2019 Annual Report


FINISH

MISSION

The Department of Pharmacology and Toxicology will ensure academic excellence and achievement of regional, national, and international recognition for the quality of its educational, research, and service activities. Guided by the University of Louisville and the School of Medicine Strategic Plans, the mission of the Department of Pharmacology and Toxicology focuses on five broad objectives:

- Provide instruction in pharmacology and toxicology of the highest quality for the education and preparation of medical, dental, and other health care professional students. Emphasis is placed on the fundamental principles necessary for life-long learning and the essential knowledge required for rational, effective, and safe use of drug therapy.
- Advance biomedical knowledge through high quality research and other scholarly activities, particularly in pharmacology and toxicology and other areas of focus within the University of Louisville and School of Medicine Strategic Plans.
- Provide robust research and educational experiences in pharmacology and toxicology for the education and training of future biomedical scientists who will provide and advance biomedical education, research, and service.
- Provide instruction of the highest quality in pharmacology and toxicology appropriate for students at the undergraduate, graduate, and postgraduate levels.
- Provide service to the School of Medicine, the Health Sciences Center, the University, of Louisville, the Commonwealth of Kentucky, professional organizations, the nation, and the world.

Primary Faculty Promotions

Dr. Geoffrey Clark and Dr. Nobuyuki Matoba were promoted to professor of pharmacology & toxicology effective July 1.

Primary Faculty Departures

Demetra Antimisiaris, PharmD, BCGP, FASCP
Associate Professor

Dr. Antimisiaris transferred her appointment to the UofL School of Public Health and Information Sciences, Department of Health Management Systems and Systems Sciences.

Theodore R. Smith, Ph.D.
Associate Professor

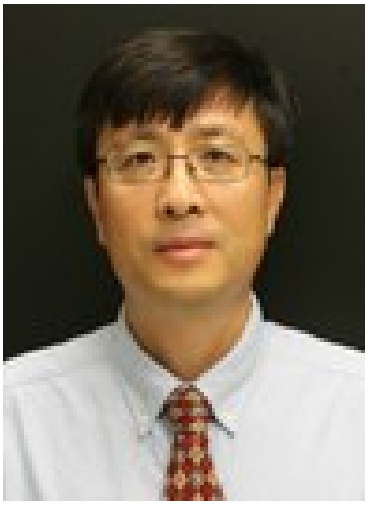
Dr. Smith transferred his primary appointment to the Department of Medicine, Division of Environmental Medicine. He maintains a secondary appointment in the Department of Pharmacology and Toxicology.

New Appointments of Associate Faculty

Petra Haberzettl, Ph.D

Assistant Professor, Department of Medicine
Ph.D., Biochemistry, Heinrich-Heine University (2006)

Research Interest: Environmental air pollution and cardiometabolic disorders



Yan Li, M.D., Ph.D

Associate Professor, Department of Surgery
M.D. Liaoning University of Chinese Medicine (1987)
Ph.D. Chengdu University of Chinese Medicine (1998)

Research Interest: Cancer Prevention

Theodore Smith, Ph.D

Associate Professor, Envirome Institute
Ph.D., Experimental Psychology, Miami University (1992).

Research Interests: Support the Envirome initiative and the development of the Center for Healthy, Air, Water, and Soil, the early focus is on scientific research in the areas of urban development and health and novel approaches for measuring and assessing different domains of the envirome (sensors, new data sources). A second area of focus is the development of new models and frameworks for communicating scientific knowledge to the lay public, other academics, healthcare industry, policy makers and other stakeholders.

Shizuka Uchida, Ph.D

Associate Professor, Department of Medicine
Ph.D., Molecular Biology, Japan Advanced Institute of Science and Technology (2007)

Research Interests: Dr. Uchida's research focuses on elucidating the functions of long non-coding RNAs (lncRNAs) using dry (bioinformatics) and wet (biology) lab techniques. Application of basic biology to rejuvenate ailing hearts by directing the differentiation of resident adult cardiac stem cells into functional cardiomyocytes using lncRNAs.

Associate Faculty Departures

Albert R. Cunningham, Ph.D.
Associate Professor, Department of Medicine
Ph.D., Environmental and Occupational Health, University of Pittsburgh (1998)

Research Interests: Structure-Activity Relationship Modeling: Carcinogens, Chemotherapeutics, and Molecular Targets

Yiru Guo, M.D.
Professor, Department of Medicine
M.D., Xinjiang Medical University (1982)

Research Interests: Cardio-thoracic and vascular surgery, physiology, and pharmacology. Research focuses on: (i) elucidating the mechanisms of ischemic-pharmacologic- and exercise-induced preconditioning by using the ischemia/reperfusion model in genetically engineered animals, (ii) studying protection of ischemic myocardium by using gene and/or cell therapy, and (iii) elucidating adaptations to ischemia/reperfusion injury in the aging heart.

Donald M. Miller, M.D., Ph.D.
Professor of Medicine
Chief, Division of Medical Oncology and Hematology
Foundation Chair and Director, James Graham Brown Cancer Center
M.D., Duke University School of Medicine (1973)
Ph.D., Duke University School of Medicine (1972)

Research Interests: Molecular and clinical oncology; modulation of oncogene expression; triplex DNA based gene therapy; treatment of melanoma.

Wolfgang Zacharias, Ph.D.
Professor of Medicine
Ph.D., Biochemistry, Philipps-University, Marburg, Germany (1980)

Research Interests: Ribozymes for gene therapy in rheumatoid arthritis; involvement and roles of cathepsins in oral cancers; gene expression profiling with DNA microarray chip technology.

