

2022 ANNUAL REPORT



IIT @MSU

INSTITUTE FOR INTEGRATIVE TOXICOLOGY

MICHIGAN STATE
UNIVERSITY

IIT ANNUAL REPORT 2022

IIT HISTORY AND MESSAGE

- 4 A Tradition of Excellence
- 5 Message from Director Norbert Kaminski

HIGHLIGHTS

- 6 2022 Highlights

EITS TRAINING PROGRAM

- 8 EITS Training Program
- 8 EITS 2022 Graduates
- 9 Graduate Spotlights

FACULTY FEATURES

- 12 Dr. Brian Johnson
- 13 Dr. A.J. Robison
- 14 Dr. Neera Tewari-Singh

FACULTY PUBLICATIONS

- 15 Publications of IIT Faculty

PROFESSIONAL SERVICE

- 31 Professional Service of IIT Faculty

AFFILIATES

- 37 IIT Affiliated Faculty
- 38 Departments / Ph.D. Programs and Deans

Managing Editor: Writing and Design
Lauren St.John

Photos
MSU,
IIT Staff

IIT Staff

Norbert E. Kaminski, Ph.D., Director
John J. LaPres, Ph.D., Graduate Program Director
Amy Swagart, IIT Fiscal Officer
Kasey Baldwin, IIT Administrative Assistant
Lauren St.John, Communications/Webmaster



A **TRADITION** of EXCELLENCE

The Michigan State University Institute for Integrative Toxicology (IIT) is a multidisciplinary academic unit that supports and coordinates research and graduate education activities for faculty interested in various aspects of **toxicology**. The Institute is a **successor** to the Institute for Environmental Toxicology and the Center for Environmental Toxicology, the latter founded in 1978. While the name of the unit has changed over the years to denote changes in the **leadership** and academic position, the mission has been the same. For over 40 years, toxicology at Michigan State has provided **excellence** in training graduate students, facilitating research, and providing service to the State of Michigan when needed. The successes generated in these endeavors have resulted in **recognition** of Michigan State as a leader in academic toxicology.

The Center for Environmental Toxicology was initiated primarily to **assist** the State of Michigan with environmental contamination issues such as those arising from the PBB (polybrominated biphenyls) incident in the early 1970s. That unfortunate event was initiated by the accidental

contamination of feed for dairy cattle with PBBs. These dioxin-like chemicals and dioxin itself remain a major topic of research at Michigan State University.

Several years after the founding of the Center for Environmental Toxicology, a dual-major Ph.D. program in environmental toxicology was offered in conjunction with several cooperating departments. The characteristics of the program were **unique** at that time as students were required to complete the Ph.D. requirements of a department of their choice in addition to the didactic requirements and toxicology research specified by the Center. The **quality** of this cross programmatic effort was recognized by the National Institutes of Health in 1989 with the award of a Training Grant from the National Institute for Environmental Health Sciences. This grant has been competitively renewed ever since, providing over 30 years of continuous funding. Graduates of MSU's toxicology program number over 200 and can be found in academia, industry, and governmental positions. ♡

MESSAGE from the DIRECTOR



The Institute for Integrative Toxicology has continued to thrive in education, research and collaboration over the past year. I am especially thrilled to share that we successfully competed for a five-year, \$10.5 million Superfund Research Program (SRP) Center grant from NIEHS to conduct innovative and collaborative biomedical and remediation

technology research. A large cadre of our faculty along with researchers from Emory University, Purdue University, Rutgers University and the Michigan Department of Health and Human Services will work on five research projects supported by five cores. A major goal of the MSU SRP Center is to develop new innovative tools that identify sensitive human sub-populations and reduce exposure through effective remediation of contaminated Superfund sites. The MSU SRP Center is working closely with local Michigan communities affected by dioxins.

This year, we are pleased to welcome Dr. Honglei Chen and Dr. Joseph Zagorski as IIT-affiliated faculty members. Dr. Chen is a MSU Foundation Professor in the Department of Epidemiology and Biostatistics and Dr. Zagorski joins us at the Center for Research on Ingredient Safety as an assistant professor. We are excited to welcome their expertise to our group of affiliated faculty whose chosen fields span twenty-eight different departments and programs across campus.

As for our students, the EITS graduate program continues to be one of the premier toxicology training programs in the U.S. Many of the EITS students received awards at the 2022 Annual Meeting of the Society of Toxicology. Students also traveled to a wide variety of other meetings across the globe this year. Four students graduated from the EITS program in 2022 and have moved on to pursue careers in academia and industry.

Our affiliated center under the IIT umbrella, the Center for Research on Ingredient Safety (CRIS), has had a productive 2022 as well. Also, I had the pleasure of continuing to broaden CRIS' reach as an invited speaker at several international travel conferences in Brussels, Belgium; Edinburgh, Scotland; and Dubai, United Arab Emirates, where I spoke on a breadth of topics, including endocrine-disrupting chemicals, titanium dioxide, and microplastics.

Included in a very full 2022 was a CRIS Science Symposium where we heard from leaders in the areas of developmental immunology and immunotoxicology as well as on the effects of nanoplastics on human health. You can watch the symposium at <https://go.msu.edu/92C5>.

I look forward to seeing what 2023 brings for our institute.

A handwritten signature in blue ink that reads "Norbert Kaminski". The signature is written in a cursive, flowing style.

Norbert E. Kaminski, Ph.D., IIT Director

2022 IIT HIGHLIGHTS

IIT Hosts Prestigious Speakers Throughout 2022

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

The IIT hosted **Dr. Brian S. Cummings** from the Eugene Applebaum College of Pharmacy and Health Sciences at Wayne State University on January 18. He spoke on, “*Novel Mechanisms of Toxicity of Brominated Flame Retardants.*”

In February, the IIT hosted the EITS Student Spotlight seminars, an opportunity to feature some of the EITS students that would normally have been showcased during the EITS Research Evening, which was postponed in 2021. The three students who were featured this year were:

- » **Dawn Kuszynski**, EITS graduate student in the Department of Pharmacology and Toxicology, spoke on, “*Endothelial P2Y2-Mediated Vasoconstriction is Inhibited in Middle Cerebral Arteries of Rabbits Treated with Clopidogrel.*” Dawn is mentored by Dr. Adam Lauver.
- » **Isha Khan**, EITS graduate student in the Department of Pharmacology and Toxicology, spoke on, “*Perturbation of Human Hematopoiesis by Persistent AHR Signaling: An Insight Using Single-Cell Transcriptomics.*” Isha is mentored by Dr. Norbert Kaminski.
- » **Diana Pacyga**, EITS graduate student in the Department of Food Science and Human Nutrition, spoke on, “*Associations of Unique and Cumulative Phthalate and Replacement Biomarkers with Gestational Weight Gain through Late Pregnancy.*” Diana is mentored by Dr. Rita Strakovsky.

In April, the IIT hosted **Dr. Kimberly Gowdy**, Department of Internal Medicine, Division of Pulmonary, Allergy and Critical Care at the Ohio State University on April 19. She spoke on, “*Molecular Interactions of Lipid Metabolism and Environmental Lung Diseases.*”



Above: Dr. Jay Goodman, Dr. Jackie Smith (widow of Dr. Hook), distinguished lecturer Dr. Vishal S. Vaidya, and IIT Director Dr. Norbert Kaminski in the MSU gardens after Dr. Vaidya's lecture.

In September, the IIT hosted **Dr. Lance Blevis** Assistant Professor, Institute for Integrative Toxicology, MSU, on September 20. He spoke on, “*AHR Activation Suppresses Human CD5⁺ Innate-like B Cell IgM Secretion Via Enhancement of CD9^b B Regulatory Cell Function.*”

In October, the IIT hosted **Dr. Katharine Hanson**, Associate Director, PPD, Thermo Fisher Scientific on Tuesday, October 18. She spoke on, “*Academia to Pharmaceutical Industry, My Pathway.*”

The final seminar of the year featured **Dr. Justin Colacino**, Associate Professor, Department of Environmental Health Sciences and Department of Nutritional Sciences, University of Michigan on Tuesday, November 15. He spoke on, “*Chemical Exposures, Dysregulated Stem Cell Biology, and Breast Cancer Disparities.*”

In addition, to the annual seminar series, the IIT hosted the inaugural Jerry Hook Distinguished Lectureship in memory of Dr. Jerry Hook on May 17, 2022. The IIT welcomed **Dr. Vishal S. Vaidya**, the Senior Director of Head Clinical Biomarkers at Pfizer, who spoke on, “*Biomarker Science to Understand Diseases*

and Advance Drug Development for Patient Care.”

The IIT is honored to host this annual lectureship series in honor of Dr. Jerry Hook. Jerry was a very well-known and highly respected Pharmacologist and Toxicologist whose research spanned the areas of mechanisms of drug action on the kidney, to the ontogeny of renal transport systems, to mechanisms of renal toxicity. He was critical in advancing the field of toxicology by helping to drive it from observational to a mechanism-based science. Jerry published more than 250 papers, review articles, and book chapters.

Jerry was named Founding Director of MSU's Center for Environmental Toxicology (CET) in 1981 and successfully developed multidisciplinary 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.

Jerry was regarded highly as a mentor and had a profound influence on graduate education in toxicology at MSU. The discipline of toxicology has been enhanced by Jerry's pioneering contributions to our understanding of mechanisms underlying chemical-induced renal toxicity. The IIT looks forward to honoring Dr. Hook each year with this lectureship. This year, **Dr. Zheng Dong**, Augusta University, will give the 2nd Annual Jerry Hook Distinguished Lecture and speak on, “*Save the Kidneys During Cisplatin Chemotherapy,*” on May 23, 2023. 📍

IIT Successfully Competes for NIEHS Superfund Research Center

A multidisciplinary team of researchers at MSU has received a five-year, \$10.5 million Superfund Research Program Center (SRP) grant from the National Institute of Environmental Health Sciences to conduct innovative and collaborative biomedical and remediation technology research.

In 2000, the US EPA identified high-levels of dioxin-like compound contamination in the Tittabawassee River and adjacent floodplain near its confluence with the Saginaw River in the state of Michigan. Based on the potential for human health and environmental impact of this contamination, a highly innovative MSU SRP Center research team will investigate dioxin-like compounds in this area. The goal of the team is to develop innovative solutions for reducing these toxicants and better understand the health risks they cause.

The chemicals in the halogenated aromatic hydrocarbon (HAH) family are persistent environmental contaminants that accumulate in the food chain. The chemicals of greatest concern to human and environmental health bind with high affinity to a protein called the aryl hydrocarbon receptor (AhR) and are often described as “dioxin-like.” These chemicals, which include polychlorinated dibenzo-*p*-dioxins, dibenzofurans, biphenyls and polyaromatic hydrocarbons, are environmentally persistent, fat soluble contaminants that accumulate in the food chain leading to human and wildlife exposure. Although dioxin-like compounds have been studied widely, there does not yet exist a precise understanding of the relationship between alterations in specific biochemical processes and particular toxic responses observed in animals or humans. There is also limited understanding of how dioxin-like compounds interact with components of soil, which may act as a type of filter and help to limit their effects on living organisms. In addition, knowledge of the enzymes present in microorganisms within the environment capable of degrading dioxin-like compounds is currently limited.

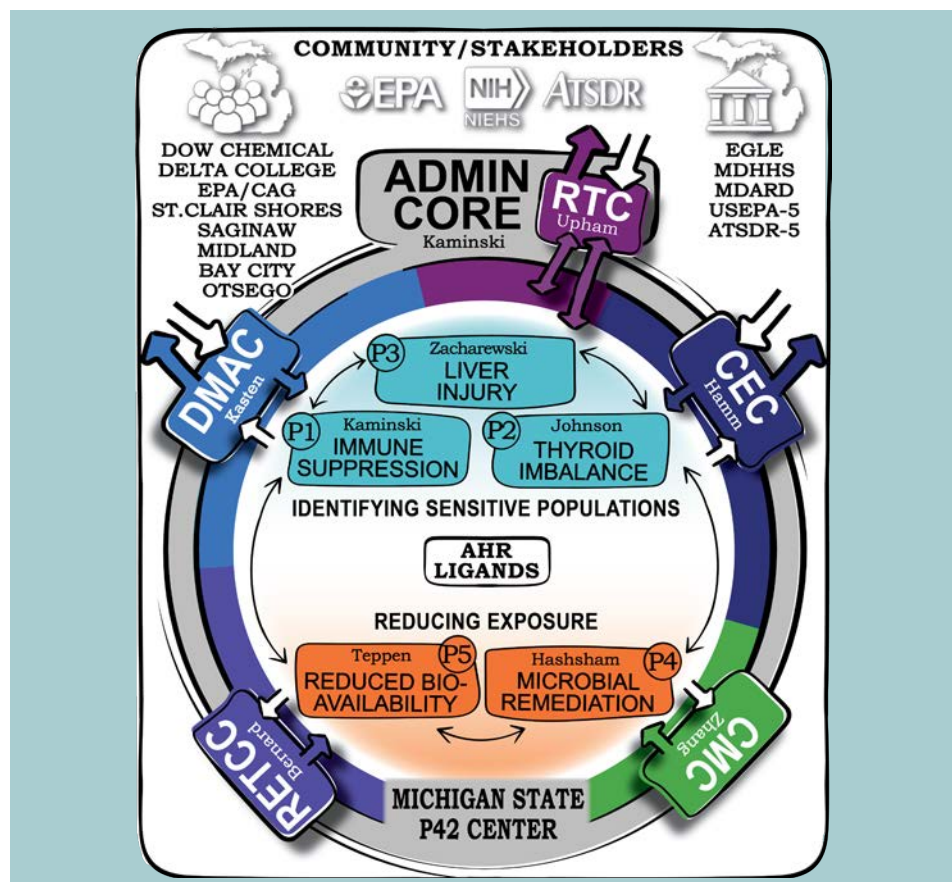
Based on these crucial data gaps, three complementary and highly integrated biomedical research projects are the basis of the newly funded MSU SRP Center grant with the objective of linking biochemical processes induced by dioxin-like compounds to specific toxic responses produced in the liver, thyroid and the immune system. In

addition, two environmental science and engineering projects will work to advance existing knowledge on dioxin-like compound bioavailability when adhered to soil components and to characterize environmental microbial organisms capable of degrading dioxin-like compounds, including the specific enzymes involved. “The MSU SRP Center provides a unique opportunity for cross disciplinary approaches and collaborations,” commented Principal Investigator Dr. Norbert Kaminski, “which is critical when addressing complex scientific problems.”

These research projects will be supported by five cores. The Computational Modeling Core will develop dynamic computational models of biological responses induced by AhR ligands. An Administrative Core will support research, training, community engagement, data management, and information and technology transfer. Within the Administrative Core, a research translation group will share research findings with target audiences in government, industry and academia. A Community Engagement Core will communicate with community stakeholders through engagement with county and city health officials in three new Michigan communities that have

experienced contamination by dioxin-like compounds. A Data Management and Analysis Core will provide the technology, expertise, infrastructure and training necessary to curate datasets, metadata, processing and analyses needed to properly manage and share high quality reproducible data. Lastly, a Research Experience and Training Coordination Core (RETCC) will ensure cross-disciplinary training to pre- and postdoctoral trainees.

The MSU SRP Center research team includes 25 investigators from Michigan State University (20), Emory University (1), Purdue University (1), Rutgers University (2) and the Michigan Department of Health and Human Services (1). The grant is administered by the Institute for Integrative Toxicology (IIT) at MSU. Results from MSU SRP Center studies will be integrated using data science approaches to develop predictive computational models of adverse effects in support of risk assessment efforts. ♡



EITS TRAINING PROGRAM

An overview of the current EITS training program and review of 2022 activities.

The Environmental and Integrative Toxicological Sciences (EITS) graduate program continues to be one of the premier toxicology training programs in the U.S. This MSU training program administered by the IIT is a “dual major” format that emphasizes excellent basic science training from one of our 16 partnering graduate programs coupled with didactic and research training in toxicology by MSU IIT-affiliated faculty. Currently, 30 doctoral students are enrolled in the EITS program, distributed among several of our partnering PhD programs. Twenty-three of these students are in the Biomedical Track, three in the Environmental Track, and four students are currently enrolled in the Food Toxicology and Ingredient Safety Track. Many of our current students received awards at the 2022 Annual Meeting of the Society of Toxicology (SOT) or from other organizations. Our students continue to demonstrate good citizenship by volunteering to serve on Society committees at the regional and national levels as well as within MSU. Students who graduated in the past year have accepted postdoctoral positions at various academic institutions in the U.S. and other countries or began careers at some of the largest corporations in the country.

The National Institute of Environmental Health Sciences (NIEHS) Training Grant, that the IIT has received with continuous funding since 1989, continued in 2022. The training grant offers stipend and tuition support for 7 predoctoral and 2 postdoctoral fellows each year. Universities compete nationally for training grant support from NIEHS. The longstanding support by NIH of the MSU-IIT is a testament to the excellence that the EITS program has maintained over three decades in training graduate students and postdoctoral fellows, many of whom have become leaders in the field of toxicology. 🌱

EITS GRADUATES 2022



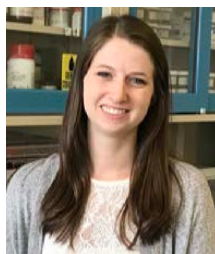
Janice Albers
Fisheries & Wildlife
Mentor, Cheryl Murphy

Effects of Neurotoxic Contaminants on Larval Fish from Genes and Behavior to Populations



Russell Fling
Microbiology & Molecular Genetics
Mentor, Timothy Zacharewski

Disruptions in Hepatic One Carbon Metabolism and the Gut Microbiome During the Progression of Non-alcoholic Fatty Liver Disease



Dawn Kuszynski
Pharmacology & Toxicology
Mentor, Adam Lauver

The Vascular Effects of Clopidogrel



Azam Ali Sher
Comparative Medicine & Integrative Biology
Mentor, Linda Mansfield

Transmission of Antibiotic Resistance Genes Encoded on a Broad Host Range RP4 Plasmid Among Members of the Human Gut Microbiota

GRADUATE SPOTLIGHTS

IIT graduates are sought for careers in industry, government and academia. Below we feature one postdoctoral alumni and two EITS alumni and their paths after graduation.



Peer Karmaus

*Staff Scientist, National Institute for Environmental Health Sciences (NIEHS)
EITS Alumnus*

At a glance:

Department: Cell & Molecular Biology

Mentor: Norbert Kaminski

Dissertation: "Role of the Cannabinoid Receptors 1 and 2 in the Immune Response to Influenza Virus"

Defended: 2011

Significant Achievements During Graduate School:

- » SOT Immunotoxicology Specialty Section, 2nd place presentation Award, 2011
- » Institute for Integrative Toxicology Travel Award, 2011, 2010, 2009, 2007
- » Fellowship, Institute for Integrative Toxicology, 2011, 2008, 2007, 2006
- » The Graduate School, MSU, Travel Award, 2010
- » College of Natural Science, MSU Travel Award, 2010

Driven by a curiosity for how things work, and an interest in disassembling but not reassembling things, Peer Karmaus knew a career in natural sciences research could be a good fit for his future. After earning his Bachelor of Science in Biochemistry from Lyman Briggs College at MSU, Karmaus continued on at MSU to earn his Ph.D. in Cell and Molecular Biology with a dual major in Environmental & Integrative Toxicological Sciences. Karmaus trained with Dr. Norbert Kaminski and completed his dissertation, "Role of the Cannabinoid Receptors 1 and 2 in the Immune Response to Influenza Virus," in 2011.

