

NEWSLETTER

CIEHS Up to Date News and Accomplishments

Awards Announcements and Reminders

CIEHS Environmental Health Series Seminar with special guest **Marcelo G. Bonini, Ph.D.**

CIEHS welcomes external speaker, Dr. Marcelo Bonini, as the next EHS seminar guest on Thursday, December 2nd, at 11 AM. Bonini's presentation is entitled "Electrochemical determinants of cellular phenotypic transitions". This will be a hybrid event. Click [HERE](#) to register for the MS Teams link or attend in person at the Clinical and Translational Research Building (CTR) room 124. View the CIEHS EHS seminar schedule [HERE](#) and past seminars on our [YouTube channel](#).

The Center for Integrative Environmental Health Sciences Presents EHS Seminar with Special Guest

Marcelo G. Bonini, PhD



Presentation Entitled:
"Electrochemical determinants of cellular phenotypic transitions"

Dr. Marcelo Bonini is a professor of medicine at the Feinberg School of Medicine of Northwestern University in Chicago. He also serves as the Associate Director for Education and Training at the Robert H. Lurie Comprehensive Cancer Center of Northwestern University.

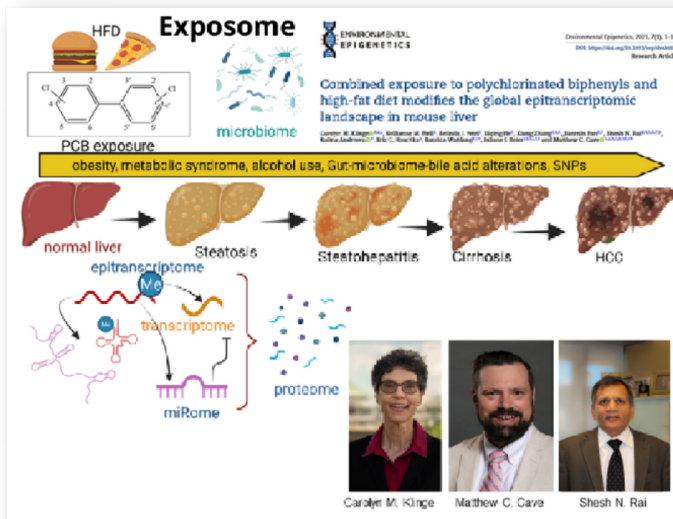
Thursday, December 2 | 11 AM ET
Attendance In-person: CTRB 124
To register for attendance via MS Teams: [CLICK HERE](#)

UNIVERSITY OF
LOUISVILLE
CENTER FOR INTEGRATIVE
ENVIRONMENTAL HEALTH
SCIENCES

Marcelo G. Bonini, Ph.D. Series Seminar Flyer

Carolyn M. Klinge, Ph.D. ITEMFC Research Voucher Award

Dr. Carolyn M. Klinge's Cycle 2- January 2021 ITEMFC Research Voucher award entitled "Epitranscriptome in a murine model of TASH" helped to fund, in part, the research in a recent publication entitled "[Combined exposure to polychlorinated biphenyls and high-fat diet modifies the global epitranscriptomic landscape in mouse liver](#)". CIEHS collaborators on this research include Drs. Matthew Cave, Shesh Rai, and Banrida Wahlang. Learn more [HERE](#).



Publication Slide

WELCOME OUR NEW MEMBERS:

MOT RIG:

Charlie H. Zhang, Ph.D.

NEURO RIG:

John Wise, Jr., Ph.D.

Announcement:

The **Pilot Project Program** is now accepting letters of intent (LOI) for the 2022 research voucher submission. Learn more [HERE](#). LOI are due by December 10th.

CONNECT WITH US ON SOCIAL MEDIA:



Awards Announcements and Reminders Continued

Annual Retreat & Anti-Racism Seminar

Thank you to everyone who attended the annual retreat on Wednesday, November 10th. We appreciate the constructive feedback received during the session. This is also a reminder to register for the 3 part CIEHS sponsored virtual Anti-Racism Workshop series by December 3rd. You may click [HERE](#) to register or scan the QR code on the right. You can now review parts of the Annual Retreat on our [YouTube channel](#).

J. Christopher States, Ph.D. quoted in Medscape Medical News

Dr. Christopher States, CIEHS Center Director, was quoted in a Medscape Medical News article entitled "More Eczema in Children Exposed to Toxic Metals in Utero" on November 2nd, 2021. The article reports on a study that shows how exposure to arsenic and other metals in pregnancy can cause Eczema during childhood. Dr. States shares "Low-level arsenic exposure does not cause disease immediately, but it does appear to have long-lasting effects, making individuals susceptible to 'second hits' with another environmental agent." Read the full article in Medscape Medical News [HERE](#).

AASLD Student Highlight

Congratulations to Belinda J. Petri, Doctoral Candidate, who presented two posters at the [American Association for the Study of Liver Diseases](#) meeting with the collaboration of several CIEHS members (members names bolded).

Petri, B.J., Piell, K.M., **Wahlang, B.**, Jin, J., Shi, H., Andreeva, K., Rouchka, E.C., **Cave, M.C.**, and **Klinge, C.M.** Mult-omics analysis elucidates potential roles for environmental pollution-regulated microRNAs in nonalcoholic fatty liver disease. Poster #497, the American Association for the Study of Liver Diseases (AASLD) The Liver Meeting November 12-15, 2021.