In Memoriam

Carr, Laurence A., Ph.D., Professor Emeritus of Pharmacology & Toxicology

Laurence Alan Carr (Larry), 77, died July 16, 2019 in Louisville, Ky of complications from Myelodysplastic Syndrome. He was born March 21, 1942 in Ann Arbor, MI, the son of the late Hollis and Virginia Carr. He graduated from Saline High School as valedictorian in 1960, having served as class president for multiple years. He attended the University of Michigan, graduating in 1965 with a B.S. in Pharmacy. He then went on to earn a Ph.D. in Pharmacology from Michigan State University. In 1969, Larry and his wife, Jeanne, moved to Louisville, KY and joined the Department of Pharmacology and Toxicology at the University of Louisville. Over 32 years, he taught graduate, medical, dental, and nursing students and was named Teacher of the Year by the student body twice. As a scientist, he studied how drugs act in the brain. He was named a Fulbright Research Scholar in 1980, leading to a year of research in Paris, France. He also served as Associate Dean for Curriculum in the UofL Medical School from 1987 until his retirement in 2001. Larry truly was an educator, scientist, historian, leader, and volunteer. He served as president of several local chapters of national societies, including the UofL Association of Retired Personnel. Throughout his life, Larry had a passion for genealogy and for history, especially the Civil War. Vacations with family entailed countless trips to monuments and landmarks. For the past 17 years, he volunteered at the Filson Historical Society in the archives. He was a long-time member and supporter of St. Paul United Methodist Church. Larry was generous with his time, serving on the board of Highland Community Ministries and volunteering with Meals on Wheels from his retirement up until a week before his death. He was commissioned as a Kentucky Colonel in 1984. Larry was patient, thorough, careful, and, at times, remarkably thrifty, suitable for his do-it-yourself philosophy toward life and home improvement projects. He was an exceptional husband, marrying Jeanne (Levleit) Carr, his sweetheart from kindergarten, in 1964. He is survived by Jeanne, two very grateful children, L. Alan Carr, Jr. (Janet) of North Branford, CT and Rachel Atwell (Michael) of Louisville, KY, four grandchildren, Seth and Wyatt Carr and Ethan and Madeline Atwell, his brother Bruce Carr (Phyllis) of Irving, TX and his sister Deborah Brunelle of Ann Arbor, MI, and several nieces and nephews.

FACULTY WITH PRIMARY APPOINTMENTS

Brian P. Ceresa, Ph.D.
Pharmacology Thread Director for School of Medicine Curriculum
Professor

The Ceresa lab studies the epidermal growth factor receptor (EGFR) and its role in tissue biology/wound repair and cancer. The EGFR has an essential role in many developmental processes and for homeostasis of a number of tissues, such as the cornea, epidermis, and colon. In addition, the EGFR is overexpressed and/or hyperactivated in a number of cancers, including lung, breast, gastric, pancreatic, and melanomas. The Ceresa lab is interested in the molecular mechanisms that regulate the magnitude and duration of EGFR signaling. Understanding how EGFR signaling is dysregulated may provide clues to the diagnosis, prognosis, or treatment of cancer. Conversely, deliberately perturbing these regulatory processes is a strategy to enhance corneal epithelial wound healing. They use a variety of experimental strategies to answer our scientific questions – from purified proteins, primary and immortalized cell lines, isolated animal tissues, and whole animals.

Shao-yu Chen, Ph.D.
Professor

Dr. Chen has conducted alcohol-related birth defects research for more than 20 years. His research program focuses on elucidation of cellular and molecular mechanisms of alcohol-induced birth defects. In his laboratory, a combination of state-of-the-art approaches, including RNA interference, microRNA technology and ultrasound-guide in utero microinjection are integrated with cell and whole embryo culture systems, as well as in vivo mouse and zebrafish models of Fetal Alcohol Spectrum Disorders (FASD) to elucidate the molecular mechanisms underlying FASD. Dr. Chen's laboratory has been successfully conducting innovative and pioneering research in various areas, including Nrf2, Siah1 signaling pathways and the microRNAs involved in ethanol-induced apoptosis and birth defects. These studies have provided important information regarding the mechanisms underlying ethanol-induced birth defects. His research has also clearly shown the effectiveness of a number of agents, including antioxidants, the neuroprotective peptides, and microRNA mimics, in the prevention of alcohol-induced apoptosis and structural abnormalities in embryos. These findings are expected to validate possible molecular targets and yield innovative strategies for the prevention of FASD and give hope that antioxidants, certain

peptides or microRNA mimics could lessen the effects of prenatal alcohol exposure in the children of women who are unable to curtail their alcohol abuse while pregnant.

Geoffrey J. Clark PhD
Professor

Ras is arguably the most important oncogene of all and may drive more than 30% of human cancers. Yet it has defied efforts to target it therapeutically. One of the most fascinating and poorly understood aspects of Ras biology is that deregulated Ras activity can promote cell death. These Ras death pathways are subverted in human tumors, allowing the transforming effects of activated Ras to dominate. I have spent a large part of the last 15 years defining the signaling mechanism used by Ras to kill cells and trying to understand how they are subverted in cancer. These studies have focused extensively on the RASSF family of Ras death effectors, the majority of which were first identified and cloned by my group. I also have a program involving the development of novel small molecules that act directly or indirectly to suppress Ras driven tumorigenesis. The laboratory utilizes a variety of cellular and molecular biology techniques to pursue these studies.

Jonathan H. Freedman, Ph.D.
Professor

Dr. Freedman's research interests can be divided into two broad categories: basic and applied. The tools developed as part of the applied research program are used to advance basic research. Likewise, mechanistic information derived through basic research projects is adapted and then developed into applied protocols. The basic research program involves understanding how exposures to environmental factors contribute the development and/or exacerbation of human diseases. Our group is focused in the roles of transition metals (cadmium and zinc) and diet in the etiology of cancer, metabolic syndrome (e.g., type II diabetes) and Autism Spectrum Disorder. We are applying a systems biological approach; where interactions among phenotypes, genetics, transcriptomics and environmental factors at the molecular, cellular, organ and whole organism level are characterized in an integrated manner. This holistic approach allows us to develop novel models to delineate the mechanism(s) by which multiple factors come together to produce human disease. Our group utilizes model organisms (*Caenorhabditis elegans* and mice) and mammalian cell culture, as well as high-throughput screening technologies to explore the environmental contributions to these human diseases.

The applied research program is focused on the development of alternative organisms for *in vivo* toxicological testing. This project is part of the international effort to reduce, refine and replace mammalian species in toxicity testing. We utilize the technologies and statistical methods already developed in the laboratory for high-throughput toxicity testing using *C. elegans* to other biomedically-relevant model organisms; *Daphnia*, *Drosophila*, Zebrafish and *Xenopus*.

