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IIT UPDATE

INSTITUTE FOR INTEGRATIVE TOXICOLOGY

IIT Hosts 2nd Annual Jerry Hook Distinguished Lectureship

The IIT was thrilled to host **Dr. Zheng Dong** for the 2nd Annual Jerry Hook Distinguished Lectureship. This year's lecture was held May 23 at the MSU Food Safety and Toxicology Building. Dr. Dong is Regents' Professor and Leon H. Charbonnier Endowed Chair at the Medical College of Georgia of Augusta University. He is also the Director of Research & Development and Senior Research Career Scientist at the Charlie Norwood VA Medical Center.

Dong's lecture, "Save the Kidneys During Cisplatin Chemotherapy," was well attended by numerous IIT-affiliated faculty and EITS students. Dong discussed how cisplatin is one of the most widely used chemotherapeutic drugs for cancer treatment, but it is also notorious for its side effects in normal tissues and organs, especially the kidney. Cisplatin induces acute kidney injury within days of exposure, which can progress into long-term pathologies resulting in chronic kidney disease. In the past two decades, we have delineated the mechanism of kidney tubular cell death involving the DNA damage response, DNA damage-independent pathways, and epigenetic regula-

tions. Interestingly, intrinsic cytoprotective mechanisms, such as autophagy, are also activated. These and further investigations could lead to effective strategies that might not only protect the kidney but may also enhance the chemotherapeutic effects of cisplatin in tumors.

Dr. Dong has years of research experience in kidney injury, protection, and repair with a focus on autophagy, mitochondrial regulation, epigenetics, and DNA damage response in acute and chronic kidney diseases. He has published over 300 full-length articles in peer-reviewed scientific journals. Dr. Dong has served and continues to serve on NIH and VA study sections and numerous international grant review panels. He is a co-editor of the book, "Essentials of Apoptosis" (Humana Press), and the "Cell Death in Biology and Disease Series" (Springer) book series. He is an associate editor for the *American Journal of Physiology-Renal Physiology* and the journal *Kidney Diseases*.

The Jerry Hook Distinguished Lectureship is held annually by the Institute for Integrative Toxicology in memory of Dr.

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Dong Gives 2nd Annual Jerry Hook Lecture cont.

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Jerry Hook. Jerry was a very well-known and highly respected Pharmacologist and Toxicologist who was critical in advancing the field of toxicology by helping to drive it from observational to a mechanism-based science. Jerry was named Founding Director of MSU's Center for Environmental

Toxicology (CET) in 1981 and successfully developed multi-disciplinary approaches aimed at resolving human and environmental toxicology issues. Jerry's achievements were the foundation for the CET to develop into today's Institute for Integrative Toxicology. 🌱

Right: 2nd Annual Jerry Hook Distinguished Lecturer Dr. Zheng Dong and IIT Director Dr. Norbert Kaminski in the MSU gardens after Dr. Dong's lecture on, "Save the Kidneys During Cisplatin Chemotherapy."

IIT Seminar Series Returns for Spring 2023

The IIT was delighted to once again host the IIT Seminar Series this spring with three exciting seminars.

