



YOUR HEALTH & THE ENVIRONMENT

News from the University of Rochester Environmental Health Sciences Center

Fall 2019

EHSC Members Featured on NBC News



Professor of Environmental Medicine, Irfan Rahman, PhD and Assistant Professor of Medicine, Daniel Croft, MD, MPH were interviewed September 5th by NBC News reporter Anne Thompson about recent hospitalizations related to e-cigarettes (vaping). The story highlighted the University of Rochester Medical Center e-cigarette research, along with pulmonary and critical care at Strong Memorial Hospital.

Rahman, Croft and multiple clinicians/researchers at Strong are investigating and treating illnesses linked to cannabis vaping. "When the oil is heated, it forms an aerosol that's able to travel into the lung," says Croft. "We are concerned that inhaling the aerosolized oil is leading to inflammation in the lungs which can lead to respiratory failure"

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Welcome New Toxicology Students!

The story aired during the second half of Nightly News with Lester Holt on September 5th, and September 6th on the Today Show. It featured a patient in Utah who suffered serious lung damage after vaping THC, along with Rahman's explanation of e-cigarette research during his lab tour with Thompson, and Croft's interview about Strong's response to the recent outbreak of vaping-related illnesses.



To view these news reports follow the links below:

NBC Nightly News:

https://youtu.be/jlttdGZm_mo

Today Show:

<https://www.today.com/video/what-s-causing-vaping-illnesses-focus-turns-to-oils-68333637903>

Science Take-Out to Develop Hands-On Kits for Education About Vaping

Dina Markowitz, PhD, Professor of Environmental Medicine and Director, Life Sciences Learning Center has been awarded a Small Business Technology Transfer (STTR) grant from the National Institute of Environmental Health Sciences (NIEHS) to develop educational materials about vaping. Markowitz is also the owner of Science Take-Out, a small business that creates and manufactures preassembled “lab in a bag” science kits containing all materials needed for users to engage in hands-on science activities (www.sciencetakeout.com). The Community Engagement Core of the University of Rochester’s Environmental Health Sciences Center will team up with Science Take-Out to develop, pilot test, and evaluate the use of Science Take-Out kits that focus on topics related to the environmental health effects of vaping.

E-cigarettes are currently the most commonly used tobacco product among youth, and they are typically marketed to youth by promoting flavors. Commonly cited reasons for e-cigarette use (“vaping”) among both youth and young adults are flavoring/taste and low perceived harm compared to other tobacco products. Because of the rapidly evolving e-cigarette technology, there are many uncertainties and unknowns about the environmental health effects of vaping. Vaping may pose significant health risks due to long-term exposure to e-cigarette aerosols containing chemicals, flavorings, ultrafine particles, and heavy metals.



www.nypost.com

These new kits will combine the ease-of-use features of Science Take-Out kits with activities and scenarios that engage learners in understanding the potential long-term environmental health effects of vaping. The hands-on Science Take-Out vaping education kits will be designed to be useful in a wide variety of school-based and community-based education settings. The kits will be designed to enable school-based and community-based educators to use hands-on activities to improve participants’ environmental health literacy on the potential long-term health effects of vaping.

Center for Inhalation and Flavoring Toxicological Research



The University of Rochester has established the Center for Inhalation and Flavoring Toxicological Research (CIFT) as a home for research on the health effects of inhaled flavorings. Irfan Rahman, PhD who is a professor in the departments of Environmental Medicine, Public Health Sciences, Dentistry, and Medicine, will direct the new center at the University of Rochester Medical Center.

“Our mission is to understand the inhalation toxicology and human health effects of emerging flavoring chemicals and flavors used in electronic cigarettes and emerging tobacco and non-tobacco products (e-cigarettes, JUUL, vape pens, hookah/waterpipe, IQOS and conventional tobacco/cigarettes) for regulatory science and toxicology. We are also determined to provide updated information on emerging flavoring toxicity to the FDA/NIH and to inform public, schools (middle and high schoolers), and other researchers for dangers of using emerging tobacco or non-tobacco products include flavorings,” says Rahman.