Joshua L. Fuqua, Ph.D.
Assistant Professor

Development of proteins and biologic for therapeutic and diagnostic indications in infectious disease, cancer, and neurodegenerative disease. Dr. Fuqua has experience in preclinical product development ranging from drug manufacturing to toxicology studies. He has familiarized himself with Project Management and Regulatory Affairs applications in the pharmaceutical industry through external certificate programs and practice.

Ramesh Gupta, Ph.D.
Professor, Agnes Brown Duggan Chair of Oncological Research

Dr. Gupta's current major interests are to develop new prevention and treatment strategies by intervention with dietary constituents (such as berries, common spices), novel subcutaneous polymeric implantable devices embedded with test agents for systemic and local delivery, and milk-derived exosomes as nano carriers for oral delivery of both standard drugs and natural agents with therapeutic activity, as well as identify molecular targets. The common experimental models and laboratory techniques performed routinely in his laboratory include, cell culture, wild-type and xenograft models for lung cancer and breast cancer, ^{32}P-postlabeling DNA adduct assay, qPCR, western, tumor imaging, and HPLC coupled with various detectors. His laboratory was the first to demonstrate that berries are effective beyond the GI tract by showing significant inhibition of estrogen-mediated breast cancer and lung cancer. The ongoing work with phenolics isolated from these berries have demonstrated that berry phenolics can have significant synergistic activity towards anti-proliferation, apoptosis and anti-inflammation due to attack of different bioactives on distinct or overlapping protein targets against lung cancer. These findings have been confirmed in cell culture and tumor models. His laboratory's present major thirst is on drug delivery for enhanced therapeutic response. The most recent development is a novel technology for oral delivery of drugs using bovine milk-derived exosomes (biological

nanoparticles) as a carrier for small drug molecules, as well as macromolecules such as siRNAs. This technology is emerging as a major drug delivery technology in the field with potentially wide therapeutic applications. His laboratory has trained numerous graduate students, postdoctoral scholars, residents, undergraduates and High School students. His laboratory is currently supported by a postdoctoral fellow, two PhD students and two junior faculty.

Kyung U. Hong, Ph.D.
Assistant Professor

Arylamine N-acetyltransferases (NATs) express a well-defined genetic polymorphism in humans that modifies drug and xenobiotic metabolism. Our laboratory has previously characterized the genetic variants of NAT2 and shown that they result in expression of protein of varying enzymatic activity or stability. Recent GWAS studies have reported that some of these genetic variants within the NAT2 gene are tightly linked to insulin resistance and high serum triglyceride level in humans, suggesting a previously unrecognized yet important role of these enzymes in development of metabolic disorders. However, the precise mechanism by which NAT2 exerts this role and whether or not this role is modified by NAT2 genetic polymorphism is currently unknown. Importantly, the role of NAT2 in insulin resistance and metabolism has not been investigated in model systems of human origin. Our research involves using human primary hepatocytes, adipocytes and myoblasts and characterizing their responses to insulin while modulating cellular NAT2 level or activity. Human primary hepatocytes that harbor defined genetic polymorphisms of NAT2 will be also employed to see if naturally occurring genetic variants of NAT2 in humans have differential effects on cellular metabolism and insulin sensitivity.

Joshua L. Hood M.D., Ph.D.
Assistant Professor

Dr. Hood's lab is focused on the translational design and implementation of biology inspired nanomedicine supported by nanoscale biologic extracellular vesicle (EV) investigations. Understanding EV function and nanocarrier properties in the context of tumor angiogenesis, macrophage function and pre-metastatic niche formation are explored in the context of melanoma, lung and liver cancer. Other derivative projects include development of small EV/exosome-based biomarkers for cancer and synthetic nanomedicines to combat pathogenic EVs and similarly structured viruses. Our long-term goal is to develop and translate personalized EV-based diagnostics and therapeutics for cancer.

David W. Hein, PhD
Peter K. Knoefel Endowed Professor and Chair

Dr. Hein's research program in molecular epidemiology identifies individuals genetically susceptible to the development of cancer from environmental and occupational chemicals in order to focus treatment and prevention public health strategies on those at greatest risk. His research in pharmacogenetics/genomics and personalized medicine improves understanding of the genetic causes for drug failure and/or drug toxicity in order to optimize clinical drug therapy for each individual patient. His research in functional genomics improves understanding of the mechanistic and clinical consequences of genetic variation in the biotransformation of carcinogens and drugs.

La Creis Renee Kidd, Ph.D., M.P.H.
Our Highest Potential Endowed Chair and Associate Professor

Dr. Kidd's research focuses on the utilization of state of the art bioinformatics tools to identify and validate genetic susceptibilities related to cancer risk and poor disease prognosis (i.e., high tumor grade/stage, disease/biochemical recurrence). Although Dr. Kidd is intrigued by major cancer malignancies, a majority of her work has centered on prostate cancer. Her earlier work focused on complex interactions among xenobiotic metabolism, DNA repair, oxidative stress-related genes, and angiogenesis in relation to prostate and breast cancer outcomes. She was a lead author on the first study on the role of genomic anomalies in the chemokine ligand 5 (CCL5) and chemokine receptor 5 (CCR5) associated genetic alterations in prostate cancer risk among men of African and Caribbean Descent (Hered Cancer Clin Pract. 2012 Nov 20; 10(1): 16). A majority of her work focuses on understanding the role genetic plays in high cancer incidence and mortality rates among underserved populations. She has 3 patents for important prostate cancer predictors from her population-based studies (61/240089, 61/313,595, 61/655,243). Dr. Kidd was a significant contributor of a multi-center genome wide study for genetic susceptibility genes for prostate cancer among men of African and European descent.