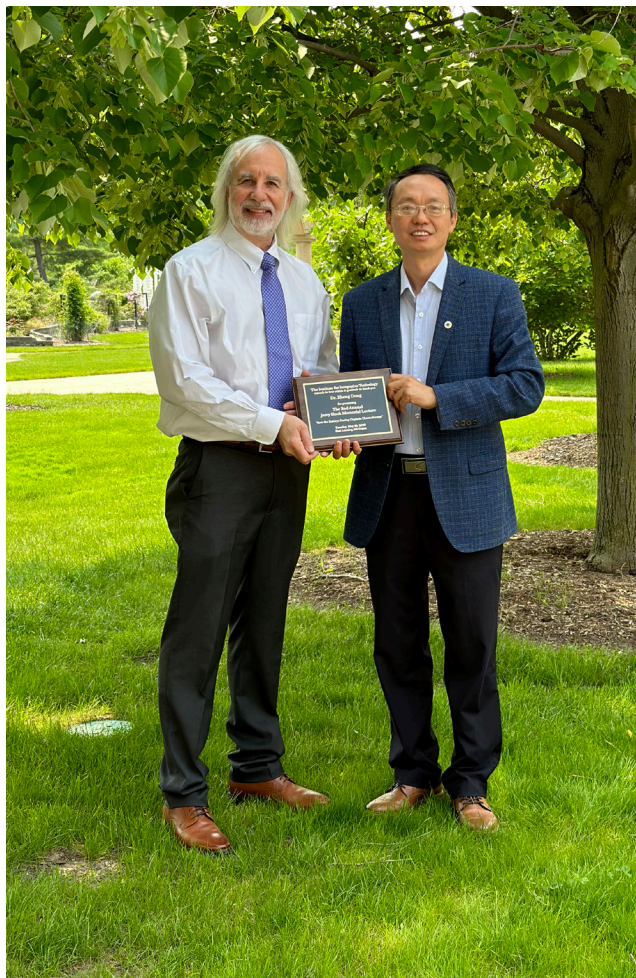
The IIT hosted **Dr. Jonathan Diedrich**, Michigan State University on January 17. He spoke on, "Adipocyte-Modulated Aryl Hydrocarbon Receptor Expression and Activity in Multiple Myeloma." John Diedrich is a Senior Research Assistant in the Bernard Lab at Michigan State University. His current research goals are to expand our understanding of obesity-associated cancers by identifying adipose-derived factors and their biological significance in tumorigenesis.

In February, the IIT hosted **Dr. Peer Karmaus**, staff scientist at NIEHS. Karmaus is also an Adjunct Assistant Professor with the IIT. Karmaus' research focuses on how metabolism in innate and adaptive immune cells dictates cell fate and function. Of particular interest is the idea that different intracellular signaling pathways instruct anabolic, catabolic, and biosynthetic processes to affect cell fate decisions and how in turn these metabolites (including xenobiotics) affect cell signaling and cell fate. Karmaus spoke on, "Meta-analysis of COVID-19 bronchoalveolar lavage scRNA-Seq reveals alveolar epithelial transitions and unique alveolar epithelial cell fates."

The final seminar of the series was given by **Dr. Donna Zhang**, Musil Family Endowed Chair in Drug Discovery, University of Arizona, on April 18. She spoke on, "Nrf2-mediated regulation of redox

balance, proteostasis, and iron homeostasis in human cancer." Dr. Zhang's research program focuses on investigating the key physiological and pathological roles of the Nrf2-Keap1-ARE signaling pathway in mediating disease. She has made seminal contributions to both the mechanistic understanding of Nrf2 regulation and the role of Nrf2 in human diseases.

In addition to the seminar series events, the IIT also hosted several additional seminars this spring. In January, the IIT hosted the first presentation in a new seminar series, **Career Paths in Toxicology Forum**. **Dr. Steven Hermansky**, FDA, spoke on, "Remaining Relevant in a World that Doesn't Trust Science: My Journey." Dr. Hermansky joined US FDA in April 2022 to work on chemical food safety issues and help the agency evaluate and move to New Alternative Methods in their continuing effort to reduce, refine, and even replace animal use in toxicology. Dr. Hermansky has a Doctor of Pharmacy degree as well as Master of Science and Doctor of Philosophy degrees in toxicology from the University of Nebraska. He is a Diplomate of the American Board of Toxicology and has published over 40 publications including textbook chapters, peer-reviewed articles, and scientific abstracts. He is an adjunct professor at the University of



Nebraska College of Public Health and has served on the advisory or editorial boards of several organizations.

In February, the IIT also co-hosted a seminar with the Department of Chemistry. **Dr. Bruce Bucholz** from the Lawrence Livermore National Laboratory, spoke on, "Pharmacokinetics, Metabolite Quantitation and Biomarker Development of Xenobiotics Using Accelerator Mass Spectrometry."

The IIT was excited to be able to offer such a diverse array of learning and professional development opportunities through the wide variety of seminars this spring. Look for the fall IIT Seminar Series schedule to be announced later this summer! 🌱

Moerland Recipient of Two Prestigious Fellowship Awards



EITS graduate student, **Jessica Moerland**, was recently selected for two prestigious fellowship awards for her research on the pharmacological modulation of the lung tumor microenvironment.

Moerland was selected for the National Cancer Institute (NCI) Ruth L. Kirschstein NRSA for Individual Predoctoral Fellows (F31) Award which supports promising doctoral candidates performing dissertation research and training for a Ph.D. degree in a scientific health-related field relevant to the mission of the NCI. Moerland is the third Ph.D. student at MSU to receive funding through the NCI for an F31 training grant.