Irfan Rahman, PhD

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CIFTs initial membership includes over 30 faculty, many of whom are also EHSC members. CIFT works closely with the Center for Research on Flavored Tobacco Products (CRoFT), and the Tobacco Centers of Regulatory Science (TCORS) funded by the Food and Drug Administration spring 2018 in partnership with Roswell Park Comprehensive Cancer Center in Buffalo, NY (See EHSC Fall 2018 Newsletter). Inhalation Facility Core of the Environmental Sciences Health Center and Lung Biology & Disease Program, topography and surveys (Ossip/PHS), clinical samplings and lung function (UR CTSI-CRC), and assessment of toxicants (Roswell Park). CIFT also plans to support activities related to the mission and objectives of the EHSC, including educational activities, seminar series, workshops, and pilot projects to generate preliminary data.

For more information, please see the CIFT website at <https://www.urmc.rochester.edu/environmental-medicine/research/inhalation-flavoring-toxicological-research/about-cift.aspx>

Above: Isaac K. Sundar, PhD, Research Assistant Professor working in the Center for Inhalation and Flavoring Toxicological Research



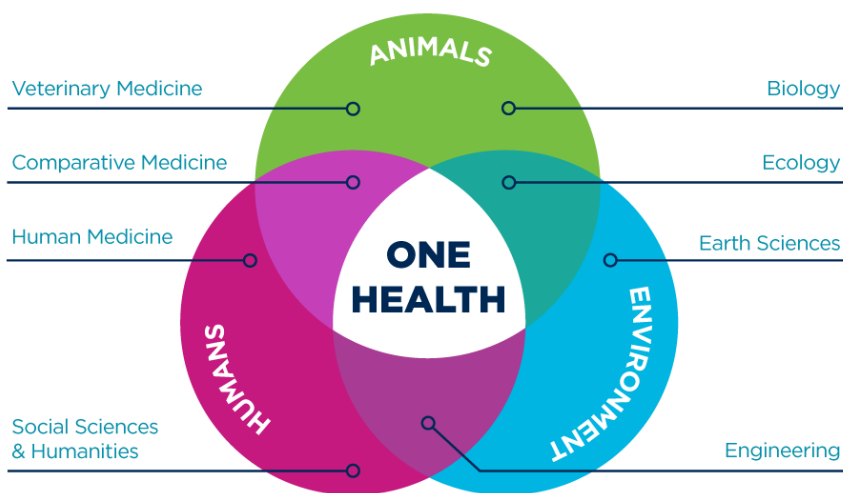
Dina Markowitz, PhD

Life Sciences Learning Center Begins One Health Project

Dina Markowitz, PhD, Professor of Environmental Medicine and Director of the Life Sciences Learning Center (LSLC) recently received a Science Education Partnership Award (SEPA) grant from the National Institute of General Medical Sciences. The 5-year SEPA grant will fund a project to improve adolescents' understanding of the One Health approach to promoting the health of people, animals, and the environment.

The concept of One Health emphasizes the connection between human health, the health of animals and the health of the environment – with the goal of improving all health. The One Health approach supports collaborations between physicians, veterinarians, dentists, nurses, ecologists, and other science, health and environmentally-related disciplines. Markowitz said, “We are excited to create educational materials teachers can use to teach about One Health approach, which is increasingly important as our population rises, agriculture intensifies, and habitat destruction increases.”

This innovative project will develop One Health lessons and activities for use in a variety of settings, through partnerships with UR scientists, science teachers, and informal science educators. Markowitz and her group at the LSLC will collaborate with UR Medical Center researchers and science teachers to develop case-based, hands-on One Health lessons for high school students. They will also develop activities for middle school and high school One Health field trip programs to visit the LSLC as well as informal education and outreach programs throughout the US. The project will also feature an innovative model for disseminating the One Health lessons nationwide using peer-to-peer teacher professional development.