Since 2012, Dr. Kidd's lab started to work on the role of miRNAs in prostate cancer in partnership with her former graduate student (Dominique Reed) and various faculty members engaged in basic research. Micro-RNAs (miRNAs), are non-coding RNAs that regulate the expression of genes. Dr. Kidd became interested miRNAs after learning these mini gene regulators can suppress or accelerate aggressive cancer behavior by inhibiting the expression of oncogenic or tumor suppressor genes, respectively. MiRNAs are promising cancer biomarkers for many reasons. First, miRNAs are stably expressed in tumor tissue and biological fluids (i.e., urine, serum, plasma). Second, they regulate

the expression of genes involved in the hallmarks of cancer (e.g., cell proliferation, cell survival, anchorage independent growth, invasion, migration, cell survival, angiogenesis). Third, dysregulation of miRNAs corresponds with aggressive prostate cancer phenotypes. Fourth, tissue/blood-based miRNAs may distinguish between lethal and non-lethal forms of cancer. Fifth, miRNAs may help investigators find potential therapeutic targets for the effective treatment of cancer.

Recently, Dr. Kidd's lab demonstrated the up-regulation of one particular miRNA, miR-186-5p in metastatic prostate cancer cell lines and serum from prostate cancer patients. Her lab also demonstrated a decrease in cell proliferation, colony formation and cell invasion in miR-186 depleted metastatic prostate cancer cell lines. Based on pre-clinical studies, the decrease in cell invasion may be related to an up-regulation of AKAP12 following the repression of miR-186 in metastatic prostate cancer cell lines. Presumably, AKAP12, a tumor suppressor gene, inhibits pAkt, which in turn suppresses beta-catenin, a gene essential for cell invasion, epithelial mesenchymal transition and chemo-sensitivity. These findings are currently under review for publication consideration in BMC Cancer.

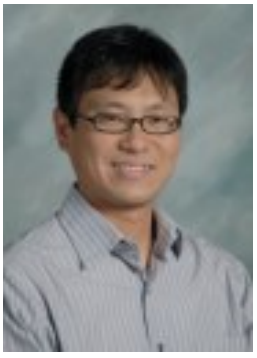
It is her hope that her research findings will lead to the discovery of therapeutic targets for the effective treatment of aggressive and lethal forms of cancer. Such efforts will help to reduce the burden of this disease among cancer patients and their families.

J. Calvin Kouokam, Ph.D.
Assistant Professor.

My main research focus is the development of plant produced proteins for the treatment of human diseases. Our current projects involve safety, pharmacodynamic and pharmacokinetic evaluation of antivirals targeting HIV-1 and other enveloped viruses, including HSV-2. Notably, we are assessing the safety and efficacy of the potent antiviral lectin Griffithsin (GRFT) in the context of colorectal pathologies (e.g. ulcerative colitis and colorectal cancer). In addition, we are interested in plant derived lectins as anticancer agents. Such lectins will be produced in Nicotiana benthamiana plants. Finally, we plan in the near future to assess natural products from various African plants for their therapeutic activities.

Igor S. Lukashevich, M.D., Ph.D., D.Sc.
Professor

Dr. Lukashevich research interest includes pathogenesis of liver dysfunctions caused by highly pathogenic RNA viruses causing hemorrhagic fevers (HFs). In collaboration with Dr. Arteel's team, he discovered a novel mechanism of liver involvement in pathogenesis of viral HFs. According to this mechanism, the virus-induced pathophysiological hepatocyte proliferation is accompanied by cell cycle arrest and contributes to expansion of the infection to parenchymal cells. Elevated levels of plasma transaminases are likely explained, at least in part, by aborted hepatocyte proliferation causing apoptotic events and induction of oval cells, the "second line" of liver protection against the injury. These results may lead to the development of new therapeutic interventions for devastating diseases caused by HF viruses (e.g., Lassa, Machupo, Ebola). Development of new preventive vaccines based on advanced vaccine technologies is another scientific avenue in Dr. Lukashevich lab. He designed several promising vaccine candidates against Lassa HF, the most prevalent HF in West Africa, and against South American HFs. He co-invented infectious DNA (iDNA) technology to improve existing and experimental live-attenuated vaccines against Yellow Fever, Venezuelan Equine Encephalitis, Japanese Encephalitis, and Chikungunya. This technology combines advantages of naked DNA immunization and high efficacy of live-attenuated vaccines. The iDNA-launched vaccines are "manufactured" in vaccinated individuals and do not require traditional vaccine manufacturing facility and technology.



Nobuyuki Matoba, Ph.D.
Professor

Dr. Matoba's research is focused on the development of protein pharmaceuticals. To this end, they utilize a plant-based transient protein production system. This technology enables quick transition of candidate proteins from discovery and preclinical studies to clinical testing and ultimately provides cost-effective vaccines and therapeutics for developing countries. They employ multidisciplinary experimental methodologies including protein engineering, biochemistry, analytical chemistry, antiviral research and immunology. Currently, one of their projects is developing a vaccine against inflammatory bowel disease and colitis-associated colon cancer. Another project is investigating the cancer diagnostic and therapeutic potentials of a "lectibody", an antibody-lectin chimera that can recognize a broad spectrum of cancer cells. Our projects are funded by NIH, DoD and Helmsley Charitable Trust.

Kenneth E. Palmer, Ph.D.

Professor & Helmsley Chair in Pharmaceutical Plant-based Research; Director, Center for Predictive Medicine

Dr. Kenneth Palmer's primary research focus is in developing vaccines and antivirals that address pathogen diversity and counteract immune evasion strategies. His laboratory has been developing a lectin, Griffithsin, as a broad-spectrum antiviral biopharmaceutical for prevention of human immunodeficiency virus and genital herpes virus transmission. This product is advancing to a first-in-humans clinical trial. Dr. Palmer is the Director of the University of Louisville Center for Predictive Medicine, which has state-of-the-art facilities for BSL-3 biocontaiment research. His group is developing broad-spectrum antiviral strategies for prevention and treatment of emerging and re-emerging viral infections of public health concern, including highly pathogenic influenza and coronaviruses. Dr. Palmer is the Helmsley Charitable Trust Endowed Chair in Plant-based Pharmaceutical Research, which recognizes that the core products and technologies that drive his research program originate in plants, or use plants as recombinant protein expression systems. The Palmer laboratory is supported by grants from the National Institutes of Health and private philanthropy from the Helmsley Charitable Trust.

