



# 2025 ANNUAL REPORT

INSTITUTE FOR INTEGRATIVE TOXICOLOGY

MICHIGAN STATE  
UNIVERSITY





# IIT ANNUAL REPORT 2025

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# IIT@MSU

## 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 35 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 during our 47<sup>th</sup> year.

The influence of IIT faculty's research in the field of toxicology was far-reaching this year. In 2025, several IIT faculty received nationally recognized awards for their achievements and hold positions on notable boards and committees. Our faculty have continued to conduct excellent research, successfully competing for grant funding, attending scientific meetings, and receiving news coverage on their newest discoveries. Our affiliated faculty have now grown to 70 specialists conducting toxicology-related research spanning investigations pertaining to the environment (air, water, soil), occupational setting, as well as food and putative therapeutic agents.

The EITS graduate program, now with 38 doctoral students participating, continues to be one of the premier toxicology training programs in the U.S. Students participated in workshops and seminars, not only on campus, but across the country, to further their learning and research. Five students graduated from the EITS program in 2025 and have moved on to pursue careers in academia and industry.

Our affiliated center under the IIT umbrella, the Center for Research on Ingredient Safe-

ty (CRIS), has had a year of accelerated growth and meaningful impact. Building on major scientific milestones, CRIS advanced its research portfolio through expanded work in developmental immunotoxicology, the continued refinement of human-relevant testing models, and deeper collaboration across academic, clinical, and international institutions. Equally important, CRIS expanded its communications and outreach impact to ensure that this science reaches audiences where it matters most. Through national and international media coverage, a robust and growing blog ecosystem, a fast-expanding podcast platform, and strategic speaking engagements, CRIS continues to translate complex research into accessible, actionable knowledge for diverse stakeholders.

Lastly, a large cadre of our faculty continue to be extremely productive in their research activities and engagement with community and regulatory agencies related to work on dioxin and dioxin-like compounds as part of our NIH funded Superfund Research Center. We are now in the third full year of our most recent award period. Dr. Timothy Zacharewski has taken the reins this year as Director of the SRC as I step down to a Project Co-Investigator and Deputy Director role.

I look forward to the growth, learning and collaboration we will accomplish as an institute in 2026.

A handwritten signature in blue ink that reads "Norbert E. Kaminski".

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

# 2025 SEMINARS

## IIT Hosts Prestigious Speakers Throughout 2025

The IIT was delighted to once again host the IIT Seminar Series this year with five exciting seminars including the 4<sup>th</sup> Annual Jerry Hook Distinguished Lectureship.

The series began with Dr. **Matthew Campen**, University of New Mexico, on January 21. He spoke on, “*Neuroplastics*.” The global burden of plastics waste is progressively degrading into micro- and nanoplastics that have the potential to access the human body and alter health. Campen and his team have used several methods to identify and quantify plastic content in the human body, highlighting a preferential uptake into the human brain that is increasing over time. Campen’s presentation provided a new benchmark for the concentrations in the human body and discussed research needs to improve upon this body of knowledge.

On April 15 the IIT hosted Dr. **Karina Orłowska**, MSU, who spoke on, “*Generation and Evaluation of an Inducible Hepatocyte-Specific AhR Knockout Model to Investigate TCDD-Elicited Hepatic Effects*.” Orłowska is a postdoctoral research associate training with Dr. Timothy Zacharewski and works with the MSU Superfund Research Center. Her research focuses on elucidating the underlying mechanisms of action of environmental contaminants in order to better understand their effect on liver metabolism.

The 4<sup>th</sup> Annual Jerry Hook Distinguished Lectureship was given by Dr. **Christopher Bradfield** on May



**Above:** Dr. Christopher Bradfield with IIT Director Dr. Norbert Kaminski after giving the 4<sup>th</sup> Annual Jerry Hook Distinguished Lecture.

20. Bradfield is a Professor of Oncology at the McArdle Laboratory for Cancer Research at the University of Wisconsin–Madison, where he is also a member of the UW Carbone Cancer Center’s Genetics Program and serves as the Director of UW Biotechnology Center. Bradfield’s laboratory is internationally recognized for its pioneering work on the PAS family of sensor proteins, which play crucial roles in environmental sensing and regulation of physiological processes such as xenobiotic metabolism, circadian rhythms, and angiogenesis. His

research has significantly advanced understanding of how environmental contaminants like dioxins, polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs) interact with the aryl hydrocarbon receptor (AhR) and related pathways to influence cancer risk and other diseases. The Distinguished Lectureship is held annually by the Institute for Integrative Toxicology in memory of Dr. Jerry Hook.

The fall series began in September with Dr. **Kyle Poulsen**, Assistant Professor and IIT-affiliated faculty member, Pharmacology and Toxicology, MSU, who spoke on, “*Multifunctional MIF in Alcohol-related Liver Disease*.” The Poulsen lab’s translational research program investigates chronic liver disease. From mechanistic discovery through preclinical therapeutic design, Poulsen’s lab employs state-of-the-art in vitro and in vivo models to test their hypotheses and develop new therapeutic strategies for unmet needs in chronic liver disease.

