IIT UPDATE

INSTITUTE FOR INTEGRATIVE TOXICOLOGY

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in this issue....

MICHIGAN STATE UNIVERSITY

IIT Hosts Inaugural Jerry Hook Distinguished Lectureship

The IIT is pleased to announce the Jerry Hook Distinguished Lectureship in memory of Dr. Jerry Hook. The lectureship will be held annually and the inaugural seminar was recently held 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*."

Vaidya, who is also a part-time associate professor at Harvard Medical School, has led multidisciplinary teams in acadamia and industry with a goal of changing patient's lives by discovering disease modulating targets and disease monitoring biomarkers. At Pfizer since 2016, Vishal has held leadership roles with increasing responsibilities in Drug Safety and now in Early Clinical Development with the remit of applying biomarker science to achieve confidence in translational safety, clinical proof of mechanism and patient stratification for candidates across all therapeutic areas.

Prior to this, Vishal was an Associate Professor at Harvard Medical School where his team invented biomarkers and targets for kidney disease, co-founded a biotechnology company (Mediar Therapeutics) and authored over 100 papers and book chapters. Vishal has received several prestigious accolades including NIH Outstanding New Environmental Scientist Award, Burroughs Wellcome's Innovation in Regulatory Science Award and the Society of Toxicology's Leading Edge in Basic Science Award.

The IIT is honored to host this lecturship 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. He was the Editor of Toxicology of the Kidney (Target Organ Toxicology Series), 1981, and in collaboration with Robin Goldstein (who performed her

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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 on, "Biomarker Science to Understand Diseases and Advance Drug Development for Patient Care."

Hook Distinguished Lectureship cont.

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doctoral thesis research in Jerry's laboratory), co-edited the second edition of the book, 1992.

Jerry received his PhD in Pharmacology from the University of Iowa in 1966 and later that year was recruited to join the faculty at Michigan State University (MSU) as an Assistant Professor in the new Department of Pharmacology. He contributed substantially to the department's toxicology expertise that led to its evolving to the Department of Pharmacology and Toxicology in 1978. He was an extensive collaborator and worked effectively across disciplines and departments. 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. Over the course of his 17 years as a faculty member, 5 post-doctoral fellows, 10 PhD students, and 4 MS students received their training in his laboratory. The Department's faculty considered him a caring and supportive colleague, always eager to engage in scientific discussion and share his knowledge/insight, with a particular passion for encouraging trainees. We were always proud to say, "Jerry Hook is my friend." Indeed, Jerry is regarded as an icon of MSU's Department of Pharmacology & Toxicology and of the field of toxicology.

In 1983, Jerry was recruited to join Smith Kline & French Laboratories (later becoming Smith Kline Beecham) as Vice President for Preclinical Research and Development, where he directed laboratories in the United States and United Kingdom, and rose to Senior Vice President and Director of Development. In 1993, he founded Lexin Pharmaceutical Company (LPC), a biotechnology company, and served as its CEO. Three years later, LPC merged into Sparta Pharmaceuticals, Inc. which Jerry headed until his retirement in 1999.

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.

Atchison Retires After 39 Years at MSU

The IIT would like to congratulate **Dr. William Atchison** on his recent retirement from MSU after 39 years of distinguished service. Bill joined the Department of Pharmacology and Toxicology in 1983 and maintained an extremely active and vibrant research program in the areas of neurotoxicology and neurodegenerative disorders, which was funded by NIH continuously throughout his career. His research and scholarship resulted in over 120 peer reviewed publications. Bill also served as Director of the Neuroscience Program (1992-1998) and played a major role in establishing this program as degree granting. In addition, Bill served as CVM's Associate Dean for Research and Graduate Studies for several years. Bill also devoted generously of his time and effort to promoting graduate education for underrepresented minority students. Toward this end, Bill established the postbacc program dedicated to preparing URM students for Ph.D. programs in biomedical sciences, and 10 years of developing the Bridge to the Ph.D. in Neuroscience program - the foundation for the Enhancing Neuroscience Diversity through Undergraduate Research Education Experiences (ENDURE) program. Bill capitalized upon his 15+ years of interaction with the University of Puerto Rico to develop a highly successful NIH, NINDS-funded R25-Diversity Education grant that he has directed since 2005. The grant provides research experiences for Hispanic undergraduates. More recently, he also successfully competed for a NIH NIEHS-funded R25 grant to support summer training in toxicology for undergraduate students. In addition to his research and scholarship, Bill was well recognized as an outstanding teacher, lecturer, mentor and colleague.