Today, Karmaus is a Staff Scientist at the National Institute for Environmental Health Sciences. Karmaus' research focuses on investigating how immune signaling and metabolism interact to form immunological responses. By manipulating cellular metabolism and/or signaling, Karmaus can affect immune outcomes, which could be used to boost (e.g., anti-tumor/virus, vaccine) or diminish (e.g., autoimmunity, inflammation) immune responses. Karmaus and his team are currently filing a patent based on their research, hoping to translate their findings to treatments of immune-related illnesses in humans.

Karmaus enjoys his position at NIEHS because it allows him to be creative and at the forefront of scientific discovery without the worry of securing funding through grants. "The funding and access to resources (i.e., subject experts, facilities) are hard to beat at NIEHS," commented Karmaus. "The overall atmosphere is very collegial and collaborations are encouraged. Overall, these factors have led to many creative pursuits and productive projects, so I have enjoyed my time at NIEHS thus far."

For Karmaus, the most important training experience for him as an EITS student was the exposure to many research topics and areas while being in a collaborative research environment. "For both my postdoc and my current position, it has been very important to learn to assemble and function within a team of experts with a common goal in mind," said Karmaus. "When I am invited to collaborate, I can usually understand and even contribute beyond my immediate area of expertise thanks to the exposure to diverse topics as an EITS student." ☺



Lauren Poole (Hardy)

*Assistant Professor, Department of Pharmacology, Rutgers University
Postdoctoral Alumna*

At a glance:

Department: Pathobiology and Diagnostic Investigation

Mentor: James Luyendyk

Significant Achievements:

- » International Society on Thrombosis and Haemostasis Early Career Travel Award, 2022
- » Society of Toxicology Mechanisms Specialty Section Sheldon D. Murphy Award, 2022
- » Society of Toxicology Molecular and Systems Biology Specialty Section Postdoctoral Travel Award, Second Place, 2022
- » International Society on Thrombosis and Haemostasis Early Career Travel Award, 2021
- » Research and Practice in Thrombosis and Haemostasis Editors' Award, 2021
- » Gabriel L. Plaa Education Award, 1st Place, Society of Toxicology Mechanisms Specialty Section, 2020
- » Society of Toxicology Mechanisms Specialty Section Postdoctoral Student Travel Award, 2020
- » Travel Award: Michigan State University Thorp Trainee Travel Award, 2019, 2018
- » Outstanding Abstract Award: International Fibrinogen Research Society, 2018

Lauren Poole's interest in science as a career started in her high school biology class. Rather than memorizing diagrams in a textbook or performing experiments with a pre-determined outcome, her teacher, Janet Zeller, provided her class with basic materials and encouraged students to identify their own research questions and design experiments to test their own hypotheses. This experience made Poole realize, that as a scientist, she could dedicate her time to pursuing her own questions about the world. She became interested in pharmacology and toxicology as an undergraduate student, and was fascinated by the ability to use all of the subjects she was currently studying - biology, organic chemistry, genetics, and mathematics - and apply these to solving complex problems in human health. Being an academic scientist allows Poole to have a career that feels more like a hobby, while being able to train the next generation of scientists and inspire them as her mentors have inspired her.

After earning her Bachelor of Science in Biology (Subcellular Biology and Genetics) at University of Louisville, Poole continued on there earning her M.S. and Ph.D. in Pharmacology and Toxicology. Poole was a postdoctoral research associate at MSU from 2017 to 2022 in the Department of Pathobiology and Diagnostic Investigation and was supported by the IIT NIEHS Training Grant.

Today, Poole is an assistant professor in the Department of Pharmacology at Rutgers University Robert Wood Johnson Medical School. Her research interests seek to understand how activation of the blood clotting cascade drives tissue injury and inflammation. Specifically, Poole is working to identify blood clotting proteins that can be targeted to prevent or reverse the progression of hepatic fibrosis, also known as "scarring" of the liver.

With Poole's lifelong career goal to become an independent academic researcher, her new position has been a dream-come-true. Since starting her new role in October 2022, Poole has set

up her own laboratory, recruited team members, and begun initial studies. As her lab continues to get up and running, she is focused on developing a diverse and inclusive research environment that puts mentoring and education at the forefront. "As a postdoc, I was primarily focused on developing my research skills, and I am now learning to navigate the complex administrative environment of a large academic institution," commented Poole. "I am fortunate to have unwavering support from the leadership at RWJMS, including my Department Chair, Dr. Nancy Walworth, my new colleagues in the Department of Pharmacology, and all of the support staff."

As a postdoctoral fellow supported by the IIT NIEHS Training Grant, Poole gained invaluable skills and training. Her postdoctoral mentor, Dr. Jim Luyendyk, was always very supportive of her career goals and she was afforded substantial academic freedom to pursue her research interests during her time in his lab. This allowed Poole to prepare and submit a successful NIH K99/R00 Pathway to Independence Award and transition smoothly to a faculty position. "So many of the IIT faculty, especially Drs. Ganey, Roth, Bernard, Copple, Harkema, and Rockwell, went above and beyond to help prepare me for the academic job market, including preparing me for interviews and providing valuable feedback on my application materials," said Poole. "Being part of the IIT allowed me to meet with toxicologists with many different career paths, allowing me to make an informed decision regarding which path would be best for me." 🌟



Katherine Roth

Postdoctoral Fellow, Institute of Environmental Health Sciences, Wayne State University, EITS Alumna

At a glance:

Department: Cell & Molecular Biology

Mentor: Bryan Copple

Dissertation:

“Regulation of Hepatic Macrophage Activation Following APAP-Induced Acute Liver Injury”

Defended: Summer 2019

Significant Achievements During Graduate School:

- » NIEHS Training Grant in Environmental Toxicology Predoctoral Fellow, 2015-2018
- » Institute for Integrative Toxicology Travel Award, 2018
- » The Liver Meeting 2016 Presidential Poster of Distinction
- » Environmental and Integrative Toxicological Sciences Travel Award, 2015, 2016

Following her love of science in high school and her fascination with how life and cells and the world around us worked, Katherine Roth decided to pursue an education in science. After earning her Bachelor of Arts in Molecular and Cellular Biology (Honors Program) and European History from Vanderbilt University, Roth came to MSU to earn her Ph.D. in Cell and Molecular Biology with a dual major in Environmental Toxicology. Roth trained with Dr. Bryan Copple and completed her dissertation, “Regulation of Hepatic Macrophage Activation Following APAP-Induced Acute Liver Injury,” in the summer of 2019.

Today, Roth is a postdoctoral fellow at Wayne State University, working in the laboratory of Dr. Michael Petriello within the Center for Urban Responses to Environmental Stressors (CURES) Center. Her current research focuses on mechanisms linking exposure to environmental toxicants and human health and disease. More specifically, Roth’s main area of research explores per- and polyfluoroalkyl substances (PFAS) and how exposure to PFAS leads to cardio-metabolic disease. PFAS are a class of ubiquitous, synthesized chemicals used in a variety of industrial and consumer products, including cookware, food storage, clothing, carpets, and aqueous fire-fighting foams. PFAS accumulate in the environment, in water sources, in food sources, and even in the air. Humans are exposed to these PFAS chemicals in the environment, and PFAS can be detected in almost every American adult. They are everywhere. In our bodies, these chemicals have been linked to a variety of different diseases, including cardiovascular diseases and highly elevated cholesterol levels. Roth’s work strives to understand the specific mechanisms linking these.

Roth is also the Program Administrator for the training core within WSU’s new Superfund Research Program, known as the Center for Leadership in Environmental Awareness and Research (CLEAR). In this role, she works with the trainees to implement training components, such as seminars and col-

loquiums, development of a certificate program, community service projects, internships, data collection, and project reports.

Roth’s experience so far as a postdoctoral fellow has surpassed her expectations. As a graduate student at MSU, Roth’s research focused on studying the mechanisms involved in hepatic inflammation and repair/regeneration that are activated when the liver is injured or failing. Although fascinating, after earning her Ph.D. Roth wanted to move into a field of study that incorporated the knowledge she had already gained, but that also explored the field of environmental pollutants. Her work now has a focus on the effects of human exposure to environmental toxicants. Her experience with animal disease models and cell culture that she gained while at MSU has been a great foundation for her new research focus. Additionally, Roth’s work with the CLEAR program has also allowed her to keep working with students and trainees, which is another area she would like to continue to focus on.

Roth believes her time as an EITS student provided a strong foundation for her current research and career goals. As a graduate student enrolled in the Cell and Molecular Biology program at MSU, but working within a pharmacology/toxicology lab, the EITS program helped her to bridge the gap between molecular biology and toxicology. “Some of the toxicology courses through the EITS have been invaluable as foundational knowledge,” commented Roth. “EITS also provided many more opportunities to practice presenting my research, which has helped immensely, as well as funding.”

Roth’s long-term career goal is to transition to a position as an independent research faculty and project manager at an academic institution, focusing on research that investigates mechanisms linking toxicant exposure and human health and disease. 🌱

FACULTY FEATURES



Brian Johnson

Assistant Professor, Department of Pharmacology & Toxicology,
Department of Biomedical Engineering

After spending summers enjoying nature in the upper peninsula with his family, Brian Johnson decided to pursue a college education at Michigan Tech University. Chemistry and biology courses in community college sparked his interest in science and so upon entering Michigan Tech, Johnson chose to study ecology to bridge his love of nature with his interest in science.

His first foray into toxicology happened while working in an ornithology laboratory doing a study of rough grouse. As Michigan Tech is in the heart of copper mine country, the laboratory retrieved and tested organs from birds donated by hunters to check if there were stamp stands left over from mine tailings. Grouse normally consume small amounts of gravel to help with digestion and so they also consume stamp sands. While not the most pleasant job, Johnson enjoyed linking the science of the project to his passion for hunting and it got him thinking about other toxic exposures in nature. He considered his first summer job laying sod and the toxic pesticide exposures possible there, as well as the toxic exposures possible in his family-owned salvage yard.

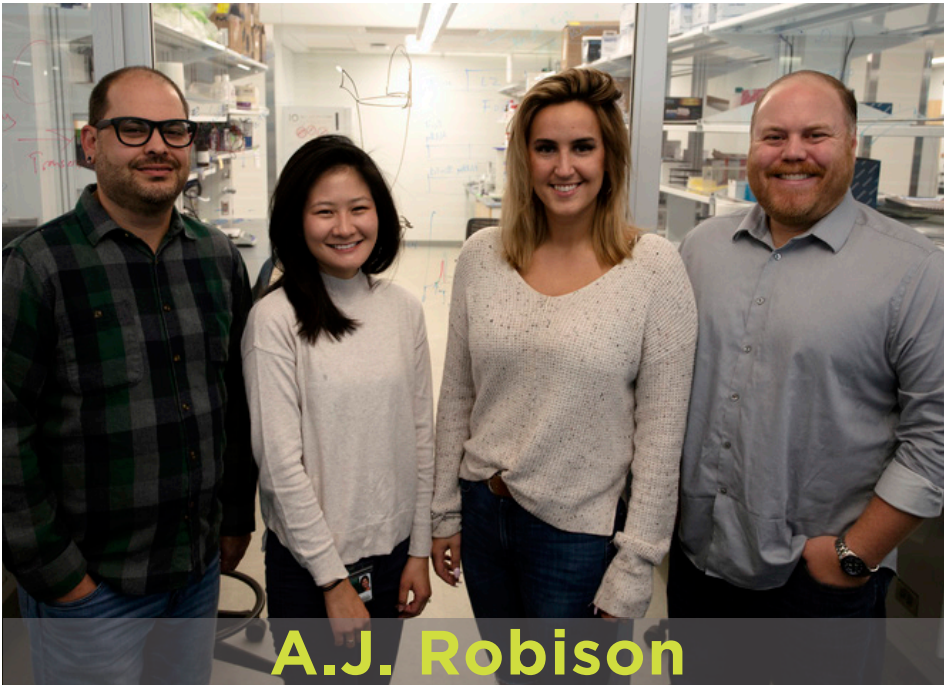
Switching from a major in ecology to human biology, Johnson considered medical school and shadowed a lot of physicians. He found that while they applied the science, they never really got to do the part he enjoyed best, which was learning and discovering the science. Therefore, his next move was to the University of Wisconsin for graduate school. The year he began his Ph.D. in 2007, the National Academy of Sciences came out with a report that discussed how the current methods of testing chemicals was unsustainable, due to the time required for testing. At the time, around 2,000 chemicals had been tested, but it was estimated there were over 80,000 chemicals being used in commerce. The report suggested there needed to be a shift from animal intensive research processes to more of a drug screening type of model with the use of robotics and automation. Johnson's Ph.D. work mostly used animal models, using knockouts and triple knockouts, which was necessary because the biology he was studying was systems based, looking at developmental signaling related to the hydrocarbon receptor. Johnson at this point decided, "The tools don't exist

that I need – so what do I need to do? I need to figure out how to build the tools that we need." Which led to his next step, a postdoctoral fellowship at the University of Wisconsin in biomedical engineering so that he could build the tools he needed to do the research that was important to him.

At the end of his postdoctoral time, Johnson had been selected for both a K99 Pathway to Independence Award and a R44 Small Business Innovation Research Grant. Wavering between going the academic route or the entrepreneurial route, an offer from MSU let him choose the best of both worlds, an academic position with the freedom to run his small company on the side. With established connections at MSU, Johnson also knew the ability to collaborate with colleagues and the opportunities to merge biomedical engineering and the biology of his research at the IQ building on campus would be unmatched.

Today, Johnson collaborates with multiple faculty across campus on varying projects. His research falls between traditional animal models and high throughput screening and he strives to bridge that gap. His overall research goal is to build models of human development and disease to identify how chemicals might either cause or contribute to birth defects in sensitive populations, and how we can better treat disease. By building these models of development, Johnson and his laboratory test and identify new chemicals with the idea that one day they can hope to prevent birth defects. Current research directions in the Johnson laboratory include 1) identifying the potential for chemical mixtures to disrupt epithelial: mesenchymal signaling in orofacial development leading to cleft lip/palate 2) developing high-throughput multicellular models of breast and prostate cancers to identify mechanisms of treatment resistance and uncover therapeutic targets in the cancer microenvironment 3) using multicellular models of the hypothalamic: pituitary: thyroid axis to inform computational modeling of thyroid homeostasis and perturbation by chemical insults.

...continued on page 36



Associate Professor, Department of Physiology, Neuroscience Program

Photo: A.J. Robison (far right), along with lab members (left to right) Andrew Eagle, Chiho Sugimoto, and Ivana Lakic. Photo by lab manager, Ken Moon.

After high school, AJ Robison chose to attend Rhodes College, a small school in Memphis, Tennessee, to play football. Starting out as an English major, Robison wasn't sure what career he wanted after school, but just knew he wasn't going to end up in the NFL. As a freshman, he found himself in a mycology class with an outstanding professor who ran a program on fungal research. After Robison was offered a position in his lab, he found his love for science growing and he enjoyed learning new research techniques like electron microscopy and making monoclonal antibodies. Robison's professor encouraged him to apply for graduate school when Robison mentioned to him that he would like to do something similar as a career one day. He recommended nearby Vanderbilt University in Nashville, Tennessee.

At Vanderbilt, the people Robison met critically influenced his next research opportunities. After meeting a biochemist named Roger Colbran, Robison took a position in his lab. The laboratory focused on the biochemistry of kinases and phosphatases, and Robison worked CaMKII and its protein interaction partners. Robison found that the interactions between these proteins regulated kinase activity that was essential for the function of synapses and

the formation of memories. While the laboratory was mostly biochemistry focused, the connections to the synapse led to his next focus as a postdoctoral fellow – neuroscience, neuronal physiology, and animal behavior.

While at Vanderbilt, Robison also met and married the love of his life, Michelle Mazei-Robison. They knew that they wanted to be at the same institute for postdoctoral work so they both ended up at UT Southwestern in Dallas, TX. Robison worked in the laboratory of Thomas Südhof, and Mazei-Robison in the laboratory of Eric Nestler, both very well-respected neuroscientists. When Südhof moved his laboratory to Stanford, Robison joined Eric Nestler's lab to stay close to Mazei-Robison and their soon-to-be-growing family. Not long after, though, they went with the Nestler Laboratory when it moved to Mount Sinai School of Medicine in New York City. They spent four years total with Nestler, and while they each had their own lines of research, their interests and research programs were very integrated. When they began to look for faculty positions, they knew that they wanted two faculty positions at the same institute that would let them continue to develop their research programs together. Michigan State gave them their best offer with laboratories right next door

to each other. Michelle also grew up in Western Michigan, and the pull to come back home close to family was strong. Today, Robison and Mazei-Robison each have their own laboratories, but they are very much collaborative and integral to each other's research programs. After those whirlwind years leading up to MSU, Robison commented, "I feel like my whole life is falling backwards into good things."

Robison describes his lab today as an octopus, with tentacles and interests that grow out in all kinds of directions based on the variety of collaborations he has across campus and beyond. Research in the Robison Lab uses mouse models of drug addiction and chronic stress to study gene expression in discreet brain regions, particularly the hippocampus. A core project in his lab, funded by the National Institute of Mental Health, works to understand how changes in gene expression in specific circuits of the brain regulate behavioral responses to stress that are relevant for diseases like depression. Robison and his team study how sex differences and sex hormones can impinge upon that regulation of gene expression, and thereby these behaviors. His laboratory uses cutting edge neuroscience techniques like chemogenetics, calcium imaging, and CRISPR modification of gene expression. They were the first lab to his knowledge to use CRISPR to modify genomic DNA in a specific circuit in the mouse brain. The other big core project in the lab is funded by the National Institute of Allergens and Infectious Diseases and then also by the National Institute of Childhood Health and Disease. The project, a large-scale collaboration with Dr. Adam Moeser in MSU College of Veterinary Medicine, aims to study gene expression in mast cells, an innate immune cell typically linked to allergic reactions and regulation of immune responses. They've created multiple new mouse lines allowing them to measure and manipulate mast cell gene expression and have uncovered a novel role for the transcription factor

[...continued on page 36](#)



Assistant Professor, Department of Pharmacology & Toxicology

Neera Tewari-Singh grew up watching her father teach. A professor of biology, he often talked science with her and encouraged her to contribute something to the world, specifically that her contribution was important. “A teacher is like a burning candle,” he used to tell her. “Your knowledge is a light to all your students, and it is your duty to share your light with others.”

Born in northern India in the state of Uttar Pradesh, Tewari-Singh spent her early childhood in India. When she was in fifth grade, her father was offered a position to teach plant pathology in Kenya. She lived there with her family until she returned to India to Lucknow University to earn her Bachelor of Science in Botany, Chemistry and Zoology. She then went on to attend Jawaharlal Nehru University at New Delhi to work on her graduate degree in Molecular Biology. The German academic exchange fellowship awarded her the chance to study abroad at the Leibniz University Hannover in Germany. She found the opportunity to learn a different culture and to learn another language invaluable. While in Germany, her research focused on plant biotechnology and molecular biology, specifically the development of plants that could be enriched in protein and were disease resistant for use in Middle Eastern and Asian countries with large populations.

After submitting her graduate thesis, she began to look for postdoctoral opportunities in the United States. She came across a project funded by the Defense Advanced Research Projects Agency (DARPA) that was looking for a postdoctoral candidate who could work on plant biotechnology to sense chemical threat exposures. Finding this blend of synthetic biology as well as biotechnology very interesting, Tewari-Singh came to Colorado State University to pursue that postdoctoral research and decided to combine that work with therapeutics development.