The final seminar of the series was given by Dr. **Aitor Aguirre**, to speak on, “*Synthetic Heart Models for the Study of Human Cardiac Development and Disease*.” Dr. Aguirre is an Associate Professor in Biomedical Engineering; Chief of the Division of Developmental and Stem Cell Biology, Institute for Quantitative Health Science and Engineering; and Faculty Director of the Stem Cell Core all here at Michigan State University. ♡

# INSTITUTE HIGHLIGHTS



## Dr. Jim Luyendyk

was recently named the College of Veterinary Medicine's Associate Dean for Research and Graduate Studies. In his new position Luyendyk will lead the College's research initiatives, support faculty in securing funding, and strengthen partnerships with funding agencies and collaborators.



## Dr. Laura McCabe

was recently recognized as a fellow of the American Association for the Advancement of Science (AAAS), one of four MSU researchers chosen for the honor. AAAS is the world's largest general scientific society, which recognizes distinguished individuals as fellows for their contributions to science and society.



## Dr. Hui Li

was selected as one of ten MSU faculty to receive the William J. Beal Outstanding Faculty Award in 2025. William J. Beal Outstanding Faculty Awards are made each year to members of the faculty for outstanding total service to the University.



## Dr. Kyle Poulsen

joined the IIT as an affiliated faculty member. Poulsen is an assistant professor in the Department of Pharmacology and Toxicology and a proud EITS alumnus. He completed the program in 2013 under the mentorship of Dr. Robert Roth and earned his dual major Ph.D. in Pharmacology and Toxicology and Environmental Toxicology.

Today Poulsen's translational research program in his laboratory investigates chronic liver disease. From mechanistic discovery through preclinical therapeutic design, Poulsen's lab employs state-of-the-art in vitro and in vivo models to test their hypotheses and develop new therapeutic strategies for unmet needs in chronic liver disease. Current research areas in the Poulsen lab include 1) deciphering the epithelial-immune language of MIF-CD74 in alcohol-related liver injury; 2) studying interference anti-sense therapies against MIF and CD74 in cell-specific contexts; 3) developing novel 3D spheroid/organoid models for liver disease in animal and in human stem cells; and 4) studies into organellar transplantation as a therapeutic modality.



## Dr. Yun Liang

joined the IIT as an affiliated faculty member. Liang is an assistant professor in the Department of Physiology and the Department of Pharmacology and Toxicology.

Liang's research is focused on understanding the pathogenic mechanisms of autoimmune diseases. Liang and her laboratory aim to understand fundamental differences in the immune system between males and females to ultimately find prevention and treatment options for chronic inflammation and autoimmunity. Recent findings in Liang's lab suggest that toxic chemicals such as benzo[a]pyrene cause molecular changes that may help explain the increased risk of end organ damage in autoimmune diseases. Liang and her team are actively looking for ways that can prevent or reverse the immunological damages caused by environmental toxicants.



## Maria Cinzori

EITS graduate student training with Dr. Rita Strakovsky, was recently selected to receive the NIH Ruth L. Kirschstein National Research Service Award for Individual Predoctoral Fellows (F31). The prestigious fellowship will support Cinzori in enhancing her training in environmental epidemiology, clinical pregnancy health outcomes, and science

communication related to the implications of chemical exposures in pregnancy.



## Joel Marty

EITS graduate student training with Dr. Norbert Kaminski, received the Eleanor L. Gilmore Endowed Excellence Award from the Microbiology, Genetics and Immunology Department. The award was established by Eleanor L. Gilmore, class of 1943, to benefit research and scholarships in the Department of Microbiology and Public Health in the

College of Natural Science.



## Jacob Reynolds

EITS graduate student training with Dr. Brian Johnson, received the Outstanding Graduate Student Award from the College of Engineering. This annual award recognizes the most outstanding graduate student from each doctoral program in the college. ♡

# SUPERFUND HIGHLIGHTS

## SRC Transitions Leadership Roles

Since 2005, Dr. Norbert Kaminski has directed the MSU Superfund Research Center. Taking the helm when the focus was on studying groundwater contaminants, Kaminski leaned into shifting the focus of the center to addressing dioxin contamination in Michigan's Tittabawassee River. Today, the MSU SRC's research focuses on the human health effects of dioxins and dioxin-like compounds (DLCs) and the remediation of contaminated Superfund sites. Kaminski will continue this work as a Project Co-Investigator and Deputy Director, but will hand over the Director role to colleague **Dr. Timothy Zacharewski**.

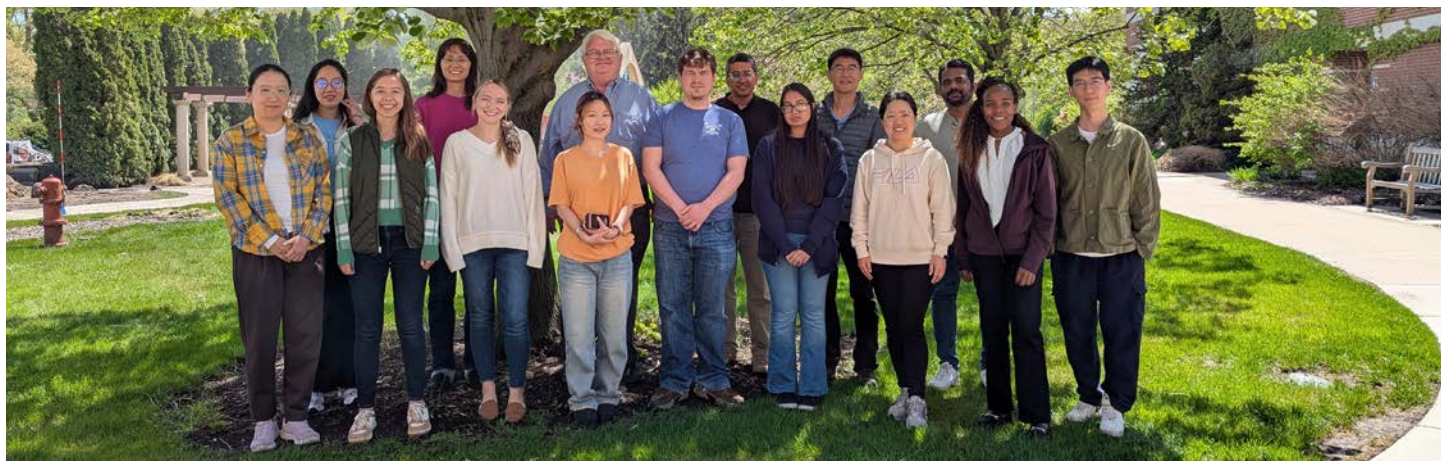
Dr. Zacharewski became a member of the MSU SRC in 2000 and is currently the Co-Leader of Project 3. His research focuses on the aryl hydrocarbon receptor (AHR)-mediated