Bill's research interests focused on the study of effects of chemicals on the nervous system, particularly those chemicals which act directly on the synapse. His primary research interest was in the cellular mechanism of action of chemicals which disrupt Ca^{2+}-dependent processes at the membrane and intracellularly. His toxicological research interests were focused on the effects of heavy metals such as methylmercury, many of which exert potent toxic actions at chemical synapses, and on the potential interaction of environmental toxicants with diseases in the cardiovascular and nervous systems. He also did additional research in the area of neuroscience, focusing on understanding the mechanism of neuronal damage associated with human motor neuron and neuromuscular diseases specifically identifying the molecular entities involved in Ca^{2+}-dependent neurosecretion.

For his many contributions in undergraduate and graduate education, Bill was the recipient of the All University Excellence in Diversity Award in 2010, MSU Distinguished Faculty Award in 2011 and in 2014 the Society of Toxicology Undergraduate Educator Award.

We are thankful to have had the opportunity to work with Bill over the years and wish him a happy retirement!

Tiedje Recognized as One of MSU's Most Highly Cited Researchers

IIT-affiliated faculty member, **Dr. James Tiedje**, has been recognized as one of eleven Michigan State University researchers named in the 2021 Highly Cited Researchers List compiled by Clarivate Analytics.

Each year, the Web of Science Group identifies the world's most influential researchers. The list includes those who have been most cited by peers over the past decade.

According to the report, the researchers had "multiple highly-cited papers that rank in the top 1% by citations for field and year in the Web of Science. Of the world's scientists and social scientists, Clarivate Highly Cited Researchers truly are one in 1,000."

Dr. Tiedje is a University Distinguished Professor Emeritus in the Department of Plant, Soil and Microbial Sciences in the College of Natural Science and College of Agriculture and Natural Resources. He is also the former director of the MSU Center for Microbial Ecology.

Dr. Tiedje was also recently elected as a Foreign Member of the Chinese Academy of Sciences for 2021. The lifelong honor is among the highest that China awards to citizens of foreign countries, with only 25 Foreign Members elected annually.

To read the orginal article on MSUToday, please visit: **https://msutoday.msu.edu/news/2021/eleven-faculty-named-2021-highly-cited-researchers**.

Mansfield Elected to Fellowship in American Academy of Microbiology

IIT-affiliated faculty member, **Dr. Linda Mansfield**, was recently elected to Fellowship in the American Academy of Microbiology. Fellows of the American Academy of Microbiology, an honorific leadership group and a think tank within the ASM, are elected annually through a highly selective, peer-review process, based on their records of scientific achievement and original contributions that have advanced microbiology. The Academy received 130 nominations this year and elected 65 into the 2022 Fellowship Class. Academy fellows are eminent leaders in the field of microbiology and are relied upon for authoritative advice and insight on critical issues in microbiology.

Mansfield is an university distinguished professor in the department of Large Animal Clinical Sciences and the department of Microbiology and Molecular Genetics. Mansfield and her Comparative Enteric Diseases Laboratory explores and elucidates the relationship of the enteric microbiome to acute diarrheal illness. They focus on the inter-relationships among factors mediating diarrheal disease, 1) enteric bacterial pathogens, 2) the human enteric microbiome, and 3) host responses controlling susceptibility, resistance, or autoimmunity. Their specific objective is to understand the mechanisms that initiate autoimmunity secondary to Campylobacter jejuni infection. To learn more about Dr. Mansfield's research, please visit: https://iit.msu.edu/directory/mansfield-linda.html.