Petri, B.J., Piell, K.M., He, L, Zhang, X, Pan, J. **Rai, S.N.**, Andreeva, K. Rouchka, E.C., **Wahlang, B.**, **Cave, M.C.**, and **Klinge, C.M.** Environmental pollutants modify the hepatic global epitranscriptome in a mouse model of nonalcoholic fatty liver disease. Poster #497, the American Association for the Study of Liver Diseases (AASLD) The Liver Meeting November 12-15, 2021

OpEd on Children's Environmental Health

Dr. Luz Huntington-Moskos, Dr. Vicki Hines-Martin, and Josie Willis, wrote an OpEd on Children's Environmental Health that was featured in the Louisville Courier-Journal and the [Murray Ledger & Times](#). Willis emphasizes that "Promoting environmental health literacy among healthcare providers and the public; screening protocols at primary/pediatric care settings; more transparency from corporations about their waste elimination, and advocacy for stricter standard of compliance laws and regulations for larger industrial operations are essential to our children's health." Read the full article on the CIEHS website [HERE](#).

Matthew Cave, M.D. Featured in the Cover of NIH News in Health

Dr. Matthew C. Cave, IHSFC Core Director, was featured on the cover of the October 2021 edition of [NIH News in Health](#). Dr. Cave gives insights into fighting fatty liver disease and the importance of getting screened by medical professionals. Read more about this news story through the CIEHS Community Engagement Core- [Health Care Providers tab](#).

Workshop registrants will be provided the opportunity to participate in research evaluating the workshops, but research participation is not required for workshop attendance. Contact PI Dr. Becky Antle with questions or concerns at becky.antle@louisville.edu. Contact Carol Frame at carol.frame@louisville.edu with any questions.

UofL Center for Family & Community Well-Being Poster

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"We're finding that these things probably serve as double whammies," Cave explains. "Say you eat a bad diet and have a chemical exposure. The chemical may make the effects of the diet worse."

—Dr. Matthew C. Cave

Quote from Dr. Matthew Cave NIH News in Health feature

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Awards Announcements and Reminders Continued

Research!Louisville Recap

Thank you to everyone who participated in Research!Louisville for another successful year! Several awards were received by center members and mentors of awardees. You can view these awards on [our website](#) or below (member names bolded). Various presentations from CIEHS Pilot awardees and voucher awardees are accessible on the CIEHS website and our [YouTube channel](#).

Postdoctoral Fellow Award

Alexandra Nail, PhD

1st Place

Mentor: **J. Christopher States, PhD**

Jamie Young, PhD

1st Place

Mentor: **Lu Cai, PhD**

Doctoral Basic Science- Graduate Student Award

Idoia Meaza Isusi

3rd Place

Mentor: **John P. Wise, Sr., PhD**

Research Associate/Research Scientist Award

Jianzhu Luo

2nd Place

Mentor: **Banrida Wahlang, PhD**

Public Health & Information Sciences- Graduate Student Award

Yuanbao Zhang

1st Place

Mentor: **Qunwei Zhang, MD, MPH, PhD**

Emily Reece

2nd Place

Mentor: **Kira Taylor, PhD, MS**

Faculty Award in Basic Science

Banrida Wahlang, PhD

Winner

NCI Cancer Education Program- Norbert J. Burzynski Award- Professional Student Category

Lakynkalina McCaffrey

1st Place

Mentor: **J. Christopher States, PhD**

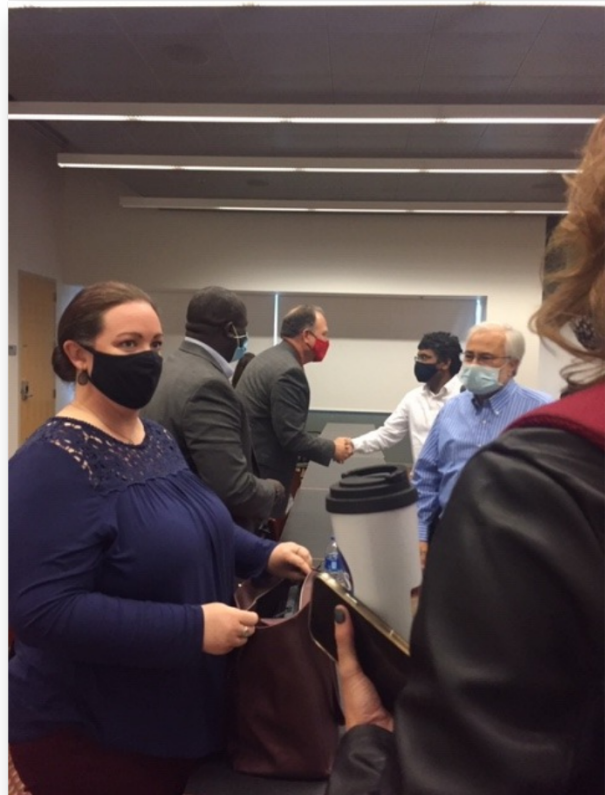


Photo from Research ! Louisville featuring (from left to right): Ashley Adams, Drs. Edrisa Sanyang, Ritchie Taylor, Krishna Jala, Chris States, and Amanda Jo LeBlanc

2021 OVOST Student Award Winners and Presenters

Congratulations to the 2021 OVSOT student award winners and presenters! Students worked from the labs of Drs. John Wise, David Hein, Christopher States, and Alex Carll. View the list of presenters and awardees with full presentation titles [HERE](#).

