UNIVERSITY OF LOUISVILLE
CENTER FOR INTEGRATIVE ENVIRONMENTAL HEALTH SCIENCES

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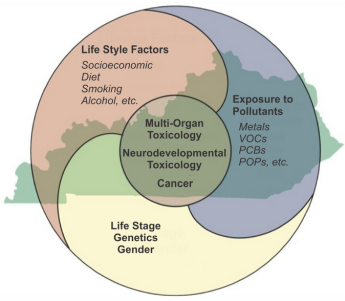

MONTHLY NEWSLETTER

CIEHS Up to Date News and Accomplishments

Community Engagement Core Highlights

CEC has accomplished several successful community outreach sessions since the center opened in July 2020.

Fall 2020

AHEC South Central (Bowling Green region) – 6 sessions total

- 2 sessions completed with **Future Health Professionals** group 10/19, 11/16
- Completed the 1st **Youth Exchange Session** 11/10 with Dr. Kim Hartley.
- Completed **WKU Student Rural Health Association** presentation 11/11.
- 2 sessions completed with **Pikeville Medical Residents**. 11/17, 12/8

Spring 2021

- 2 sessions completed with **Future Health Professionals** group:
  - -3/1 Warren County, Science Take Out Kit, Safe City Water
  - -3/2 Hardin County, Science Take Out Kit, Safe Well Water

Summer 2021

- 2021 Summer Environmental Health Program, scheduled for 8 sessions in June
- 2nd **Youth Exchange Session** with Dr. Natasha DeJarnett 5/26

Vicki Hines-Martin, PhD, PMHCNS, RN, FAAN

Luz Huntington-Moskos PhD, RN, CPN

Dr. Vicki Hines-Martin Named A Health Care Hero

Congratulations to Dr. Vicki Hines-Martin, the CIEHS Community Engagement Core Associate Director, for being recognized as a Kentuckiana Health Care Hero. This accolade is from Spalding University who partnered with WHAS for their Health Care Heros special. You may click HERE to view Dr. Vicki Hines-Martin's spotlight on WHAS.
Dr. Hines-Martin will also receive the *Caritas Medal* from Spalding University in June.

Dr. Luz Huntington-Moskos NIEHS Grantee Highlight

Congratulations to Dr. Huntington-Moskos, the CIEHS Community Engagement Core Director, who is featured as a grantee highlight with the National Institute of Environmental Health Science. Dr. Huntington-Moskos is recognized for her partnership with youth and community groups to support environmental health literacy throughout Western Kentucky. You can view more information about the NIEHS highlight HERE.

Dr. Luz Huntington-Moskos joins Betty Irene Moore Fellowship

Congratulations to Dr. Huntington-Moskos for being accepted as one of ten nurses for the 2021 cohort of the Betty Irene Moore Fellowship for Nurse Leaders and Innovators. During this fellowship, she will receive a $450,000 grant to conduct research and will focus on environmental health research centered on improving adolescent health outcomes. She strives to create environmental health report-back strategies to help support adolescent asthma self-management. Click HERE for more information.

WELCOME OUR NEW MEMBERS:

MOT RIG:
Kira Taylor, Ph.D.

Biostatistician I:
Shilpa Kulkarni

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Awards Announcements and Reminders

CIEHS Environmental Health Series Seminar

Please join us on Thursday, June 3rd at 11 AM EST for Dr. Deborah Cory-Slechta's seminar entitled "Ambient Ultrafine Particle Air Pollution and Neurodevelopmental Disorders". This will be a hybrid event, but CIEHS encourages individuals to attend in person. The seminar will be held at the Clinical and Translational Research Building (CTRB) in room 101/102. If you are unable to attend in person, you can register HERE to receive the MS Teams link.

Deborah A. Slechta, Ph.D.
Series Seminar Poster

2nd Youth Exchange Session

With Community Engagement Core

Guest speaker, Dr. Natasha DeJarnett from the Christina Lee Brown Envirome Institute at the University of Louisville, joined CEC on May 26th, 2021 to engage youth in environmental health with her presentation titled "Climate Changes Youth Health". Dr. DeJarnett spoke about the importance of youth voicing their concerns on climate change and environmental health. She emphasized how climate change impacts physical/mental health and that sensitive groups are more susceptible to the effects of climate change. You can view the Youth Exchange Session HERE.