During her time as a postdoctoral fellow at Colorado State University, the United States government formed a new program under the National Institutes of Health called the Countermeasures Against Chemical Threats Program. After speaking with a professor at the University of Colorado at Denver who was working on the first cycle of the grant from the new program, Tewari-Singh knew she wanted to push her research into this direction so that she could have more impact on the human population. As a research associate at the University of Colorado Denver, Tewari-Singh began to work with chemical exposures, studying their toxic effects through efficacy studies as well as models studying the mechanistic aspects, all in the goal of identifying potential therapeutic targets.

Knowing that MSU had one of the strongest toxicology programs in the nation from her experience with the Society of Toxicology, Tewari-Singh transitioned to MSU a few years ago. Today, her research goal is to pursue both basic and translational studies to develop approved and more effective targeted countermeasures/therapies against mainly the dermal and ocular injuries from chemical threat agent exposures. The chemical agents of interest include vesicating and nettle agents (sulfur mustard, nitrogen mustard, lewisite and phosgene oxime), industrial agents/pollutants and pesticides (chloropicrin, polycyclic aromatic hydrocarbons, etc.) that can cause harmful effects/mass casualties as well as long-term ailments to the human population. Developing effective and targeted medical interventions is a critical component of the modern global strategy to overcome the challenges of chemical emergencies in both civilian and military populations, making her research highly significant.

Current funded grants in her lab focus on investigating the role of mast cells and related inflammatory responses to elucidate skin, systemic and/or lung injury mechanisms that contribute to severe toxicity/long-term illnesses from vesicating agents' exposure in civilian population as well as war veterans. In addition, under recently funded collaborative projects, her lab is elucidating the role of nuclear erythroid 2-related factor 2 (Nrf2) signaling pathway in vesicating, and pesticide chloropicrin caused ocular injuries. Outcomes from these studies are anticipated to identify novel molecular targets for therapeutic intervention and further drug development to effectively treat injuries from these chemical threat agents. Under other collaborative projects, she is studying mechanisms and testing as well as optimizing therapies including oxygen emulsion to treat ocular injuries from chemical threat agents and ocular inflammatory diseases (corneal inflammation and dry eye). Additionally, she is also elucidating the role of aryl hydrocarbon receptor in polycyclic aromatic hydrocarbon-induced exacerbation in skin inflammatory diseases (psoriasis and atopic dermatitis) for better targeted treatment strategies.

...continued on page 36



FACULTY PUBLICATIONS

During 2022, IIT affiliated faculty published more than 200 peer-reviewed articles. As a result, the IIT, and MSU research, has been highly visible in prominent peer-reviewed literature. The publications below are from January 1, 2022 to December 31, 2022.

Andrea Amalfitano

O'Connell P, Blake MK, Godbehere S, Amalfitano A, Aldhamen YA (2022). SLAMF7 modulates B cells and adaptive immunity to regulate susceptibility to CNS autoimmunity. *J Neuroinflammation*. 19(1):241. PMID: 36199066.

Blake MK, O'Connell P, Pepelyayeva Y, Godbehere S, Aldhamen YA, Amalfitano A (2022). ERAP1

is a critical regulator of inflammasome-mediated proinflammatory and ER stress responses. *BMC Immunol*. 23(1):9. PMID: 35246034.

O'Connell P, Blake MK, Pepelyayeva Y, Hyslop S, Godbehere S, Angarita AM, Pereira-Hicks C, Amalfitano A, Aldhamen YA (2022). Adenoviral delivery of an immunomodulatory protein to the tumor microenviron-

ment controls tumor growth. *Mol Ther Oncolytics*. 24:180-193. PMID: 35036523.

Eran R. Andrechek

Swiatnicki MR, Rennhack JP, Ortiz MMO, Hollern DP, Perry AV, Kubiak R, Rivera Riveria SM, O'Reilly S, Andrechek ER (2022). Elevated phosphorylation of EGFR in NSCLC due to mutations in PTPRH. *PLoS Genet*. 18(9):e1010362.

PMID: 36054194.

Jamie J. Bernard

Wilson MR, Skalski H, Reske JJ, Wegener M, Adams M, Hostetter G, Hoffmann HM, Bernard JJ, Bae-Jump VL, Teixeira JM, Chandler RL (2022). Obesity alters the mouse endometrial transcriptome in a cell context-dependent manner. *Reprod Biol Endocrinol*. 20(1):163. PMID: 36424602.

- Zhang J, Liang L, Yang W, Ramadan S, Baryal K, Huo CX, Bernard JJ, Liu J, Hsieh-Wilson L, Zhang F, Linhardt RJ, Huang X (2022). Expedient Synthesis of a Library of Heparan Sulfate-Like “Head-to-Tail” Linked Multimers for Structure and Activity Relationship Studies. *Angew Chem Int Ed Engl.* 61(48):e202209730. PMID: 36199167.
- Njomen E, Vanecek A, Lansdell TA, Yang YT, Schall PZ, Harris CM, Bernard MP, Isaac D, Alkharabsheh O, Al-Janadi A, Giletto MB, Ellsworth E, Taylor C, Tang T, Lau S, Bailie M, Bernard JJ, Yuzbasiyan-Gurkan V, Tepe JJ (2022). Small Molecule 20S Proteasome Enhancer Regulates MYC Protein Stability and Exhibits Antitumor Activity in Multiple Myeloma. *Biomedicines.* 10(5):938. PMID: 35625675.
- Matthew P. Bernard**
- Njomen E, Vanecek A, Lansdell TA, Yang YT, Schall PZ, Harris CM, Bernard MP, Isaac D, Alkharabsheh O, Al-Janadi A, Giletto MB, Ellsworth E, Taylor C, Tang T, Lau S, Bailie M, Bernard JJ, Yuzbasiyan-Gurkan V, Tepe JJ. Small Molecule 20S Proteasome Enhancer Regulates MYC Protein Stability and Exhibits Antitumor Activity in Multiple Myeloma. *Biomedicines.* 2022 Apr 19;10(5):938. doi: 10.3390/biomedicines10050938. PMID: 35625675; PMCID: PMC9138505.
- Sudin Bhattacharya**
- Nault R, Saha S, Bhattacharya S, Sinha S, Maiti T, Zacharewski T (2022). Single cell transcriptomics shows dose-dependent disruption of hepatic zonation by TCDD in mice. *Toxicol Sci.* kfac109. PMID: 36222588.
- Gasior K, Hauck M, Bhattacharya S (2022). Modeling the influence of cell-cell contact and TGF- β signaling on the epithelial mesenchymal transition in MCF7 breast carcinoma cells. *J Theor Biol.* 546:111160. PMID: 35594913.
- Nault R, Saha S, Bhattacharya S, Dodson J, Sinha S, Maiti T, Zacharewski T (2022). Benchmarking of a Bayesian single cell RNAseq differential gene expression test for dose-response study designs. *Nucleic Acids Res.* 50(8):e48. PMID: 35061903.
- Yang Y, Filipovic D, Bhattacharya S (2022). A Negative Feedback Loop and Transcription Factor Cooperation Regulate Zonal Gene Induction by 2, 3, 7, 8-Tetrachlorodibenzo-p-Dioxin in the Mouse Liver. *Hepatol Commun.* 6(4):750-764. PMID: 34726355.
- Lance K. Blevins**
- Blevins LK, Bach AP, Crawford RB, Zhou J, Henriquez JE, Rizzo MD, Sermet S, Khan DMIO, Turner H, Small-Howard AL, Kaminski NE (2022). Evaluation of the anti-inflammatory effects of selected cannabinoids and terpenes from Cannabis Sativa employing human primary leukocytes. *Food Chem Toxicol.* 170:113458. PMID: 36228902.
- Zhou J, Blevins LK, Crawford RB, Kaminski NE (2022). Role of Programmed Cell Death Protein-1 and Lymphocyte Specific Protein Tyrosine Kinase in the Aryl Hydrocarbon Receptor-Mediated Impairment of the IgM Response in Human CD5+ Innate-Like B Cells. *Front Immunol.* 13:884203. PMID: 35558082.
- Leslie D. Bourquin**
- Shingiro JB, Shee P, Beaudry R, Thiagarajan D, Bourquin LD, Walker K (2022). Assessing Alkyl Methoxypyrazines as Predictors of the Potato Taste Defect in Coffee. *ACS Food Science & Technology.* <https://doi.org/10.1021/acsfoodscitech.2c00233>.
- Rehman MA, Hameed A, Ahmad Z, Ahmad S, Tipu MI, Shah F, Mehmood T, Bourquin LD, Hussain S (2022). Postharvest Application of Aloe Vera Gel Improved Shelf Life and Quality of Strawberry (*Fragaria x ananassa* Duch.). *Emirates Journal of Food & Agriculture* 34(7): 553-562.
- Stephen A. Boyd**
- Hu X, Zhang Y, Chen Z, Gao Y, Teppen B, Boyd SA, Zhang W, Tiedje JM, Li H (2022). Tetracycline accumulation in biofilms enhances the selection pressure on *Escherichia coli* for expression of antibiotic resistance. *Sci Total Environ.* 857(Pt 2):159441. PMID: 36252660.
- Li Y, Sallach JB, Zhang W, Boyd SA, Li H (2022). Characterization of Plant Accumulation of Pharmaceuticals from Soils with Their Concentration in Soil Pore Water. *Environ Sci Technol.* 56(13):9346-9355. PMID: 35738923.
- John P. Buchweitz**
- Heine LK, Benninghoff AD, Ross EA, Rajasinghe LD, Wagner JG, Lewandowski RP, Richardson AL, Li QZ, Buchweitz JP, Zyskowski J, Tindle AN, Skedel AE, Chargo NJ, McCabe LR, Harkema JR, Pestka JJ (2022). Comparative effects of human-equivalent low, moderate, and high dose oral prednisone intake on autoimmunity and glucocorticoid-related toxicity in a murine model of environmental-triggered lupus. *Front Immunol.* 13:972108. PMID: 36341330.
- Johnson SD, Buchweitz JP, Lehner AF (2022). Single oral or intravenous administration of voriconazole achieved recommended therapeutic minimum inhibitory concentrations against *Aspergillus* in the common raven (*Corvus corax*). *Am J Vet Res.* 83(10):ajvr.22.03.0055. PMID: 36029482.
- Viner TC, Kagan RA, Lehner A, Buchweitz JP (2022). Anticoagulant exposure in golden eagle (*aquila chrysaetos*) power line electrocution and wind turbine mortalities. *J Wildl Dis.* 58(2):348-355. PMID: 35100409.
- Buchweitz JP, Zyskowski J, Lehner AF (2022). Heroin Fatality in a Feline: A Case Report with Postmortem Liver Concentrations. *J Anal Toxicol.* 46(1):e36-e41. PMID: 33475731.
- Slabe VA, Anderson JT, Millsap BA, Cooper JL, Harmata AR, Restani M, Crandall RH, Bodenstern B, Bloom PH, Booms T, Buchweitz J, Culver R, Dickerson K, Domenech R, Dominguez-Villegas E, Driscoll D, Smith BW, Lockhart MJ, McRuer D, Miller TA, Ortiz PA, Rogers K, Schwarz M,

Turley N, Woodbridge B, Finkelstein ME, Triana CA, DeSorbo CR, Katzner TE (2022). Demographic implications of lead poisoning for eagles across North America. *Science*. 375(6582):779-782. PMID: 35175813.

Lyle D. Burgoon

Burgoon LD, Kluxen FM, Frericks M (2022). Understanding and overcoming the technical challenges in using in silico predictions in regulatory decisions of complex toxicological endpoints - A pesticide perspective for regulatory toxicologists with a focus on machine learning models. *Regul Toxicol Pharmacol*. 137:105311. PMID: 36494002.

Burgoon LD, Borgert CJ (2022). Comment on “Application of an in Vitro Assay to Identify Chemicals That Increase Estradiol and Progesterone Synthesis and Are Potential Breast Cancer Risk Factors”. *Environ Health Perspect*. 130(5):58002. PMID: 35507340.

Burgoon LD, Fuentes C, Borgert CJ (2022). A novel approach to calculating the kinetically derived maximum dose. *Arch Toxicol*. 96(3):809-816. PMID: 35103817.

Carignan, Courtney C.

Muensterman DJ, Titaley IA, Peaslee GF, Minc LD, Cahuas L, Rodowa AE, Horiuchi Y, Yamane S, Fouquet TNJ, Kissel JC, Carignan CC, Field JA (2022). Disposition of Fluorine on New Firefighter Turnout Gear. *Environ Sci Technol*. 56(2):974-983. PMID: 34961317.

Honglei Chen

Arsiwala-Scheppach LT, Ramulu PY, Sharrett AR, Kamath V, Deal JA, Guo X, Du S, Garcia Morales EE, Mihailovic A, Chen H, Abraham AG (2022). Associations among Visual, Auditory, and Olfactory Functions in Community-Based Older Adults: The Atherosclerosis Risk in Communities (ARIC) Study. *Transl Vis Sci Technol*. 11(11):2. PMID: 36322079.

Stein E, Chern A, Chen H, Shiroma EJ, Devanand DP, Gudis DA, Overdeest JB (2022). Association between social determinants of health and olfactory dysfunction in older adults: A population-based analysis. *Int Forum Allergy Rhinol*. PMID: 36102027.

Song S, Luo Z, Li C, Huang X, Shiroma EJ, Simon-sick EM, Chen H (2022). Depressive symptoms before and after Parkinson's diagnosis-A longitudinal analysis. *PLoS One*. 17(7):e0272315. PMID: 35905124.

Schneider ALC, Gottesman RF, Mosley TH, Shrestha S, Rowan NR, Sharrett AR, Chen H, Kamath V (2022). Associations of Prior Head Injury With Olfaction in Older Adults: Results From the Atherosclerosis Risk in Communities (ARIC) Study. *JAMA Otolaryngol Head Neck Surg*. 148(9):840-848. PMID: 35862067.

Chen R, Jiang Y, Hu J, Chen H, Li H, Meng X, Ji JS, Gao Y, Wang W, Liu C, Fang W, Yan H, Chen J, Wang W, Xiang D, Su X, Yu B, Wang Y, Xu Y, Wang L, Li C, Chen Y, Bell ML, Cohen AJ, Ge J, Huo Y,

Kan H (2022). Hourly Air Pollutants and Acute Coronary Syndrome Onset in 1.29 Million Patients. *Circulation*. 145(24):1749-1760. PMID: 35450432.

Parks CG, Shrestha S, Long S, Flottemesch T, Woodruff S, Chen H, Andreotti G, Hofmann JN, Beane Freeman LE, Sandler DP (2022). Completeness of cohort-linked U.S. Medicare data: An example from the Agricultural Health Study (1999-2016). *Prev Med Rep*. 27:101766. PMID: 35369114.

Cao Z, Yang A, D'Aloisio AA, Suarez L, Deming-Halverson S, Li C, Luo Z, Pinto JM, Werder EJ, Sandler DP, Chen H (2022). Assessment of Self-reported Sense of Smell, Objective Testing, and Associated Factors in Middle-aged and Older Women. *JAMA Otolaryngol Head Neck Surg*. 148(5):408-417. PMID: 35266981.

Wang K, Luo Z, Li C, Pinto JM, Shiroma EJ, Simon-sick EM, Chen H (2022). Olfaction and kidney function in community-dwelling older adults. *PLoS One*. 17(2):e0264448. PMID: 35213666.

Yuan Y, Shrestha S, Luo Z, Li C, Plassman BL, Parks CG, Hofmann JN, Beane Freeman LE, Sandler DP, Chen H (2022). High Pesticide Exposure Events and Dream-Enacting Behaviors Among US Farmers. *Mov Disord*. 37(5):962-971. PMID: 35152487.

Chen H, Wang K, Schepers F, Killinger B (2022). Environmental triggers of Parkinson's disease - Implications of the Braak and dual-hit hypotheses. *Neurobiol Dis*. 163:105601. PMID: 34954321.

Yuan Y, Li C, Luo Z, Simonsick EM, Shiroma EJ, Chen H (2022). Olfaction and Physical Functioning in Older Adults: A Longitudinal Study. *J Gerontol A Biol Sci Med Sci.* 77(8):1612-1619. PMID: 34379770.

Wang C, Lin J, Niu Y, Wang W, Wen J, Lv L, Liu C, Du X, Zhang Q, Chen B, Cai J, Zhao Z, Liang D, Ji JS, Chen H, Chen R, Kan H (2022). Impact of ozone exposure on heart rate variability and stress hormones: A randomized-crossover study. *J Hazard Mater.* 421:126750. PMID: 34339988.

Rory B. Conolly

Liu R, Zacharewski TR, Conolly RB, Zhang Q (2022). A Physiologically Based Pharmacokinetic (PBPK) Modeling Framework for Mixtures of Dioxin-like Compounds. *Toxics.* 10(11):700. PMID: 36422908.

Conolly RB, Campbell JL, Clewell HJ, Schroeter J, Kimbell JS, Gentry PR (2022). Relative Contributions of Endogenous and Exogenous Formaldehyde to Formation of Deoxyguanosine Monoadducts and DNA-Protein Crosslink Adducts of DNA in Rat Nasal Mucosa. *Toxicol Sci.* kfac119. PMID: 36409013.

Villeneuve DL, Blackwell BR, Blanksma CA, Cavallin JE, Cheng WY, Conolly RB, Conrow K, Feifarek DJ, Heinis LJ, Jensen KM, Kahl MD, Milsk RY, Poole ST, Randolph EC, Saari TW, Watanabe KH, Ankley GT (2022). Case Study in 21st-Century Ecotoxicology: Using In Vitro Aromatase Inhi-

bition Data to Predict Reproductive Outcomes in Fish In Vivo. *Environ Toxicol Chem.* 42(1):100-116. PMID: 36282016.

Andrea I. Doseff

Kariagina A, Doseff AI (2022). Anti-Inflammatory Mechanisms of Dietary Flavones: Tapping into Nature to Control Chronic Inflammation in Obesity and Cancer. *Int J Mol Sci.* 23(24):15753. PMID: 36555392.

Susan L. Ewart

Rathod R, Zhang H, Karmaus W, Ewart S, Mzayek F, Arshad SH, Holloway JW (2022). Association of childhood BMI trajectory with post-adolescent and adult lung function is mediated by pre-adolescent DNA methylation. *Respir Res.* 23(1):194. PMID: 35906571.

Luttman AM, Komine M, Thaiwong T, Carpenter T, Ewart SL, Kiupel M, Langohr IM, Venta PJ (2022). Development of a 17-Plex of Penta- and Tetra-Nucleotide Microsatellites for DNA Profiling and Paternity Testing in Horses. *Front Vet Sci.* 9:861623. PMID: 35464354.

Eslamimehr S, Jones AD, Anthony TM, Arshad SH, Holloway JW, Ewart S, Luo R, Mukherjee N, Kheirkhah Rahimabad P, Chen S, Karmaus W (2022). Association of prenatal acetaminophen use and acetaminophen metabolites with DNA methylation of newborns: analysis of two consecutive generations of the Isle of Wight birth cohort. *Environ Epigenet.* 8(1):dvac002. PMID: 35317219.

Li L, Zhang H, Holloway JW, Ewart S, Relton CL, Arshad SH, Karmaus W (2022). Does DNA methylation mediate the association of age at puberty with forced vital capacity or forced expiratory volume in 1 s? *ERJ Open Res.* 8(1):00476-2021. PMID: 35237685.