hepatic effects of DLCs. This includes the disruption of metabolism during DLC-induced progression of steatosis to steatohepatitis with fibrosis which increases the risk of fatty liver diseases such as Metabolic Syndrome, end-stage liver disease, liver cancer and Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD, for-

merly referred to as non-alcoholic fatty liver disease (NAFLD)). The primary goal is to elucidate the mechanisms underlying adverse effects elicited by DLCs. Current projects in the Zacharewski group are collaborative efforts that use novel in vitro organoid and in vivo genetic models and involve the integration of multi-omic approaches in complementary dose response studies.

Zacharewski is excited to lead the MSU SRC into the future, **"I look forward to continuing to work closely with Norb as well as the other MSU SRC team in pursuing ground breaking human health research, developing solutions to remediate Superfund sites and engaging with affected communities."** 🌱



## MSU SRC Hosts Introduction to PBTK/PBPK Modeling Workshop

The MSU SRC recently hosted the Introduction to Physiologically Based Toxicokinetic (PBTK) / Pharmacokinetic (PBPK) Modeling Workshop on May 4 - 6, 2025 on Michigan State's campus. Course instructors were **Sudin Bhattacharya** from Michigan State University, **Qiang Zhang** from Emory University, and **Eberhard Voit** from the University of Texas at Dallas.

The workshop was attended by 12 students and covered the principles of physiologically based toxicokinetic

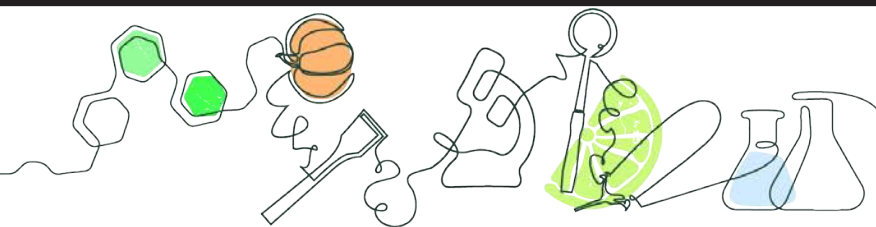
(PBTK) or pharmacokinetic (PBPK) modeling and introduced the application of this technique in chemical health risk assessment. Upon completion of the workshop, students learned how to:

- » Understand the fundamental concepts underlying PBPK modeling
- » Describe the absorption, distribution, metabolism, and elimination of chemicals using mass balance differential equations
- » Build PBPK models to simulate tissue dosimetry using Berkeley Madonna

- » Appreciate the application of PBPK models in human health risk/safety assessment including New Approach Methodologies (NAMs)

The workshop comprised lectures and hands-on computer exercises in R and was a collaborative effort between the Computational Modeling Core, the Research Experience and Training Coordination Core, and the Data Management and Analysis Core of the NIH-funded MSU Superfund Research Center. 🌱

# CRIS HIGHLIGHTS



## 2025 CRIS Science Symposium: Communicating Chemical Ingredient Safety for Today & Tomorrow

The 2025 Center for Research on Ingredient Safety Science Day held on September 3, 2025 at the MSU Union focused on effectively communicating the safety of chemical ingredients today and in the future.

If you were unable to attend, don't worry! You can still catch up on all the insightful sessions. Most are now available for you to watch on [YouTube](#).

Please share them with any friends and colleagues who might benefit from the sessions.

Sessions included:

- » **Joanne Slavin**, Ph.D., R.D.  
University of Minnesota  
*Expertise:* Nutrition science, dietary guidelines, public health communication  
*Talk Focus:* [Bridging the gap: Integrating ingredient safety into everyday nutrition messaging](#)

- » **Anne Chappelle**, Ph.D., DABT  
SafeBridge Consultants  
*Expertise:* Toxicology, chemical risk assessment, regulatory communication  
*Talk Focus:* [Risk, dose, and trust: Making chemical safety concepts make sense to non-experts](#)

- » **Jess Steier**, Dr.PH.  
Unbiased Science  
*Expertise:* Public health, podcast host, interdisciplinary science communication  
*Talk Focus:* [Storytelling that works, communicating ingredient safety in the digital age](#)

- » **Jill Adams**, Ph.D.  
Washington Post  
*Expertise:* Science journalism, editorial framing, media coverage of health, biomedical research,

psychology, education, and the environment.