Natasha K. DeJarnett, Ph.D., MPH
Youth Exchange Poster

2021 ITEMFC Research Voucher Awards Cycle 2

Congratulations to Dr. Alex Carll in collaboration with Dr. Michael Merchant, Dr. Petra Haberzettl, and Dr. Daniel Conklin who received a Cycle 2 ITEMFC Research Voucher Award entitled “Neural and Neuroendocrine Pathways of Airborne Toxin-Induced Cardiac Dysfunction”. The significance of this study is that while the detailed mechanisms by which air pollutants adversely affect the heart remain elusive, evidence is mounting that those pollutants which evoke pulmonary irritant reflexes impose harm by altering neural and neurohormonal control of cardiac function, thereby triggering arrhythmia and impairing contraction. To examine the link between neural/neurohormonal dysregulation of the heart and actual dysfunction of the heart upon exposure to inhaled irritant toxins, these studies will compare the effects of inhalation exposures to particulate matter, formaldehyde, and e-cigarette aerosol on the phosphorylation of a vast array of neural/neurohormonal-targeted proteins in the heart that influence cardiac conduction and contraction. Effects on phosphorylation will be evaluated for association with ancillary measures of cardiac physiology (e.g., electrocardiogram, echocardiography) to further elucidate their physiologic implications. You can view this award on the CIEHS website HERE.

Notes from the Director:

May, 2021

We are now in our second year of funding on the P30 grant. We have a great year planned with four external speakers, one each quarter. We have Dr. Deborah Cory-Slechta coming June 3 from the University of Rochester, Dr. Miroslav Styblo coming September 2 from the University of North Carolina Chapel Hill, and Dr. Marcelo Bonini coming December 2 from Northwestern University. We are open to suggestions for the speaker for March 2022.

Things are still in a state of flux with COVID. For the moment, it appears that restrictions are being relaxed and vaccinated persons are now able to meet in person without masks. This is good news as I am sure that you all are eager to get back to interacting with one another face to face again. CIEHS is planning to hold its meetings and seminars in person. So we hope to see you at Dr. Cory-Slechta's seminar on June 3.

Sarah Jump will be joining us full-time to help with communications. She will be expanding our outreach on social media publicizing the great work that CIEHS members do. As you are aware, she collects and publicizes new publications and grants. This effort will be improved by inclusion of short statements of impact. Please help Sarah to publicize your work by providing her a sentence or two in lay language stating the impact of your publications and grants. Speaking our social media, please follow CIEHS on LinkedIn, Facebook and Twitter. You can find us at: LinkedIn, Facebook @CIEHSUOFL, and Twitter @CIEHS_UofL.

Our Community Engagement Core has been active in addressing the concerns of the Cadiz community concerning a hemp processing plant there. The Core and Dr. Rachel Neal have been working with community members teaching them how to use air monitoring devices to collect data on pollutants. The data will assist the community members in their appeals for regulation of the plant.

Now that pandemic restrictions are relaxed and we can gather, we are working on organizing a CIEHS-wide reception in late June. Meeting in person will provide opportunities to interact and get to know other members and their interests better. We also will be saying farewell to Dr. Gary Hoyle who has led the Pilot Project Program as he is retiring June 30. We thank Dr. Hoyle for his outstanding service and wish him well in his retirement.

Congratulations to the CIEHS 2021 Pilot Project Awardees

New Direction Pilot Project Awards

Principal Investigator: David Hein, Ph.D.
Collaborator: Raul Salazar-Gonzalez, Ph.D.
Title: Gene-environmental interactions of novel psychoactive chemicals substituting for illegal drugs of abuse
Narrative: The use of new psychoactive substances as drugs of abuse in human populations is common and increasing in popularity, particularly among youth and communities with lower socioeconomic status. Similarly, hookah smoking is also increasingly popular, particularly among young people. The long-term toxicity of these new psychoactive substances and hookah smoking in human populations is unknown. The ultimate goal of the studies is to better define individual human risk as well as to develop intervention strategies to prevent and/or treat toxicity following the increasing use of these drugs of abuse.

Principal Investigator: Rachel Neal, Ph.D.
Co-Investigator: Cynthia Corbitt, Ph.D.
Title: Hepatic metabolic response to the fasting/refeeding transition in offspring exposed in utero to vaping
Narrative: Dr. Neal will examine the impact of maternal vaping on key offspring liver nutrient utilization pathways in conjunction with weight gain, using two murine model systems. Outcomes of this study are critically important and necessary to characterize the potential impacts of maternal vaping on the fetal environment and infant health.

