Puerto Rico to recruit/interview students for the program. Many of these students have gone on to participate in SOT’s Annual Meeting by presenting their research. To date, 40 undergraduate students have received training through this program.

» **Dr. Patricia Ganey**, professor in the Department of Pharmacology and Toxicology, received one of two Colgate Palmolive Grants for Alternative Research for her project, "Prediction of Idiosyncratic, Drug-induced Liver Injury from Drug-Cytokine Interaction In Vitro." The Colgate-Palmolive Grant for Alternative Research identifies and supports efforts that promote, develop, refine, or validate scientifically acceptable animal alternative methods to facilitate the safety assessment of new chemicals and formulations. Dr. Ganey was awarded a plaque and $40,000 in grant funds to facilitate research on her project.

» **Dr. Norbert Kaminski**, professor in the Department of Pharmacology and Toxicology and Director of the CIT, received the Senior Investigator Award from the Immunotoxicology Specialty Section of the SOT. The award is given to those whose body of work represents an outstanding career in immunotoxicology.

» **Dr. Cheryl Rockwell**, professor in the Department of Pharmacology and Toxicology, received the Outstanding Young Immunotoxicologist Award and was named a new Junior Councilor by the Immunotoxicology Specialty Section of the SOT. The Outstanding Young Immunotoxicologist Award is given to those whose work has made significant contributions to the field of Immunotoxicology and have had an impact on regulatory issues. The CIT is very proud to be affiliated with these inspiring professors of toxicology.
Weimin Chen
Microbiology and Molecular Genetics
Mentor, Norbert Kaminski

Weimin successfully defended her dissertation, "Modulation of HIV gp120 Antigen-Specific Immune Responses by Delta9-Tetrahydrocannabinol and Cannabinoid Receptors 1 and 2 In Vitro and In Vivo" in February of 2014 and earned her Ph.D. degree in Microbiology and Molecular Genetics and Environmental Toxicology.

Weimin is currently working as a postdoctoral research fellow in the lab of Dr. Norbert Kaminski. Her research focuses on assessing the immunological status of aryl hydrocarbon receptor null rats and mice and their age-matched wild type controls. This project is conducted in collaboration with the Hamner Institutes for Health Sciences and the Dow Chemical Company.

In five years, she hopes to continue doing research as a scientist in the field of immunotoxicology.

Daven Jackson
Pathobiology and Diagnostic Investigation
Mentor, James Wagner

Daven successfully defended her dissertation, "Attenuation of Airway Hyperreactivity by Gram- Negative Lipopolysaccharide in a Murine Model of Asthma," in March of 2014 and earned her Ph.D. degree in Pathobiology and Diagnostic Investigation and Environmental Toxicology.

Currently, Daven is preparing to take the anatomic veterinary pathology board exam in September. She is also a postdoctoral research fellow with Dr. Jack Harkema and Dr. Ning Li where she is working on the GLACIER project which examines the effects of short term exposure to air pollution in the Great Lakes region on chronic cardiovascular and metabolic diseases in susceptible populations.

In five years, she hopes to be a veterinary pathologist in industry or government.

Ashwini Phadnis-Moghe
Genetics
Mentor, Norbert Kaminski

Ashwini successfully defended her dissertation, "Mechanisms Underlying 2,3,7,8-tetrachlorodibenzo-p-dioxin-Mediated Suppression of B Cell Activation and Differentiation," in February of 2014 and earned her Ph.D. degree in Genetics and Environmental Toxicology.

Ashwini is currently working as a postdoctoral research fellow in the lab or Dr. Norbert Kaminski. Her postdoctoral project involves the characterization of a triple knockout rat model of inflammation. She will be investigating the effects of TCDD on liver tumors, liver inflammation and on the immune system using this model. This project will be conducted in collaboration with the Dow Chemical Co. in Midland, MI.

In five years, she hopes to join industry as an immunotoxicologist. Although she equally enjoys doing academic research and the process of grant writing, she is inclined towards a position in industry given the dynamism and diversity of projects.

Kyle Poulsen
Pharmacology and Toxicology
Mentor, Robert Roth

Kyle successfully defended his dissertation, "Trovafloxacin Potentiates Lipopolysaccharide-Induced Tumor Necrosis Factor-Alpha in a Macrophage Cell-Line: Mechanistic Insights to Idiosyncratic Liability," in December of 2013 and earned his Ph.D. degree in Pharmacology and Toxicology and Environmental Toxicology.