*Talk Focus:* [Chemicals in the news: Ingredient safety through the lens of journalism and the click economy](#)

- » **John Besley**, Ph.D.  
Michigan State University  
*Expertise:* Science communication education, training scientists to engage public audiences  
*Talk Focus:* [Communicating effectively and strategically in the context of chemical ingredient safety](#)

The symposium day concluded with a panel discussion with the 2025 speakers answering community questions. Thank you to all who participated and attended! 🌟

### New Review: Seafood & Microplastics Safety

A new paper published in Environmental Science & Technology Letters and coauthored by CRIS director Norbert Kaminski, Ph.D., finds that, based on the current peer-reviewed scientific literature, seafood is less risky than many presume. The study finds that microplastics in seafood aren't the primary source of human exposure and that avoiding seafood due to plastic fears could do more harm than good.

Researchers analyzed how plastic contamination in food is studied and reported, and found a clear imbalance. More than 70% of research and media coverage about microplastics in food focuses on seafood, even though exposure from eating fish or shellfish is similar to that from other foods.

To continue reading the entire blog post on the new review, please visit: <https://cris.msu.edu/news/new-evidence/new-review-seafood-microplastics-safety>.

### New Research: Human-based Model of Developmental Immunotoxicology

A new study from the CRIS in partnership with Corewell Health shows that a lab model made from human cells can accurately reflect how lead exposure during pregnancy affects a baby's developing immune system.

The findings from the study show that lead is a potential developmental immunotoxicant, subtly changing how a child's immune system forms during pregnancy. Over time, these shifts could either resolve or conversely influence how the immune system responds to infections, vaccines, or allergens later in life. This research highlights the value of New Approach Methodologies (NAMs), which are advanced, non-animal testing systems that use human cells to better predict human health outcomes. To continue reading the entire blog post, please visit: <https://cris.msu.edu/news/new-evidence/human-based-model-of-developmental-immunotoxicology/>

# EITS TRAINING PROGRAM

An overview of the current EITS training program and review of 2025 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 and directed by Dr. John LaPres is a “dual major” format that emphasizes excellent basic science training from a graduate program at MSU coupled with didactic and research training in toxicology by IIT-affiliated faculty. Currently, 38 doctoral students are enrolled in the EITS program. Twenty-seven of these students are in the Biomedical Track, eight in

the Environmental Track, and three students are currently enrolled in the Food Toxicology and Ingredient Safety Track. 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 2025. 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. 🌱

## 2025 EITS Graduates



### Rachel Bauer

Pharmacology & Toxicology  
Mentor, Courtney Carignan

*Quantifying Associations of Per- and Polyfluoroalkyl Substances (PFASs) in Serum with Drinking Water Source and Functional Measures of Immunotoxicity*

Currently: Toxicologist, Michigan Public Health Institute



### Jessica Moerland

Pharmacology & Toxicology  
Mentor, Karen Liby

*Pharmacological Nrf2 Activation Reprograms the Immune Microenvironment and Decreases Tumor Burden in KRAS-driven Lung Cancer*

Currently: Postdoctoral Fellow, Indiana University



### Jacob Reynolds

Biomedical Engineering  
Mentor, Brian Johnson

*Refinement of a Microphysiological Model of Orofacial Development for Chemical Testing*

Currently: Scientist, ToxStrategies



### Nat Yawson

Pharmacology & Toxicology  
Mentor, Jamie Bernard

*Molecular Mechanisms of Obesity-driven Carcinogenesis: Implications for Skin Cancer and Multiple Myeloma*

Currently: Senior Scientist, Vital Rx Pharmacy

# GRADUATE SPOTLIGHTS

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



## Krista Greenwood

Director, Toxicology, Jnana Therapeutics

### At a glance:

**Department:** Biochemistry & Molecular Biology

**Mentor:** John LaPres

**Dissertation:** “The Role of Hypoxia Inducible Factor (HIF)-1/2 alpha in the Inflammatory Response to Inhaled Allergens”

**Defended:** Summer 2015

A strong interest in human biology and the need to understand the physiology of the human body, led Krista Greenwood down the path of science and eventually toxicology. After earning her Bachelor of Science in Biology with honors from the University of Wisconsin - Madison, Greenwood came to MSU to earn her Ph.D. in Biochemistry and Molecular Biology with a dual major in Environmental & Integrative Toxicological Sciences. Greenwood trained with Dr. John LaPres and completed her dissertation, “*The Role of Hypoxia Inducible Factor (HIF)-1/2 alpha in the Inflammatory Response to Inhaled Allergens*,” in 2015.

Today, Greenwood is the Director of Toxicology at Jnana Therapeutics, a Boston-based, clinical-stage biotechnology company focused on developing first-in-class small molecule therapies for rare diseases and immune-mediated disorders. Utilizing its proprietary RAPID chemoproteomics platform, the firm targets challenging protein-transporter interactions, specifically for phenylketonuria (PKU).

Greenwood is responsible for the planning, design and execution of all nonclinical safety studies to support the company’s drug development

pipeline. She is involved in species selection, nonclinical safety study design, contract lab study placement, review of study protocols and study reports, and the summarization of all safety studies for submission to regulatory bodies for the go ahead to begin first-in-human clinical trials. Greenwood and her team use high exposures in the nonclinical species to identify what possible toxicities to watch for in the clinic, in humans.

Greenwood enjoys working for a smaller drug development company and being able to troubleshoot and bring new drugs to clinical trial. Even though she is the only toxicologist at her company, as a wholly owned subsidiary of Otsuka Pharmaceuticals, Greenwood is able to access their resources, including additional toxicologists to discuss findings, developments, etc.