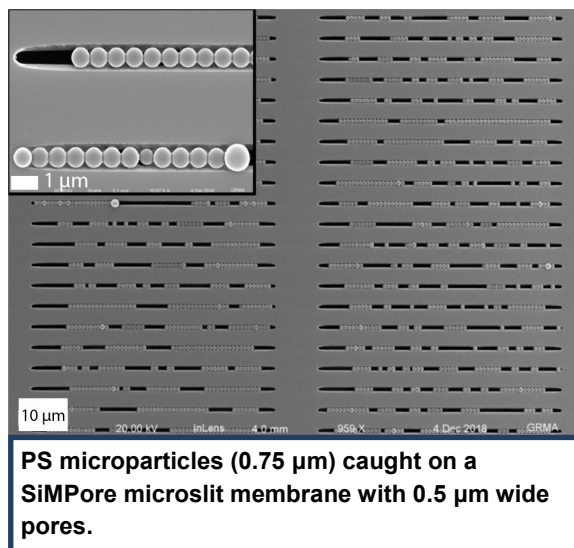
<https://www.ucdavis.edu/one-health/collaborations/>

Biomedical Engineering Teams Up with Life Science Learning Center to Continue Work on Microplastics

James McGrath, PhD, Professor in Biomedical Engineering, and his team received a Small Business Innovation Research (SBIR) grant from the NIEHS to develop filters for detection of microplastics in water. Microplastic particles of 100 nm to 5 mm diameter are now routinely found in sea and fresh water, food and beverages, as well as intestinal tracts of fish and mammals. Public awareness of the microplastic pollution problem is growing, but the development of standards and acceptable pollutant limits has been hampered for several reasons. A first step is to better understand the distribution and extent of environmental microplastics in surface and drinking water. However, lack of affordable and standardized isolation protocols have made it impractical to conduct widespread surveillance of environmental microplastics, which is a prerequisite to understanding the potential health consequences of environmental microplastic exposures.



James McGrath, PhD



McGrath's lab will develop filters that use silicon nanomembranes to process small amounts of water (50 mL) quickly. These filters will rely upon the high permeability, optical transparency, and plastic-free background properties of silicon microslit nanomembranes to enable the easy isolation and chemical identification of environmental microplastics. The research team also aims to use the microplastics that were caught on the nanomembranes in proof-of-concept toxicological studies with an in vitro model of intestinal absorption. In addition to developing and testing the filters, this project will partner with Dina Markowitz, PhD, Professor of Environmental Medicine,

to conduct microplastic testing in water samples collected throughout western New York by local high school students participating in the Life Science Learning Center's outreach programs.

New Book Examines How Local Collaborations Work to Promote Environmental Health Equity

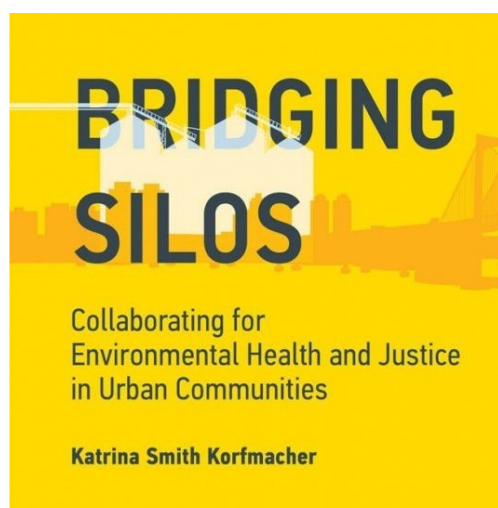


Above: Korfmacher addresses an audience of community members and URMC faculty at a book talk in Miner Library at the University of Rochester School of Medicine and Dentistry

CEC Director Katrina Korfmacher's new book, "Bridging Silos: Collaborating for Environmental Health and Justice in Urban Communities," (The MIT Press, 2019) examines ways that communities can collaborate across systems and sectors to address environmental health disparities. The book presents in-depth studies of three efforts to address longstanding issues environmental health inequities: childhood lead poisoning in

Rochester, New York; unhealthy built environments in Duluth, Minnesota; and pollution related to commercial ports and international trade in Southern California. All three efforts addressed environmental health issues by forging new connections among existing community, academic, and government groups. The Rochester case study highlights the EHSC's longstanding community engagement around lead poisoning prevention.