Leah J. Siskind, Ph.D.
Associate Professor; Director, Graduate Program

The Siskind laboratory has several different areas of interest and combines expertise at the biophysical, molecular, cellular, and animal level with the goal of translating findings to the clinic. The laboratory has several areas of focus. First, the Siskind laboratory aims to protect the kidney from the toxic effects of chemotherapeutics so that they can be more effectively utilized to treat cancer. Current chemotherapies such as cisplatin often have the deleterious side-effect of kidney toxicity which in almost 30% of cancer patients limits their use. Data from the Siskind laboratory indicates that repeated dosing of chemotherapeutics induces pro-fibrotic signaling pathways in the kidney, leading to long-term loss of kidney 0function. The Siskind laboratory aims to target these signaling pathways to protect the kidney from chemotherapeutics so that they can be utilized better to reduce tumor burden. In addition, the Siskind laboratory in collaboration with the laboratory of Dr. Levi Beverly studies fundamental cancer cell biology utilizing 3-dimentional models of tumors in culture to understand how interactions between cancer cells and the extracellular matrix alters tumor cell proliferation, migration, invasion, and

metastasis. In a collaboration with the laboratories of Drs. Beverly and Clark, the Siskind lab aims to develop a porcine model of lung cancer. They aim to determine if pigs represent a model system that more closely resemble the progression and metastasis of human cancer patients. Furthermore, the lab aims to treat pigs with standard of care chemotherapeutic regimens, exactly as human patients would be treated, and determine if tumors demonstrate a similar response, as seen in patients. Finally, they aim to determine if pigs can be used as a model for the testing of immune-modulatory therapeutics that are now being tested in humans. Interestingly, they have found that the most exciting the therapies used in humans that target CTLA4 and PD-1 also bind to their porcine counterpart, raising the exciting possibility that these therapeutics will be able to be used in co-clinical trials in pigs to guide their usage in humans.

Zhoe-Hui (Joe) Song, Ph.D
Professor

The current research focuses of Dr. Song's laboratory are the molecular targets of cannabinoids. Cannabinoids are composed of three categories, including phytocannabinoids (the active chemical components of cannabis), endocannabinoids (the cannabinoid-like substances in our body), and synthetic cannabinoids. We are studying the ligand binding and signal transduction mechanisms of CB1 and CB2 cannabinoid receptors, two proven molecular targets for cannabinoids. In addition, we are investigating GPR3, GPR6 and GPR12, a family of orphan receptors that have been recently shown by us to be novel molecular targets for cannabidiol (CBD). CBD is the major non-psychoactive of marijuana and has been proposed to have therapeutic potentials for a variety of illnesses, including glaucoma, neurological/psychiatric disorders and cancer. Therefore, our research on GPR3, GPR6 and GPR12 will not only help to understand the mechanisms of action for CBD, it will also explore the viability of these three receptors as novel therapeutic targets.

J. Christopher States, Ph.D.
Professor; Vice Chair for Research

The major interests of the laboratory are arsenic toxicology, DNA repair and development of mitosis disrupting drugs for cancer chemotherapy. Currently, the laboratory is investigating the role of miRNA dysregulation in arsenic induced skin carcinogenesis. The lab has determined miRNA profiles of arsenic-induced squamous and basal cell carcinomas and premalignant hyperkeratoses. Currently, the lab is extending these results by characterizing miRNA and mRNA expression changes that occur during arsenic transformation of a human keratinocyte cell line. These studies led to characterization of differential alternative mRNA splicing as well. Dysregulation of miRNA expression and alternative mRNA splicing lead to disturbances in the proteome and dysfunction of molecular machines, such as those involved in DNA damage signalling and repair. The interest in mitotic disruption includes investigation of both structural and numerical aneuploidy induced by miR-186 overexpression. Compounds that inhibit function of the anaphase promoting complex/cyclosome that may lead to new cancer chemotherapeutics are also under investigation. Other interests include induction of chronic adult diseases by early life/in utero arsenic exposure and enhancement of cisplatin sensitivity by co-administration of arsenicals.

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

The Wise Laboratory studies cancer and seeks to understand how environmental chemicals transform normal cells into tumor cells. Their work focuses on chromosomes and how changes in the number and structure of chromosomes leads to cancer. The Wise Laboratory has made important advances in understanding DNA damage, DNA repair, mitosis, and centrosome biology; discovering how chemical impacts on these processes lead to chromosome instability and carcinogenesis. The Wise Laboratory then compares these outcomes in humans, to similar endpoints in whales, alligators and sea turtles to discover novel adaptations and to better conserve wildlife. In addition, to these efforts, The Wise Laboratory pioneers studies on how zero gravity changes these processes during space exploration. Some of the new directions in the Laboratory include stem cell research, autophagy and three-dimensional cell culture as they consider how metals impact or create cancer stem cells in their carcinogenic mechanism and preventative studies as they seek to understand if natural products like berries and beets can reduce or reverse toxicity. The Wise Laboratory contextualizes their studies in a “one” environmental health perspective, which considers

data from their studies of wildlife, domestic animal, and ecosystem health, together with data from their human health studies. Thus, work in the Wise Laboratory includes laboratory-based mechanistic investigations using state-of-the-art cellular and molecular toxicology tools in their laboratories on the UofL Medical School campus combined with ship-and-shore-based work at field sites in Vieques, Puerto Rico; Cape Canaveral, Florida; and the Gulfs of Maine, Mexico and California.

Sandra S. Wise, Ph.D.
Assistant Professor

Dr. Wise's research interests include how environmental chemicals, such as hexavalent chromium, depleted uranium and oil and dispersed oil products, can transform normal cells into cancer cells. These studies have focused on DNA repair deficiency and its impact on chromosome instability as a driving mechanism to cellular transformation and the development of disease. Currently, she is pursuing how cells exposed to these chemicals induce DNA and chromosomal damage yet are able to survive and evade the normal cell death pathways that should occur in order to protect the organism from disease.

Faculty with Secondary Appointments

Juhi Bagaitkar, Ph.D.
Assistant Professor
Ph.D., Oral Immunology and Infectious Diseases, University of Louisville (2010)

Research Interests: To understand the immunological consequences of apoptotic cell clearance during inflammation and infection.