As an EITS student, Greenwood appreciated the amount of exposure they were given to different aspects of toxicology. “**Having a well-rounded background really helps when trying to solve complex toxicological issues that can arise during drug development,**” commented Greenwood. ♡



## Jiajun Brian Zhou

Associate Director, Genetic Medicine Search and Evaluation, Eli Lilly and Company

### At a glance:

**Department:** Microbiology & Molecular Genetics

**Mentor:** Norbert Kaminski

**Dissertation:** “The Role of LCK and PD-1 in TCDD-mediated Suppression of the IgM Response by Human CD5<sup>+</sup> Innate-like B Cells”

**Defended:** Fall 2019

Growing up with a grandmother who was a first-generation doctor post the cultural revolution in China, Zhou became fascinated with science and medicine. With a desire to dive deep into his scientific questions and expand his knowledge, Zhou decided to pursue becoming a scientist. After earning his Bachelor of Science in Microbiology, and Biochemistry and Molecular Biology from Michigan State University, Zhou continued at MSU to earn his Ph.D. in Biochemistry and Molecular Biology with a dual major in Environmental & Integrative Toxicological Sciences. Zhou trained with Dr. Norbert Kaminski and completed his dissertation, “The role of LCK and PD-1 in TCDD-mediated suppression of the IgM response by humans CD5<sup>+</sup> innate-like B cells,” in 2019.

For the past six years, Zhou has been with Eli Lilly and Company. Today, he is an Associate Director for Genetic Medicine Search and Evaluation. This team sits within the therapeutic area and also with corporate business development. The main goal is to identify high value assets/

companies that can be able to have impact on the next generation of machines for the company/patients. The Search and Evaluation team is mainly looking at licensing or acquiring assets or companies when they reach a mature stage.

Zhou believes Lilly has offered him a lot of opportunities for learning and growth. Starting as a research-based scientist, he then moved into clinic work before transitioning to the business development side of the company. **“It has always been my passion to work in a larger organization to advance life-saving medicines to patients,”** commented Zhou. **“Lilly provides me with the access and a broad view of drug development.”**

As an EITS student, Zhou appreciated the multi-disciplinary aspect of the program. His experiences working with different researchers in the EITS program paved the way for how he communicates and collaborates with colleagues today in his career. 🌟



# FACULTY FEATURES

The IIT is a leader in conducting diverse, interdisciplinary research, with seventy affiliated faculty members who conduct toxicology-related research spanning investigations of environmental (air, water, soil), occupational, food-borne and pharmaceutical agents. These faculty are from twenty-two different academic departments across campus. Faculty research is primarily supported by federal agencies such as NIH, EPA, NSF and USDA as well as through partnerships with private industry. The research partnerships that MSU toxicologists have forged over the decades in conducting interdisciplinary research have been highly beneficial in the context of research productivity, education and service.

## John Buchweitz

Associate Professor and Toxicology Section Chief,  
MSU Veterinary Diagnostic Laboratory



As an undergraduate biochemistry major at MSU, John Buchweitz was open to wherever life would lead him. He enjoyed biochemistry but until he attended a Society of Toxicology meeting near the end of his undergraduate degree, toxicology hadn't been on his radar. It was at this SOT meeting that Buchweitz began to gain an appreciation for the depth and breadth of toxicology itself and became fascinated with all the related research avenues and topics involved. After completing a Masters degree in animal science with Dr. Steven Bursian, Dr. Robert Roth and Dr. Patti Ganey, Buchweitz decided to pursue his Ph.D. with Dr. Norbert Kaminski as his mentor. While most of Buchweitz's work in his Masters program involved working with the liver, he was excited to work with Dr. Kaminski to look at how the impacts of chemicals on the immune system affected the lung. His postdoctoral work was at the Van Andel Research Institute with Dr. Brian Hobb researching immunodiagnosics and cancer. After this experience, Buchweitz knew he wanted to pursue a toxicological career.

His first role was as a toxicologist at the State of Michigan Department of Agriculture. Buchweitz credits this position with really opening his eyes to the broader reach of agriculture across many different commodities. In particular, he had an opportunity to

work with the animal industry division and the pesticide and plant pest management division and to see how there was an interplay between chemical inputs and animal health. About three years into this role, Buchweitz was asked to provide support to the Veterinary Diagnostic Laboratory at MSU in a temporary capacity. One of the challenges in his role at the State was being unable to access data with which to act upon in

emergency situations. When he came to MSU in his on-loan position, he found all the data he could have ever wanted. **“I realized during my stay here that the biggest impact that I could have for the State of Michigan was through a role here at MSU in which I would have better access to the data,”** commented Buchweitz. **“I could then establish or make contact with individuals who could act upon that data in a meaningful way to ensure food and animal safety was maintained.”**

In 2012, Buchweitz joined the Veterinary Diagnostic Laboratory (VDL) permanently and is now Toxicology Section Chief of the analytical toxicology laboratory. In this role, Buchweitz and his laboratory wear three hats. The first hat is clinical diagnostics. VDL analyzes biological, food/feed, water, and environmental samples to detect the presence of toxic compounds and determine whether poisons are responsible for animal illness or death. The second hat is food safety and its regulatory impact. VDL is often tasked with testing compounds related to food safety or public health. These tests can often lead to action being taken by local regulatory agencies and even the FDA on drugs, feed or food that is potentially contaminated and a threat to the animal or human population. The third hat Buchweitz wears at the VDL is