Interdisciplinary Pilot Project Awards:

Principal Investigator: Xiao-An Fu, Ph.D.
Co-Investigator: Qunwei Zhang, Ph.D.
Title: Analysis of harmful compounds in aerosols of electronic cigarettes to evaluate toxicity
Narrative: This project will analyze all harmful organic compounds in aerosols of laboratory formulated e-liquids to understand the sources of toxic compounds. Constituents in the five most popular flavoring electronic liquids and ecigarettes used by teenagers and in aerosols of the e-cigarettes will then be analyzed to identify all toxicants. The data obtained from this project will be disseminated to the public by publications and to the FDA for regulation of e-cigarettes.

Principal Investigator: Jun Cai, M.D., Ph.D.
Co-Investigator : Lu Cai, M.D., Ph.D., Gregory Barnes, M.D., Ph.D.
Title: Disruption of β-catenin destruction complex and ASD-like behaviors in whole-life cadmium exposure and postnatal obesity
Narrative: In this study, Dr. Cai will investigate the effects of cadmium exposure and diet-induced obesity on brain impairments and autism-associated behaviors in mice exposed to low-dose cadmium from preconception to adulthood and fed high-fat diet after weaning. The completion of this proof of concept will allow us to establish the interactions among cadmium toxicity, diet, and their roles in the cause of autism. The findings will identify putative target(s) for developing new interventions to treat autism patients with chronic exposure of cadmium or other toxic heavy metals

Community-Engaged Pilot Project Award:

Principal Investigators: Rachel Neal, Ph.D. and Luz Huntington Moskos, Ph.D., R.N, C.P.N.
Co-Investigator: NA
Title: Citizen Science Approach to Studying the Community Impact of Hemp Processing Facilities in Cadiz, KY
Narrative: The aims of this work are to support community odor reporting, to disseminate information on the health impacts of PM 2.5 and PM 10, VOCs and, finally, to train community members in environmental sampling. The study of the environmental impact of hemp cultivation and processing is in its infancy. Nationwide, hemp processing plants represent a significant community environmental challenge due to the overwhelming odor profile that has led to citizen complaints to local and regional air quality boards. In Kentucky, there are multiple drying and cannabinoid extraction plants using a variety of industrial processes resulting in odors, reduced adjacent highway visibility, and lack of air pollution release permitting prior to operation. This community-engaged work will provide community members with their own data and strive to increase their environmental health literacy related to outdoor air quality.

MEMBER GRANT AWARDS FOR MARCH

Congratulations to CIEHS members who received new grants in the month of March 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		The role of signaling adaptor protein epsin in atherosclerosis	Children's Hospital Boston	$98,280.00
The goal of this project is to decipher the molecular mechanisms by which epsin endocytic adaptor proteins contribute to hyperlipidemia, especially by enhancing sterol regulatory element binding protein (SREBP) transcriptional activity to promote cholesterol synthesis as well as increasing low density lipoprotein receptor (LDLR) degradation to perturb oxidized lipid clearance in the liver.				
Wise, John Pierce		Demonstration Projects, Integrating DNA Profiles, Genomics and Photo-Identification Data	Oregon State University	$29,732.00
This work will create a database of pictures, photo identification and DNA fingerprints for the Gulf of Mexico's population of sperm whales that will help study and understand these important animals.				
Bhatnagar, Aruni	**Rai, Shesh Nath; Yeager, Ray Anthony**	Linking Sars-CoV-2 Wastewater Concentrations to Community Infection Prevalence	Centers for Disease Control	$8,665,208.00
This grant is to identify the prevalence of coronavirus infection in different parts of Jefferson County using both wastewater monitoring and randomized community testing. Our overall goal is to see whether there is correspondence between the results obtained from measuring the levels of the virus in wastewater and the levels of infection detected by measuring the levels of infection in a random survey of the community. This will help validate and quantify wastewater results.				
Huang, Jiapeng		Evaluate Long Term Cardiovascular and Pulmonary Complications after COVID-19 with Point of Care Ultrasound	Gilead Foundation	$249,982.85
The goal for this study is to comprehensively delineate the long term cardiovascular and pulmonary ultrasound findings in recovered COVID-19 patients, identify risks factors for prolonged heart/lung injury, evaluate long term effects of applied treatment, and assess late medication/vaccine side effects in COVID-19 patients.				
			Total New Awards March 2021:	**$9,043,202.85**