Moerland was also selected as one of four Aitch Foundation Fellows for 2022-2023. The Aitch Foundation is

a non-profit organization that works to support MSU cancer researchers studying early cancer detection and diagnostics, genetic and cellular changes contributing to tumor development, and the identification of new cancer targets or therapeutic agents. The foundation is led by Lauren Aitch, an MSU alumna, and is supported by the Izzo Legacy Family Fund.

Moerland's research focuses on pharmacological modulation of the lung tumor microenvironment to promote anti-tumor immunity and reduce tumor burden. Lung cancer is the deadliest malignancy worldwide. The microenvironment of lung tumors contains a considerable number of immune cells, the activity of which may be modified pharmacologically to promote an anti-tumor immune response. The immune cells which mount these responses rely on cytoprotective pathways in order to survive in the inflammatory environments they create and to maintain an anti-tumor phenotype. Without the ability to maintain oxidative homeostasis, immune cells lose their anti-tumor ca-

pabilities and may even promote tumor progression. Moerland's studies have shown that pharmacological activation of the cytoprotective Nrf2 pathway with the triterpenoid CDDO-Me promotes an anti-tumor phenotype in macrophages (the most common immune cell type within the lung tumor microenvironment) and reduces lung tumor burden in preclinical mouse models. She hypothesizes that through activation of Nrf2, CDDO-Me promotes oxidative homeostasis within these immune cells that enables them to mount a proper anti-tumor inflammatory response, thereby decreasing tumor burden.

Moerland's research for both awards will focus on this path. Her first-authored paper in the journal *Antioxidants*, "*The Triterpenoid CDDO-Methyl Ester Redirects Macrophage Polarization and Reduces Lung Tumor Burden in a Nrf2-Dependent Manner*," will be the stepping stone for her continued research. Moerland is mentored by IIT-affiliated faculty member, Dr. Karen Liby. ♡

Carignan & Team Publish Study on Self-Collected PFAS Blood Testing



IIT-affiliated faculty member, **Dr. Courtney Carignan**, recently published a study on improved self-collection PFAS blood tests developed for people in contaminated communities.

Giving people at high risk of PFAS exposure the opportunity to easily self-test could improve access to testing for these "forever chemicals" and lead to the early detection of detrimental health conditions. The study tested an improved approach for people to collect their own blood samples to test for PFAS without being part of an academic research study.

PFAS, short for per- and polyfluoro-

alkyl substances, are a class of more than 9,000 chemicals that are used widely to produce industrial and consumer products. They are commonly known as "forever chemicals" due to their extreme persistence in the environment as well as in the human body where they can remain for many years.

For individuals with elevated exposure, either through drinking water or occupational hazard, early detection of elevated PFAS blood levels can inform exposure reduction and medical screening to protect against associated harm to the liver, kidneys and thyroid; immune system; reproduction and development; and the risk of several cancers.

Interventions are especially important to protect infants, children and pregnant women, as PFAS accumulate in the body over the lifespan, cross the placenta and accumulate in the fetus, and pass into breast milk. They have been linked to a wide range of health ef-

fects including high cholesterol, several cancers, infertility and low birth weight.

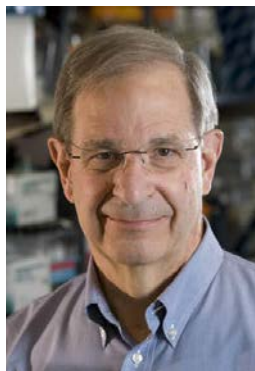
Additionally, PFAS have contaminated drinking water for millions of Americans, and the U.S. Environmental Protection Agency recently proposed enforceable drinking water standards for six types of PFAS.

"People with drinking water contamination often want to know their PFAS blood levels but have trouble gaining access to a blood draw and testing," said Carignan. "Blood test results can be used to document exposure, compare with levels in the general populations, inform exposure reduction and take health protective action."