Rathod A, Zhang H, Arshad SH, Ewart S, Relton CL, Karmaus W, Holloway JW (2022). DNA Methylation and Asthma Acquisition during Adolescence and Post-Adolescence, an Epigenome-Wide Longitudinal Study. *J Pers Med.* 12(2):202. PMID: 35207690.

Li L, Holloway JW, Ewart S, Arshad SH, Relton CL, Karmaus W, Zhang H (2022). Newborn DNA methylation and asthma acquisition across adolescence and early adulthood. *Clin Exp Allergy.* 52(5):658-669. PMID: 34995380.

Patricia E. Ganey

Roth RA, Kana O, Filipovic D, Ganey PE (2022). Pharmacokinetic and toxicodynamic concepts in idiosyncratic, drug-induced liver injury. *Expert Opin Drug Metab Toxicol.* 18(7-8):469-481. PMID: 36003040.

John L. Goudreau

Fischer DL, Auinger P, Goudreau JL, Paumier KL, Cole-Strauss A, Kemp CJ, Lipton JW, Sortwell CE (2022). BDNF rs10501087, rs1491850 and rs11030094 polymorphisms associated with delayed progression in early-stage Parkinson's disease. *Front Neurol.* 13:1053591. PMID: 36468063.

Brian D. Gulbransen

- Dharshika C, Gulbransen BD (2022). Enteric Neuromics: How High-Throughput “Omics” Deepens Our Understanding of Enteric Nervous System Genetic Architecture. *Cell Mol Gastroenterol Hepatol.* 15(2):487–504. PMID: 36368612.
- Seguella L, McClain JL, Esposito G, Gulbransen BD (2022). Functional Intra-regional and Interregional Heterogeneity between Myenteric Glial Cells of the Colon and Duodenum in Mice. *J Neurosci.* 42(46):8694–8708. PMID: 36319118.
- Grubišić V, Bali V, Fried DE, Eltzhig HK, Robson SC, Mazei-Robison MS, Gulbransen BD (2022). Enteric glial adenosine 2B receptor signaling mediates persistent epithelial barrier dysfunction following acute DSS colitis. *Mucosal Immunol.* 15(5):964–976. PMID: 35869148.
- Gonzales J, Gulbransen BD (2022). Purines help determine the gut’s sweet tooth. *Purinergic Signal.* 18(3):245–247. PMID: 35639305.
- Duque-Wilckens N, Teis R, Sarno E, Stoelting F, Khalid S, Dairi Z, Douma A, Maradiaga N, Hench S, Dharshika CD, Thelen KM, Gulbransen B, Robison AJ, Moeser AJ (2022). Early life adversity drives sex-specific anhedonia and meningeal immune gene expression through mast cell activation. *Brain Behav Immun.* 103:73–84. PMID: 35339629.
- Ahmadzai MM, McClain JL, Dharshika C, Seguella L, Giancola F, De Giorgio R, Gulbransen BD (2022). LPAR1 regulates enteric nervous system function through glial signaling and contributes to chronic intestinal pseudo-obstruction. *J Clin Invest.* 132(4):e149464. PMID: 35166239.
- ## Jack R. Harkema
- Pawelec KM, Varnum M, Harkema JR, Auerbach B, Larsen SD, Neubig RR (2022). Prevention of bleomycin-induced lung fibrosis via inhibition of the MRTF/SRF transcription pathway. *Pharmacol Res Perspect.* 10(6):e01028. PMID: 36426895.
- Wierenga KA, Riemers FM, Westendorp B, Harkema JR, Pestka JJ (2022). Single cell analysis of docosahexaenoic acid suppression of sequential LPS-induced proinflammatory and interferon-regulated gene expression in the macrophage. *Front Immunol.* 13:993614. PMID: 36405730.
- Heine LK, Benninghoff AD, Ross EA, Rajasinghe LD, Wagner JG, Lewandowski RP, Richardson AL, Li QZ, Buchweitz JP, Zyskowski J, Tindle AN, Skedel AE, Chargo NJ, McCabe LR, Harkema JR, Pestka JJ (2022). Comparative effects of human-equivalent low, moderate, and high dose oral prednisone intake on autoimmunity and glucocorticoid-related toxicity in a murine model of environmental-triggered lupus. *Front Immunol.* 13:972108. PMID: 36341330.
- Majumder N, Kodali V, Velayutham M, Goldsmith T, Amedro J, Khrantsov VV, Erdely A, Nurkiewicz TR, Harkema JR, Kelley EE, Hussain S (2022). Aerosol physicochemical determinants of carbon black and ozone inhalation co-exposure induced pulmonary toxicity. *Toxicol Sci.* kfac113. PMID: 36303316.
- Cromar KR, Lee AG, Harkema JR, Annesi-Maesano I (2022). Science-based Policy Recommendations for Fine Particulate Matter in the United States. *Am J Respir Crit Care Med.* 206(9):1067–1069. PMID: 35856816.
- Tovar A, Smith GJ, Nalesnik MB, Thomas JM, McFadden KM, Harkema JR, Kelada SNP (2022). A Locus on Chromosome 15 Contributes to Acute Ozone-induced Lung Injury in Collaborative Cross Mice. *Am J Respir Cell Mol Biol.* 67(5):528–538. PMID: 35816602.
- Borm PJA, Lison D, Driscoll K, Duffin R, Harkema J, Weber K, Elder A (2022). Inflammation as a Key Outcome Pathway in Particle Induced Effects in the Lung. *Front Public Health.* 10:869041. PMID: 35692318.
- Rajasinghe LD, Bates MA, Benninghoff AD, Wierenga KA, Harkema JR, Pestka JJ (2022). Silica Induction of Diverse Inflammatory Proteome in Lungs of Lupus-Prone Mice Quelled by Dietary Docosahexaenoic Acid Supplementation. *Front Immunol.* 12:781446. PMID: 35126352.
- Mahdieh Z, Postma B, Herritt LA, Hamilton RF Jr, Harkema JR, Holian A (2022). Hyperspectral microscopy of subcutaneously released silver nanoparticles reveals sex differences in drug distribution. *Micron.* 153:103193. PMID: 34929618.
- Scieszka D, Hunter R, Begay J, Bitsui M, Lin Y, Galewsky J, Morishita M, Klaver Z, Wagner J, Harkema JR, Herbert G, Lucas S, McVeigh C, Bolt A, Bleske B, Canal CG, Mostovenko E, Ottens AK, Gu H, Campen MJ, Noor S (2022). Neuroinflammatory and Neurometabolomic Consequences From Inhaled Wildfire Smoke-Derived Particulate Matter in the Western United States. *Toxicol Sci.* 186(1):149–162. PMID: 34865172.
- Li N, Lewandowski RP, Sidhu D, Holz C, Jackson-Humbles D, Eiguren-Fernandez A, Akbari P, Cho AK, Harkema JR, Froines JR, Wagner JG (2022). Combined adjuvant effects of ambient vapor-phase organic components and particulate matter potently promote allergic sensitization and Th2-skewing cytokine and chemokine milieu in mice: The importance of mechanistic multi-pollutant research. *Toxicol Lett.* 356:21–32. PMID: 34863859.
- Perez GI, Broadbent D, Zarea AA, Dolgikh B, Bernard MP, Withrow A, McGill A, Toomajian V, Thampy LK, Harkema J, Walker JR, Kirkland TA, Bachmann MH, Schmidt J, Kanada M (2022). In Vitro and In Vivo Analysis of Extracellular Vesicle-Mediated Metastasis Using a Bright, Red-Shifted Bioluminescent Reporter Protein. *Adv Genet (Hoboken).* 3(1):2100055. PMID: 36619349.

Syed A. Hashsham

Saeed M, Rais M, Akram A, Williams MR, Kellner KF, Hashsham SA, Davis DR (2022). Development and validation of an eDNA protocol for monitoring endemic Asian spiny frogs in the Himalayan region of Pakistan. *Sci Rep.* 12(1):5624. PMID: 35379841.

Wallace A. Hayes

Barangi S, Ghodsi P, Mehraabi A, Mehri S, Hayes AW, Karimi G (2022). Melatonin attenuates cardiopulmonary toxicity induced by benzo(a)pyrene in mice focusing on apoptosis and autophagy pathways. *Environ Sci Pollut Res Int.* PMID: 36474038.

Zare S, Karbasforooshan H, Hayes AW, Karimi G (2022). The modulation of sirtuins by natural compounds in the management of cisplatin-induced nephrotoxicity. *Naunyn Schmiedebergs Arch Pharmacol.* PMID: 36454257.

Buha Djordjevic A, Milovanovic V, Curcic M, Antonijevic Miljakovic E, Bulat Z, Djukic-Cosic D, Jankovic S, Vučinić S, Hayes AW, Antonijevic B (2022). New insight into the perplexing toxic features of PCBs: A study of nephrotoxicity in an animal model. *Environ Res.* 217:114829. PMID: 36410460.

Yarmohammadi F, Hayes AW, Karimi G (2022). Sorting nexins as a promising therapeutic target for cardiovascular disorders: An updated overview. *Exp Cell Res.* 419(1):113304. PMID: 35931142.

Pressman P, Clemens R, Hayes AW (2022). Significant shifts in preclinical and clinical neurotoxicology: a review and commentary. *Toxicol Mech Methods.* 1-10. PMID: 35920262.

Molaei A, Molaei E, Sadeghnia H, Hayes AW, Karimi G (2022). LKBI: An emerging therapeutic target for cardiovascular diseases. *Life Sci.* 306:120844. PMID: 35907495.

Agathokleous E, Barceló D, Aschner M, Azevedo RA, Bhattacharya P, Costantini D, Cutler GC, De Marco A, Docea AO, Dórea JG, Duke SO, Efferth T, Fatta-Kassinos D, Fotopoulos V, Ginebreda A, Guedes RNC, Hayes AW, Iavicoli I, Kalantzi OI, Koike T, Kouretas D, Kumar M, Manautou JE, Moore MN, Paoletti E, Peñuelas J, Picó Y, Reiter RJ, Rezaee R, Rinklebe J, Rocha-Santos T, Sicard P, Sonne C, Teaf C, Tsatsakis A, Vardavas AI, Wang W, Zeng EY, Calabrese EJ (2022). Rethinking Subthreshold Effects in Regulatory Chemical Risk Assessments. *Environ Sci Technol.* 56(16):11095-11099. PMID: 35878124.

Mahdiani S, Omidkhoda N, Heidari S, Hayes AW, Karimi G (2022). Protective effect of luteolin against chemical and natural toxicants by targeting NF- κ B pathway. *Biofactors.* 48(4):744-762. PMID: 35861671.

Izadparast F, Riahi-Zajani B, Yarmohammadi F, Hayes AW, Karimi G (2022). Protective effect of berberine against LPS-induced injury in the intestine: a review. *Cell Cycle.* 21(22):2365-2378. PMID: 35852392.

Yarmohammadi F, Hayes AW, Karimi G (2022). The therapeutic effects of berberine against different diseases: A review on the involvement of the endoplasmic reticulum stress. *Phytother Res.* 36(8):3215-3231. PMID: 35778942.

Rashidi R, Rezaee R, Shakeri A, Hayes AW, Karimi G (2022). A review of the protective effects of chlorogenic acid against different chemicals. *J Food Biochem.* 46(9):e14254. PMID: 35609009.

Khodaei M, Mehri S, Pour SR, Mahdavi S, Yarmohammadi F, Hayes AW, Karimi G (2022). The protective effect of chemical and natural compounds against vincristine-induced peripheral neuropathy (VIPN). *Naunyn Schmiedebergs Arch Pharmacol.* 395(8):907-919. PMID: 35562512.

Dourson M, Ewart L, Fitzpatrick SC, Barros SBM, Mahadevan B, Hayes AW (2022). Response to Decision-Making with New Approach Methodologies: Time to Replace Default Uncertainty Factors with Data. *Toxicol Sci.* 189(1):150-151. PMID: 35404424.

Hilton GM, Adcock C, Akerman G, Baldassari J, Battalora M, Casey W, Clippinger AJ, Cope R, Goetz A, Hayes AW, Papineni S, Peffer RC, Ramsingh D, Williamson Riffle B, Sanches da Rocha M, Ryan N, Scollon E, Visconti N, Wolf DC, Yan Z, Lowit A (2022). Rethinking chronic toxicity and carcinogenicity assessment for agrochemicals project (ReCAAP): A reporting framework to support a weight of evi-

dence safety assessment without long-term rodent bioassays. *Regul Toxicol Pharmacol.* 131:105160. PMID: 35311659.

Balarastaghi S, Rezaee R, Hayes AW, Yarmohammadi F, Karimi G (2022). Mechanisms of Arsenic Exposure-Induced Hypertension and Atherosclerosis: an Updated Overview. *Biol Trace Elem Res.* PMID: 35167029.

Yarmohammadi F, Hayes AW, Karimi G (2022). Targeting PPARs Signaling Pathways in Cardiotoxicity by Natural Compounds. *Cardiovasc Toxicol.* 22(4):281-291. PMID: 35067839.

Hayes AW, Clemens RA, Pressman P (2022). The absence of genotoxicity of a mixture of aloin A and B and a commercial aloe gel beverage. *Toxicol Mech Methods.* 32(5):385-394. PMID: 34979868.

Dourson M, Ewart L, Fitzpatrick SC, Barros SBM, Mahadevan B, Hayes AW (2022). The Future of Uncertainty Factors With In Vitro Studies Using Human Cells. *Toxicol Sci.* 186(1):12-17. PMID: 34755872.

Yousefian M, Hosseinzadeh H, Hayes AW, Hadizadeh F, Karimi G (2022). The Protective Effect of Natural Compounds on Doxorubicin-Induced Cardiotoxicity via Nicotinamide Adenine Dinucleotide Phosphate Oxidase Inhibition. *J Pharm Pharmacol.* 74(3):351-359. PMID: 34562089.

James E. Jackson

Zhou Y, Klinger GE, Hegg EL, Saffron CM, Jackson JE (2022). Skeletal Ni electrode-catalyzed

C-O cleavage of diaryl ethers entails direct elimination via benzyne intermediates. *Nat Commun.* 13(1):2050. PMID: 35440551.

Das S, Anderson JE, De Kleine R, Wallington TJ, Jackson JE, Saffron CM (2022). Technoeconomic analysis of corn stover conversion by decentralized pyrolysis and electrocatalysis. *Sustainable Energy Fuels.* 6:2823-2834.

Fang Z, Jackson JE, Hegg EL (2022). Mild, Electroreductive Lignin Cleavage: Optimizing the Depolymerization of Authentic Lignins. *ACS Sustainable Chem. Eng.* 10:7545-7552.

Killian WG, Bala AM, Norfleet AT, Peereboom L, Jackson JE, Lira CT (2022). Infrared quantification of ethanol and 1-butanol hydrogen bonded hydroxyl distributions in cyclohexane. *Spectrochim Acta A Mol Biomol Spectrosc.* 285:121837. PMID: 36137499.

Brian P. Johnson

Reynolds JI, Vitek RA, Geiger PG, Johnson BP (2022). Engineering Epithelial-Mesenchymal Microtissues to Study Cell-Cell Interactions in Development. *Methods Mol Biol.* 2403:201-213. PMID: 34913124.

Vitek RA, Huang W, Geiger PG, Heninger E, Lang JM, Jarrard DF, Beebe DJ, Johnson BP (2022). Fresh tissue procurement and preparation for multicompartiment and multimodal analysis of the prostate tumor microenvironment. *Prostate.* 82(7):836-849. PMID: 35226381.

A. Daniel Jones

Parks HM, Cinelli MA, Bedewitz MA, Grabar JM, Hurney SM, Walker KD, Jones AD, Barry CS (2022). Redirecting tropane alkaloid metabolism reveals pyrrolidine alkaloid diversity in *Atropa belladonna*. *New Phytol.* PMID: 36451537.

Stamm J, DeJesus L, Jones AD, Dantus M (2022). Quantitative Identification of Nonpolar Perfluoroalkyl Substances by Mass Spectrometry. *J Phys Chem A.* 126(47):8851-8858. PMID: 36383030.

Chipkar S, Smith K, Whelan EM, Debrauske DJ, Jen A, Overmyer KA, Senyk A, Hooker-Moericke L, Gallmeyer M, Coon JJ, Jones AD, Sato TK, Ong RG (2022). Water-soluble saponins accumulate in drought-stressed switchgrass and may inhibit yeast growth during bioethanol production. *Biotechnol Biofuels Bioprod.* 15(1):116. PMID: 36310161.

Neugebauer KA, Okros M, Guzior DV, Feiner J, Chargo NJ, Rzepka M, Schillmiller AL, O'Reilly S, Jones AD, Watson VE, Luyendyk JP, McCabe LR, Quinn RA (2022). Baat Gene Knockout Alters Post-Natal Development, the Gut Microbiome, and Reveals Unusual Bile Acids in Mice. *J Lipid Res.* 63(12):100297. PMID: 36243101.

Sadre R, Anthony TM, Grabar JM, Bedewitz MA, Jones AD, Barry CS (2022). Metabolomics-guided discovery of cytochrome P450s involved in pseudotropine-dependent biosynthesis of modified tropane alkaloids. *Nat Commun.* 13(1):3832. PMID: 35780230.

Leong BJ, Hurney S, Fiesel P, Anthony TM, Moghe G, Jones AD, Last RL (2022). Identification of BAHD acyltransferases associated with acylinositol biosynthesis in *Solanum quitoense* (naranjilla). *Plant Direct.* 6(6):e415. PMID: 35774622.

Li X, Sarma SJ, Sumner LW, Jones AD, Last RL (2022). Switchgrass Metabolomics Reveals Striking Genotypic and Developmental Differences in Specialized Metabolic Phenotypes. *J Agric Food Chem.* 70(26):8010-8023. PMID: 35729681.

Schenck CA, Anthony TM, Jacobs M, Jones AD, Last RL (2022). Natural variation meets synthetic biology: Promiscuous trichome-expressed acyltransferases from *Nicotiana*. *Plant Physiol.* 190(1):146-164. PMID: 35477794.

Eslamimehr S, Jones AD, Anthony TM, Arshad SH, Holloway JW, Ewart S, Luo R, Mukherjee N, Kheirkhah Rahimabad P, Chen S, Karmaus W (2022). Association of prenatal acetaminophen use and acetaminophen metabolites with DNA methylation of newborns: analysis of two consecutive generations of the Isle of Wight birth cohort. *Environ Epigenet.* 8(1):dvac002. PMID: 35317219.

Xue S, Pattathil S, da Costa Sousa L, Ubanwa B, Dale B, Jones AD, Balan V (2022). Understanding the structure and composition of recalcitrant oligosaccharides in hydrolysate using high-throughput biotin-based glycome profiling and mass spectrom-

etry. *Sci Rep.* 12(1):2521. PMID: 35169269.

Dong H, Sousa LDC, Ubanwa B, Jones AD, Balan V (2022). A New Method to Overcome Carboxamide Formation During AFEX Pretreatment of Lignocellulosic Biomass. *Front Chem.* 9:826625. PMID: 35127657.

Gaffney KA, Guo R, Bridges MD, Muhammednazaar S, Chen D, Kim M, Yang Z, Schillmiller AL, Faruk NF, Peng X, Jones AD, Kim KH, Sun L, Hubbell WL, Sosnick TR, Hong H (2022). Lipid bilayer induces contraction of the denatured state ensemble of a helical-bundle membrane protein. *Proc Natl Acad Sci U S A.* 119(1):e2109169119. PMID: 34969836.