Gregory Barnes, Ph.D.
Associate Professor, Department of Neurology
M.D., University of Kentucky (1992)
Ph.D., Biochemistry, University of Kentucky (1990)

Shirish Barve, Ph.D.
Professor of Medicine
Ph.D., Molecular Pathogenesis, University of Kentucky (1990)

Research Interests: Effects of alcohol on molecular mechanisms of cytokine action, gene expression and liver injury.

Levi J. Beverly, Ph.D.
Associate Professor, Department of Medicine
Ph.D., Molecular Genetics, Biochemistry and Microbiology, University of Cincinnati (2007)

Research Interests: Regulation of anti-apoptotic proteins in cancer progression and treatment.

Aruni Bhatnagar, Ph.D., FAHA
Smith and Lucille Gibson Chair and Professor, Department of Medicine;
Director, Envirome Institute
Ph.D., Kanpur University, India (1985)

Research Interests: Cardiovascular toxicology; oxidative mechanisms of cardiovascular disease; lipid peroxidation in atherosclerosis; gene expression; secondary complications of diabetes.

Michael E. Brier, Ph.D.
Professor, Department of Medicine
Ph.D., Industrial and Physical Pharmacy, Purdue University (1986)

Research Interests: Clinical pharmacokinetics/dynamics; Drug dosing in renal failure.

Jian Cai, Ph.D.

Assistant Professor of Medicine
Ph.D., Pharmacology and Toxicology, University of Louisville (1999)

Research Interests: Application of mass spectrometry in biomedical research; Drug and metabolite identification and quantification; Protein identification and post-translational modification; Hemoglobin adducts as biomarkers of chemical exposure and pathogenesis.

Jun Cai, M.D., Ph.D.

Assistant Professor, Department of Pediatrics
M.D., Tianjin Medical College (1993)
Ph.D., Biochemistry and Molecular Biology, Tianjin Medical University (1997)

Lu Cai, M.D., Ph.D.

Professor, Department of Pediatrics, Director of Pediatric Research Institute
M.D., Norman Bethune University of Medical Sciences (1983)
Ph.D., Radiation Biology/Oncology, Norman Bethune University of Medical Sciences (1987)

Research Interests: Diabetic cardiomyopathy and nephropathy

Matthew C. Cave, M.D.

Associate Professor, Department of Medicine
M.D., University of Kentucky (2001)

Research Interests: Steatohepatitis and liver cancer related to environmental and occupational chemical exposures; Complementary and alternative medicine in liver disease; Alcoholic and nonalcoholic fatty liver disease; Treatment of Hepatitis C.

Jason A. Chesney, M.D., Ph.D.

Professor and Brinkley Chair in Lung Cancer Research, Department of Medicine
Ph.D., Biomedical Sciences/Immunology, University of Minnesota (1997)
M.D., University of Minnesota (1998)

Research Interests: Novel regulators of cancer cell metabolism; identification of emerging viruses and the development of immune-based therapies against widely metastatic cancers.

Daniel J. Conklin, Ph.D.

Professor, Department of Medicine
Ph.D., University of Notre Dame (1995)
Research Interests: Environmental cardiology; cardiovascular toxicology.

Chendil Damodaran, Ph.D.

Associate Professor, Department of Urology
Ph.D., Environmental Toxicology (Cancer Biology), University of Madras (1984).

Research Interests: Identifying novel therapeutic compounds of natural origin that possess anti proliferative properties in prostate cancer cells, both androgen-dependent and – independent.

Ayman El-Baz, Ph.D.

Associate Professor and Chair of Bioengineering
Ph.D., Electrical and Computer Engineering, University of Louisville (2006)

Research Interests: Dr, El-Baz directs UofL's BioImaging Laboratory. The primary focal point of the BioImaging Lab is to develop and implement innovative and ground-breaking techniques for use in image-guided surgeries, and the creation of non-invasive image-based diagnostic systems, which can help to revolutionize the early diagnosis of numerous diseases and brain disorders.

Paul N. Epstein, Ph.D.

Professor, Department of Pediatrics
Carol B. McFerran Chair in Pediatric Diabetes Research
Ph.D., Pharmacology, Baylor College of Medicine (1981)

Research Interests: Molecular mechanisms of diabetogenesis. The use of transgenic animals to study genetics and molecular mechanisms in vivo.

Wenke Feng, Ph.D.

Associate Professor, Department of Medicine
Ph.D, Biochem/Biotech, University for Bodenkultur (1998)

Research Interests: Mechanisms of alcoholic liver disease; Mechanisms of nonalcoholic steatohepatitis; Tissue hypoxia and diabetic complications.

Herman B. Frieboes, Ph.D.

Associate Professor, Department of Bioengineering
Ph.D., Biomedical Engineering, University of California, Irvine (2006)

Research Interests: Develop and apply realistic, predictive biocomputational models integrated with clinical and laboratory data to study disease progression and treatment; design of patient-specific therapies; and design of multiscale biocomputational models to describe the complex interactions between treatment and the immune system.

Lelia Gobejishvili, Ph.D.

Assistant Professor, Department of Medicine
Ph.D. Physiology. I. Beritashvili Institute of Physiology, Georgian Academy of Sciences (1995)

Research Interests: Alcohol induced changes in innate immunity; alcohol mediated epigenetic changes of pro-inflammatory cytokines; role of phosphodiesterase 4 enzymes in a) modulating cAMP signaling in hepatic parenchymal and non-parenchymal cells (e.g. Kupffer cells, hepatic stellate cells) and b) pathogenesis of alcoholic and non-alcoholic liver disease.

Evelyne Gozal, Ph.D.

Associate Professor of Pediatrics
Ph.D., Toxicology, University of Southern California (1997)

Research Interests: Signal transduction pathways involved in neuronal cell survival and neuronal cell death during hypoxia; cellular mechanisms underlying brain adaptation to chronic and intermittent hypoxia; identification of the kinases and transcription factors activated by hypoxia, leading to gene induction and to adaptation to oxygen deprivation.

Petra Habberzettl, Ph.D.