Postdoctoral Student Platform

Ana Ferragut Cardoso- States Lab

Alexandra Nail - States Lab

Doctoral Student Platform

Idoia Meaza- 1st place- Wise Lab

Kennedy Walls- Hein Lab

Tox on the Clock

Jennifer Toyoda- 1st place - Wise lab

Haiyan Lu- 2nd place- Wise lab

Mariam Habil- Participation Award-Hein lab

Oral Posters

Cory Kucera- Alex Carll lab

Awards Announcements and Reminders Continued

Raise Some L Trainee Travel Fund

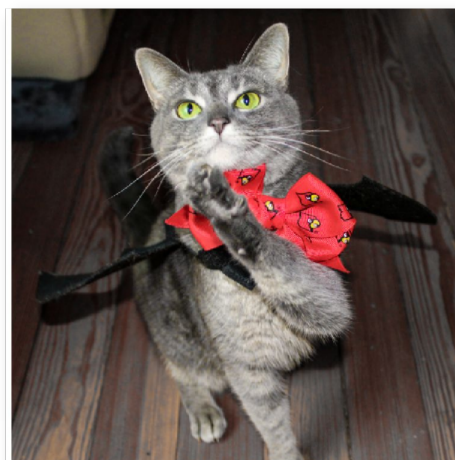
Thank you to everyone who contributed to the CIEHS Student and Post-Doc Travel Fund during Raise Some L! We received \$475 in one-time contributions and were awarded \$200 for the Future Cards and Pets Social Media Challenge (winning photo on the right).

Four center members also signed up for payroll deductions that will go directly to the travel fund. If only 5 members contribute \$10 per month for 10 months, that will allow us to award 1 award for student and post-doc travel! The more monthly contributions we receive, the more awards we can provide!

Why should you contribute?

Dr. Alexandra Nail, Postdoctoral Fellow in the States Lab, received a CIEHS Student and Post-Doc Travel Award in October 2021, where she attended the Gordon Research Seminar and Gordon Research Conference (photo on the right). Dr. Nail declares "The CIEHS travel award provided me the opportunity to meet leaders in the DNA Repair field, present my work to international experts, and receive critical feedback that is necessary for my continued development as a postdoctoral trainee." Read more about Dr. Nail's experience [HERE](#).

Jennifer Toyoda, Graduate Student in the Wise Lab, gives an inside scoop on how essential travel awards are for student and post-doc success in a testimonial video you can find on the CIEHS YouTube channel [HERE](#). Any contribution helps to support the scientists of tomorrow! In order to make a donation to support the CIEHS travel fund, click [HERE](#).



Sarah Jump, CIEHS Program Coordinator, awarded \$200 for Raise Some L-Future Cards and Pets Social Media Challenge with her cat Gremlin. Funds donated to the CIEHS Travel Fund.

Vicki Hines-Martin, PhD, PMHCNS, RN, FAAN Keynote Speaker for Diversity in Healthcare Discussion

Dr. Vicki Hines-Martin, Associate Director for the Community Engagement Core, was a keynote speaker at the UofL Kornhauser Library Diversity in Healthcare discussion on November 3rd. Other panelists include Dr. Abbie Beacham, Holly Cunningham, Kaelin Shay, and Onu Udoh. This session provided an overview of wellbeing, discussed multiple threats based on current social and environmental factors and needed resources to support individual and community mental health.

John P. Wise, Sr., Ph.D. RIVER Grant Press Conference

The University of Louisville will be holding a press conference at 10AM on December 9th in the Abell building for Dr. John Wise's newly awarded R35 RIVER grant. Neeli Bendapudi, UofL President, will be introducing Dr. Wise and the R35 grant followed by a speech from Dr. Wise. Congratulations to the CIEHS Deputy Director, Dr. John Wise!

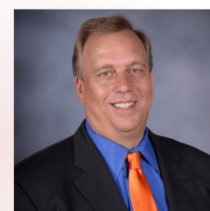
John P. Wise, Sr., Ph.D. & Jiapeng Huang, MD, Ph.D. Faculty Excellence Awardees

Congratulations to Drs. Jiapeng Huang and John P. Wise, Sr. for being honored with Faculty Excellence Awards from the University of Louisville School of Medicine. Dr. Huang was honored with the Distinguished Service to the National and/or International Community Award. Dr. Wise was honored with the Career Achievement in Education Award.

Congratulations to Idoia Meaza (Wise Lab) for successfully finishing her Master's this semester and advancing to Doctoral Candidacy.



Dr. Alexandra Nail presenting her poster at the Gordon Research Conference



John P. Wise, Sr., Ph.D.

National Institute of Environmental Health Sciences Grant

Congratulations to Deputy Director of CIEHS, Dr. John P. Wise, Sr., who received an eight-year, \$6.6 million Revolutionizing Innovative, Visionary Environmental health Research (RIVER) award from the NIH/NIEHS.



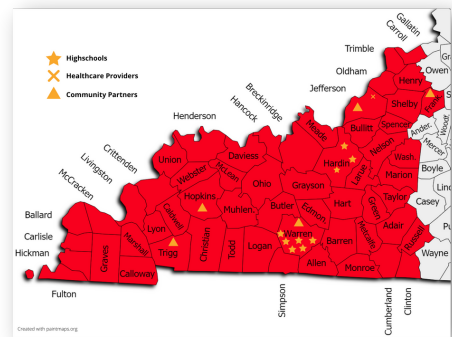
Social Media post announcing Wise Grant

Community Engagement Core Corner

The Community Engagement Core was busy during the month of October with a number of outreach events. To begin with, Dr. Huntington-Moskos completed two environmental health education workshops (Warren and Hardin counties) in collaboration with the South Central Area Health Education Center (AHEC). These sessions included the AHEC Future Healthcare Professionals group, which includes youth in grades 9-12. Our outreach with community members in Trigg County continues as Dr. Huntington-Moskos, Ms. Josie Willis, and Ms. Sarah Jump journeyed to interview community members that had experienced an air and odor pollution problem related to a lack of regulatory practices at a hemp processing plant. The community members were welcoming towards the team and expressed great appreciation for the assistance they received from Dr. Rachel Neal. Ms. Jump is currently working on editing and compiling the community member testimonials that will be on our website to view at a later date. In addition to community outreach in western Kentucky, [a presentation](#) by our first Community-Engaged Pilot Project Awardee, Dr. Edrisa Sanyang on workplace exposures impacting career and volunteer firefighters in the northwestern Kentucky area was completed during Research!Louisville. Dr. Sanyang was accompanied by his graduate research student, Ms. Ashley Adams who has firsthand experience as she is a volunteer firefighter herself and his colleague (CEC Stakeholder Advisory Board member) Dr. Ritchie Taylor (pictured below).