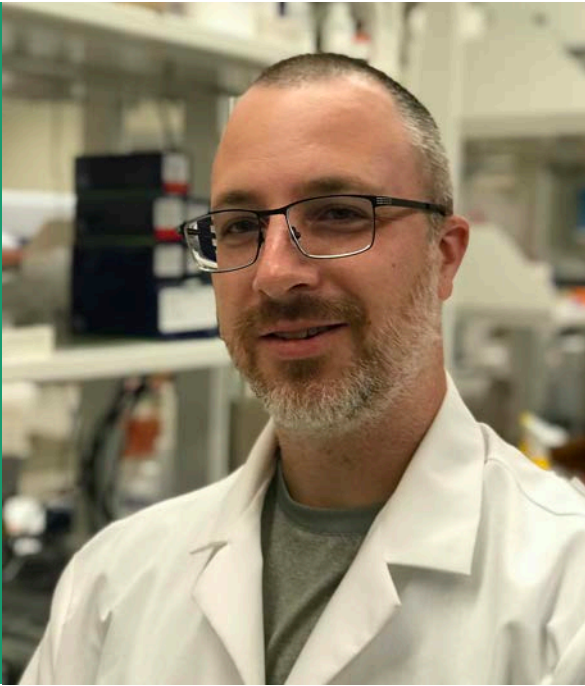
forensics. Within animal diagnostics, there are a number of instances of both accidental, as well as, intentional poisoning events. The VDL's job is to provide defensible evidence through their testing that will support a legal action.

The VDL has staff that is both clinical and research-based. Clinical staff include two supervisors, two prep technicians, and five technicians. The research staff includes two postdoctoral students, one graduate student, a research associate and a number of undergraduates who cycle through the laboratory as well to provide laboratory support or additional support to method developments. The primary research Buchweitz oversees at the VDL focuses on method development. They continuously strive to improve testing capabilities, ensuring that what they report is as accurate as possible. The team is very methodical to ensure they meet guidelines set forth by the EPA or FDA to ensure reproducibility and sensitivity of the tests.

As an EITS alumnus, Buchweitz believes his time in the program set him up well for his career today. Supplementary courses in food safety and toxicology and environmental law are experiences he has drawn on throughout his career at both the government and academic level. ●

## Rance Nault

Assistant Professor,  
Department of Pharmacology & Toxicology



**new things,”** commented Nault on his long run at MSU, **“so it made sense to stay.”** Beginning with microarray omics, Nault has transitioned through an ever-growing field of data management, moving through next-generation sequencing, into single cell transcriptomics and gene expression, and then spatial transcriptomics.

The opportunities for collaboration have kept Nault at MSU as well. As a

co-investigator on the MSU Superfund Research Center in the Data Management and Analysis Core, Nault supports the work of the center through his data management expertise. He is also part of the PVAT Program Project Grant at MSU that explores the role of perivascular adipose tissue (PVAT) in hypertension and vascular health through a highly disciplinary approach. Nault has multiple other collaborations across campus with various researchers where he supports their research with single cell and spatial transcriptomic techniques.

Today, Nault’s research focuses on where specific cells are in the liver, how that affects how chemicals cause toxicity and specifically, how it causes certain patterns of disease to develop. One of his laboratory’s main areas of focus is fatty liver disease. Nault and his group are striving to understand the difference between various types of fatty liver – specifically, are there different subtypes of disease, and how can they develop new tools to evaluate fatty liver disease itself. Looking at it through the lense of toxicology, Nault’s group is looking at how environmental contaminants may be contributing to the development of the disease and the mechanisms involved. A large focus of his laboratory is also working with public data, big data and developing tools to work with the data. Merging

data management with emerging tools in AI has helped Nault in discovering new patterns that might have been overlooked with previous methods. His group is always pushing towards better data management, better data sharing and new ways to use data to solve questions that are being asked. His laboratory of five works on separate projects related to genetics and the development of disease but come together to work on the bioinformatics pieces as a whole. 🌟

As an undergraduate student at the University of Ottawa, Rance Nault had dreams of one day becoming a veterinarian. A semester of research in a toxicology laboratory changed everything though. The environmental laboratory specifically focused on work around fish liver and that is where he began his work with AHR agonists and the liver. During his Masters work, Nault studied how environmental contaminants change energy metabolism in fish. If the fish are stressed from exposure to specific chemicals, can they grow as much, can they swim as well, etc. As part of this research, he was also looking at the metabolism of fish. His research reached a point where he wanted to measure more things and technology was the metric holding him back.

Looking into ways he could further his research with more tools for measuring, Nault found Dr. Timothy Zacharewski at MSU. He was at the forefront of omics in mouse models and had the resources to teach Nault how to measure and gather data in larger quantities. Nault earned his Ph.D. in Biochemistry and Molecular Biology in 2016 and was mentored by Dr. Zacharewski in the EITS program. He continued postdoctoral work with Dr. Zacharewski before accepting his faculty position at MSU. **“The truth is, there was always opportunities to do more, to learn**



# FACULTY PUBLICATIONS

During 2025, 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, 2025 to December 31, 2025.