Assistant Professor, Department of Medicine
Ph.D., Biochemistry, Heinrich-Heine University (2006)

Research Interest: Environmental air pollution and cardiometabolic disorders

Michal Hetman, M.D., Ph.D.

Professor of Neurological Surgery
Endowed Professor of Molecular Signaling
M.D., Warsaw Medical School (1994)
Ph.D., Experimental and Clinical Medicine, Polish Academy of Sciences (1997)

Research Interests: Role of signaling kinases in neuronal repair and demise.

Bradford G. Hill, Ph.D.

Associate Professor of Medicine
Ph.D., Biochemistry, University of Louisville (2007)

Research Interests: The broad theme of my research entails understanding how changes in metabolism contribute to cardio-metabolic health and disease. This involves the critical examination of glycolysis, mitochondria, and other pathways of intermediary metabolism and the development of causal relationships between metabolic defects or signatures and (patho)physiology.

Steven P. Jones, Ph.D.

Professor of Medicine
Director, Diabetes and Obesity Center
Ph.D., Physiology, Louisiana State University Health Sciences Center, Shreveport (2002)
Postdoctoral Fellowship, Mitochondrial Biology, Johns Hopkins University (2004)

Research Interests: My group is interested in understanding why the heart fails and developing strategies to mitigate pump failure. We are primarily focused on the immunometabolic factors that reshape the extracellular matrix in the remodeling ventricle.

Swati Joshi-Barve, Ph.D.

Assistant Professor of Medicine
Ph.D., Biochemistry, University of Kentucky (1992)

Research Interests: Mechanisms of Steatohepatitis (nonalcoholic and alcoholic fatty liver disease); Mechanisms of Alcohol-induced Immune Dysfunction; Mechanisms of Hepatocellular Carcinoma.

Bradley B. Keller, M.D.

Professor of Pediatrics and Bioengineering
Kosair Charities Chair and Chief, Division of Pediatric Heart Research
M.D., Pennsylvania State University (1985)

Research Interests: Cardiovascular bioengineering: Development of 3D tissues for heart repair and regeneration.

Irina Kirpich, Ph.D., M.P.H.

Assistant Professor of Medicine
Ph.D., Biology and Physiology, Pomor State University (1997)
M.P.H, University of Louisville (2014)

Research Interests: Gut-liver interactions in alcoholic and non-alcoholic liver disease; alcohol and dietary fat mediated intestinal and liver injury; gut barrier, microbiome, probiotics; epigenetics and hepatic steatosis; Oxidized Metabolites of Linoleic Acid (OXLAMs).

Donghan Lee, Ph.D.

Associate Professor of Medicine
James Graham Brown Chair of Structural Biology
Ph.D., Biophysics, Swiss Federal Institute of Technology (2003)

Research Interests: Molecular recognition between biomolecules such as protein-

protein, protein-DNA, protein-carbohydrate, protein-ligands; design NMR experiments and development of associated theory.

Chi Li, Ph.D.

Associate Professor of Medicine
Ph.D., Molecular Biology, Columbia University (1998)

Research Interests: Mechanisms of apoptotic pathways initiated from different intracellular organelles. Molecular and cellular mechanisms that affect inflammation and immunity.

Yan Li, M.D., Ph.D.

Associate Professor of Surgery
M.D., Liaoning University of Chinese Medicince (1987)
Ph.D., Chengdu University of Chinese Medicine (1998)

Research Interests: Cancer research and prevention.

Robert C.G. Martin, II, M.D., Ph.D.

Professor and Sam and Lolita Weakley Endowed Chair in Surgical Oncology
M.D., University of Louisville (1995)
Ph.D., Pharmacology & Toxicology, University of Louisville (2008)

Research Interests: Cancer Research.

Craig J. McClain

Professor of Medicine
M.D., University of Tennessee-Memphis (1972)

Research Interests: Role of cytokines in liver injury and other forms of hepatotoxicity, interactions with nutrition and toxicology.

Kelly M. McMasters, M.D., Ph.D.

Professor and Chair of Surgical Oncology
Ph.D., Cell and Developmental Biology, Rutgers University (1988)
M.D., University of Medicine and Dentistry of New Jersey (1989)

Research Interests: Melanoma therapies-Adenovirus-mediated gene therapy; Radio guided surgery for breast, melanoma, and parathyroid tumors as well as gastrointestinal, hepatic, and pancreaticobiliary tumors

Michael L. Merchant, Ph.D.

Associate Professor of Medicine
Ph.D., Chemistry, University of Arkansas (1994)

Research Interests: Translational research - the discovery and understanding of biomarkers of renal disease; Basic Research - Mechanisms of renal function decline and fibrosis; Basic Research - Mechanisms for the transition from acute to chronic disease.

Tamer Mohammed, Ph.D.

Assistant Professor of Medicine
Ph.D., Cardiovascular and Molecular Medicine, University of Manchester (2008)

Research Interest: Novel therapies for heart failure focusing on endogenous heart repair and regeneration mechanisms

Chin K. Ng, Ph.D.

Associate Professor of Radiology
Ph.D., Medical Physics, University of Wisconsin (1989)

Research Interests: Validating and characterizing novel imaging probes for multimodality imaging (MRI, PET, SPECT, CT and Optical); Exploring approaches for early detection and monitoring of treatment efficacy of multiple diseases such as infectious diseases, cancer, spinal cord injury, brain diseases, diabetes and heart diseases; Developing thermal laser ablation devices for treating spinal metastases in a MRI environment.

Matthew A. Nystoriak, Ph.D.

Assistant Professor of Medicine
Ph.D., Pharmacology, University of Vermont (2010)

Research Interests: Regulation of vascular calcium signaling and blood flow in diabetes.

Martin G. O'Toole, Ph.D.

Assistant Professor of Bioengineering
Ph.D., Chemistry, University of Louisville (2008)

Research Interests: Development of stimulus-responsive biomaterials for use in medical applications of drug-delivery, wound healing, and tissue engineering. Development of stimulus-responsive biomaterials of clinical relevance for diagnosing and treating various diseases.

Timothy E. O'Toole, Ph.D.