R!L left to right: Dr. Chris States, Ashley Adams, Dr. Edrisa Sanyang and Dr. Ritchie Taylor



CEC Relations in KY

With the support of Ms. Sarah Jump, the CEC has continued to add content to the website. Under the [‘About Us’](#) tab, you will find a map of Kentucky, displaying the areas where the CEC has established relationships with several community partners, high schools, and healthcare providers (map of KY pictured above). There is a benchmark science timeline underneath the [“CIEHS Scientists”](#) tab that explains how close research is to being readily used by the public (example timeline below). A publication on fatty liver disease featuring Dr. Matt Cave has also been added to the [‘Healthcare Providers’](#) tab.

On Wednesday, November 3rd, a [Youth Exchange Session](#) was held via MS Teams with [Dr. Rachel Keith](#) presenting on the dangers of e-cigarettes and vaping. This [video](#) is available on the CEC website under the [‘Youth’](#) tab. Additionally, an opinion piece on the importance of children’s environmental health written by Dr. Huntington-Moskos, Dr. Hines-Martin, and Ms. Willis was submitted to several newspapers local to Western Kentucky and Louisville at the end of October. The piece was published in the Murray Ledger and the Courier Journal on Tuesday, November 10th. The CIEHS Community Engagement Core is now on [Instagram](#) and [Facebook](#). Both Facebook and Instagram use the handle @uofl.ciehs.cec, feel free to follow, like and share! If you have any comments, questions, concerns or ideas for collaboration, please reach out to Ms. Josie Willis via email at Josephine.willis@louisville.edu.



Bench Science



Animal Studies



Clinical Trials



Community-engaged Research



Citizen-led Science

Notes from the Director:

11/30/21

We are now halfway through our second year of funding. This year CIEHS hosted two symposia at Research!Louisville – one showcasing our first year pilot project awards and the second showcasing our first year research vouchers. The research presented was exciting cutting edge research. If you were not able to see and hear the presentations live, they are available on our [YouTube channel](#) (Louisville CIEHS). All the CIEHS seminars are also posted there. Please subscribe to our channel! Speaking of pilot project and research voucher awards, CIEHS has awarded approximately a half million dollars in pilot grants and research vouchers in its first two years. These programs are continuing with the receipt of letters of intent for next year's pilot project due soon. Another round of RFAs for research vouchers is also on the horizon.

We also initiated a student/post-doctoral travel award fund. Several members have generously contributed to the fund and we were able to make our first award to Dr. Alexandra Nail to assist her participation in the Gordon Research Conference and Symposium on Mammalian DNA Repair. We can make one award for every five members who donate \$10 a month by payroll deduction, so join me in supporting our students and post-docs participation in national and international meetings.

Our seminar series continues with both internal and external speakers. Each RIG hosts one external speaker each year and we have a Center-wide external speaker once per year. This month the Cancer RIG is hosting Dr. Marcelo Bonini from Northwestern University. Dr. Bonini chairs the SIEE study section that reviews many of our grant applications and on which several CIEHS members either currently serve or previously served. He will be our fourth external speaker. In March, we are hosting Dr. Michael Aschner as a Center-wide guest.

CIEHS held the annual retreat last month. The first half was devoted to a presentation by Dr. Becky Antle and Ms. Chyna Angelini, Director and Program Coordinator, respectively, of the Center for Family & Community Well-Being, on systemic racism that stimulated active discussion. You can sign up for the follow-up workshops elsewhere in this newsletter. Dr. Amanda Jo LeBlanc then discussed changes to the Pilot Project Program. We then discussed CIEHS strengths, weaknesses, opportunities and threats during the retreat. The membership provided valuable feedback on what we are doing well and where we might improve. We thank all those who attended for their participation and input. Review the annual retreat on our [YouTube channel](#).

We are preparing for our upcoming review by our External Advisory Committee in January. As we did last year, we ask that CIEHS members attend as much of the review as possible both to show your support and potentially to answer questions posed by the Committee.

Our annual report to the EVPRI is due this month before the winter break. CIEHS, like other Centers, must collect information on members including publications and active grants during fiscal year 2021 (7/1/20-6/30/21) for this report. A web form was developed to make the reporting easier for the membership. Please respond to the request for information promptly so that the information can be compiled for the report in a timely manner. The EVPRI distributes Center-RIF based on these reports. These funds enable us to offer more research vouchers to enable members to respond to concerns expressed in grant or manuscript reviews.

MEMBER GRANT AWARDS FOR AUGUST

Congratulations to CIEHS members who received new grants in the month of August 2021! We are so proud of all the hard work of our CIEHS members. You truly are making UofL a nationally recognized premier metropolitan research University and promoting interdisciplinary collaborative research in our Center! You can also view these grants by following this [LINK](#).