Published in the peer-reviewed journal *Environmental Science and Technology*, the authors examined PFAS exposure measured by self-collection of blood using both the new finger prick and traditional blood draw methods among

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Tiedje Receives American Society of Microbiology Lifetime Achievement Award & Elected to the American Academy of Arts & Sciences



IIT-affiliated faculty member, **Dr. James Tiedje**, was recently selected for the 2023 Lifetime Achievement Award by the American Society of Microbiology (ASM). The ASM Life-

time Achievement Award is ASM's premier award for sustained contributions to the microbiological sciences. Nominees must be advocates, active or retired, in any area relevant to the microbiological sciences and are well respected in the microbial science community for their integrity, research and dedication to promoting and advancing the microbial sciences.

Tiedje was also selected to join the 2023 elite cohort of the American Academy of Arts and Sciences. This year, the Academy elected 269 people across the arts and sciences. With a career spanning more than 50 years, Tiedje's research contributions and mentoring have fundamentally changed the field of microbial science.

"When we consider those in the American Academy of Arts and Sciences, we are considering the most radiant intellectuals, artists, and scientists in

American history, dating back to Benjamin Franklin," said Victor DiRita, Rudolph Hugh Professor and chair of the MSU Department of Microbiology and Molecular Genetics. "With his singular contributions to uncovering and understanding the profound roles played by microbes in our global ecosystem, Jim Tiedje stands shoulder-to-shoulder with the members of this august group. Election to the Academy is a fitting honor to recognize this remarkable individual, and his colleagues in MMG—and indeed across the campus—congratulate him."

"This is one of the major honors in science and arts in the United States," said Tiedje, University Distinguished Professor Emeritus in MSU's Departments of Microbiology and Molecular Genetics and Plant, Soil and Microbial Sciences. "It is certainly rewarding because it reflects what other people think of your accomplishments over, in my case, a long career."

Tiedje is an university distinguished professor emeritus of microbiology and molecular genetics and of plant, soil and microbial sciences at Michigan State University. He earned his B.S. from Iowa State University and his M.S. and Ph.D. from Cornell University.

His laboratory focuses on understanding the ecology, physiology and biochemistry of microbial processes important in nature and of value to industry. Tiedje researches microbial

ecology, studying interactions between microbes, their environments and plant and animal species. His work includes understanding biodegradation of environmental pollutants and the use of molecular methods to understand microbial community structure and function. Tiedje and colleagues discovered soil microbes that dechlorinate chlorine aromatic compounds that can help degrade toxic chemicals such as polychlorinated biphenyls (PCBs) and dichlorodiphenyltrichloroethane (DDT).

Tiedje was president of the American Society for Microbiology and the International Society of Microbial Ecology (ISME). He is a fellow of the American Association for the Advancement of Science (AAAS), the American Academy of Microbiology, the Ecological Society of America, the Soil Science Society of America and a member of the U.S. National Academy of Sciences. Tiedje is the former editor-in-chief of 3 ASM journals (Applied and Environmental Microbiology, Molecular Biology Reviews and mBio) and was the director of the Center for Microbial Ecology for 30 years. Many of the 61 graduate students, 61 postdocs, and more than 75 visiting scientists that Tiedje has mentored have become leading microbiologists around the world.

Part of this story originally ran on the [College of Natural Science website](#) and was also featured on [MSUToday](#). 📍

Recent CRIS Blog Topics

The Center for Research on Ingredient Safety continues to use their expert knowledge to research, fact check, and supply the global community with the latest science-based information about the ingredients in food, beverages and other consumer products. Here are some of CRIS's most recent blog post topics:

- » In the News: Modernization of Cosmetics Regulation Act Passes
- » In the News: Heavy Metals in Food

- » In the News: Cannabidiol (CBD) Regulations
- » Trending: Non-Alcoholic Beer & Hops Flavored Seltzer Water
- » Trending: Silicon Dioxide
- » Trending: Petroleum Jelly
- » Trending: Potassium Bromate
- » Trending: Vegan & Plant-based Labeling
- » Everyday Toxicology: Thresholds Overview
- » Thresholds - Trace Contaminants & Residue Regulations in Packaging

- » In the News: Cultivated Meat
- » Herbal Tea
- » Real-time Science: PFAS Compounds
- » Real-time Science: Sweeteners
- » Trending: Colloidal & Ionic Silver
- » Trending: Sun Safety & Alpha-hydroxy Acids
- » In the News: Titanium Dioxide Regulation in California

Read more on all of these topics at: <https://www.canr.msu.edu/cris/news-views/>

IIT Affiliates Succeed at 62nd SOT Meeting

Students and faculty of the MSU Institute for Integrative Toxicology were excited to attend and present at this year's 62nd annual Society of Toxicology (SOT) meeting held in Nashville, TN.