MARCH PUBLICATIONS HIGHLIGHTS

Congratulations to the CIEHS members with articles published in the month of March! 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. Oshunbade AA, Kassahun-Yimer W, Valle KA, Hamid A, Kipchumba RK, Kamimura D, Clark D 3rd, White WB, DeFilippis AP, Blaha MJ, Benjamin EJ, O'Brien EC, Mentz RJ, Rodriguez CJ, Fox ER, Butler J, Keith RJ, **Bhatnagar A**, Marie Robertson R, Correa A, Hall ME. Cigarette Smoking, Incident Coronary Heart Disease, and Coronary Artery Calcification in Black Adults: The Jackson Heart Study. J Am Heart Assoc. 2021 Apr 6;10(7):e017320. doi: 10.1161/JAHA.120.017320. Epub 2021 Mar 23. PMID: 33754833.
   Impact Statement: *In Black individuals cigarette smoking can exacerbate heart failure and increase the risk of hospital admissions for heart failure*

2. Keith R, **Bhatnagar A**. Cardiorespiratory and Immunologic Effects of Electronic Cigarettes. Curr Addict Rep. 2021 Mar 5:1-11. doi: 10.1007/s40429-021-00359-7. Epub ahead of print. PMID: 33717828; PMCID: PMC7935224.
   Impact Statement: *This review discusses evidence showing that the use of e-cigarettes is associated with a range of cardiovascular and immunological changes that could be detrimental to health*

3. Ohanyan V, Raph SM, Dwenger MM, Hu X, Pucci T, Mack G, Moore JB 4th, Chilian WM, **Bhatnagar A**, Nystoriak MA. Myocardial Blood Flow Control by Oxygen Sensing Vascular Kvβ Proteins. Circ Res. 2021 Mar 19;128(6):738-751. doi: 10.1161/CIRCRESAHA.120.317715. Epub 2021 Jan 27. PMID: 33499656.
   Impact Statement: *This study shows that the increase in oxygen demand in the heart, due to exercise or exertion, is met by increase blood flow in the heart, which is regulated by potassium channels and their subunits.*

4. Men H, Cai H, Cheng Q, Zhou W, Wang X, Huang S, Zheng Y, **Cai L**. The regulatory roles of p53 in cardiovascular health and disease. Cell Mol Life Sci. 2021 Mar;78(5):2001-2018. doi: 10.1007/s00018-020-03694-6. Epub 2020 Nov 11. PMID: 33179140.
   Impact Statement: *Except for regulating a myriad of genes to maintain normal cell functions, this study found the important roles of p53 in the cardiovascular physiological and pathological conditions as revealed by this review: primarily, p53 determines the fates of cardiomyocytes by regulating metabolism and programmed cell death and also regulates cell cycle arrest and angiogenesis in non-myocytes, thus participating in the regulation of CVDs.*

5. Wahlang B, Alexander NC 2nd, Li X, Rouchka EC, Kirpich IA, **Cave MC.** Polychlorinated biphenyls altered gut microbiome in CAR and PXR knockout mice exhibiting toxicant-associated steatohepatitis. Toxicol Rep. 2021 Mar 10;8:536-547. doi: 10.1016/j.toxrep.2021.03.010. PMID: 33777700; PMCID: PMC7985695
   Impact Statement: *This publication elucidated mechanism by which polychlorinated biphenyls and their nuclear receptor targets, PXR and CAR, modulate the gut:liver axis thereby impacting susceptibility to obesity-related diseases.*

6. O'Brien SJ, **Ellis CT**, McDowell J, Galandiuk S, Polk HC Jr. Anal squamous cell carcinoma incidentally found at hemorrhoidectomy. Surgery. 2021 Mar;169(3):610-616. doi: 10.1016/j.surg.2020.08.026. Epub 2020 Sep 29. PMID: 33004218.
   Impact Statement: *Anal cancer (SSCA) is on the rise and Kentucky now has the second highest incidence rate. Although this cancer is strongly associated with Human Papilloma Virus (HPV), it doesn't completely explain its temporal trend. Three percent of all SCCA cases in KY were found at the time of hemorrhoidectomy.*

MARCH PUBLICATIONS HIGHLIGHTS CONTINUED

7. Hill BG, Rood B, Ribble A, **Haberzettl P**. Fine particulate matter (PM2.5) inhalation-induced alterations in the plasma lipidome as promoters of vascular inflammation and insulin resistance. Am J Physiol Heart Circ Physiol. 2021 Mar 5. doi: 10.1152/ajpheart.00881.2020. Epub ahead of print. PMID: 33666505.