Norbert E. Kaminski

Blevins LK, Bach AP, Crawford RB, Zhou J, Henriquez JE, Rizzo MD, Sermet S, Khan DMIO, Turner H, Small-Howard AL, Kaminski NE (2022). Evaluation of the anti-inflammatory effects of selected cannabinoids and terpenes from Cannabis Sativa employing human primary leukocytes. *Food Chem Toxicol.* 170:113458. PMID: 36228902.

Zhou J, Blevins LK, Crawford RB, Kaminski NE (2022). Role of Programmed Cell Death Protein-1 and Lymphocyte Specific Protein Tyrosine Kinase in the Aryl Hydrocarbon Receptor-Mediated Impairment of the IgM Response in Human CD5+ Innate-Like B Cells. *Front Immunol.* 13:884203. PMID: 35558082.

John B. Kaneene

Kakooza S, Watuwa J, Ipola PA, Munyirwa DFN, Kayaga E, Nabatta E, Mahero M, Ssajakambwe P, Kaneene JB (2022). Seromonitoring of brucellosis in goats and sheep slaughtered at an abattoir in Kampala, Uganda. *J Vet Diagn Invest.* 34(6):964-967. PMID: 36127840.

Kin Sing Lee

Matsumoto N, Singh N, Lee KS, Barnych B, Morisseau C, Hammock BD (2022). The epoxy fatty acid pathway enhances cAMP in mammalian cells through multiple mechanisms. *Prostaglandins Other Lipid Mediat.* 162:106662. PMID: 35779854.

Gina M. Leininger

Perez-Bonilla P, Ramirez-Virella J, Menon P, Troyano-Rodriguez E, Arriaga SK, Makela A, Bugescu R, Beckstead MJ, Leininger GM (2022). Developmental or adult-onset deletion of neurotensin receptor-1 from dopamine neurons differentially reduces body weight. *Front Neurosci.* 16:874316. PMID: 36213756.

Kurt G, Kodur N, Quiles CR, Reynolds C, Eagle A, Mayer T, Brown J, Makela A, Bugescu R, Seo HD, Carroll QE, Daniels D, Robison AJ, Mazei-Robison M, Leininger G (2022). Time to drink: Activating lateral hypothalamic area neurotensin neurons promotes intake of fluid over food in a time-dependent manner. *Physiol Behav.* 247:113707. PMID: 35063424.

Hui Li

Hu X, Zhang Y, Chen Z, Gao Y, Teppen B, Boyd SA, Zhang W, Tiedje JM, Li H (2022). Tetracycline accumulation in biofilms enhances the selection pressure on Escherichia coli for expression of antibiotic resistance. *Sci Total Environ.* 857(Pt 2):159441. PMID: 36252660.

Li Y, Miyani B, Zhao L, Spooner M, Gentry Z, Zou Y, Rhodes G, Li H, Kaye A, Norton J, Xagorarakis I (2022). Surveillance of SARS-CoV-2 in nine neighborhood sewersheds in Detroit Tri-County area, United States: Assessing per capita SARS-CoV-2 estimations and COVID-19 incidence. *Sci Total Environ.* 851(Pt 2):158350. PMID: 36041621.

Li Y, Sallach JB, Zhang W, Boyd SA, Li H (2022). Characterization of Plant Accumulation of Pharmaceuticals from Soils with Their Concentration in Soil Pore Water. *Environ Sci Technol.* 56(13):9346-9355. PMID: 35738923.

Chen Z, Yin L, Zhang W, Peng A, Sallach JB, Luo Y, Li H (2022). NaCl salinity enhances tetracycline bioavailability to Escherichia coli on agar surfaces. *Chemosphere.* 302:134921. PMID: 35568221.

Huang X, Wang W, Gong T, Wickell D, Kuo LY, Zhang X, Wen J, Kim H, Lu F, Zhao H, Chen S, Li H, Wu W, Yu C, Chen S, Fan W, Chen S, Bao X, Li L, Zhang D, Jiang L, Yan X, Liao Z, Zhou G, Guo Y, Ralph J, Sederoff RR, Wei H, Zhu P, Li FW, Ming R, Li Q (2022). The flying spider-monkey tree fern genome provides insights into fern evolution and

- arborescence. *Nat Plants*. 8(5):500-512. PMID: 35534720.
- Gunathilaka GU, He J, Li H, Zhang W, Ryser ET (2022). Behavior of Silver Nanoparticles in Chlorinated Lettuce Wash Water. *J Food Prot*. 85(7):1061-1068. PMID: 35512293.
- Zhu M, Tang J, Shi T, Ma X, Wang Y, Wu X, Li H, Hua R (2022). Uptake, translocation and metabolism of imidacloprid loaded within fluorescent mesoporous silica nanoparticles in tomato (*Solanum lycopersicum*). *Ecotoxicol Environ Saf*. 232:113243. PMID: 35093815.
- Wang W, Rhodes G, Zhang W, Yu X, Teppen BJ, Li H (2022). Implication of cation-bridging interaction contribution to sorption of perfluoroalkyl carboxylic acids by soils. *Chemosphere*. 290:133224. PMID: 34896418.
- Gao F, Shen Y, Brett Sallach J, Li H, Zhang W, Li Y, Liu C (2022). Predicting crop root concentration factors of organic contaminants with machine learning models. *J Hazard Mater*. 424(Pt B):127437. PMID: 34678561.
- Huang F, Chen L, Zhang C, Liu F, Li H (2022). Prioritization of antibiotic contaminants in China based on decennial national screening data and their persistence, bioaccumulation and toxicity. *Sci Total Environ*. 806(Pt 2):150636. PMID: 34592302.
- Karen T. Liby**
- Torres GM, Yang H, Park C, Spezza PA, Khatwani N, Bhandari R, Liby KT, Pioli PA (2022). T Cells and CDDO-Me Attenuate Immunosuppressive Activation of Human Melanoma-Conditioned Macrophages. *Front Immunol*. 13:768753. PMID: 35265066.
- Reich LA, Moerland JA, Leal AS, Zhang D, Carapellucci S, Lockwood B, Jurutka PW, Marshall PA, Wagner CE, Liby KT (2022). The rexinoid V-125 reduces tumor growth in preclinical models of breast and lung cancer. *Sci Rep*. 12(1):293. PMID: 34997154.
- James P. Luyendyk**
- Neugebauer KA, Okros M, Guzior DV, Feiner J, Chargo NJ, Rzepka M, Schillmiller AL, O'Reilly S, Jones AD, Watson VE, Luyendyk JP, McCabe LR, Quinn RA (2022). Baat Gene Knockout Alters Post-Natal Development, the Gut Microbiome, and Reveals Unusual Bile Acids in Mice. *J Lipid Res*. 63(12):100297. PMID: 36243101.
- Hur WS, King KC, Patel YN, Nguyen YV, Wei Z, Yang Y, Juang LJ, Leung J, Kastrup CJ, Wolberg AS, Luyendyk JP, Flick MJ (2022). Elimination of fibrin polymer formation or crosslinking, but not fibrinogen deficiency, is protective against diet-induced obesity and associated pathologies. *J Thromb Haemost*. 20(12):2873-2886. PMID: 36111375.
- Ferraresso F, Strilchuk AW, Juang LJ, Poole LG, Luyendyk JP, Kastrup CJ (2022). Comparison of DLin-MC3-DMA and ALC-0315 for siRNA Delivery to Hepatocytes and Hepatic Stellate Cells. *Mol Pharm*. 19(7):2175-2182. PMID: 35642083.
- Poole LG, Kopec AK, Flick MJ, Luyendyk JP (2022). Cross-linking by tissue transglutaminase-2 alters fibrinogen-directed macrophage proinflammatory activity. *J Thromb Haemost*. 20(5):1182-1192. PMID: 35158413.
- Juang LJ, Hur WS, Silva LM, Strilchuk AW, Francisco B, Leung J, Robertson MK, Groeneveld DJ, La Prairie B, Chun EM, Cap AP, Luyendyk JP, Palumbo JS, Cullis PR, Bugge TH, Flick MJ, Kastrup CJ (2022). Suppression of fibrin(ogen)-driven pathologies in disease models through controlled knockdown by lipid nanoparticle delivery of siRNA. *Blood*. 139(9):1302-1311. PMID: 34958662.
- Hur WS, Paul DS, Bouck EG, Negrón OA, Mwiza JM, Poole LG, Cline-Fedewa HM, Clark EG, Juang LJ, Leung J, Kastrup CJ, Ugarova TP, Wolberg AS, Luyendyk JP, Bergmeier W, Flick MJ (2022). Hypofibrinogenemia with preserved hemostasis and protection from thrombosis in mice with an Fga truncation mutation. *Blood*. 139(9):1374-1388. PMID: 34905618.
- Burra V. Madhukar**
- Omar SA, Abdul-Hafez A, Ibrahim S, Pillai N, Abdulmageed M, Thiruvengataramani RP, Mohamed T, Madhukar BV, Uhal BD (2022). Stem-Cell Therapy for Bronchopulmonary Dysplasia (BPD) in Newborns. *Cells*. 11(8):1275. PMID: 35455954.
- Linda S. Mansfield**
- St Charles JL, Brooks PT, Bell JA, Ahmed H, Van Allen M, Manning SD, Mansfield LS (2022). Zoonotic Transmission of *Campylobacter jejuni* to Caretakers From Sick Pen Calves Carrying a Mixed Population of Strains With and Without Guillain Barré Syndrome-Associated Lipooligosaccharide Loci. *Front Microbiol*. 13:800269. PMID: 35591997.
- Brudvig JM, Cluett MM, Gensterblum-Miller EU, Chen J, Bell JA, Mansfield LS (2022). Th1/Th17-mediated Immunity and Protection from Peripheral Neuropathy in Wild-type and IL10^{-/-} BALB/c Mice Infected with a Guillain-Barré Syndrome-associated *Campylobacter jejuni* Strain. *Comp Med*. 72(2):63-77. PMID: 35272743.
- Malik A, Brudvig JM, Gadsden BJ, Ethridge AD, Mansfield LS (2022). *Campylobacter jejuni* induces autoimmune peripheral neuropathy via Sialoadhesin and Interleukin-4 axes. *Gut Microbes*. 14(1):2064706. PMID: 35442154.
- Sher AA, VanAllen ME, Ahmed H, Whitehead-Tillery C, Rafique S, Bell JA, Zhang L, Mansfield LS (2022). Conjugative RP4 Plasmid-Mediated Transfer of Antibiotic Resistance Genes to Commensal and Multidrug-Resistant Enteric Bacteria In Vitro. *Microorganisms*. 11(1):193. <https://doi.org/10.3390/microorganisms11010193>.
- Michelle Mazei-Robison**
- Grubišić V, Bali V, Fried DE, Eltzschig HK, Robson SC, Mazei-Robison MS, Gulbransen BD (2022).

- Enteric glial adenosine 2B receptor signaling mediates persistent epithelial barrier dysfunction following acute DSS colitis. *Mucosal Immunol.* 15(5):964-976. PMID: 35869148.
- Kurt G, Kodur N, Quiles CR, Reynolds C, Eagle A, Mayer T, Brown J, Makela A, Bugescu R, Seo HD, Carroll QE, Daniels D, Robison AJ, Mazei-Robison M, Leininger G (2022). Time to drink: Activating lateral hypothalamic area neurotensin neurons promotes intake of fluid over food in a time-dependent manner. *Physiol Behav.* 247:113707. PMID: 35063424.
- Williams ES, Mazei-Robison M, Robison AJ (2022). Sex Differences in Major Depressive Disorder (MDD) and Preclinical Animal Models for the Study of Depression. *Cold Spring Harb Perspect Biol.* 14(3):a039198. PMID: 34404738.
- Laura R. McCabe**
- Heine LK, Benninghoff AD, Ross EA, Rajasinghe LD, Wagner JG, Lewandowski RP, Richardson AL, Li QZ, Buchweitz JP, Zyskowski J, Tindle AN, Skedel AE, Chargo NJ, McCabe LR, Harkema JR, Pestka JJ (2022). Comparative effects of human-equivalent low, moderate, and high dose oral prednisone intake on autoimmunity and glucocorticoid-related toxicity in a murine model of environmental-triggered lupus. *Front Immunol.* 13:972108. PMID: 36341330.
- Neugebauer KA, Okros M, Guzior DV, Feiner J, Chargo NJ, Rzepka M, Schillmiller AL, O'Reilly S, Jones AD, Watson VE, Luyendyk JP, McCabe LR, Quinn RA (2022). Baat Gene Knockout Alters Post-Natal Development, the Gut Microbiome, and Reveals Unusual Bile Acids in Mice. *J Lipid Res.* 63(12):100297. PMID: 36243101.
- Quinn MA, Pritchard AE, Visker JR, McPeck AC, Raghuvanshi R, Martin H C, Wellette-Hunsucker AG, Leszczynski EC, McCabe LR, Pfeiffer KA, Quinn RA, Ferguson DP (2022). Longitudinal effects of growth restriction on the murine gut microbiome and metabolome. *Am J Physiol Endocrinol Metab.* 323(2):E159-E170. PMID: 35658543.
- Ilce G. Medina Meza**
- Maldonado-Pereira L, Barnaba C, Medina-Meza IG (2022). Dietary exposure assessment of infant formula and baby foods' oxidized lipids in the US population. *Food Chem Toxicol.* 172:113552. PMID: 36502995.
- Maldonado-Pereira L, Barnaba C, de Los Campos G, Medina-Meza IG (2022). Evaluation of the nutritional quality of ultra-processed foods (ready to eat + fast food): Fatty acids, sugar, and sodium. *J Food Sci.* 87(8):3659-3676. PMID: 35781710.
- Cheryl A. Murphy**
- Sample BE, Johnson MS, Hull RN, Kapustka L, Landis WG, Murphy CA, Sorensen M, Mann G, Gust KA, Mayfield DB, Ludwigs JD, Munns WR Jr (2022). Key challenges and developments in wildlife ecological risk assessment: Problem formulation. *Integr Environ Assess Manag.* PMID: 36325881.
- Albers JL, Steibel JP, Klingler RH, Ivan LN, Garcia-Reyero N, Carvan MJ, Murphy CA (2022). Altered Larval Yellow Perch Swimming Behavior Due to Methylmercury and PCB126 Detected Using Hidden Markov Chain Models. *Environ Sci Technol.* 56(6):3514-3523. PMID: 35201763.
- Firkus TJ, Goetz FW, Fischer G, Murphy CA (2022). The Influence of Life History on the Response to Parasitism: Differential Response to Non-Lethal Sea Lamprey Parasitism by Two Lake Charr Ecomorphs. *Integr Comp Biol.* 62(1):104-120. PMID: 35026028.
- Bogdan P, Caetano-Anollés G, Jolles A, Kim H, Morris J, Murphy CA, Royer C, Snell EH, Steinbrenner A, Strausfeld N (2022). Biological Networks across Scales-The Theoretical and Empirical Foundations for Time-Varying Complex Networks that Connect Structure and Function across Levels of Biological Organization. *Integr Comp Biol.* 61(6):1991-2010. PMID: 34021749.
- Rance Nault**
- Nault R, Saha S, Bhattacharya S, Sinha S, Maiti T, Zacharewski T (2022). Single cell transcriptomics shows dose-dependent disruption of hepatic zonation by TCDD in mice. *Toxicol Sci.* kfac109. PMID: 36222588.
- Orlowska K, Fling RR, Nault R, Sink WJ, Schillmiller AL, Zacharewski T (2022). Dioxin-elicited decrease in cobalamin redirects propionyl-CoA metabolism to the β -oxidation-like pathway resulting in acrylyl-CoA conjugate buildup. *J Biol Chem.* 298(9):102301. PMID: 35931118.
- Cholico GN, Nault R, Zacharewski TR (2022). Genome-Wide ChIPseq Analysis of AhR, COUP-TF, and HNF4 Enrichment in TCDD-Treated Mouse Liver. *Int J Mol Sci.* 23(3):1558. PMID: 35163483.
- Nault R, Saha S, Bhattacharya S, Dodson J, Sinha S, Maiti T, Zacharewski T (2022). Benchmarking of a Bayesian single cell RNAseq differential gene expression test for dose-response study designs. *Nucleic Acids Res.* 50(8):e48. PMID: 35061903.
- Nigel S. Paneth**
- Paneth NS, Joyner MJ, Casadevall A (2022). The fossilization of randomized clinical trials. *J Clin Invest.* 132(4):e158499. PMID: 35166241.
- Sullivan DJ, Focosi D, Hanley D, Cruciani M, Franchini M, Ou J, Casadevall A, Paneth N (2022). Outpatient regimens to reduce COVID-19 hospitalizations: a systematic review and meta-analysis of randomized controlled trials. *medRxiv [Preprint]*. PMID: 35665014.
- Paneth N, Joyner MJ, Casadevall A (2022). Finding evidence for treatment decisions in a pandemic. *Trends Mol Med.* 28(7):536-541. PMID: 35527116.
- Paneth N, Joyner MJ, Casadevall A (2022). Filling in the Spaces in Cardio-

- vascular Epidemiology. *Epidemiology*. 33(1):34-36. PMID: 34799481.
- Senefeld JW, Paneth NS, Carter RE, Wright RS, Fairweather D, Bruno KA, Joyner MJ (2022). Late Treatment for COVID-19 With Convalescent Plasma. *Chest*. 162(5):e283-e284. PMID: 36344142.
- Focosi D, Franchini M, Pirofski LA, Burnouf T, Paneth N, Joyner MJ, Casadevall A (2022). COVID-19 Convalescent Plasma and Clinical Trials: Understanding Conflicting Outcomes. *Clin Microbiol Rev*. 35(3):e0020021. PMID: 35262370.
- Paneth N, Yeargin-Allsopp M (2022). Thinking about differences in the worldwide prevalence of cerebral palsy. *Dev Med Child Neurol*. 64(12):1436-1437. PMID: 35899854.
- Paneth N, Casadevall A, Pirofski LA, Henderson JP, Grossman BJ, Shoham S, Joyner MJ (2022). WHO covid-19 drugs guideline: reconsider using convalescent plasma. *BMJ*. 376:o295. PMID: 35135758.
- Manandhar J, Brooks K, Samms-Vaughan M, Paneth N (2022). ***ECD*** maternal C-reactive protein as a predictor of neonatal sepsis. *Psychol Health Med*. 1-8. PMID: 35067122.
- Joyner MJ, Paneth NS, Senefeld JW, Fairweather D, Bruno KA, Wright RS, Carter RE, Casadevall A (2022). Concerns about estimating relative risk of death associated with convalescent plasma for COVID-19. *Nat Med*. 28(1):51-52. PMID: 35013614.
- Brennan PA, Dunlop AL, Croen LA, Avalos LA, Salisbury AL, Hipwell AE, Nozadi SS, Sathyanarayana S, Crum RM, Musci R, Li M, Li X, Mansolf M, O'Connor TG, Elliott AJ, Ghildayal N, Lin PD, Sprowles JLN, Stanford JB, Bendixsen C, Ozonoff S, Lester BM, Shuster CL, Huddleston KC, Posner J, Paneth N (2022). Prenatal Antidepressant Exposures and Autism Spectrum Disorder or Traits: A Retrospective, Multi-Cohort Study. *Res Child Adolesc Psychopathol*. PMID: 36417100.
- Romano ME, Buckley JP, Elliott AJ, Johnson CC, Paneth N (2022); program collaborators for Environmental influences on Child Health Outcomes. SPR Perspectives: scientific opportunities in the Environmental influences on Child Health Outcomes Program. *Pediatr Res*. 92(5):1255-1261. PMID: 34035428.
- Ma T, Bu S, Paneth N, Kerver JM, Comstock SS (2022). Vitamin D Supplementation in Exclusively Breastfed Infants Is Associated with Alterations in the Fecal Microbiome. *Nutrients*. 14(1):202. PMID: 35011077.
- Joyner MJ, Paneth N (2022). Commentary on "Outcomes of Convalescent Plasma with Defined High versus Lower Neutralizing Antibody Titers against SARS-CoV-2 among Hospitalized Patients: CoronaVirus Inactivating Plasma (CoVIP) Study". *mBio*. 13(6):e0265322. PMID: 36314790.
- Wajid A, Todem D, Schleiss MR, Colombo DF, Paneth NS (2022). Gestational Antibodies to *C. pneumoniae*, *H. pylori* and CMV in Women with Pre-eclampsia and in Matched Controls. *Matern Child Health J*. 26(10):2040-2049. PMID: 35932403.
- Dunlop AL, Essalmi AG, Avalos L, Breton C, Camargo CA, Cowell WJ, Dabelea D, Dager SR, Duarte C, Elliott A, Fichorova R, Gern J, Hedderson MM, Thepaksorn EH, Huddleston K, Karagas MR, Kleinman K, Leve L, Li X, Li Y, Litonjua A, Ludena-Rodriguez Y, Madan JC, Nino JM, McEvoy C, O'Connor TG, Padula AM, Paneth N, Perera F, Sathyanarayana S, Schmidt RJ, Schultz RT, Snowden J, Stanford JB, Trasande L, Volk HE, Wheaton W, Wright RJ, McGrath M; program collaborators for Environmental Influences on Child Health Outcomes (2022). Correction: Racial and geographic variation in effects of maternal education and neighborhood-level measures of socioeconomic status on gestational age at birth: Findings from the ECHO cohorts. *PLoS One*. 17(5):e0268423. Erratum for: *PLoS One*. 16(1):e0245064. PMID: 35522645.
- Ma T, Wiggins CC, Kornatowski BM, Hailat RS, Clayburn AJ, Guo WL, Johnson PW, Senefeld JW, Klassen SA, Baker SE, Bruno KA, Fairweather D, Wright RS, Carter RE, Li C, Joyner MJ, Paneth NS (2022). The Role of Disease Severity and Demographics in the Clinical Course of COVID-19 Patients Treated With Convalescent Plasma. *Front Med (Lausanne)*. 8:707895. PMID: 35155458.