The SOT annual meeting brings together 5,000 plus toxicologists and those working in areas related to toxicology to share the latest science and technology in the field, as well as to make new connections, gather with friends, and engage in mentoring and professional development. This year's meeting was held from March 19-23, 2023.

The following students affiliated with IIT received recognition:

- » **Giovan Cholico**, a postdoctoral fellow in the laboratory of Dr. Timothy Zacharewski, received an Honorable Mention from the Hispanic Organization of Toxicologists Special Interest Group for his presentation, "Time-course single-nuclei RNA-seq analysis identifies NRG/ERBB signaling dysregulation in TCDD-induced hepatotoxicity."
- » **Luca Jolly**, an undergraduate student training with Dr. Rita Strakovsky, received the SOT RC4 Undergraduate Travel Award which recognizes exceptional undergraduate members of SOT Regional Chapters who conducted impressive, independent, and toxicology-focused research projects and received outstanding recommendations from their mentors. Luca was one of three awardees and was selected for his abstract, "Age at First Menstrual Cycle Influences Associations of Phthalates/Replacements with Maternal Metabolic Factors in Pregnancy."
- » **Maria Kloboves**, EITS student training with Dr. Rita Strakovsky, co-chaired a SOT Symposium Session in Strakovsky's place on, "Placenta as a Target of Environmental Exposures: From Bench to Society."
- » **Ebenezar Okoyeocha**, EITS student training with Dr. Neera Tewari-Singh, received two awards from the Ocular Toxicity Specialty Section, the Graduate Student and Postdoctoral Fellow Trainee Support Award and the 2023 Ocular Toxicology Best Poster Award for his presentation, "Progression of chloropicrin induced ocular injury: clinical and biological effects."
- » **Karina Orlowska**, a postdoctoral fellow in the laboratory of Dr. Timothy Zacharewski, received the Molecular and Systems Biology Specialty Section Paper of the Year, for her work, "Dioxin-elicited decrease in cobalamin redirects propionyl-CoA metabolism to the β -oxidation-like pathway, resulting in acrylyl-CoA conjugate buildup." She also received the first place poster award from the same specialty section for her poster, "Disruption of dioxin response element (DRE)-dependent PKM2 induction compromises antioxidant defenses and increases TCDD-elicited hepatotoxicity."
- » **Diana Pacyga**, EITS student training with Dr. Rita Strakovsky, received the SOT Outstanding Graduate Student Leadership Award for her service to the Michigan Regional Chapter of SOT.

Congratulations to all the IIT-affiliated SOT award winners this year! 🎉

Johnson Receives Withrow Teaching Excellence Award



IIT-affiliated faculty member, **Dr. Brian Johnson**, received the Withrow Teaching Excellence Award in Biomedical Engineering from the College of Engineering.

Students in the MSU College of Engineering nominate their favorite faculty members for the highly prized annual Withrow Teaching Excellence Awards. The teaching distinction is for distinguished service to the university and the student body. The honors are part of the annual Withrow Endowed Award program, which was established through a gift

from Jack Withrow (BS, MECH EGR, '54; MBA '71) and Dottie Withrow (BA, speech therapy and elementary education, '55). The awards were presented on Wednesday, March 22, during a banquet at the University Club.

Johnson is an assistant professor in the Department of Biomedical Engineering and the Department of Pharmacology and Toxicology, as well as an affiliated faculty member of the IIT. He is an interdisciplinary researcher who engages students in a broad range of biomedical engineering topics. His NIH-funded research applies digital manufacturing tools (primarily CAD, CAM, and CNC machining) to construct biomimetic models of human development and disease.

He leverages his experience patenting and commercializing technologies to cultivate entrepreneurial interests

and skills in his students. He applies scientific teaching pedagogy he learned via a Howard Hughes Medical Institute teaching fellowship to develop an inclusive, goal-oriented, and engaging teaching philosophy that he applies in the classroom.

He also drives students to be forward-thinking about their career goals by organizing career panels and encouraging students to identify the skills and experiences needed to pursue their own unique career interests.

Congratulations to Dr. Johnson on this wonderful honor!