Impact Statement: *We found that inhalation of fine particulate matter air pollution induces vascular inflammation and insulin resistance via circulating plasma constituents possibly by promoting a unique form of dyslipidemia that dependents on pulmonary oxidative stress.*

8. Kumar A, Ren Y, Sundaram K, Mu J, Sriwastva MK, Dryden GW, Lei C, Zhang L, Yan J, Zhang X, **Park JW, Merchant ML,** Teng Y, Zhang HG. miR-375 prevents high-fat diet-induced insulin resistance and obesity by targeting the aryl hydrocarbon receptor and bacterial tryptophanase (tnaA) gene. Theranostics. 2021 Feb 19;11(9):4061-4077. doi: 10.7150/thno.52558. PMID: 33754048; PMCID: PMC7977461.

Impact Statement: *The molecular mechanisms that mediate diet-based prevention of insulin resistance are not well understood. In this proof-of-concept study, ginger-derived nanoparticles (GDNP) were used to examine a role for GDNP-supplemented diet in amelioration of high-fat diet (HFD) induced insulin resistance. Using multiple lines of inquiry, this study revealed that oral administration of GDNP to HFD mice improved host glucose tolerance and insulin response via (1) regulating VAMP7 induction, (2) enhanced the exosomal accumulation of microRNA miR-375 culminating in (3) the inhibition of arylhydrocarbon receptor (AhR) expression and signaling*

9. Hardesty JE, Wahlang B, **Prough RA**, Head KZ, Wilkey D, **Merchant M**, Shi H, Jin J, **Cave MC.** Effect of Epidermal Growth Factor Treatment and Polychlorinated Biphenyl Exposure in a Dietary-Exposure Mouse Model of Steatohepatitis. Environ Health Perspect. 2021 Mar;129(3):37010. doi: 10.1289/EHP8222. Epub 2021 Mar 31. PMID: 33788613; PMCID: PMC8011667

Impact Statement: *Our initial research demonstrated that some PCBs bind to the Epidermal Growth Factor Receptor (EGFR) and terminate its activation of normal gene expression in liver. We sought to establish whether co-treatment with epidermal growth factor, a ligand activator for EGFR, would reverse this inhibition by PCBs. While EGR did reverse the action of PCBs as proposed, there were other downstream effects caused by EGR suggesting the growth factor probably wouldn't serve as a therapeutic agent to prevent PCB toxicity due to its side effects.*

10. Das S, **Rai SN**. SwarnSeq: An improved statistical approach for differential expression analysis of single-cell RNA-seq data. Genomics. 2021 Mar 1;113(3):1308-1324. doi: 10.1016/j.ygeno.2021.02.014. Epub ahead of print. PMID: 33662531.

Impact Statement: *This publication discusses the development of an efficient method for analysis of Single-cell RNA sequencing data. This new method is compared with 11 methods on 10 data sets.*

11. Fuqua JL, Rouchka EC, Waigel S, Sokoloski K, Chung D, Zacharias W, Zhang M, Chariker J, Talley D, Santisteban I, Varsani A, Moyer S, Holm RH, **Yeager RA**, Smith T, **Bhatnagar A**. A rapid assessment of wastewater for genomic surveillance of SARS-CoV-2 variants at sewershed scale in Louisville, KY. medRxiv [Preprint]. 2021 Mar 26:2021.03.18.21253604. doi: 10.1101/2021.03.18.21253604. PMID: 33791725; PMCID: PMC8010757.

Impact Statement: *This paper describes preliminary observations and methodological refinements for wastewater-based surveillance of SARS-CoV-2 variants of concern. This work will inform future wastewater-based COVID-19 surveillance and targeted response to the spread of variants*

12. Yuan J, Zhang Y, Zhang Y, Mo Y, **Zhang Q**. Effects of metal nanoparticles on tight junction-associated proteins via HIF-1α/miR-29b/MMPs pathway in human epidermal keratinocytes. Part Fibre Toxicol. 2021 Mar 19;18(1):13. doi: 10.1186/s12989-021-00405-2. PMID: 33740985; PMCID: PMC7980342.