Recent CRIS Blog Topics

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

- Publication Spotlight - Cannabidiol CBD Research
- Trending - Tryptophan
- Trending - Flavored Seltzer Water
- Preservatives & Refrigeration
- Trending - Sweeteners
- Trending - Nootropics
- Understanding Recalls - Food, Cosmetics, Medications
- Trending - Nail Polish
- Trending - Hot Sauce Overview
- Trending - Hot Sauce Nutrition
- Probiotics & Prebiotics - Microbiome Background
- Probiotics & Prebiotics - Foods & Supplements
- Response to EFSA's Draft Opinion on BPA
- Probiotics & Prebiotics - Ingredient Safety
- Trending - Bee Pollen
- Risk - Zero Risk?
- Risk in the News - Artificial Sweeteners a Cancer Risk?
- Dryer Sheet Ingredient Safety
- What's the Risk - Repelling Ticks & Mosquitos
- What's the Risk - Sunscreen
- What's the Risk - Pesticide Residue

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

EITS Alumnus Joseph Zagorski Joins CRIS & IIT Faculty

Dr. Joseph Zagorski, EITS alumnus, joins the Center for Research on Ingredient Safety (CRIS) as an assistant professor and the IIT as an affiliated faculty member. As a toxicologist for CRIS, Zagorski is dedicated to better understanding and supporting the safety of consumer products as they pertain to bettering public health.

The broad interest of Zagorski's research centers on ingredient safety and molecular toxicology. Currently, Zagorski is working on developing models of developmental immunotoxicology, co-culture models systems with human hepatocytes, and the utilization of 3D culture systems to predict toxicity. As part of CRIS, his goal is to develop alternative model systems, utilizing primary human cells and tissues. This includes the implementation of a developmental immunotoxicology model system, using primary human CD34+ cells from cord blood, to determine effects of toxicants on the developing immune system. The overarching goal of Zagorski's research is to utilize these models to promote public health and support research for ingredient safety.

Zagorski completed a Ph.D. in Cell and Molecular Biology and Environmental Toxicology from Michigan State University in 2017 and was mentored by Dr. Cheryl Rockwell in the EITS program. While at MSU, he studied the role of a cell stress pathway, activated by chemical toxicants, in the alteration of immune function.

After graduation, Zagorski accepted a position at Spectrum Health in Grand Rapids, studying translational therapeutics for pediatric cancer. Three years later, he transitioned into a role creating, facilitating, and carrying out translational research at Spectrum Health beyond pediatric oncology. At Spectrum, he supported projects ranging from heart disease to adult oncology and precision medicine.

Both CRIS and the IIT are pleased to welcome Dr. Zagorski back to MSU!

IIT Seminar Series Returns for Spring 2022

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

Above: EITS graduate students, Isha Khan, Diana Pacyga, and Dawn Kuszynski, gave the EITS Student Spotlight Seminars for the IIT Seminar Series in February 2022.

» **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. Kymberly 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*."