James J. Pestka

Wierenga KA, Riemers FM, Westendorp B, Harkema JR, Pestka JJ (2022). Single cell analysis of docosahexaenoic acid suppression of sequential LPS-induced proinflammatory and interferon-regulated gene expression in the macrophage. *Front Immunol.* 13:993614. PMID: 36405730.

Heine LK, Benninghoff AD, Ross EA, Rajasinghe LD, Wagner JG, Lewandowski RP, Richardson AL, Li QZ, Buchweitz JP, Zyskowski J, Tindle AN, Skedel AE, Chargo NJ, McCabe LR, Harkema JR, Pestka JJ (2022). Comparative effects of human-equivalent low, moderate, and high dose oral prednisone intake on autoimmunity and glucocorticoid-related toxicity in a murine model of environmental-triggered lupus. *Front Immunol.* 13:972108. PMID: 36341330.

Thomas ST, Wierenga KA, Pestka JJ, Olive AJ (2022). Fetal Liver-Derived Alveolar-like Macrophages: A Self-Replicating Ex Vivo Model of Alveolar Macrophages for Functional Genetic Studies. *Immunohorizons.* 6(2):156-169. PMID: 35193942.

Rajasinghe LD, Bates MA, Benninghoff AD, Wierenga KA, Harkema JR, Pestka JJ (2022). Silica Induction of Diverse Inflammatory Proteome in Lungs of Lupus-Prone Mice Quelled by Dietary Docosahexaenoic Acid Supplementation. *Front Immunol.* 12:781446. PMID: 35126352.

Fletcher P, Hamilton RF Jr, Rhoderick JF, Postma B, Buford M, Pestka JJ,

Holian A (2022). Dietary Docosahexaenoic Acid as a Potential Treatment for Semi-acute and Chronic Particle-Induced Pulmonary Inflammation in Balb/c Mice. *Inflammation.* 45(2):677-694. PMID: 34655011.

Brian K. Petroff

Jones C, Jablonski SA, Petroff BK, Langlois DK (2022). Relationship between serum magnesium, calcium, and parathyroid concentrations in dogs with abnormally low serum 25-hydroxyvitamin D concentration and chronic or protein-losing enteropathy. *J Vet Intern Med.* PMID: 36426911.

A.J. Robison

Fulton SL, Wenderski W, Lepack AE, Eagle AL, Fanutza T, Bastle RM, Ramakrishnan A, Hays EC, Neal A, Bendl J, Farrelly LA, Al-Kachak A, Lyu Y, Cetin B, Chan JC, Tran TN, Neve RL, Roper RJ, Brennand KJ, Roussos P, Schimenti JC, Friedman AK, Shen L, Blitzler RD, Robison AJ, Crabtree GR, Maze I (2022). Rescue of deficits by Brwd1 copy number restoration in the Ts65Dn mouse model of Down syndrome. *Nat Commun.* 13(1):6384. PMID: 36289231.

Kumar A, Aglyamova G, Yim YY, Bailey AO, Lynch HM, Powell RT, Nguyen ND, Rosenthal Z, Zhao WN, Li Y, Chen J, Fan S, Lee H, Russell WK, Stephan C, Robison AJ, Haggarty SJ, Nestler EJ, Zhou J, Machius M, Rudenko G (2022). Chemically targeting the redox switch in API transcription factor ΔFOSB. *Nucleic Acids Res.* 50(16):9548-9567.

PMID: 36039764.

Duque-Wilckens N, Teis R, Sarno E, Stoelting F, Khalid S, Dairi Z, Douma A, Maradiaga N, Hench S, Dharshika CD, Thelen KM, Gulbransen B, Robison AJ, Moeser AJ (2022). Early life adversity drives sex-specific anhedonia and meningeal immune gene expression through mast cell activation. *Brain Behav Immun.* 103:73-84. PMID: 35339629.

Feng H, Gao K, Chen D, Shen L, Robison AJ, Ellsworth E, Wei GW (2022). Machine Learning Analysis of Cocaine Addiction Informed by DAT, SERT, and NET-Based Interactome Networks. *J Chem Theory Comput.* 18(4):2703-2719. PMID: 35294204.

Gao Y, Duque-Wilckens N, Aljazi MB, Moeser AJ, Mias GI, Robison AJ, Zhang Y, He J (2022). Impaired KDM2B-mediated PRC1 recruitment to chromatin causes defective neural stem cell self-renewal and ASD/ID-like behaviors. *iScience.* 25(2):103742. PMID: 35128353.

Liu J, Wu R, Seaman R Jr, Manz KM, Johnson B, Vu J, Huang Y, Zhang Y, Robison AJ, Neve R, Grueter BA, Dietz D, Li JX (2022). TAAR1 regulates drug-induced reinstatement of cocaine-seeking via negatively modulating CaMKIIα activity in the NAC. *Mol Psychiatry.* 27(4):2136-2145. PMID: 35079125.

Kurt G, Kodur N, Quiles CR, Reynolds C, Eagle A, Mayer T, Brown J, Makela A, Bugescu R, Seo HD, Carroll QE, Daniels D, Robison AJ, Mazei-Robison

- M, Leininger G (2022). Time to drink: Activating lateral hypothalamic area neurotensin neurons promotes intake of fluid over food in a time-dependent manner. *Physiol Behav.* 247:113707. PMID: 35063424.
- Robison AJ, Nestler EJ (2022). ΔFOSB: A Potentially Druggable Master Orchestrator of Activity-Dependent Gene Expression. *ACS Chem Neurosci.* 13(3):296-307. PMID: 35020364.
- Williams ES, Mazei-Robison M, Robison AJ (2022). Sex Differences in Major Depressive Disorder (MDD) and Preclinical Animal Models for the Study of Depression. *Cold Spring Harb Perspect Biol.* 14(3):a039198. PMID: 34404738.
- Cheryl E. Rockwell**
- Freeborn RA, Boss AP, Kaiser LM, Gardner EM, Rockwell CE (2022). Trivalent arsenic impairs the effector response of human CD4+ and CD8+ T cells to influenza A virus ex vivo. *Food Chem Toxicol.* 165:113122. PMID: 35580760.
- Rockwell CE, Jin Y, Boss AP, Kaiser LM, Awali S (2022). The Complicated Role of Nuclear Factor Erythroid-Derived 2-Like 2 in Allergy and Asthma. *Drug Metab Dispos.* 50(4):500-507. PMID: 34930784.
- Kenneth D. Rosenman**
- Reilly MJ, Wang L, Rosenman KD (2022). Evaluation of the characteristics of workers injured on the job requiring hospitalization, and employer compliance with OSHA's reporting requirement for these work-related hospitalizations. *Am J Ind Med.* PMID: 36433717.
- Rosenman KD, Wang L (2022). Opioid prescriptions for individuals receiving workers' compensation in Michigan. *PLoS One.* 17(8):e0272385. PMID: 35944052.
- Kirkland KH, Rosenman KD (2022). Association of occupational and environmental clinics exposure code system and criteria for substances that cause work-related asthma. *Occup Environ Med.* 79(4):287-288. PMID: 35177429.
- Oliveri AN, Fagerstrom LA, Wang L, Rosenman KD (2022). A County-Level Program for the Evaluation of the Potential for Take-Home Lead Exposures Among Children in Michigan. *Public Health Rep.* 137(6):1153-1161. PMID: 34918567.
- TenHarmsel H, Wang L, Rosenman KD (2022). Evaluation of Silicosis, Asthma, and COPD Among Sand and Gravel and Stone Surface Mine Workers. *J Occup Environ Med.* 64(3):263-270. PMID: 34723913.
- Crooks J, Mroz MM, Vandyke M, McGrath A, Schuler C, McCanlies EC, Virji MA, Rosenman KD, Rossmann M, Rice C, Monos D, Fingerlin TE, Maier LA (2022). HLA-DPBI E69 genotype and exposure in beryllium sensitisation and disease. *Occup Environ Med.* 79(2):120-126. PMID: 34535537.
- Robert A. Roth**
- Roth RA, Kana O, Filipovic D, Ganey PE (2022). Pharmacokinetic and toxicodynamic concepts in idiosyncratic, drug-induced liver injury. *Expert Opin Drug Metab Toxicol.* 18(7-8):469-481. PMID: 36003040.
- Rita S. Strakovsky**
- Cinzori ME, Strakovsky RS (2022). Effects of Elevated Maternal Adiposity on Offspring Reproductive Health: A Perspective From Epidemiologic Studies. *J Endocr Soc.* 7(1):bvac163. PMID: 36438545.
- Iizuka T, Yin P, Zuberi A, Kujawa S, Coon JS 5th, Björvang RD, Damdimopoulou P, Pacyga DC, Strakovsky RS, Flaws JA, Bulun SE (2022). Mono-(2-ethyl-5-hydroxyhexyl) phthalate promotes uterine leiomyoma cell survival through tryptophan-kynurenine-AHR pathway activation. *Proc Natl Acad Sci U S A.* 119(47):e2208886119. PMID: 36375056.
- Babadi RS, Williams PL, Li Z, Smith RL, Strakovsky RS, Hauser R, Flaws JA, James-Todd T (2022). Urinary phthalate metabolite concentrations and hot flash outcomes: Longitudinal associations in the Midlife Women's Health Study. *Environ Res.* 216(Pt 2):114576. PMID: 36252832.
- Pacyga DC, Patti MA, Papanandonatos GD, Haggerty DK, Calafat AM, Gardiner JC, Braun JM, Schantz SL, Strakovsky RS (2022). Associations of individual and cumulative urinary phthalate and replacement biomarkers with gestational weight gain through late pregnancy. *Sci Total Environ.* 855:158788. PMID: 36116648.
- Pacyga DC, Talge NM, Gardiner JC, Calafat AM, Schantz SL, Strakovsky RS (2022). Maternal diet quality moderates associations between parabens and birth outcomes. *Environ Res.* 214(Pt 3):114078. PMID: 35964672.
- Ryva BA, Haggerty DK, Pacyga DC, James-Todd T, Li Z, Flaws JA, Strakovsky RS (2022). Determinants of urinary phthalate biomarker concentrations in pre- and perimenopausal women with consideration of race. *Environ Res.* 214(Pt 3):114056. PMID: 35952743.
- Kloboves ME, Pacyga DC, Gardiner JC, Flaws JA, Schantz SL, Strakovsky RS (2022). Associations of maternal anthropometrics with newborn anogenital distance and the 2:4 digit ratio. *Hum Reprod.* 37(9):2154-2166. PMID: 35802047.
- Pacyga DC, Chiang C, Li Z, Strakovsky RS, ZivGal A (2022). Parabens and Menopause-Related Health Outcomes in Midlife Women: A Pilot Study. *J Womens Health (Larchmt).* 31(11):1645-1654. PMID: 35787012.
- Pacyga DC, Ryva BA, Nowak RA, Bulun SE, Yin P, Li Z, Flaws JA, Strakovsky RS (2022). Midlife Urinary Phthalate Metabolite Concentrations and Prior Uterine Fibroid Diagnosis. *Int J Environ Res Public Health.* 19(5):2741. PMID: 35270433.
- Pacyga DC, Haggerty DK, Nicol M, Henning M, Calafat AM, Braun JM, Schantz SL, Strakovsky RS (2022). Identification of profiles and determinants of maternal pregnancy urinary biomarkers of

phthalates and replacements in the Illinois Kids Development Study. *Environ Int.* 162:107150. PMID: 35247685.

Greg M. Swain

Henderson S, Bhardwaj K, Perugachi V, Espinoza-Montero P, Galligan JJ, Swain GM (2022). In Vitro Monitoring of Nitric Oxide Release in the Mouse Colon Using a Boron-Doped Diamond Microelectrode Modified with Platinum Nanoparticles and Nafion. *Anal Chem.* PMID: 36524968.

France M, Galligan JJ, Swain GM (2022). In vitro electrochemical measurement of serotonin release in the human jejunum mucosa using a diamond microelectrode. *Analyst.* 147(11):2523-2532. PMID: 35543208.

Brian J. Teppen

Wang W, Rhodes G, Zhang W, Yu X, Teppen BJ, Li H (2022). Implication of cation-bridging interaction contribution to sorption of perfluoroalkyl carboxylic acids by soils. *Chemosphere.* 290:133224. PMID: 34896418.

Neera Tewari-Singh

Goswami DG, Mishra N, Kant R, Agarwal C, Ammar DA, Petrash JM, Tewari-Singh N, Agarwal R (2022). Effect of dexamethasone treatment at variable therapeutic windows in reversing nitrogen mustard-induced corneal injuries in rabbit ocular in vivo model. *Toxicol Appl Pharmacol.* 437:115904. PMID: 35108561.

Cruz-Hernandez A, Roney A, Goswami DG, Tewari-

Singh N, Brown JM (2022). A review of chemical warfare agents linked to respiratory and neurological effects experienced in Gulf War Illness. *Inhal Toxicol.* 34(13-14):412-432. PMID: 36394251.

Dwivedi S, Tewari Singh N, Masih J, Taushiba A, Lawrence A (2022). Evaluation of sub-micron particles and PAHs on residents during winter season in Indoor air of Northern India: comprehensive impact of regional appearances. *Journal of Hazardous Materials Advances.* Volume 8. <https://doi.org/10.1016/j.hazadv.2022.100195>.

James M. Tiedje

Lee M, Yoo K, Kim H, Song KG, Kim D, Tiedje JM, Lee PH, Park J (2022). Metatranscriptional characterization of metabolic dynamics in anaerobic membrane bioreactor producing methane from low-strength wastewater. *Bioresour Technol.* 370:128532. PMID: 36574886.

Xiang L, Harindintwali JD, Wang F, Redmile-Gordon M, Chang SX, Fu Y, He C, Muhoza B, Brahushi F, Bolan N, Jiang X, Ok YS, Rinklebe J, Schaeffer A, Zhu YG, Tiedje JM, Xing B (2022). Integrating Biochar, Bacteria, and Plants for Sustainable Remediation of Soils Contaminated with Organic Pollutants. *Environ Sci Technol.* 56(23):16546-16566. PMID: 36301703.

Hu X, Zhang Y, Chen Z, Gao Y, Teppen B, Boyd SA, Zhang W, Tiedje JM, Li H (2022). Tetracycline accumulation in biofilms enhances the selection pressure on *Escherichia*

coli for expression of antibiotic resistance. *Sci Total Environ.* 857(Pt 2):159441. PMID: 36252660.

Zhao J, Jin L, Wu D, Xie JW, Li J, Fu XW, Cong ZY, Fu PQ, Zhang Y, Luo XS, Feng XB, Zhang G, Tiedje JM, Li XD (2022). Global airborne bacterial community-interactions with Earth's microbiomes and anthropogenic activities. *Proc Natl Acad Sci U S A.* 119(42):e2204465119. PMID: 36215495.

Neri U, Wolf YI, Roux S, Camargo AP, Lee B, Kazlauskas D, Chen IM, Ivanova N, Zeigler Allen L, Paez-Espino D, Bryant DA, Bhaya D; RNA Virus Discovery Consortium, Krupovic M, Dolja VV, Kyrpides NC, Koonin EV, Gophna U (2022). Expansion of the global RNA virome reveals diverse clades of bacteriophages. *Cell.* 185(21):4023-4037.e18. PMID: 36174579.

Muurinen J, Muziasari WI, Hultman J, Pärnänen K, Narita V, Lyra C, Fadlillah LN, Rizki LP, Nurmi W, Tiedje JM, Dwiprahasto I, Hadi P, Virta MPJ (2022). Antibiotic Resistomes and Microbiomes in the Surface Water along the Code River in Indonesia Reflect Drainage Basin Anthropogenic Activities. *Environ Sci Technol.* 56(21):14994-15006. PMID: 35775832.

Wu L, Zhang Y, Guo X, Ning D, Zhou X, Feng J, Yuan MM, Liu S, Guo J, Gao Z, Ma J, Kuang J, Jian S, Han S, Yang Z, Ouyang Y, Fu Y, Xiao N, Liu X, Wu L, Zhou A, Yang Y, Tiedje JM, Zhou J (2022). Reduction of microbial diversity in grassland soil is driven by long-term climate warming. *Nat Microbiol.*

7(7):1054-1062. PMID: 35697795.

Tiedje JM, Bruns MA, Casadevall A, Criddle CS, Eloë-Fadrosch E, Karl DM, Nguyen NK, Zhou J (2022). *Microbes and Climate Change: a Research Prospectus for the Future.* *mBio.* 13(3):e0080022. PMID: 35438534.

Wu L, Yang F, Feng J, Tao X, Qi Q, Wang C, Schuur EAG, Bracho R, Huang Y, Cole JR, Tiedje JM, Zhou J (2022). Permafrost thaw with warming reduces microbial metabolic capacities in subsurface soils. *Mol Ecol.* 31(5):1403-1415. PMID: 34878672.

Fu Y, Wang F, Wang Z, Mei Z, Jiang X, Schäffer A, Virta M, Tiedje JM (2022). Application of magnetic biochar/quaternary phosphonium salt to combat the antibiotic resistome in livestock wastewater. *Sci Total Environ.* 811:151386. PMID: 34742956.