To read more about the Withrow Teaching Excellence Awards, please visit: <https://www.egr.msu.edu/news/2023/03/20/eight-faculty-honored-distinguished-service-students>. 🎉

Recent EITS Graduates



Olivia Favor

Pharmacology and Toxicology
Mentor, Kin Sing Lee

Dr. Olivia Favor received her Ph.D. after completing the dual major program in Pharmacology and Toxicology and Environmental Toxicology. Her dissertation was, “*Lipidome Modulation of Environmentally-Triggered Autoimmunity.*”

Favor will be continuing at MSU as a postdoctoral researcher in the laboratories of Dr. James

Pestka and Dr. Andrew Olive in the Department of Microbiology and Molecular Genetics. Her postdoctoral research will involve investigating the mechanisms by which omega-3 fatty acids and pro-resolving lipid metabolites mitigate crystalline silica-triggered proinflammatory responses in novel fetal liver-derived alveolar-like macrophages (FLAMs). These studies will also be related to immunological functions and autoimmune responses in the lungs of lupus-prone mice.



Amanda Jurgelewicz

Pharmacology and Toxicology
Mentor, John LaPres

Dr. Amanda Jurgelewicz received her Ph.D. after completing the dual major program in Pharmacology and Toxicology and Environmental Toxicology. Her dissertation was, “*The Role of HMG-CoA Reductase in AHR-mediated, TCDD-induced Liver Injury.*”

Jurgelewicz will be starting as an ORISE postdoctoral research fellow at the Environmental Protection Agency in Research Triangle Park, North Carolina this summer. She will be mentored by Dr. Joshua Harrill in the Center for Computational Toxicology and Exposure (CCTE). The CCTE at

the EPA has been working on incorporating new approach methods (NAMs) into hazard evaluation for chemicals found in the environment. While new assays have been established at the CCTE to do this, the in vitro models (i.e. human-derived cell lines) lack xenobiotic metabolizing capabilities, which limits the ability of these assays to fully account for in vivo hazards. The project Jurgelewicz will be working on is focused on introducing metabolic competence into cellular test systems used for hazard screening. This will integrate high-throughput transcriptomics and phenotypic profiling assays with metabolic competence technologies like the alginate immobilization of metabolic enzymes (AIME) platform.



Diana Pacyga

Food Science and Human Nutrition
Mentor, Rita Strakovsky

Dr. Diana Pacyga received her Ph.D. after completing the dual major program in Food Science and Human Nutrition and Environmental Toxicology. Her dissertation was, “*Gestational phthalate/replacement exposure: a glimpse into maternal risk factors, biological targets, and gestational cardiometabolic health.*”

In the fall, Diana will be starting as a T32 Postdoctoral Trainee in the Department of Epidemiology at the University of North Carolina at Chapel Hill. She will continue conducting research in environmental and perinatal epidemiology, but with a focus on the impact of prenatal chemical exposures on child health from infancy to adult-

hood. During her doctoral training, Diana focused on exposures to non-persistent chemicals, including phthalates and parabens, and she will focus her postdoctoral training on exposures to other chemical classes, including (but not limited to) per- and polyfluoroalkyl substances, metals, and pesticides. Additionally, she will conduct more methods-based studies related to best practices for modeling environmental exposures in human epidemiological studies and will also focus on studying interventions, such as improving diet and other lifestyle factors, to offset the potential health consequences associated with chemical exposures. Diana's overall career goal is to become an academic researcher in environmental, nutritional, and perinatal epidemiology, and this postdoctoral experience will help her achieve this goal.

Save the Date! CRIS Science Day 2023

The 2023 CRIS Science Day, “New Approach Methodologies in Support of Weight of Evidence Assessments for Regulatory Decisions,” will be held on September 12, 2023 from 1 to 5 pm at the MSU Union.

In-person and virtual options will be available.

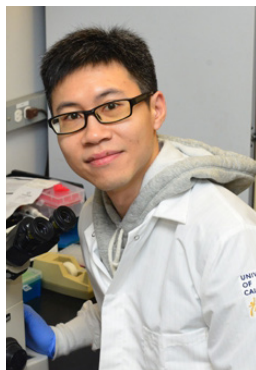
Speakers will include:

- » Amber Goetz, Ph.D., Syngenta
- » Barbara Kaplan, Ph.D., Mississippi State University
- » Zhichao Liu, Ph.D., Boehringer Ingelheim Pharmaceuticals, Inc.
- » Kelly Magurany, M.S., NSF International

- » Lindsay Marshall, Ph.D., Humane Society International
- » M. Sue Marty, Ph.D., DOW, Inc.