IIT Affiliates Succeed at 61st SOT Meeting in CA

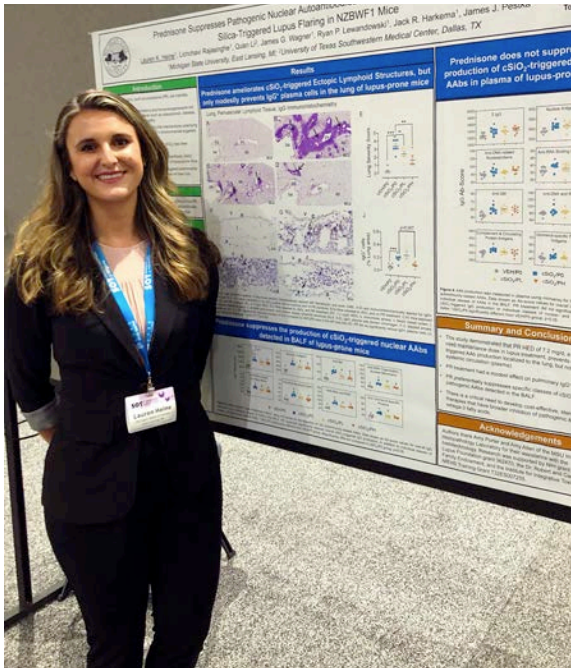
Students and faculty of the MSU Institute for Integrative Toxicology were excited to attend and present at this year's 61st annual Society of Toxicology (SOT) meeting held in San Diego, CA.

The SOT annual meeting is the largest toxicology meeting and exhibition in the world, with more than 70 scientific sessions and 2,000 plus abstract presentations. This year's meeting was held from March 27-31, in person and virtually.

The following students affiliated with IIT received recognition:

» **Lauren Heine**, EITS student training with Dr. Jack Harkema, received the Frank C. Lu Graduate Student Award from the Food Safety Specialty Section for her research elucidating the triggering of autoimmune disease by inhaled silica dust in adult mice genetically prone to development of lupus, and the ameliorating effects of dietary omega-3 fatty acid.

» **Omar Kana**, EITS student training with Dr. Sudin Bhattacharya, was an Abstract Award Finalist for the Biological Modeling Specialty Section for his abstract, "*Generative Deep Learning of the Single Cell 2,3,7,8 Tetrachlorodibenzo-p-dioxin Dose Response in Mouse Liver*."



Above: Lauren Heine, EITS graduate student, won the Frank C. Lu Graduate Student Award from the Food Safety Specialty Section.

» **Isha Khan**, EITS student training with Dr. Norbert Kaminski, was a recipient of the 2022 SOT Graduate Student Travel Support.

» **Lauren Poole Hardy**, a postdoctoral fellow in the laboratory of Dr. James Luyendyk, received the SOT Mechanisms Specialty Section Sheldon D. Murphy Award, as well as the SOT Molecular and Systems Biology Specialty Section Postdoctoral Scholar 2nd Place Award, for her abstract, "*Canonical activation of protease-activated receptor-1 drives experimental liver fibrosis*."

» **Jonathan Diedrich**, a postdoctoral fellow in the laboratory of Dr. Jamie Bernard, received the Environmental Carcinogenesis Merit Award for Postdoctoral Researchers presented by the Carcinogenesis Specialty Section (CSS) for his abstract, "*Bone Marrow Adipocyte-Induced Expression of the Aryl Hydrocarbon Receptor in Multiple Myeloma*."

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

Bhattacharya Receives Withrow Teaching Excellence Award

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

Students in the MSU College of Engineering nominate their favorite faculty members for the highly prized annual Withrow Teaching Excellence Awards. The teaching distinction is for distinguished service to the university and the student body. The honors are part of the annual Withrow Endowed Award program, which was established through a gift from Jack Withrow (BS, MECH EGR, '54; MBA '71) and Dottie Withrow (BA, speech therapy and elementary education, '55). The awards were presented on Monday, March 21, during a banquet at the University Club.

Bhattacharya is an assistant professor in the department of Biomedical Engineering and the department of Pharmacology and Toxicology. He is a recognized scholar in cellular and computational toxicology and an innovative teacher who effectively transfers knowledge gained through his creative research to students. His pioneering research has been funded by multiple federal grants, including NIH R01 and US EPA STAR. He has been an educator and innovator in MSU's new Department of Biomedical Engineering since 2017. He has provided an exceptional learning environment and enthusiasm for the material taught in the BME 891 (graduate level). Students compliment his availability and his offers to help after class. His lectures integrate frontier biological concepts with computational studies seamlessly. Students say he is very knowledgeable and organizes his lectures well. His recent student rating is 4.0 (on a 1-4 scale, with 4 being the best). Students like his lectures, and they appreciate his "tremendous effort."