PI Name	Other Investigator	Long Title	Sponsor	Amount
Srivastava, Sanjay		Supplement - KC Donnelly Externship-Promotion of Translational/ Transdisciplinary Efforts in Graduate & Post-Doctoral Research	National Institutes of Health	\$15,600.00
<p>Our proposed project will provide an improved approach for studying lung and arterial injury in vitro. This will generate a better understanding of how exposure to 1,3-butadiene and other volatile organic compounds VOCs contribute to the development of cardiovascular diseases.</p>				
Wise, John Pierce		Chromosome Instability Drives Metal-Induced Lung Cancer	National Institutes of Health	\$769,278.00
<p>Lung cancer is the number one cause of cancer death in the United States and metals are a major cause of the disease. Our study focuses on how hexavalent chromium, a metal with widespread exposure known to cause lung cancer, causes chromosome instability, a hallmark event in lung cancer. Our findings will transform our understanding of how metals cause chromosome instability and lung cancer, which may spur new potential treatment targets, new approaches to reduce and prevent metal-induced lung cancer, and new insights to better determine and manage safer exposure levels for this major public health concern. Important Co-investigators on this grant include Drs. Sandra Wise (University of Louisville), Ke Jian Liu (University of New Mexico), Tongzhang Zheng (Brown University), Stefan Mundlos (Max Planck Institute for Molecular Genetics in Germany) and Lynne Haber (University of Cincinnati) along with key collaborators Drs. Matthew Cave (University of Louisville), Deborah Kelly (Penn State University), Kazuya Kondo, Collaborator (The University of Tokushima), Michael Merchant (University of Louisville), Alvaro Puga (University of Cincinnati), Erik Tokar (National Institute of Environmental Health Sciences), Ronald Walter (Texas State University), and Wesley Warren (University of Missouri).</p>				
Conklin, Daniel		Cardiovascular Benefits of Inhaled Biogenic Volatile Organic Compounds	National Institutes of Health	\$234,063.00
<p>We propose that plant-derived biogenic volatile organic chemicals (BVOCs) including pinenes, limonene, and citronellol stimulate distinct signaling pathways, in part, by activating the transient receptor potential ankyrin-1 (TRPA1) channel on cardiovascular targets. In endothelial cells, for example, activation of TRPA1 releases nitric oxide that lowers blood pressure, improves cardiovascular function and tamps down inflammation and thrombosis leading to an overall decrease in cardiovascular disease risk. Completion of this project will verify beneficial cardiovascular effects of inhaled BVOCs and also lead to the development of biomarkers of exposure to greenness.</p>				
Harris, Lesley Beth		The Promise: Arts-Based, Socially Engaged Research Exploring the Impact of Race-Based Trauma and Gun Violence in Louisville.	Engagement Scholarship Consortium	\$5,000.00
<p>This grant was written by Dr. Harris and members of the Research Committee at the Speed Art Museum, under the leadership of Toya Northington, Community Engagement Strategist at the Speed. Other members include: Dr. Jelani Kerr, Dr. Emma Sterrett-Hong, Dr. Maurice Gattis and Dr. Ahmad Washington. This program will culminate into a public, arts-advocacy exhibition at the Speed Art Museum in the Spring of 2022.</p>				
Johnsrude, Christopher L.	Sullivan, Janice	ICD Therapy in Catecholaminergic Polymorphic Ventricular Tachycardia	University of British Columbia	\$1,000.00
<p>Catecholaminergic Polymorphic Ventricular Tachycardia (CPVT) is a rare inherited arrhythmia disorder characterized by ventricular tachycardia typically triggered by exercise and emotions in the presence of a structurally normal heart. The goals of this study are to: 1) compare the rate of arrhythmia-induced events between paediatric CPVT patients with and without ICDs and 2) determine the quality of life and psychosocial functioning of paediatric CPVT patients with and without ICDs. The study involves data collection, exercises tests, accelerometry, physical activity trackers, and questionnaires throughout the 1 year study.</p>				
Total New Awards August 2021:				\$1,024,941.00

SEPTEMBER PUBLICATIONS HIGHLIGHTS

Congratulations to the CIEHS members with articles published in the month of September! Member names will be bolded and impact statements for the publications are italicized. You may also read the publication by clicking on the PMID underlined.