Amarasekara NR, Mafiz, Qian X, Tiedje JM, Hao W, Zhang Y (2022). Exploring the co-occurrence of antibiotic, metal, and biocide resistance genes in the urban agricultural environment. *J Food Agric Res.* 11 (2023) 100474. <https://doi.org/10.1016/j.jafr.2022.100474>.

Bruce D. Uhal

Redwan EM, Elrashdy F, Aljabali AAA, Baetas-da-Cruz W, Barh D, Brufsky AM, Hassan SS, Lundstrom K, Serrano-Aroca Á, Takayama K, Tambuwala MM, Uhal BD, Uversky VN (2022). Would New SARS-CoV-2 Variants Change the War against COVID-19? *Epidemiologia (Basel).* 3(2):229-237. PMID: 36417254.

- Hassan SS, Kodakandla V, Redwan EM, Lundstrom K, Choudhury PP, Serrano-Aroca Á, Azad GK, Aljabali AAA, Palu G, Abd El-Aziz TM, Barh D, Uhal BD, Adadi P, Takayama K, Bazan NG, Tambuwala M, Sherchan SP, Lal A, Chauhan G, Baetas-da-Cruz W, Uversky VN (2022). Non-uniform aspects of the SARS-CoV-2 intraspecies evolution reopen question of its origin. *Int J Biol Macromol.* 222(Pt A):972-993. PMID: 36174872.
- Chavda VP, Patel AB, Vora LK, Apostolopoulos V, Uhal BD (2022). Dendritic cell-based vaccine: the state-of-the-art vaccine platform for COVID-19 management. *Expert Rev Vaccines.* 21(10):1395-1403. PMID: 35929957.
- Omar SA, Abdul-Hafez A, Ibrahim S, Pillai N, Abduldumageed M, Thiruvengkaramani RP, Mohamed T, Madhukar BV, Uhal BD (2022). Stem-Cell Therapy for Bronchopulmonary Dysplasia (BPD) in Newborns. *Cells.* 11(8):1275. PMID: 35455954.
- Hassan SS, Choudhury PP, Dayhoff GW 2nd, Aljabali AAA, Uhal BD, Lundstrom K, Rezaei N, Pizzol D, Adadi P, Lal A, Soares A, Mohamed Abd El-Aziz T, Brufsky AM, Azad GK, Sherchan SP, Baetas-da-Cruz W, Takayama K, Serrano-Aroca Á, Chauhan G, Palu G, Mishra YK, Barh D, Santana Silva RJ, Andrade BS, Azevedo V, Góes-Neto A, Bazan NG, Redwan EM, Tambuwala M, Uversky VN (2022). The importance of accessory protein variants in the pathogenicity of SARS-CoV-2. *Arch Biochem Biophys.* 717:109124. PMID: 35085577.
- Hassan SS, Basu P, Redwan EM, Lundstrom K, Choudhury PP, Serrano-Aroca Á, Azad GK, Aljabali AAA, Palu G, Abd El-Aziz TM, Barh D, Uhal BD, Adadi P, Takayama K, Bazan NG, Tambuwala MM, Lal A, Chauhan G, Baetas-da-Cruz W, Sherchan SP, Uversky VN (2022). Periodically aperiodic pattern of SARS-CoV-2 mutations underpins the uncertainty of its origin and evolution. *Environ Res.* 204(Pt B):112092. PMID: 34562480.
- Brad L. Upham**
Bauer AK, Siegrist KJ, Wolff M, Nield L, Brüning T, Upham BL, Käfferlein HU, Plöttner S (2022). The Carcinogenic Properties of Overlooked yet Prevalent Polycyclic Aromatic Hydrocarbons in Human Lung Epithelial Cells. *Toxics.* 10(1):28. PMID: 35051070.
- James G. Wagner**
Heine LK, Benninghoff AD, Ross EA, Rajasinghe LD, Wagner JG, Lewandowski RP, Richardson AL, Li QZ, Buchweitz JP, Zyskowski J, Tindle AN, Skedel AE, Chargo NJ, McCabe LR, Harkema JR, Pestka JJ (2022). Comparative effects of human-equivalent low, moderate, and high dose oral prednisone intake on autoimmunity and glucocorticoid-related toxicity in a murine model of environmental-triggered lupus. *Front Immunol.* 13:972108. PMID: 36341330.
- Li N, Lewandowski RP, Sidhu D, Holz C, Jackson-Humbles D, Eiguren-Fernandez A, Akbari P, Cho AK, Harkema JR, Froines JR, Wagner JG (2022). Combined adjuvant effects of ambient vapor-phase organic components and particulate matter potently promote allergic sensitization and Th2-skewing cytokine and chemokine milieu in mice: The importance of mechanistic multi-pollutant research. *Toxicol Lett.* 356:21-32. PMID: 34863859.
- Felicia Wu**
Wu F (2022). Mycotoxin risks are lower in biotech corn. *Curr Opin Biotechnol.* 78:102792. PMID: 36088737.
- Chen C, Patil CL, Mduma ER, Groopman JD, Riley RT, Wu F (2022). Mycotoxins were not associated with environmental enteropathy in a cohort of Tanzanian children. *Risk Anal.* PMID: 35618664.
- Saha Turna N, Havelaar A, Adesogan A, Wu F (2022). Aflatoxin M1 in milk does not contribute substantially to global liver cancer incidence. *Am J Clin Nutr.* 115(6):1473-1480. PMID: 35470382.
- Saha Turna N, Wu F (2022). Estimation of Tolerable Daily Intake (TDI) for Immunological Effects of Aflatoxin. *Risk Anal.* 42(3):431-438. PMID: 34147038.
- Wu F (2022). Fixing Food: An FDA Insider Unravels the Myths and the Solutions. *Risk Analysis* 42:425-7.
- Wei Zhang**
Hu X, Zhang Y, Chen Z, Gao Y, Teppen B, Boyd SA, Zhang W, Tiedje JM, Li H (2022). Tetracycline accumulation in biofilms enhances the selection pressure on *Escherichia*

- coli for expression of antibiotic resistance. *Sci Total Environ.* 857(Pt 2):159441. PMID: 36252660.
- Jia D, Zhang R, Shao J, Zhang W, Cai L, Sun W (2022). Exposure to trace levels of metals and fluoroquinolones increases inflammation and tumorigenesis risk of zebrafish embryos. *Environ Sci Ecotechnol.* 10:100162. PMID: 36159734.
- Ling W, Ma B, Zhang W (2022). Editorial: Rhizosphere microbiology: Toward a clean and healthy soil environment. *Front Microbiol.* 13:991356. PMID: 35983335.
- Li Y, Sallach JB, Zhang W, Boyd SA, Li H (2022). Characterization of Plant Accumulation of Pharmaceuticals from Soils with Their Concentration in Soil Pore Water. *Environ Sci Technol.* 56(13):9346-9355. PMID: 35738923.
- Shen Y, Zhao E, Zhang W, Baccarelli AA, Gao F (2022). Predicting pesticide dissipation half-life intervals in plants with machine learning models. *J Hazard Mater.* 436:129177. PMID: 35643003.
- Chen Z, Yin L, Zhang W, Peng A, Sallach JB, Luo Y, Li H (2022). NaCl salinity enhances tetracycline bioavailability to *Escherichia coli* on agar surfaces. *Chemosphere.* 302:134921. PMID: 35568221.
- Gunathilaka GU, He J, Li H, Zhang W, Ryser ET (2022). Behavior of Silver Nanoparticles in Chlorinated Lettuce Wash Water. *J Food Prot.* 85(7):1061-1068. PMID: 35512293.
- Gao F, Zhang W, Baccarelli AA, Shen Y (2022). Predicting chemical ecotoxicity by learning latent space chemical representations. *Environ Int.* 163:107224. PMID: 35395577.
- Wang W, Rhodes G, Zhang W, Yu X, Teppen BJ, Li H (2022). Implication of cation-bridging interaction contribution to sorption of perfluoroalkyl carboxylic acids by soils. *Chemosphere.* 290:133224. PMID: 34896418.
- Gao F, Shen Y, Brett Sallach J, Li H, Zhang W, Li Y, Liu C (2022). Predicting crop root concentration factors of organic contaminants with machine learning models. *J Hazard Mater.* 424(Pt B):127437. PMID: 34678561.
- He J, Zhang L, He SY, Ryser ET, Li H, Zhang W (2022). Stomata facilitate foliar sorption of silver nanoparticles by *Arabidopsis thaliana*. *Environ Pollut.* 292(Pt B):118448. PMID: 34728324.
- Cheng P, Zhang W, Zhao X, Yang B, Gao U (2022). Nano-goethite-mediated transformation of anthracene derivatives under low moisture conditions. *Environmental Science: Nano*, 9, 289-301.



FACULTY PROFESSIONAL SERVICE

The affiliated faculty of the IIT participate in many external activities that promote the development of research and science in their chosen field. These activities include editorial boards, review groups or study sections, scientific advisory boards and committees, and officers in scientific societies. The professional service activities below are for the calendar year of 2022.

Bernard, Jamie

- » Councilor, Carcinogenesis Specialty Section, Society of Toxicology
- » Future Tox VI Organizing Committee, Society of Toxicology

Bhattacharya, Sudin

- » Editorial Board member, Scientific Reports
- » Ad hoc grant reviewer: CDC Special Emphasis Panel, National Science Foundation, Swiss National Science Foundation

Bourquin, Leslie

- » Chair, NSF International Global Food Safety Advisory Council
- » Technical Advisory Network Member, Food Safety Preventive Controls Alliance
- » Editorial Board, Foods Journal

Buchweitz, John

- » Executive Committee Board Member, American Board of Toxicology

Bursian, Steven

- » Member, Health Advisory Board of NSF International

Burgoon, Lyle

- » Vice President-Elect, Ethical, Legal, Forensic, Social Implications Specialty Section, SOT
- » Associate Editor, Frontiers in Genetics
- » Associate Editor, Frontiers in Toxicology

Carignan, Courtney

- » Chair, Mentoring Committee for the International Society of Exposure Science
- » Organizing Committee, Third National Conference on Per- and Polyfluoroalkyl Substances
- » Scientific Advisor, ATSDR Community Assistance Panel for Pease Tradeport
- » Environmental Health Research and Surveillance Guidance Panel for the Michigan Department of Health and Human Services
- » CVM Committee on Graduate Study and Research
- » MSU Center for PFAS Research, Research and Funding Task Force
- » Environmental Science and Policy Program Advisory Council
- » Emerging Issues Committee, Center for Research on Ingredient Safety
- » Reproductive and Developmental Science Program, Trainer
- » Food Science Curriculum Committee for the Department of Food Science and Human Nutrition
- » Inclusion and Multicultural Committee for the Department of Pharmacology and Toxicology
- » Ad-hoc reviewer for Environmental Health Perspectives, Journal of Exposure Science and Environmental Epidemiology, Environment International, and Environmental Science and Technology.

Chen, Honglei

- » Editorial board, Neurotoxicology
- » Grant reviewer: Parkinson's Foundation - Dec 2022 (ad-hoc), Neurological Foundation of New Zealand Sept 20, 2022 (ad-hoc), Netherland Organization for Health - July 2022 (ad-hoc)
- » Committee Member, Environmental Risk Factors of Parkinson's Disease, Michael J Fox Foundation

Copple, Bryan

- » Study section member, Hepatobiliary Pathophysiology (HBPP)

Doseff, Andrea

- » Director, Molecular, Cellular, and Integrative Physiology Graduate Program
- » Director, Post-baccalaureate Graduate Program SiGuE (Success in Graduate Education)
- » Associate Editor, Journal of Pharmacology and Experimental Therapeutics
- » Associate Editor Journal of Medicinally Active Plants
- » Advisory Board NIH-T32 Plant and Sustainability Training Grant, Michigan State University
- » Co-Chair, American Heart Association Study Section
- » National Institute of Health, Study Section Immunology and Immunotherapy
- » Member, National Science Foundation
- » Service at MSU: Council on Diversity and Community (CDC), College of Natural Sciences, CNS Graduate Education Strategic Plan Committee, Graduate School Strategic Plan, Graduate School Mentoring Task Force
- » Organizer member of the 10th American Council for Medicinally Active Plants (ACMAP) Meeting. Rutgers, New Jersey

Goodman, Jay

- » Fellow, Academy of Toxicological Sciences

Goudreau, John

- » Editorial Board, NPJ Parkinson's Disease
- » NIH Study Sections: Chair, Music and Health, ZNSI SRB E01; Small Business Panel, Drug Discovery for Aging, Neuropsychiatric and Neurologic Disorders, ZRGI ETTN-H (II); Small Business: Drug Discovery for Aging, Neuropsychiatric and Neurologic Disorders, ZRGI AN P II
- » Executive Committee, Secretary/Treasurer, National Board of Osteopathic Medical Examiners
- » Mentoring Committee, Parkinson Study Group

Gulbransen, Brian

- » Rome V, Neurogastroenterology Basic Science Chapter Committee Member, 2021 - present
- » Councilor, American Neurogastroenterology and Motility Society (ANMS), 2022 - present
- » Councilor, American Gastroenterological Association (AGA), 2022 - present
- » Chair, American Neurogastroenterology and Motility Society (ANMS) 2022 Virtual Scientific Webinar Series
- » Chair, NIH Neuroimmune workshop, 2022 - present
- » Curator, DocMatters online community, American Neurogastroenterology and Motility Society (ANMS), 2021 - present
- » Member, American Physiological Society GI & Liver Section Awards Committee, 2021 - present
- » Associate Editor, Purinergic Signaling, 2020 - present
- » Editorial Board Member, Cellular and Molecular Gastroenterology and Hepatology (CMGH), 2022 - present
- » NIH, Regular Member, NIDDK DDK-C panel - Career development awards

Harkema, Jack

- » Chair, American Thoracic Society's Environmental Health Policy Committee, 2020 - 2022
- » Member, American Thoracic Society's Executive Committee, Assembly of Environmental, Occupational and Population Health 2021-2023

Hashsham, Syed

- » Member, ASTM International Committee on Determining the Effects of Biogenic Sulfuric Acid on Concrete Pipe and Structures (C13.03)
- » Reviewer for multiple study sections of NIEHS K99/R00 and NIEHS ONES applications

Hayes, Wallace

- » Member, SOT/FDA Colloquium

Organizing Committee. Society of Toxicology/Food and Drug Administration

- » Member, SOT/FDA Colloquium Organizing Committee. Society of Toxicology/Food and Drug Administration
- » Member, Next Gen Food Toxicology project. U.S. Food and Drug Administration

Jackson, James

- » Member, American Chemical Society
- » Member, National Academy of Inventors
- » Member (and past chair), Meridian Township Environmental Commission
- » Vice Chair, Brownfield Redevelopment Authority, Meridian Township, MI

Jones, Daniel

- » Review Editor, *Frontiers in Plant Metabolism and Chemodiversity*

Kaminski, Norbert

- » External Review Committee for the Interdisciplinary Program in Toxicology at Texas A&M University
- » Member, Scientific Advisory Board, GB Sciences BioPharma
- » Member, Scientific Advisory Board, SciFi Foods
- » External Advisory Committee, University of New Mexico P42 Superfund Center
- » Academic Advisor, Institute for the Advancement of Food and Nutrition Sciences
- » Member, Board of Directors, Toxicology Forum
- » Editorial Board, *Toxicology*

Karmaus, Peer

- » Immunotoxicology Specialty Section, Program Committee, Society of Toxicology
- » Ad hoc Reviewer, *iScience*
- » Ad hoc Reviewer, *PLOS Pathogens*

- » Review Editor, *Frontiers in Immunology*

LaPres, John

- » Associate Editor, *Toxicology Reports*
- » Grant Reviewer, Congressionally Directed Medical Research Programs

Lee, Kin Sing

- » Reviewer: *Journal of Medicinal Chemistry*, *Journal of Fluorine Chemistry*, *ChemMedChem*, *ACS Neuroscience*, *Journal of Proteome Research*, *Bioorganic and Medicinal Chemistry Letter*

Leininger, Gina

- » Ad hoc Reviewer: *eLife*, *JCI Insight*, *Nature Communications*, *Neuropeptides*, *Peptides*, *Scientific Reports*,
- » Society Service: The Obesity Society Annual Program Committee, The Society for the Study of Ingestive Behaviors Program Committee, American Physiological Society - Awards Committee, Michigan Diabetes Research Center-Grants Program Advisory Council
- » Abstract Reviewer: The Obesity Society, The Society for the Study of Ingestive Behaviors
- » Grant Reviewer: NIDDK Fellowships Panel, Michigan Diabetes Research Center Grants Program
- » Editorial Board, *Neuropeptides*

Li, Hui

- » Guest Editor, Special Issue of *Organic Contaminants in Agro-Environment for Chemosphere*
- » Leader of Animal Agriculture and Environmental Quality Community, American Society of Agronomy
- » Fellow, American Society of Agronomy

Liby, Karen

- » Editorial Board, AACR Cancer Prevention Research
- » Editorial Board, *Scientific Reports*

- » Editorial Board, *Carcinogenesis*
- » Member, PREVENT Program Scientific Review Panel
- » Member, AACR Cancer Prevention Steering Committee
- » Member, Education Committee for the AACR Annual Meeting
- » Member, DOD Lung Cancer Research Program Review Panel
- » Reviewer, NCI Predoctoral to Postdoctoral Fellow Transition Award (F99/K00)
- » Reviewer, NIH Cancer Prevention (CPSS) Study Section
- » Reviewer, NIH Maximizing Opportunities for Scientific and Academic Independent Careers K99/R00 Review Panel
- » Reviewer, NIH SEP Workforce Diversity in Cancer Biology and Drug Discovery R21 Panel

Luyendyk, James

- » Secretary, Society of Toxicology
- » Editorial Board, *Journal of Thrombosis and Haemostasis*

Mansfield, Linda

- » Fellow of the American Academy of Microbiology, 2022
- » Appointed to Council on Education, American Veterinary Medical Association
- » Albert C. and Lois E. Dehn Endowed Chair, Michigan State University
- » University Distinguished Professor, Michigan State University

Mazei-Robison, Michelle

- » American College of Neuropsychopharmacology (ACNP) Women's Task Force
- » ACNP Liaison Committee
- » ASPET Division for Neuropharmacology Program Committee
- » ASPET Division for Neuropharmacology Executive Committee
- » Catecholamine Society, Councilor
- » *Scientific Reports*, Editorial Board

Medina Meza, Ilce

- » Editorial Board, Food Research International
- » Chair-Elect, Food Engineering Division, Institute of Food Technologist (IFT)

Murphy, Cheryl

- » Director, Center for PFAS Research, MSU
- » Scientific Advisory Panel, FIFRA (EPA)

Paneth, Nigel

- » Leadership team, National Convalescent Plasma Project (CCPP19.org)
- » Co-Chair (with David Savitz, Brown University) State of Michigan Environmental Health Research and Surveillance Guidance Panel
- » Scientific Advisory Group, Norwegian Mother and Child Cohort (MoBa) and Danish National Birth Cohort (DNCB) combined cerebral palsy study (MOBAND)
- » External Advisor, Screening to Improve Health in Very Premature Infants in Europe (SHIPS) Study, INSERM, Paris, funded by European Commission
- » Editorial Board, Journal of Developmental Medicine and Child Neurology

Robison, A.J.