To read more about the Withrow Teaching Excellence Awards, please visit: https://www.egr.msu.edu/news/2022/02/01/withrow-teaching-excellence-awards-2022.

IIT-Affiliated Faculty Part of Research Team Awarded $13.5 Million Program Project Grant

Several IIT-affiliated faculty have joined a team of MSU researchers on a recently awarded $13.5 million program project grant from NIH titled, "Perivascular Adipose Tissue (PVAT) as a Central Integrator of Vascular Health." The Program Project Grant (PPG) involves four projects that will explore different mechanisms of PVAT, a tissue essential to normal functioning of blood vessels. The grant is led by Dr. Stephanie Watts from the College of Osteopathic Medicine. After four years of intensive work pulling together a successful NIH application, Watts and her interdisciplinary team were awarded the five year, $13.5 million program project grant (PPG) in December 2021 from the National Heart, Lung and Blood Institute of the National Institutes of Health.

"The PPG centers different brains with different perspectives and techniques around the same work/question," explains Watts.

Each of the following four projects will add to the growing body of knowledge around PVAT, potentially leading to therapeutic interventions and overall improvement of health:

» **Project 1: Mechanotransduction and stiffness**
Led by Watts and Dr. Sara Roccabianca in mechanical engineering, this team will assess whether PVAT adds mechanical strength to the artery by helping to reduce stiffness. This could inform whether arteries get stiffer with disease because of or in spite of PVAT, and could lead to treatments to prevent stiffening.

» **Project 2: Nervous innervation and/or neurohumoral control**
Led by IIT-affiliated faculty member, **Dr. Brian Gulbransen** from the department of physiology and Bill Jackson in the department of pharmacology and toxicology, this team will study whether PVAT is innervated by any branch of the nervous system. This is disputed, and thus important to validate. The team will use cutting edge microscopic techniques to test this hypothesis.

» **Project 3: Microenvironmental influence on immune cell function**
Led by IIT-affiliated faculty member, **Dr. Cheryl Rockwell** along with Dr. Andres Contreras and IIT-affiliated faculty member, **Dr. Jamie Bernard** (from the departments of pharmacology and toxicology as well as veterinary medicine), this team will study the collaborative community of immune cells in the PVAT. This special community of immune cells—including microphages, P-cells, T-cells, and others—changes prior to animals becoming hypertensive. If the team is able to identify the dysfunction before the onset of disease, they could create a therapeutic intervention.

» **Project 4: Adipogenic progenitor cell fate**
Led by Dr. Andres Contreras, this team will study whether PVAT has a different stem cell progenitor cell—meaning that it can determine what cell it becomes based on what it's exposed to. Exposed to pressure, PVAT may develop a more bone-like (less adipocyte-like), stiff substance, rather than a fat. The study will also look at differences in men and women, which can inform different hypertensive treatments and therapies. The team also hopes to compare PVAT with non-PVAT fat experimentally to identify a PVAT-specific gene or cell that would allow for tissue-specific interventions.

Together, these four projects seek to understand the underappreciated functions of PVAT as an integrator of vascular health, to determine whether PVAT ameliorates or contributes to disease, to discover distinct PVAT elements, and to begin to design an integrative view of PVAT function in computer simulation.

Four cores will support the quality management of data as well, and include cores to support administrative work, animals, bioinformatics, and equipment (including specialized microscopes and the creation of new equipment if needed). These are led by Dr. Adam Lauver (department of pharmacology and toxicology) and Dr. Gregory Fink (department of pharmacology and toxicology); IIT-affiliated faculty members, **Dr. Sudin Bhattacharya** (BME, department of pharmacology and toxicology) and **Dr. Rance Nault** (department of biochemistry); and Dr. William Jackson (department of pharmacology and toxicology) and Nathan Tykocki (department of pharmacology and toxicology). The whole PPG is supported by the In Vivo Facility headed by Teresa Krieger-Burke (department of pharmacology and toxicology) and the Transgenic and Genome Editing Facility led by Elena Demireva.