1. Boakye E, Obisesan OH, Uddin SMI, El-Shahawy O, Dzaye O, Osei AD, Benjamin EJ, Stokes AC, Robertson RM, **Bhatnagar A**, Blaha MJ. Cannabis vaping among adults in the United States: Prevalence, trends, and association with high-risk behaviors and adverse respiratory conditions. *Prev Med.* 2021 Sep 11;153:106800. doi: 10.1016/j.ypmed.2021.106800. Epub ahead of print. PMID: [34520787](#).
Impact Statement: *The e-cigarette or vaping product-use-associated lung injury outbreak in the United States has raised concerns about the potential health effects of cannabis vaping, a method of cannabis use that is becoming increasingly popular. Although the study found there was no association between cannabis vaping and asthma or other respiratory symptoms, the increasing trends of cannabis vaping, particularly among young adults, raise concern and underscore the need for continued surveillance.*
2. Hamorsky KT, Bushau-Sprinkle AM, Kitterman K, Corman JM, DeMarco J, Keith RJ, **Bhatnagar A**, Fuqua JL, Lasnik A, Joh J, Chung D, Klein J, Flynn J, Gardner M, Barve S, Ghare SS, Palmer KE. Serological assessment of SARS-CoV-2 infection during the first wave of the pandemic in Louisville Kentucky. *Sci Rep.* 2021 Sep 14;11(1):18285. doi: 10.1038/s41598-021-97423-z. PMID: 34521900; PMCID: [PMC8440627](#).
Impact Statement: *Serological assays intended for diagnosis, sero-epidemiologic assessment, and measurement of protective antibody titers upon infection or vaccination are essential for managing the SARS-CoV-2 pandemic. We developed an Enzyme-linked Immunosorbent Assay (ELISA) methods for measuring IgG, IgA, and IgM responses to SARS-CoV-2, Spike (S), receptor binding domain (RBD), and nucleocapsid (N) proteins. Our analyses demonstrate a broad immune response among individuals and suggest some non-RBD specific S IgG and IgA antibodies neutralize SARS-CoV-2.*
3. Dunlap NE, van Berkel V, **Cai L**. COVID-19 and low-dose radiation therapy. *Radiat Med Prot.* 2021 Sep 10. doi: 10.1016/j.radmp.2021.09.004. Epub ahead of print. PMID: 34522905; PMCID: [PMC8429076](#).
Impact Statement: *Global health authorities working on the COVID-19 outbreak continue to explore methods to reduce the rate of its transmission to healthy individuals. Low dose radiation (LDR) as an alternative approach has attracted more attention due to its several advantages compared to the current drugs and medicines. To date more than 10 case reports and pilot clinical trial preliminary outcomes are available from different countries, therefore, this summarized the potential rationales and mechanisms of LDR therapy for COVID-19 patients, and its current clinical status and potential use.*
4. Roberts AM, Moulana NZ, Jagadapillai R, **Cai L**, Gozal E. Intravital Assessment of Pre-capillary Pulmonary Arterioles of Type-1 Diabetic Mice Shows Oxidative Damage and Increased Tone in Response to NOS Inhibition. *J Appl Physiol* (1985). 2021 Sep 30. doi: 10.1152/jappphysiol.00395.2021. Epub ahead of print. PMID: [34590907](#).
Impact Statement: *Diabetes is characterized by hyperglycemia, metabolic dysfunction, inflammation systemic vascular complications and oxidative damage affecting multiple organs but its effect on the lung and its large capillary network, have often been disregarded. This study finds that diabetes-induced changes in the lung involve microvascular dysfunction, platelet activation and altered vasoreactivity potentially impairing alveolar perfusion. Elucidating the mechanisms of diabetes-induced microangiopathy may provide novel therapeutic strategies to prevent or reverse diabetes consequences on multiple organs.*
5. **Klinge CM**, Piell KM, Petri BJ, He L, Zhang X, Pan J, **Rai SN**, Andreeva K, Rouchka EC, **Wahlang B**, Beier JI, **Cave MC**. Combined exposure to polychlorinated biphenyls and high-fat diet modifies the global epitranscriptomic landscape in mouse liver. *Environ Epigenet.* 2021 Sep 17;7(1):dvab008. doi: 10.1093/eep/dvab008. PMID: 34548932; PMCID: [PMC8448424](#).
Impact Statement: *A goal of our research is to understand how exposure to persistent environmental pollutants may contribute to the rise in metabolic diseases, including nonalcoholic fatty liver disease, seen in human populations. This publication is the first examination of how a high fat diet and PCB exposure affect post-transcriptional chemical modifications of RNA in mice as a model for nonalcoholic fatty liver disease.*

SEPTEMBER PUBLICATIONS HIGHLIGHTS CONTINUED

6. Nabeta HW, **Kouokam JC**, Lasnik AB, Fuqua JL, Palmer KE. Novel Antifungal Activity of Q-Griffithsin, a Broad-Spectrum Antiviral Lectin. *Microbiol Spectr*. 2021 Sep 8:e0095721. doi: 10.1128/Spectrum.00957-21. Epub ahead of print. PMID: [34494857](#).

Impact Statement: *Although multiple antifungals have been developed against Candida species, the currently increasing candidiasis incidence and resistance acquired by some strains demand new agents. In this study, Q-griffithsin (Q-GRFT), an algal protein with broad-spectrum activity against enveloped viruses, showed growth-inhibitory effects on several Candida strains, suggesting its potential use to tackle such infections.*

7. Koo H, Hwang JY, Jung S, Park H, Bok J, **Park JW**. Position Specific Alternative Splicing and Gene Expression Profiles Along the Tonotopic Axis of Chick Cochlea. *Front Mol Biosci*. 2021 Sep 8;8:726976. doi: 10.3389/fmolb.2021.726976. PMID: 34568429; PMCID: [PMC8456117](#).

Impact Statement: *Our study shows another level of genetic regulation to accomplish the task of frequency discrimination in chick cochlea. We found that many genes involved in sound sensing and processing undergo progressively different alternative splicing along the tonotopic axis. This differentiated transcriptome along the tonotopic axis suggests that the cochlea expresses different combinations of proteins depending on cochlear location, although encoded in the same set of genes, to have unique functional properties suitable for sensing different sound frequencies.*

8. O'Brien SJ, Scheurlen K, Rochet A, Fiechter C, Paas M, Pan J, **Rai SN**, Galandiuk S. Increased Expression of Long Non-coding RNA H19 is Associated With Colon Cancer Recurrence. *J Surg Res*. 2021 Sep 11;269:59-68. doi: 10.1016/j.jss.2021.08.004. Epub ahead of print. PMID: [34520983](#).

Impact Statement: *This study focuses on the analysis of an oncogenic long non-coding RNA H19 and its association with worse recurrence-free survival in patients with colon cancer, and in particular stage II colon cancer. These results suggest that H19 may have a specific role in the risk stratification of patients and may help inform decisions regarding the use and/or escalation of adjuvant therapy.*

9. **Wise JP Jr**, Young JL, **Cai J**, **Cai L**. Current understanding of hexavalent chromium [Cr(VI)] neurotoxicity and new perspectives. *Environ Int*. 2021 Sep 20;158:106877. doi: 10.1016/j.envint.2021.106877. Epub ahead of print. PMID: [34547640](#).