Impact Statement: *The results of this study have demonstrated whether and how exposure to metal nanoparticles causes skin diseases such as skin inflammation and allergy, which also provided tools for evaluating the health effects of other metal nanomaterials. This study not only leads to a better understanding of the mechanisms by which metal nanoparticles induce skin inflammation and allergy, but also provide scientific evidence to prevent and control them.*

APRIL PUBLICATIONS HIGHLIGHTS

Congratulations to the CIEHS members with articles published in the month of April! 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. Tarran R, Barr RG, Benowitz NL, **Bhatnagar A,** Chu HW, Dalton P, Doerschuk CM, Drummond MB, Gold DR, Goniewicz ML, Gross ER, Hansel NN, Hopke PK, Kloner RA, Mikheev VB, Neczypor EW, Pinkerton KE, Postow L, Rahman I, Samet JM, Salathe M, Stoney CM, Tsao PS, Widome R, Xia T, Xiao D, Wold LE. E-Cigarettes and Cardiopulmonary Health. Function (Oxf). 2021 Feb 8;2(2):zqab004. doi: 10.1093/function/zqab004. PMID: 33748758; PMCID: PMC7948134.

   Impact Statement: *This article describes the proceedings and discussions at an NIH workshop on e-cigarette. The paper reviews current evidence relating the use of e-cigarettes to cardiovascular and pulmonary health and how to address major gaps in our knowledge of the long-term health effects of e-cigarettes.*

   Jiang C, Liu G, **Cai L,** Deshane J, Antony V, Thannickal VJ, Liu RM. Divergent Regulation of Alveolar Type 2 Cell and Fibroblast Apoptosis by Plasminogen Activator Inhibitor 1 in Lung Fibrosis. Am J Pathol. 2021 Apr 20:S0002-9440(21)00154-1. doi: 10.1016/j.ajpath.2021.04.003. Epub ahead of print. PMID: 33887217

   Impact Statement: *This study revealed that increased PAI-1 expression may contribute to the apoptosis paradox observed in idiopathic pulmonary fibrosis (IPF) and aging lungs through dichotomous regulation of p53 expression in these cells, which supports the critical role of PAI-1 in IPF pathophysiology and suggests that small molecule PAI-1 inhibitors may have therapeutic potential for IPF.*

3. Duan X, Wei N, Wei J, Zhu Y, Kang Y, He Y, **Huang J**, Wang S. Effect of High-Flow Nasal Cannula Oxygen Therapy on Pediatric Patients With Congenital Heart Disease in Procedural Sedation: A Prospective, Randomized Trial. J Cardiothorac Vasc Anesth. 2021 Mar 27:S1053-0770(21)00273-1. doi: 10.1053/j.jvca.2021.03.031. Epub ahead of print. PMID:33934982.

   Impact Statement: *This study looks at how High flow nasal cannula is effective for pediatric patients with non-cyanotic congenital heart disease who require procedural sedation.*

4. Xu Q, Samanapally H, Nathala P, Salunkhe V, Furmanek S, Cahill MN, McGuffin T, Mohammad T, Marsili B, Petrey J, Carrico R, Ramirez J, Akca O, Clifford SP, Pahwa S, Roser L, Kong M, **Huang J**; Center of Excellence for Research in Infectious Diseases (CERID) Coronavirus Study Group on behalf of the COVID-19 CardioVascular Research Group (COVID-CVRG). Outcomes and Risk Factors for Cardiovascular Events in Hospitalized COVID-19 Patients. J Cardiothorac Vasc Anesth. 2021 Mar 27:S1053-0770(21)00277-9. doi: 10.1053/j.jvca.2021.03.035. Epub ahead of print. PMID: 33867235; PMCID: PMC7997853.

   Impact Statement: *This study found cardiovascular events were prevalent and associated with worse outcomes in hospitalized patients with COVID-19. Outcomes of cardiovascular events in African American and white COVID-19 patients were similar after propensity score matching analysis. There were common and unique risk factors for cardiovascular events in African American COVID-19 patients when compared with white patients.*

5. Latif RK, Clifford SP, Byrne KR, Maggard B, Chowhan Y, Saleem J, **Huang J.** Hyperoxia After Return of Spontaneous Circulation in Cardiac Arrest Patients. J Cardiothorac Vasc Anesth. 2021 Mar 8:S1053-0770(21)00209-3. doi: 10.1053/j.jvca.2021.03.007. Epub ahead of print. PMID: 33875350.