The book is part of the MIT Press Open Access initiative and can be ordered or downloaded for free from: <https://mitpress.mit.edu/books/bridging-silos>



EHSC Members Travel to Iowa for NIEHS Annual Center Meeting



The 2019 Environmental Health Sciences Core Centers annual meeting was hosted by the University of Iowa in Iowa City in June. University of Rochester's Environmental Health Sciences Center faculty, Irfan Rahman, PhD, CEC Director Katrina Korfmacher, PhD, IHSFC Co-Director Steve Georas, MD, Center Director Paige Lawrence, PhD, and Daniel Croft, MD, MPH, as well as Center Administrator Pat Noonan Sullivan attended the meeting.

Each faculty member played a role in the meeting based on their respective expertise. Rahman spoke on Human health studies of E-cigarette use as part of a panel with Dana Haine, MS (UNC-Chapel Hill) and Judith Zelikoff, PhD (NYU). Korfmacher co-facilitated a session on policy engagement by CECs and presented on report back of research results to participants. At a break out session on translational research in environmental health sciences, Georas shared the center's experience with the highly successful IHSFC Translational Mini-Pilot Program. Croft was selected by NIEHS as one of a select group of New Investigators invited to present a poster on his research on air pollution exposure and hospital admissions for respiratory viral infections.

Pictured from Left: Center members Irfan Rahman, PhD, Katrina Korfmacher, PhD, Steve Georas, MD, Paige Lawrence, PhD, Dan Croft, MD, MPH at the NIEHS Core Centers meeting at the University of Iowa.

The next EHSC meeting will be hosted by Wayne State University in Detroit, Michigan July 22- 24, 2020.

Toxicology Training Program 2019 Retreat

Keynote Speaker Jody Flaws, PhD



Above: Jodi Flaws, PhD

This year's toxicology retreat keynote speaker Jodi Flaws, PhD, Associate Director of the Interdisciplinary Environmental Toxicology Program at the University of Illinois, Urbana presented on "The Effects of Phthalate Exposure on Female Reproduction." Flaw's presentation focused on how endocrine disrupting chemicals (EDCs) including phthalates impact ovarian follicle growth, steroidogenesis, and female fertility. Phthalates, synthetic chemicals used as plasticizers and stabilizers, are found in many health and beauty products including perfumes, nail polish, deodorants, and lotions. They are also found in other chemicals such as pesticides, solvents, lubricants and adhesives. Medical products such as tubing, surgical gloves, and blood bags may also contain phthalates.

Phthalates have been detected in human fluids and tissues and are considerably higher in children and women, leading scientists to believe that toys and make-up, respectively, may contribute significantly to exposure.

The Flaws lab has found that some of the effects of phthalates on female reproduction may be transgenerational in nature. These findings have increased understanding of the mechanisms by which EDCs cause female reproductive toxicity. This information eventually may lead to new approaches to the prevention or treatment of infertility induced by EDCs.

Welcome New Toxicology Students!



From Left to Right:
Sarah Morgan, Traci
Pressley, and Kristina
Fenner

Kristina Fenner

Undergraduate Institution: Susquehanna University
Undergraduate Major(s): Biochemistry
Hometown: Howard, PA

Sarah Morgan

Undergraduate Institution: West Virginia University
Undergraduate Major(s): Chemistry and Forensic &
Investigative Sciences
Hometown: Webster, NY

Traci Pressley

Undergraduate Institution: University of the Sciences
Undergraduate Major(s): Pharmacology and
Toxicology
Hometown: New Cumberland, PA

For questions or comments, please contact:

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environmental-health-sciences/coec/news-publications.aspx](http://www.urmc.rochester.edu/environmental-health-sciences/coec/news-publications.aspx)