Impact Statement: *This review paper discusses the neurotoxicity of hexavalent chromium [Cr(VI)], a widely recognized human carcinogen and health hazard, drawing from literature studying humans, animals, and cell cultures over the last 50+ years. Traditionally, Cr(VI) has not been considered a neurotoxicant and Cr(VI) neurotoxicity has been largely left out of discussions pertaining to human health and regulations protecting health. This review conclusively describes Cr(VI) as a neurotoxicant and calls for increased efforts to consider Cr(VI) neurotoxicity research and regulations.*

10. Wood LA, Tomlinson MM, Pfeiffer JA, Walker KL, Keith RJ, Smith T, **Yeager RA**, **Bhatnagar A**, Kerstiens S, Gilkey D, Gao H, **Srivastava S**, Hart JL. Time spent outdoors and sleep normality: A preliminary investigation. *Popul Med*. 2021 Mar;3:7. doi: 10.18332/popmed/132119. Epub 2021 Mar 4. PMID: 34485920; PMCID: [PMC8411876](#).

Impact Statement: *Clinical trials with survival endpoints are typically designed to enroll patients for a specified number of years, (usually 2-3 years) with another specified duration of follow-up (usually 2-3 years). With random accrual time and follow-up time lead to complex censoring patterns. Conflicting findings were observed for comparing cardiovascular events in patients who took Rofecoxib (Vioxx). Here, using extensive simulation studies, we assess the impact of such censorings on statistical procedures for comparing two treatment groups. Clinical studies with survival outcome should be properly designed to maintain power by considering the censoring patterns.*

OCTOBER PUBLICATIONS HIGHLIGHTS

Congratulations to the CIEHS members with articles published in the month of October! Member names will be bolded and impact statements for the publications are italicized. You may also read the publication by clicking on the PMID underlined.

- Bhatnagar A.** Cardiovascular Effects of Particulate Air Pollution. *Annu Rev Med.* 2021 Oct 13. doi: 10.1146/annurev-med-042220-011549. Epub ahead of print. PMID: [34644154](#).
Impact Statement: *Reviews current state of knowledge about the effects of air pollution on cardiovascular disease and mortality. It discusses the mechanisms by which exposure to air pollution affects cardiovascular risk factors and the subclinical progression of cardiovascular disease states.*
- Singh M, Kapoor A, **Bhatnagar A.** Physiological and Pathological Roles of Aldose Reductase. *Metabolites.* 2021 Sep 27;11(10):655. doi: 10.3390/metabo11100655. PMID: 34677370; PMCID: [PMC8541668](#).
Impact Statement: *Reviews the role of aldose reductase in glucose metabolism and the detoxification of reactive aldehydes generated from the oxidation of membrane lipids and how the enzyme participates in the manifestation of the secondary complications of diabetes*
- Malovichko MV, Abplanalp WT, McFall SA, Taylor BS, Wickramasinghe NS, Sithu ID, Zelko IN, Uchida S, Hill BG, Sutaria SR, Nantz MH, **Bhatnagar A, Conklin DJ, O'Toole TE, Srivastava S.** Subclinical markers of cardiovascular toxicity of benzene inhalation in mice. *Toxicol Appl Pharmacol.* 2021 Nov 15;431:115742. doi: 10.1016/j.taap.2021.115742. Epub 2021 Oct 5. PMID: [34624356](#).
Impact Statement: *Benzene is a ubiquitous environmental pollutant. Recent population-based studies suggest that benzene exposure is associated with an increased risk for cardiovascular disease. However, it is unclear whether benzene exposure by itself is sufficient to induce cardiovascular toxicity. We examined the effects of benzene inhalation (50 ppm, 6 h/day, 5 days/week, 6 weeks) or HEPA-filtered air exposure on the biomarkers of cardiovascular toxicity in male C57BL/6j mice. Together, these data suggest that benzene exposure induces endothelial injury, enhances platelet activation and inflammatory processes; and circulatory levels of endothelial cell and platelet-derived microparticles and platelet-leukocyte aggregates are excellent biomarkers of cardiovascular toxicity of benzene.*
- Xiong L, Zhou B, Liu H, **Cai L.** Comprehensive Review of Cadmium Toxicity Mechanisms in Male Reproduction and Therapeutic Strategies. *Rev Environ Contam Toxicol.* 2021 Oct 8. doi: 10.1007/398_2021_75. Epub ahead of print. PMID: [34618232](#).
Impact Statement: *Cadmium (Cd) has been widely studied as an environmental pollutant for many years with several organs, and this review focused on toxic effects of Cd exposure on male reproductive system. Currently preclinical animal studies have confirmed many proteins and intracellular signaling pathways involved in the pathological process of Cd-induced male reproductive damage and potential measures for prophylaxis and treatment, which primarily include antioxidants, anti-inflammatory agents, and essential ion supplement. The underlying mechanisms for Cd-induced toxicity on male reproductive function was comprehensively discussed, which may provide guidance for the treatment and prevention of Cd-induced male reproductive toxicity.*
- Li J, Jin S, Barati MT, Rane S, Lin Q, Tan Y, **Cai L, Rane MJ.** ERK and p38 MAPK inhibition controls NF-E2 degradation and profibrotic signaling in renal proximal tubule cells. *Life Sci.* 2021 Oct 26:120092. doi: 10.1016/j.lfs.2021.120092. Epub ahead of print. PMID: [34715142](#).
Impact Statement: *Li et. al. demonstrated p38 and ERK MAPK-dependent proteasomal degradation of the anti-fibrotic protein NF-E2 in TGF- β treated human renal proximal (HK-11) cells. Moreover, activation of the proteasome and loss of NF-E2 expression, induced JNK activation and CTGF expression. In contrast, proteasomal inhibition and NF-E2 over-expression, inhibited TGF- β -induced JNK activation and CTGF expression in HK-11 cells and type 1 diabetic kidneys. Thus, NF-E2 could serve as a therapeutic target to generate therapies to prevent progression of renal fibrosis, chronic kidney disease, and renal failure associated with diabetes.*
- Zelko IN, Dassanayaka S, Malovichko MV, Howard CM, Garrett LF, Uchida S, Brittan KR, **Conklin DJ, Jones SP, Srivastava S.** Chronic Benzene Exposure Aggravates Pressure Overload-Induced Cardiac Dysfunction. *Toxicol Sci.* 2021 Oct 27:kfab125. doi: 10.1093/toxsci/kfab125. Epub ahead of print. PMID: [34718823](#).
Impact Statement: *Benzene is a ubiquitous environmental pollutant abundant in household products, petrochemicals and cigarette smoke. Benzene is a well-known carcinogen in humans and experimental animals; however, little is known about the cardiovascular toxicity of benzene. It is unclear whether benzene exposure is sufficient to induce and/or exacerbate heart failure. We examined the effects of benzene, these data suggest that benzene exacerbates heart failure by promoting endothelial activation and neutrophil recruitment.*