"The synergy of these experts and their teams will push each other in exciting ways, and they'll be able to accomplish more together. This project reflects the goal of the college to foster the linking of some of the best minds on campus," says Dr. Andrea Amalfitano, dean of the College of Osteopathic Medicine. "I am extremely proud of all the researchers and staffers who poured their time, energy, and talents into this project, and look forward to seeing the results of their work."

To read more about the PPG and to view the original article on the College of Osteopathic Medicine website, please visit: https://com.msu.edu/news_overview/news/2022/jan/135-million-nih-grant-awarded-msu-college-osteopathic-medicine-researcher.

Li and Research Team Receive USDA Grant to Explore Ways to Mitigate Crop Uptake of PFAS

IIT-affiliated faculty member, **Dr. Hui Li**, along with a team of researchers, was recently awarded a $750,000 grant from the U.S. Department of Agriculture's (USDA) National Institute of Food and Agriculture (NIFA) to study crop uptake of per- and polyfluoroalkyl substances (PFAS) and how to prevent it.

Li, a professor in the Department of Plant, Soil and Microbial Sciences, is joined by four co-principal investigators - IIT-affiliated faculty members, **Stephen Boyd** and **Wei Zhang**, as well as MSU faculty, Ray Hammerschmidt and Kurt Steinke.

PFAS contamination has made headlines around the country, and there is mounting concern about the effects these chemicals have on public health. In response, MSU has invested in the Center for PFAS Research and has developed several multi-institutional, nationwide partnerships to address the problem. Research is looking to quantify the exposure risk to humans and the environment, develop possible remediation strategies, and explore PFAS alternatives for industries that have relied on them.

This grant will allow Li and his team to evaluate novel ways to immobilize PFAS in soils to prevent plants from coming in contact with them. Since the group believes soil pore water is the primary carrier by which the chemicals move to the plant root zone, they hypothesize that soil amendments could prevent plants from taking in PFAS.

"We believe the primary vehicles used by PFAS to enter agricultural lands are contaminated irrigation water or land-applied biosolids, which is used in the agriculture community to improve soil health and provide nutrients," Li said. "But there is increasing evidence that they inadvertently introduce harmful chemicals to soil, water and plants.

"It's extremely difficult to stop PFAS from entering the environment entirely, but we're working to uncover methods that make the chemicals less bioavailable to plants for uptake."

The team will perform lab, greenhouse and field experiments to quantify PFAS in soils irrigated with PFAS-contaminated water. Then, they will test two sorbent materials — layered double hydroxides and modified biochars — and their ability to take in PFAS. Researchers will assess potential PFAS leaching from these materials.

They will seek to validate the findings by comparing test plots of carrots, corn and wheat using soil amendments to control plots without amendments.

"This research will ideally identify field-scale approaches to preventing PFAS from entering crops," Li said. "It's important that any strategies we design are efficient and implementable on agricultural operations of all sizes."

To read the orginal article on the CANR website, please visit: https://www.canr.msu.edu/news/msu-research-team-receives-750-000-usda-grant-to-explore-ways-to-mitigate-crop-uptake-of-pfas.

ToxScout: Jobs in the world of toxicology

The IIT is pleased to share that we will be sending out a new bi-weekly newsletter, the ToxScout. It will be filled with a variety of recent job postings from across academia, government and industry related to the field of toxicology. It will be sent on the opposite schedule of our long-running Toxicology Track newsletter, so job postings can be updated and shared weekly. If you would like to receive this bi-weekly email or know of any students or colleagues who may be interested, please share or subscribe at: http://eepurl.com/h1tpQT.

View past ToxScout editions on our website at: https://iit.msu.edu/news/tox-scout.html.

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