   Impact Statement: *This article looks at a strategy of precise control of arterial oxygenation where O2 therapy is titrated against a pre-specified PaO2 or SaO2 target range has been provided to healthcare providers. The best PaO2 target may vary based on patient-related factors, such as age, severe cardiac ischemia, cerebral ischemia, pulmonary edema or untreated anemia.*

APRIL PUBLICATIONS HIGHLIGHTS CONTINUED

6. **Jala VR**, Bodduluri SR, Ghosh S, Chheda Z, Singh R, Smith ME, Chilton PM, Fleming CJ, Mathis SP, Sharma RK, Knight R, Yan J, Haribabu B. Absence of CCR2 reduces spontaneous intestinal tumorigenesis in the ApcMin/+ mouse model. Int J Cancer. 2021 Jan 26. doi: 10.1002/ijc.33477. Epub ahead of print. PMID: 33497467

Impact Statement: *In this paper, we showed that deletion of chemokine receptor (CCR2), which is responsible for migration of inflammatory macrophages to the tumor sites, significantly reduced colon tumor burden and progression and increased overall survival of colon cancer mice. In addition, we also identified novel role for CCR2 in migration of Th17 cells (known to promote colonic inflammation and colon tumors) into tumors, where deletion of CCR2 significantly reduced these cells and promoted tumor killing CD8+ T cells. Therefore, targeting CCR2 in colon cancer patients potentially reduce tumor burden and benefit the patients.*

7. Abdel-Rahman SM, Paul IM, Hornik C, **Sullivan JE**, Wade K, Delmore P, Sharma G, Benjamin DK, Zimmerman KO. Racial and Ethnic Diversity in Studies Funded Under the Best Pharmaceuticals for Children Act. Pediatrics. 2021 May;147(5):e2020042903. doi: 10.1542/peds.2020-042903. Epub 2021 Apr 12. PMID: 33846237.

Impact Statement: *This study demonstrated enrollment of diverse racial and ethnic populations in pediatric studies conducted with funding from BPCA, fulfilling the legislation's expectation to ensure adequate representation of all children.*

8. Knight L, Pahud BA, Scheffler M, Euteneuer JC, Allen C, Ross J, Ali W, Meyer M, Purohit PJ, Zimmerman KO, **Sullivan JE**; ECHO IDeA States Pediatric Clinical Trials Network. Capacity Building in a New Clinical Trials Network Through Inter-Network Collaboration. J Pediatr. 2021 Apr 30:S0022-3476(21)00414-5. doi: 10.1016/j.jpeds.2021.04.062. Epub ahead of print. PMID: 33940019.

Impact Statement: *This publication reflects the positive impact of inter-network collaboration and mentoring of an established network with a new network which allowed for substantial growth and resources for the new network.*

9. Zhou B, Gentry A, Xu Q, Young JL, Yan X, Pagidas K, Yang Y, **Watson WH,** Kong M, **Cai L**, **Freedman JH**. Effects of cadmium and high-fat diet on essential metal concentration in the mouse testis. Toxicol Rep. 2021 Mar 20;8:718-723. doi: 10.1016/j.toxrep.2021.03.016. PMID: 33889501; PMCID: PMC8047427.

Impact Statement: *This report addresses the impact of environmental factors on the increasing prevalence male infertility.*

10. Speer RM, Toyoda JH, Croom-Perez TJ, Liu KJ, **Wise JP**. Particulate Hexavalent Chromium Inhibits E2F1 Leading to Reduced RAD51 Nuclear Foci Formation in Human Lung Cells. Toxicol Sci. 2021 Apr 27;181(1):35-46. doi: 10.1093/toxsci/kfab019. PMID: 33677506; PMCID: PMC8081024.

Impact Statement: *Chromium is a known human carcinogen that is common in our environment, but we do not know how it causes cancer. A key toxic action of chromium is to damage DNA strands while simultaneously inhibiting the repair of that damage, but we do not know how chromium inhibits this repair. This study provides an important step forward in understanding how chromium inhibits that repair.*

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