For more information on the event and to register, please visit: https://go.msu.edu/CRIS_SciDay_2023.

Lee Receives Two Prestigious Research Awards from National Institutes of Health



IIT-affiliated faculty member, **Dr. Kin Sing Lee**, recently received two prestigious research awards from the National Institutes of Health. A Maximizing Investigators' Research Award

(MIRA) R35 from the National Institute of General Medical Sciences (NIGMS) was awarded in the amount of \$1.9 million for his project, "Ferroptosis and Polyunsaturated Fatty Acid Metabolism." The second award, an R01 granted by the National Institute on Aging (NIA) will supply \$3.1 million for Lee's project, "Development of soluble epoxide hydrolase inhibitors for the treatment of Alzheimer's disease."

The NIGMS MIRA R35 project will investigate the fundamental mechanism of how polyunsaturated fatty acid metabolism regulates ferroptosis, a new programmed cell death pathway, in a cell-type-specific manner. Lee and his research team will apply a multidisciplinary

approach by combining synthetic probes, a novel animal model named *C. elegans*, and various genetic techniques to dissect the mechanism and identify potential receptors for regulating ferroptosis. Their findings will improve our understanding of how dietary lipids regulate this novel programmed cell death pathway, which then affects human health. "We are so excited to be supported by NIGMS MIRA (R35) to investigate the molecular interactions between lipid metabolites and this cell death pathway," commented Lee. "Hopefully, we can improve our understanding of how diet affects human health."

The overall goal of the NIA R01 project is to develop novel soluble epoxide hydrolase inhibitors with improved drug-like properties and brain exposure to treat or prevent Alzheimer's disease. Soluble epoxide hydrolase is an enzyme that degrades largely beneficial endogenous epoxy fatty acids to less active or pro-inflammatory dihydroxy fatty acids. Lee's research team comprises experts in drug design, medicinal chemistry, sEH biochemistry, protein modeling, pharmacokinetics, Alzheimer's disease pathology, and vascular biology that will work together to apply a design-

test-learn strategy to guide the design of the next generation of inhibitors. By the end of the project, Lee and his team hope to have identified a novel drug candidate ready for preclinical testing. "Drug discovery is a team sport," Lee acknowledged. "I am honored to be leading a team of excellent scientists from MSU to develop new candidates for the treatment of Alzheimer's disease. Hopefully, we can also apply the developed candidate for other neurodegenerative diseases in the future."

The overall goal of Lee's laboratory is to investigate how dietary lipids affect human health with a focus on neurodegeneration and aging through their downstream metabolism. They use chemical biology, state-of-the-art instrumentation, novel model organisms, and genetic tools to investigate the mechanism of how lipid metabolites affect disease pathology and identify corresponding receptors. The knowledge they will acquire from their research will improve our understanding of how environmental exposure including diet, toxic chemicals, etc. affects human health by modulating lipid metabolites. 🌱

Carignan PFAS Blood Testing cont.

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53 people with prior history of PFAS drinking water contamination.

Participants first provided a blood sample collected by a blood draw and then pricked their finger using a lancet — commonly used for diabetic blood testing — to collect a precise amount of blood onto a new sampler. The blood samples were analyzed by the laboratory Eurofins for 45 specific PFAS varieties, five of which were detected frequently

enough in the samples for the comparison.

In the analyses, the authors reported similar detection frequencies and high correlations between the two approaches.

"Results indicate that the new approach can work as well as the traditional approach among our highly exposed population," Carignan said. "Since the traditional approach uses the serum component of blood and our new approach relies on whole blood, we also confirmed an approximate 2:1 ratio

of PFASs in serum compared to whole blood."

Study authors include Courtney Carignan and Rachel Bauer of MSU; Andrew Patterson, Thep Phomsopha and Eric Redman of Eurofins Environment Testing; Heather Stapleton of Duke University; and Christopher Higgins of the Colorado School of Mines.

This story originally appeared on MSUToday: <https://msutoday.msu.edu/news/2023/easier-way-to-test-for-pfas>.



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