Kyle has started a postdoctoral research fellowship in the laboratory of Dr. Laura Nagy at the Lerner Research Institute within The Cleveland Clinic in Cleveland, OH. He will be investigating various genetic and environmental factors that could contribute to the development of alcoholic liver disease, including the role of the innate immune system in the incidence and progression of alcoholic liver disease.

In the next five years, Kyle plans to actively publish his findings and apply for research support in the form of federal grants to transition from a postdoctoral researcher to a young, independent investigator. From there, he hopes to secure a university-level position as a scientist and Assistant Professor, begin his own laboratory and train graduate students to become the next generations of scientists.
Brandon Armstrong, training with Dr. Cheryl Murphy, was reelected as the student representative for the Ohio Valley chapter of the Society of Environmental Toxicology and Chemistry (SETAC) for a one year appointment. Additionally, he was awarded the 2013-2014 College of Graduate Students Disciplinary Leadership Award and the 2013-2014 Dr. Howard A Tanner Fisheries Excellence Fellowship through the Fisheries and Wildlife Department. These awards will provide Brandon with funds to attend the Emerging Leader Program put on by the Great Lakes Leadership Academy.

Melissa Bates, training with Dr. James Pestka, was awarded the Ronald and Sharon Rogowski Fellowship for Food Safety and Toxicology. The graduate fellowship is awarded by the Department of Microbiology and Molecular Genetics and is awarded to those with special emphasis on training in the food safety area.

Isola Brown, training with Dr. Brian Gulbransen, received an APS Minority Travel Fellowship to attend Experimental Biology 2014. This award is offered through the Porter Physiology Development and Minority Affairs Committee and funded by the APS.

Dr. Andrea Amalfitano, CIT affiliated faculty member, was named the new director of the MSU Clinical and Translational Sciences Institute. The organization takes research breakthroughs regarding medical, environmental and societal problems and integrates them into the public.

Ashwini Phadnis-Moghe, training with Dr. Norbert Kaminski, was invited to speak at the 2013 Superfund Annual Meeting in Baton Rouge, Louisiana this past fall. She spoke on, “The Role of B-cell Lymphoma-6 (BCL-6) in TCDD-Mediated Impaired Human B-cell Activation,” in the Scientific Session: Environmental and Health Effects of Halogenated Pollutants.

Dr. Phadnis-Moghe presented results showing that TCDD-treatment of activated human peripheral blood B cells leads to suppression of B cell activation. The mechanism responsible for suppressed B cell activation and ultimately impairment of B cell differentiation into antibody secreting cells, involves, at least in part, the transcriptional repressor BCL-6. Specifically, her studies showed that TCDD treatment of B cells resulted in sustained high levels of BCL-6. Disregulation of BCL-6, which leading to high level expression, often through mutation of BCL-6, is well established to be involved in Non-Hodgkin's Lymphoma's. Interestingly, epidemiological studies performed in areas of dioxin exposure have reported associations between TCDD exposure and an increased incidence of Non-Hodgkin’s Lymphoma's. Dr. Phadnis-Moghe studies showed an increase in the proportion of BCL-6 expressing cells (BCL-6hi) in the presence of TCDD. Likewise, a decrease in the expression of activation markers CD80 and CD69 was seen in the BCL-6hi cells, which was blocked using a small molecule inhibitor of BCL-6. Collectively, Dr. Phadnis-Moghe’s studies suggest that TCDD treatment leads to an elevation of BCL-6 that impairs B cell activation and differentiation.

UPCOMING EVENTS SUMMER 2014

Distinguished Scholars in Toxicology Lecture Series
This spring the MSU CIT in cooperation with the Department of Pharmacology and Toxicology will sponsor the 8th Annual Distinguished Scholars in Toxicology Lecture Series.

Urs A. Boelsterli, Ph.D., Professor and Boehringer Ingelheim Endowed Chair in Mechanistic Toxicology from the University of Connecticut School of Pharmacy will speak on Wednesday, May 28, 2014 at 12 noon in B448 Life Sciences Building. He will speak on, "Targeting Mitochondria to Alleviate Drug Toxicity."