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Bowman DE, Panda V, Marri D, Kana O, Bhattacharya S. Protocol for predicting single- and multiple-dose-dependent gene expression using deep generative learning. *STAR Protoc*. 2025;6(3):103932. doi:10.1016/j.xpro.2025.103932

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## Trosko, James

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## Wu, Felicia

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## Zacharewski, Timothy

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### Zagorski, Joseph

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### Zhang, Wei

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collaboration



# 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 2025.

## Bernard, Matthew

- » International Society for the Advancement of Cytometry (ISAC) SRL Content Subcommittee Member

## Carignan, Courtney

- » Editorial Board, Journal of Exposure Science and Environmental Epidemiology
- » Member, Environmental Health Research and Surveillance Guidance Panel, Michigan Department

of Health and Human Services

## Chen, Honglei

- » Editorial board, Neurotoxicology

## Chou, Karen

- » Member, Sustainable Committee of Michigan Wine Collaborative
- » Member, Crisis Rapid Response Team for the 2023 East Palestine Train Derailment incident, Ohio State University, Columbus, Ohio. Received Spirit of the Land-Grant

Award for individual and teamwork from the College of Food, Agricultural, and Environmental Sciences, Ohio State University

## Goodman, Jay

- » Fellow, Academy of Toxicological Sciences
- » Diplomate, American Board of Toxicology

## Gulbransen, Brian

- » American Gastroenterology As-

sociation (AGA), Digestive Disease Week (DDW) 2026 Abstract Review Committee Chair

- » American Gastroenterology Association (AGA), Digestive Disease Week (DDW) 2026 Abstract Reviewer
- » Rome V, Neurogastroenterology Basic Science Chapter Committee Member
- » Council Member, Neurogastroenterology and Motility Society (ANMS)
- » Council Member, American Gastroenterology Association (AGA), Neurogastroenterology and Motility Section,
- » Steering Committee, Secretary/Treasurer, American Physiological Society, GI & Liver Section
- » Director, American Neurogastroenterology and Motility Society (ANMS) Webinar Series
- » Topic Editor, Cellular and Molecular Gastroenterology and Hepatology (CMGH)
- » Associate Editor, Purinergic Signaling
- » Review Editor, Neurogastroenterology and Motility
- » 2025 NIH, Member of Panel 2026/01 ZRG1 KUDS-T (03) M – Member Conflict: Topics in Gastroenterology

### Hashsham, Syed

- » Member, American Society for Testing Materials (ASTM) Committee on Microbial Corrosion of Concrete, C13.03
- » Member, Review Panel, European Commission's Marie Skłodowska-Curie Action COFUND - ONIS-LOS Programme

### Hayes, Wallace

- » Member, Health Advisory Board, NSF International, 2025-2027
- » Invited Speaker, International Life

Sciences Institute US and Canada. What's Missing/Needed? NAMs in Toxicology, Advancing Food Systems for Human Health: A Focus on Safety, Innovation, and Sustainability. April 8, 2025

- » Plenary Lecture, New Alternative Methods, Their Place in Toxicology, BioNCiD 2025, 4th International Congress Biopharm Nonclinical Development, May 27, 2025, Iberostar Selection Varadero, Cuba
- » Course Director, Introduction to Toxicology, May 28-29, 2025, Iberostar Selection Varadero, Cuba
- » Co-Chair/Speaker, The New FDA Overview, S. 11, The Westward Movement of Botanicals, 17th International Congress of Toxicology, International Union of Toxicology, Beijing, China, October 15-18, 2025

### Jackson, James

- » Member, American Chemical Society
- » Member, National Academy of Inventors
- » Member, AIChE

### Jones, A. Daniel

- » Review Editor, Frontiers in Plant Metabolism and Chemodiversity

### Kaminski, Norbert

- » Academic Advisor, Food Chemical Safety Committee, Institute for Advancement of Food & Nutrition
- » External Advisory Committee Member, Texas A&M University, NIEHS T32
- » External Advisory Committee Member, University of New Mexico, NIEHS P42
- » Finance Committee Member, Toxicology Forum
- » Food Safety Council Member, ConAgra

### LaPres, John

- » Associate Editor, Toxicological

Reports

### 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 in Past Year: Addiction Neuroscience, Obesity, Appetite, Nature Communications, Neuropharmacology,
- » Society Service: The Society for the Study of Ingestive Behaviors Program Committee, American Physiological Society - Central Nervous System Section, Michigan Diabetes Research Center-Asst. Dir. for Regional Membership & Grants Program Advisory Council
- » Abstract Reviewer: The Obesity Society, The Society for the Study of Ingestive Behaviors
- » Grant Reviewer: NIH - Pathophysiology of Obesity and Metabolic Diseases (Standing Member); Michigan Diabetes Research Center Grants Program
- » Editorial Board, Neuropeptides

### Li, Hui

- » Guest Editor, Special Issue of PFAS in Agroecosystems—Sources, Impacts, and Opportunities for Mitigating Risks to Human and Ecological Health, Journal of Environmental Quality
- » Guest Editor, Special Issue of Antibiotics and Antibiotic Resistance Genes in the Agro-Environment: Fate, Risk and Control for Environment International
- » EPA Chartered Science Advisory Board Member, October 2024 to September 2027
- » EPA Agricultural Science Committee member, October 2024 to September 2027

- » Member on the committee appointed by the National Academies of Sciences, Engineering, and Medicine (National Academies): Assistance to the U.S. Department of Agriculture in Building a Framework for Addressing PFAS on Agricultural Land, 2024-2025