OCTOBER PUBLICATIONS HIGHLIGHTS CONTINUED

7. **DeJarnett N.** *Joining Forces With Environmental Health Professionals.* *J Public Health Manag Pract.* 2021 Nov-Dec 01;27(6):621-622. doi: 10.1097/PHH.0000000000001430. PMID: [34554999](#).

Impact Statement: This article describes concrete actions leaders in public health practice can take alongside local environmental health practitioners to champion climate sustainability, including evaluating capacity for climate action, fostering strategic partnerships, supporting career pathways, connecting with grassroots groups, and using storytelling as a communications tool.

8. **Huang J, Firestone S, Moffatt-Bruce S, Tibi P, Shore-Lesserson L.** 2021 *Clinical Practice Guidelines for Anesthesiologists on Patient Blood Management in Cardiac Surgery.* *J Cardiothorac Vasc Anesth.* 2021 Sep 24:S1053-0770(21)00845-4. doi: 10.1053/j.jvca.2021.09.032. Epub ahead of print. PMID: [34654633](#).

Impact Statement: This 2021 STS/SCA/AmSECT/SABM updated patient blood management guideline stresses the importance of an evidence-based, multimodal, and multidisciplinary approach to preserving a patient's blood and conserving resources so as to optimize outcomes in patients who are at high risk for transfusion.

9. **Huntington-Moskos L, Rayens MK, Wiggins AT, Butler KM, Hahn EJ.** *Use of Theory-Driven Report Back to Promote Lung Cancer Risk Reduction.* *Int J Environ Res Public Health.* 2021 Oct 11;18(20):10648. doi: 10.3390/ijerph182010648. PMID: 34682394; PMCID: [PMC8536114](#).

Impact Statement: The goal of this work is to highlight the role of a report back process in prompting health behavior change. Report back is active sharing of research findings with participants to prompt behavior change. In particular, research on a theory-driven report back process for environmental risk reduction is limited. Our research team sought to evaluate the impact of a stage-tailored report back process with participants who had high home radon and/or air nicotine levels. We found that tailored report back of research findings to individual participants reduced radon exposure and changed the health behavior necessary to remediate radon and SHS exposure.

10. **Wahlang B, Gripshover TC, Gao H, Krivokhizhina T, Keith RJ, Sithu ID, Rai SN, Bhatnagar A, McClain CJ, Srivastava S, Cave MC.** *Associations between residential exposure to volatile organic compounds (VOCs) and liver injury markers.* *Toxicol Sci.* 2021 Oct 20:kfab119. doi: 10.1093/toxsci/kfab119. Epub ahead of print. PMID: [34668566](#).

Impact Statement: This publication investigated the effects of volatile organic compounds (VOCs), often found in air, and their contribution to liver disease, in Louisville community residents. The results from the study demonstrated significant positive associations between these environmental chemicals and liver disease biomarkers, which were more pronounced in smokers. These findings can help in better risk assessment of daily VOC exposures and provide some insight on how lifestyle factors such as smoking can contribute to liver disease risk.

11. **Zelko IN, Taylor BS, Das TP, Watson WH, Sithu ID, Wahlang B, Malovichko MV, Cave MC, Srivastava S.** *Effect of vinyl chloride exposure on cardiometabolic toxicity.* *Environ Toxicol.* 2021 Oct 30. doi: 10.1002/tox.23394. Epub ahead of print. PMID: [34717031](#).

Impact Statement: Vinyl chloride (VC) is an organochlorine mainly used to manufacture its polymer polyvinyl chloride, which is extensively used in the manufacturing of consumer products. Recent studies suggest that chronic low dose VC exposure affects glucose homeostasis in high fat diet-fed mice. Our data suggest that even in the absence of high fat diet, exposure to VC (0.8 ppm, 6 h/day, 5 day/week, for 12 weeks) induces glucose intolerance (1.0 g/kg, i.p.) in male C57BL/6 mice.

12. **Rouchka EC, Chariker JH, Saurabh K, Waigel S, Zacharias W, Zhang M, Talley D, Santisteban I, Puccio M, Moyer S, Holm RH, Yeager RA, Sokoloski KJ, Fuqua J, Bhatnagar A, Smith T.** *The Rapid Assessment of Aggregated Wastewater Samples for Genomic Surveillance of SARS-CoV-2 on a City-Wide Scale.* *Pathogens.* 2021 Oct 1;10(10):1271. doi: 10.3390/pathogens10101271. PMID: 34684220; PMCID: [PMC8541652](#).

Impact Statement: This paper describes a collaborative effort between Louisville Metro Public Health and Wellness, The Louisville Metropolitan Sewer District, and the University of Louisville to monitor COVID-19 and track variant spread through testing of wastewater samples over a 28 week period. The information gained from this work enabled targeted public health efforts including outreach to at-risk communities and the deployment of mobile and community-focused vaccination campaigns.