- » Editorial Board Member, Scientific Reports
- » Editorial Board Member, Brain Research
- » NIH Study Section, Behavioral Neuroscience Fellowship, March 2022
- » NIH Study Section, Neurobiology of Motivated Behavior, June 2022
- » Member, American College of Neuropsychopharmacology Public Information Committee

Rockwell, Cheryl

- » Editorial Board, Molecular Pharmacology
- » Editorial Board, Pharmacological Research

- » Associate Editor, BMC Pharmacology & Toxicology
- » Ad hoc member, Systemic Injury by Environmental Exposure Study Section
- » Ad hoc member, Hypersensitivity, Allergy and Mucosal Immunology Study Section
- » Ad hoc member, Lung Cellular, Molecular, and Immunobiology Study Section
- » President-elect, Michigan Society of Toxicology
- » Vice President-elect, Mechanisms Specialty Section, SOT
- » Secretary/Treasurer-Elect, Toxicology Division, ASPET

Rosenman, Kenneth

- » Co-Lead, Occupational Health Surveillance Work Group, Conference of State and Territorial Epidemiologists (CSTE)
- » Secretary, Michigan Occupational and Environmental Medical Association (MOEMA)
- » Secretary, MOEMA Educational Fund
- » Member, Michigan Pesticide Advisory Committee
- » Member, Workers' Compensation Research Institute Michigan Advisory Committee

Roth, Robert

- » Committee Member, SOT Faculty United for Toxicology Undergraduate Recruitment and Education (FUTURE)
- » External Advisory Committee, Curriculum in Toxicology, University of North Carolina at Chapel Hill
- » External Advisory Committee, Graduate Program in Pharmacology, University of Kansas Medical Center

Rowlands, Craig

- » Member, US EPA Science Advisory Committee on Chemicals (SACC)
- » Member, US EPA TSCA PBT Panel
- » Member, Board of Directors, Johns Hopkins University, Center for AL-

ternatives to Animal Testing (CAAT)

- » Since 2022: serve on the Joint Peer Review Steering Committee (JPRSC) that determines whether chemicals conform to water standards criteria such as NSF/ANSI/CAN 60: Drinking Water Treatment Chemicals.
- » Since 2022: serve on the American National Standards Institute (ANSI) Standardization Roadmap For Additive Manufacturing, Working Group 5 (WG5) Finished Material Properties

Strakovsky, Rita

- » Editorial Board Member, Nutrition Research
- » Editorial Board Member, Endocrine and Metabolic Science
- » Publication committee, American Society for Nutrition
- » Ad-hoc grant reviewer, NIEHS Career Development & Pathway to Independence in Biomedical/Clinical Research Study Section
- » President, Michigan Regional Chapter of the Society of Toxicology

Tewari-Singh, Neera

- » Editorial Boards: Cutaneous and Ocular Toxicology, Toxicology Mechanisms and Methods, Toxics
- » Grant Review Panels: NIH Grant review panels: ZRGI MDCN-B (55) PAR Panel: CounterACT-Exploratory applications; Reviewer, Emerging Science and Scientists Pilot Project Program, the UC Davis NIH CounterACT Center for Excellence; Vision Research Program (VRP) for the Department of Defense (DoD) Congressionally Directed Medical Research Programs (CDMRP).
- » Committee Member, National Academies of Sciences, Engineering and Medicine (NASEM) study: 'Assessing and Improving Strategies for Preventing, Countering, and Responding to Weapons of Mass Destruction Terrorism: Chemical Threats'
- » Program Committee Member, Ocular Toxicology Specialty Section, Society of Toxicology

- » Member and mentor, Kurukshetra University Technology Incubation Center (KUTIC), RUSA, Kurukshetra University, India
- » Faculty representative, University Provost and the Vice President for Research and Innovation Workgroup on ‘aligning MSU policies and practices related to outside interests and professional activities with federal requirements’
- » Chair, Committee on Research and Graduate Studies, College of Osteopathic Medicine.
- » Chair, Course & Curriculum Committee, Department of Pharmacology and Toxicology, Michigan State University
- » Member, Communications Committee, Department of Pharmacology and Toxicology, Michigan State University
- » Faculty Advisory Committee, Department of Pharmacology and Toxicology, Michigan State University
- » Elected Officer Positions: 2022-2024: Treasurer/Secretary, Michigan Chapter of the Society of Toxicology; 2019-2022-Treasurer, Ocular Toxicology Specialty Section, Society of Toxicology; 2021-2022: Past President, Dermal Toxicology Specialty Section, Society of Toxicology

Tiedje, James

- » Science Advisory Committee, Denmark’s CENPERM (Cntr for Permafrost change in Greenland) Projects
- » Member, Science Advisory Comm for Consortium for Monitoring, Technology, and Verification (Nuclear Non-proliferation)
- » Science Advisory Comm for CSIRO (Australia) Future Science Platform - Microbiomes for One System Health
- » Member, NASEM Workshop on Exploring a Dynamic Soil Information System (DySIS)
- » American Society of Microbiology’s Representative, US Nagoya Protocol Action Group (USANPAG)
- » American Academy of Microbiology, Chair of Colloquium Committee on Microbes and Climate Change

- » American Society of Microbiology Steering Comm of Role of Microbes in Mediating Methane Emissions Colloquium
- » Advisory Committee, Kansas’s NSF Microbiome EPSCoR Project
- » Scientific Advisor, Resistomap, a Finnish antimicrobial resistance monitoring company
- » Member, NEON’s Microbial Technical Working Group
- » American Society of Microbiology’s Life Time Achievement Award

Trosko, James

- » Editorial Board, Diseases
- » Member, Advisory Board to the MSU-COM Institute for Global Health
- » Scientific Advisory Board Member, Adult Stem Cell Research Company
- » Reviewer for multiple scientific journals and grant reviews for international granting agencies (Italy, Brazil, Korea, Czech Republic, France)

Uhal, Bruce

- » Member, College of External Reviewers, European Science Foundation
- » Editorial Board Member, Frontiers in Pediatrics

Upham, Brad

- » Associate Editor, Journal of Toxicology
- » Associate Editor, BioMed Research International
- » Associate Editor, Biomedicines
- » Chair, Education Committee, Society of In Vitro Biology
- » Co-Chair, Great Lakes Pediatrics Research Day Planning Committee

Wu, Felicia

- » President-Elect, Society for Risk Analysis
- » United Nations Food & Agriculture Organization (FAO) Scientific Advisory Committee on Livestock Food Security and Nutrition, Member

- » Joint Expert Committee on Food Additives (JECFA) of the FAO and World Health Organization (WHO), Expert Roster
- » WHO Temporary Advisor to 96th JECFA evaluation of aspartame
- » Michigan Chapter Co-President, Harvard University Alumni Network of Harvard Women (ANHW)
- » Harvard Agri-Food Board of Directors
- » International Union of Pure & Applied Chemistry (IUPAC): US National Academy of Sciences Delegate,
- » US Environmental Protection Agency (EPA) Science Advisory Board (SAB) Panel on Contaminant Candidate List 5
- » Institute for the Advancement of Food and Nutrition Sciences, Scientific Leadership Council
- » Vice President for University Advancement Search Committee, Michigan State University

Zacharewski, Timothy

- » Editorial Board, Toxicological Sciences
- » Editorial Board, Toxicology & Applied Pharmacology
- » Ad-Hoc Committee Member, National Institutes of Health – Special Emphasis Panel
- » Ad-Hoc Committee Member, Health Canada
- » Ad-Hoc Committee Member, Canadian Institutes for Health Research
- » Ad-Hoc Committee Member, The French National Research Agency (ANR)

Zhang, Wei

- » Associate Editor, Canadian Journal of Soil Science, Journal of Environmental Quality, National Science Open
- » Editorial Board Member: Biochar, Carbon Research
- » Guest associate editor, Special section “Rhizosphere microbiology: Toward a clean and healthy soil

- environment”, in *Frontiers in Microbiology*
- » Committee Member, AGU Unsaturated Zone Technical Committee
- » Member of Multistate Research Project W4188: Soil, water, and environmental physics to sustain agriculture and natural resources
- » Member of Multistate Research Project NC1187: Particulate reactivity and cycling in a changing environment: Implications for agriculture and human health
- » SSSA-SSSC Working Group (SSSA Secretary), August 2021 – December 2022
- » ACS Task Force on International Activities Task Force, July 2021 – December 2022

...continued from page 12

Johnson also is the Project Leader for Project 2: Coupling Bioengineered and Computational Models of Thyroid Homeostasis to Support Human PCDD/F Risk-Assessment of the MSU Superfund Research Program Center. Thyroid hormones regulate cellular energy metabolism throughout the body and chemical disruption of this function in humans causes neurological, hearing, and vision dysfunction in children, as

well as metabolic disorders and cancer in adults. Due to the complex nature of the thyroid system, the way many Superfund chemicals disrupt thyroid function is unclear. Johnson’s project works to bioengineer thyroid and liver microtissues and use them, along with computational modelling, to understand how these chemicals cause toxicity. They also test chemicals and their mixtures for their ability to disrupt thyroid signaling, and translate their findings

to determine how chemical exposures might affect human populations.

The Johnson laboratory currently has one lab manager, a graduate student in environmental engineering, a masters student in biomedical engineering and five undergraduates from varying disciplines including biology, mechanical engineering, and chemical engineering.

...continued from page 13

Δ FosB in a negative feedback loop limiting mast cell activity.

Robison also has several other smaller projects in the lab. An R01 from the National Institute of Drug Abuse he shares with three other researchers in Texas and New York studying the biochemistry of Δ FosB and how it’s affected by oxidative stress and how that might play a role in addiction and other mental disorders. This project is mostly about drug discovery, and they are screening compounds which they hope will lead to actual translational solutions

for the general public. Robison also has an R01 with Dr. Jeannie Chin at Baylor performing Alzheimer’s Research on gene expression in the hippocampus. He also has an NIMH-funded project with Brian Trainor at UC Davis and together they do work on oxytocin and oxytocin neurons and how those are important in stress responses and sex differences. The last big project in the lab examines how the gut microbiome regulates parts of the brain that drive aggressive behavior and this work is funded by the Avielle foundation.

The Robison lab currently has two

postdoctoral fellows, three graduate students, a lab manager and two part-time technicians. Robison is also the Director of the Neuroscience Program, which keeps him busy with 31 PhD students and two on-line certificate programs. He remains an active classroom teacher and in 2022, he directed three courses, co-directed two more, and gave lectures in five additional graduate courses. His most rewarding work, however, is mentoring in his lab group, and he the many successes of his postdocs and grad students.

...continued from page 14

Her lab integrates clinical and biological responses, molecular toxicology, biochemistry, signal transduction, immunology, imaging, and cutting-edge systems toxicology ‘omics’ tools to elucidate toxic mechanisms (mainly re-

lated to inflammation, DNA damage and oxidative stress). For these studies, they employ in vivo (mice, rats, rabbits and mini-pigs), ex vivo (rabbit and human tissues) and in vitro (cell culture) model systems. The Tewari-Singh laboratory currently includes a postdoctoral fellow,

a lab manager, two graduate students, one master’s student, and six undergraduate students. She enjoys being able to mentor these students to find their research passion.

IIT AFFILIATED FACULTY

Andrea Amalfitano, Dean, College of Osteopathic Medicine, Osteopathic Heritage Foundation Endowed Professor of Pediatrics

Eran R. Andrechek, Professor, Department of Physiology

William D. Atchison, Professor Emeritus, Pharmacology & Toxicology

Jamie J. Bernard, Associate Professor, Pharmacology & Toxicology

Matthew P. Bernard, Associate Professor, Pharmacology & Toxicology

Sudin Bhattacharya, Assistant Professor, Biomedical Engineering, Pharmacology & Toxicology

Lance K. Blevins, Assistant Professor, Institute for Integrative Toxicology

Leslie D. Bourquin, Professor, Food Science & Human Nutrition

Stephen A. Boyd, University Distinguished Professor, Plant, Soil & Microbial Sciences

Leon H. Bruner, Adjunct Professor, Institute for Integrative Toxicology

John P. Buchweitz, Associate Professor and Toxicology Section Chief, MSU Veterinary Diagnostic Laboratory, Department of Pathobiology & Diagnostic Investigation

Lyle D. Burgoon, Adjunct Associate Professor, Institute for Integrative Toxicology; Director, Center for Existential Threat Analysis; Leader, Bioinformatics and Computational Toxicology

Steven J. Bursian, Professor Emeritus, Animal Science

Stephan A. Carey, Associate Professor & Associate Chairperson, Small Animal Clinical Sciences

Courtney C. Carignan, Assistant Professor, Food Science & Human Nutrition, Pharmacology & Toxicology

Honglei Chen, MSU Foundation Professor, Epidemiology & Biostatistics

Karen Chou, Associate Professor, Animal Science

Rory B. Conolly, Adjunct Professor, Institute for Integrative Toxicology

Bryan L. Copple, Associate Professor, Pharmacology & Toxicology

Andrea I. Doseff, Professor, Department of Physiology, Pharmacology & Toxicology

Susan L. Ewart, Professor, Large Animal Clinical Sciences

Patricia E. Ganey, Professor Emeritus, Pharmacology & Toxicology

Jay I. Goodman, Professor Emeritus, Pharmacology & Toxicology

John L. Goudreau, Associate Professor, Pharmacology & Toxicology, Neurology

Brian D. Gulbransen, MSU Foundation Associate Professor, Neuroscience Program, Department of Physiology

Jack R. Harkema, University Distinguished Professor, Pathobiology & Diagnostic Investigation

Syed A. Hashsham, Professor, Civil & Environmental Engineering; Adjunct Professor, Plant, Soil & Microbial Sciences

A. Wallace Hayes, Adjunct Professor, Institute for Integrative Toxicology, Senior Science Advisor, Spherix Consulting

Colleen C. Hegg, Associate Professor, Pharmacology & Toxicology

Robert M. Hollingworth, Professor Emeritus, Entomology

James E. Jackson, Professor, Chemistry

Brian P. Johnson, Assistant Professor, Pharmacology & Toxicology, Biomedical Engineering

A. Daniel Jones, Professor, Biochemistry & Molecular Biology, Chemistry

Norbert E. Kaminski, Director, Institute for Integrative Toxicology; Director, Center for Research on Ingredient Safety; Professor, Pharmacology & Toxicology, Cell & Molecular Biology

John B. Kaneene, University Distinguished Professor, Large Animal Clinical Sciences and Director, Center for Comparative Epidemiology

Peer W.F. Karmaus, Adjunct Assistant Professor, Institute for Integrative Toxicology, Staff Scientist, NIEHS

John J. LaPres, Professor, Biochemistry & Molecular Biology; Graduate Program Director, Institute for Integrative Toxicology

Kin Sing Stephen Lee, Assistant Professor, Pharmacology & Toxicology

Gina M. Leininger, Associate Professor, Physiology, Neuroscience Program

Hui Li, Professor, Plant, Soil & Microbial Sciences

Karen T. Liby, Professor, Pharmacology & Toxicology

David T. Long, Professor Emeritus, Earth & Environmental Sciences

James P. Luyendyk, Professor, Pathobiology & Diagnostic Investigation

Jane F. Maddox, Assistant Professor Emeritus, Pharmacology & Toxicology

Burra V. Madhukar, Assistant Professor Emeritus, Pediatrics & Human Development

Linda S. Mansfield, University Distinguished Professor, Large Animal Clinical Sciences, Microbiology & Molecular Genetics

Michelle Mazei-Robison, Associate Professor, Physiology, Neuroscience Program

Laura R. McCabe, MSU Foundation Professor, Physiology

J. Justin McCormick, University Distinguished Professor Emeritus, Microbiology & Molecular Genetics, Biochemistry & Molecular Biology

Ilce G. Medina Meza, Assistant Professor, Biosystems and Agricultural Engineering

Thomas P. Mullaney, Professor Emeritus, Pathobiology & Diagnostic Investigation

Cheryl A. Murphy, Professor, Fisheries & Wildlife

Rance Nault, Assistant Professor, Biochemistry & Molecular Biology

Lawrence Karl Olson, Associate Professor, Physiology

Nigel S. Paneth, University Distinguished Professor Emeritus, Epidemiology, Pediatrics

James J. Pestka, University Distinguished Professor, Microbiology & Molecular Genetics, Food Science & Human Nutrition

Brian K. Petroff, Professor, MSU Veterinary Diagnostic Laboratory, Pathobiology & Diagnostic Investigation

A.J. Robison, Associate Professor, Physiology, Neuroscience Program

Cheryl E. Rockwell, Associate Professor, Pharmacology & Toxicology

Kenneth D. Rosenman, Professor, Medicine

Robert A. Roth, Professor Emeritus, Pharmacology & Toxicology

J. Craig Rowlands, Adjunct Professor, Institute for Integrative Toxicology, Senior Scientist, Underwriters Laboratories, LLC

James G. Sikarskie, Professor Emeritus, Small Animal Clinical Sciences

Rita S. Strakovsky, Assistant Professor, Food Science & Human Nutrition

Greg M. Swain, Professor, Chemistry

Brian J. Teppen, Professor, Plant, Soil & Microbial Sciences

Neera Tewari-Singh, Assistant Professor, Pharmacology & Toxicology

James M. Tiedje, University Distinguished Professor Emeritus, Plant, Soil & Microbial Sciences, Microbiology & Molecular Genetics

David A. Tonucci, Adjunct Professor, Institute for Integrative Toxicology, Vice President for Regulatory & Toxicology, Artemys Foods

James E. Trosko, Professor Emeritus, Pediatrics & Human Development

Bruce D. Uhal, Professor, Physiology

Brad L. Upham, Associate Professor, Pediatrics & Human Development

Thomas C. Voice, Professor, Civil & Environmental Engineering, Senior Associate Dean, College of Engineering

James G. Wagner, Associate Professor, Pathobiology & Diagnostic Investigation

Michael R. Woolhiser, Adjunct Professor, Institute for Integrative Toxicology, Toxicology & Environmental Research Laboratory Director, The Dow Chemical Company

Felicia Wu, John A. Hannah Distinguished Professor, Food Science & Human Nutrition, Agricultural, Food, & Resource Economics

Timothy R. Zacharewski, Professor, Biochemistry & Molecular Biology

Joseph W. Zagorski, Assistant Professor, Center for Research on Ingredient Safety

Wei Zhang, Associate Professor, Plant, Soil & Microbial Sciences, Environmental Science & Policy Program

Academic Dept. / Disciplinary Ph.D. Programs

(Participate in the IIT's EITS graduate program.)

- » Animal Science
- » Biochemistry & Molecular Biology
- » Cell & Molecular Biology
- » Chemistry
- » Comparative Medicine & Integrative Biology
- » Earth & Environmental Sciences
- » Fisheries & Wildlife
- » Food Science & Human Nutrition
- » Forestry
- » Genetics & Genome Sciences
- » Integrative Biology
- » Microbiology & Molecular Genetics
- » Neuroscience
- » Pharmacology & Toxicology
- » Physiology
- » Plant, Soil, & Microbial Sciences

Deans

- Birgit Puschner**, College of Veterinary Medicine
- Kelly Millenbah**, College of Agriculture and Natural Resources
- Leo Kempel**, College of Engineering
- Aron Sousa**, College of Human Medicine
- Andrea Amalfitano**, College of Osteopathic Medicine
- Phillip Duxbury**, College of Natural Science
- George W. Smith**, Director, AgBioResearch



Institute for INTEGRATIVE TOXICOLOGY

Michigan State University
1129 Farm Lane
Food Safety and Toxicology, Rm 165
East Lansing, MI 48824

517.353.6469
tox@msu.edu