### Luyendyk, James

- » Vice President - Elect, Society of Toxicology

### Mazei-Robison, Michelle

- » American College of Neuropsychopharmacology (ACNP) Membership Committee
- » Catecholamine Society, Treasurer
- » Scientific Reports, Editorial Board
- » NIH Study Sections (NIDA: ZDA XSC-E, NMB/NAL: ZRG1 ICN-L)

### Rockwell, Cheryl

- » Vice President-elect, Immunotoxicology Specialty Section, SOT
- » Editorial Boards: Frontiers in Immunology, Molecular Pharmacology, Pharmacological Research

### 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, Workers' Compensation Research Institute Michigan Advisory Committee

### Sant, Karilyn

- » Chair, 2025 Gordon Research Conference on Cellular & Molecular Mechanisms of Toxicity
- » Editorial Board, Journal of Biochemical & Molecular Toxicology

- » Development Coordinator, Society of Toxicology
- » Co-Chair, Society of Toxicology Career Advancement, Mentoring, and Networking (CAMAN) Committee

### Strakovsky, Rita

- » Section Editor, Early Life and Environmental Health section, Current Environmental Health Reports
- » Editorial board member, Nutrition Research
- » Editorial board member, Endocrine and Metabolic Science
- » Publication committee, American Society for Nutrition
- » Ad hoc reviewer, NIH Career Development Awards (Ks) in Epidemiology and Population Health Sciences Study Section
- » Co-chair, ECHO (Environ. Influences on Child Health Outcomes Program) Biospecimen Use Review Group

### Tiedje, James

- » 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
- » 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
- » Scientific Advisor, Resistomap, a Finnish antimicrobial resistance monitoring company
- » Member, NEON's Microbial Technical Working Group

### Trosko, James

- » Scientific Advisory Board Member, Kangstem Biotech, Seoul, Korea
- » Keynote Lecturer, International Colloquium on Gap Junctions and Cancer, "Cellular Communication, Carcinogenesis and Targeted Interventions," Sao Paulo, Brazil
- » Lecturer, University of Chungbuk, South Korea, Bio-Pride LMS, Chungbuk Bio-Health Innovation Industry Center

### Wagner, James

- » Chairperson, NIEHS Special Emphasis Panel, Career Development (K99/R00, K01, K08, K23)
- » Associate Editor, Inhalation Toxicology
- » Editorial Board, Particle and Fibre Toxicology
- » Member, Committee for Threshold Limit Values for Chemical Substances (TLV-CS); American Conference of Governmental Industrial Hygienists (ACGIH)

### Wu, Felicia

- » President, Society for Risk Analysis
- » Commissioner of Agriculture and Rural Development for the State of Michigan
- » Co-Chair, MSU Provost Search Committee
- » 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), Member
- » WHO Food-Based Dietary Guidelines Committee - Member
- » 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
- » Institute for the Advancement of Food and Nutrition Sciences, Scientific Leadership Council

### Zagorski, Joseph

- » Board of Directors, Toxicology Forum
- » Review Editor, *Frontiers in Toxicology – Immunotoxicology*

### Zhang, Wei

- » Soil Science Society of America, Soil Physics & Hydrology Division, Chair, 2025
- » Multistate Research Project W5188: Soil, water, and environmental physics to sustain agriculture and natural resources, Member, 2025
- » Multistate Research Project NC1187: Particulate reactivity and cycling in a changing environment: Implications for agriculture and human health, Chair, 2025
- » Multistate Research Project NC1209: North American interdis-

ciplinary chronic wasting disease research consortium, Member, 2025

- » Associate Editor, *National Science Open*
- » Associate Editor, *Canadian Journal of Soil Science*
- » Editorial Board Member: *Biochar*
- » Editorial Board Member: *Carbon Research*



# IIT AFFILIATED FACULTY

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

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**Jamie J. Bernard**, Associate Professor, Pharmacology & Toxicology

**Matthew P. Bernard**, Associate Professor, Pharmacology & Toxicology, Director, MSU Flow Cytometry Core Facility

**Sudin Bhattacharya**, Associate 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

**Stephan A. Carey**, 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, Physiology, Pharmacology & Toxicology

**Susan L. Ewart**, Professor, Large Animal Clinical Sciences

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

**Brian D. Gulbransen**, MSU Foundation Professor, Physiology, Neuroscience Program

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**A. Daniel Jones**, Professor Emeritus, Biochemistry & Molecular Biology

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**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

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

**Kin Sing Stephen Lee**, Associate Professor, Pharmacology & Toxicology

**Gina M. Leininger**, Red Cedar Distinguished Professor, Physiology, Neuroscience Program

**Hui Li**, Professor, Plant, Soil & Microbial Sciences

**Yun Liang**, Assistant Professor, Physiology, Pharmacology & Toxicology

**James P. Luyendyk**, Professor, The Albert C. and Lois E. Dehn Endowed Chair in Veterinary Medicine, Pathobiology & Diagnostic Investigation, Associate Dean for Research and Graduate Studies, College of Veterinary Medicine

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**Cheryl A. Murphy**, Professor, Fisheries & Wildlife

**Rance Nault**, Assistant Professor, Pharmacology & Toxicology

**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

**Kyle L. Poulsen**, Assistant Professor, Pharmacology & Toxicology

**A.J. Robison**, 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

**Karilyn E. Sant**, Associate Professor, Pharmacology &

Toxicology, Veterinary Medicine

**Rita S. Strakovsky**, Associate Professor, Food Science & Human Nutrition

**Greg M. Swain**, Professor, Chemistry

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

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