Assistant Professor of Medicine
Ph.D. Biological Chemistry, University of Michigan (1987)

Research Interests: To develop a molecular understanding of the cardiovascular pathology induced by exposure to air pollution or volatile organic compounds.

M. Michele Pisano, Ph.D.

Professor of Surgical and Hospital Dentistry
Ph.D., Anatomy, Thomas Jefferson University (1985)

Research Interests: Molecular developmental toxicology; gene-environment interactions in normal and abnormal embryonic development; growth factor directed cellular signal transduction in embryonic cell growth and differentiation.

Shesh N. Rai, Ph.D.

Professor of Bioinformatics and Biostatistics
Wendell Cherry Chair in Clinical Trial Research
Ph.D., Statistics, University of Waterloo (1993)

Research Interests: Clinical Trials, Survival Analysis, Bioinformatics, Mixed Effects Model, Sample Survey, Quantitative Risk Assessment

Craig S. Roberts, M.D.

Professor and Chair of Department of Orthopaedic Surgery
M.D., New York University (1986)

Research Interests: Orthopaedic trauma, fractures and their complications and outcomes.

George C. Rodgers, M.D., Ph.D.

Professor of Pediatrics
Humana Chair of International Pediatrics
Ph.D., Organic Chemistry, Yale University (1964)
M.D., State University of New York (1975)

Research Interests: Toxicokinetics in drug overdoses and pharmacokinetics in pediatric disease states.

David A. Scott, Ph.D.

Professor of Oral Immunology & Infectious Diseases
Ph.D., Microbiology and Immunology, McGill University (1997)

Research Interests: Tobacco-induced alterations to microbial-associated molecular patterns of Porphyromonas gingivalis; Tobacco-induced alterations to innate-pathogen interactions; Tobacco alkaloid amplification of endogenous anti-inflammatory pathways; Identification of gingivitis- and periodontitis-specific infrared molecular signatures.

Sanjay Srivastava, Ph.D.
Professor of Medicine
Ph.D., Chemistry, University of Lucknow (1993)

Research Interests: Delineating the mechanisms by which environmental pollutants cause endothelial activation, vascular inflammation, insulin resistance and atherosclerosis.

Theodore Smith, Ph.D.
Associate Professor of Medicine
Ph.D., Experimental Psychology, Miami University (1992)

Research Interests: Support the Envirome initiative and the development of the Center for Healthy, Air, Water, and Soil, the early focus is on scientific research in the areas of urban development and health and novel approaches for measuring and assessing different domains of the envirome (sensors, new data sources). A second area of focus is the development of new models and frameworks for communicating scientific knowledge to the lay public, other academics, healthcare industry, policy makers and other stakeholders.

Jill M. Steinbach-Rankins, Ph.D.
Associate Professor of Bioengineering
Ph.D., Bioengineering, Arizona State University (2009)

Research Interests: Design and development of drug and gene delivery vehicles for physiologically difficult-to-deliver-to microenvironments.

Janice E. Sullivan, M.D.
Professor
Vice Chair for Research, Department of Pediatrics
M.D., University of Minnesota (1988)

Research Interests: Clinical Pharmacology with a focus on underserved and rural populations; Mentoring.

Yi Tan, Ph.D.
Assistant Professor of Pediatrics
Ph.D., Biomedical Engineering, Chongqing University (2004)

Research Interests: Signaling pathways and therapeutic strategies in diabetic complications including cardiomyopathy, cardiac insulin resistance, stem cell mobilization and ischemic angiogenesis.

Shizuka Uchida, Ph.D.

Associate Professor, Department of Medicine
Ph.D., Molecular Biology, Japan Advanced Institute of Science and Technology (2007)

Research Interests: Dr. Uchida's research focuses on elucidating the functions of long non-coding RNAs (lncRNAs) using dry (bioinformatics) and wet (biology) lab techniques. Application of basic biology to rejuvenate ailing hearts by directing the differentiation of resident adult cardiac stem cells into functional cardiomyocytes using lncRNAs.

Walter H. Watson, Ph.D.

Assistant Professor of Medicine
Ph.D., Toxicology, University of Kentucky (1999)

Research Interests: Oxidative stress and redox signaling; Mechanistic toxicology; Alcoholic and nonalcoholic fatty liver disease.

Scott R. Whittemore, Ph.D.

Professor and Vice Chair for Research, Department of Neurological Surgury
Scientific Director, Kentucky Spinal Cord Injury Research Center
Ph.D., Physiology and Biophysics, University of Vermont (1982)

Research Interests: Development of key components of the vascular and nervous systems and strategies to protect them from data and/or promote regeneration.

Marcin Wysoczynski, Ph.D.

Assistant Professor of Medicine
Ph.D. Pomeranian Medical University (2009)

Research Interests: Innate immunity in myocardial repair.

Jun Yan, M.D., Ph.D.

Professor of Medicine and Endowed Chair in Translational Research
M.D., Jiangsu University School of Medicine (1985)
Ph.D., Immunology, Shanghai Jiaotong University School of Medicine (1997)

Research Interests: Immunotherapy and vaccines for treatment of cancer and infectious diseases.

Xiang Zhang, Ph.D.

Professor of Chemistry
Ph.D., Bioanalytical Chemistry, Purdue University (2001)

Research Interests: Molecular systems biology, by exploiting practical and efficient high throughput technologies for analyses of complex mixtures to facilitate the development of preventive, predictive and personalized medicine for the promotion of health and wellness.

FACULTY WITH EMERITUS APPOINTMENTS

Benz, Frederick W., Professor Emeritus, Ph.D., Pharmacology, University of Iowa (1970).

Chen, Theresa, Professor Emerita; Ph.D., University of Louisville (1971).

Hurst, Harrell E., Professor Emeritus, Ph.D., Toxicology, University of Kentucky (1978).

Kang, Y. James, Professor Emeritus, Ph.D., Toxicology and Zoology, Iowa State University (1989)

Nerland, Donald E., Professor Emeritus, Ph.D., Medicinal Chemistry, University of Kansas (1974)

Pierce Jr., William M., Professor Emeritus, Ph.D., Pharmacology and Toxicology, University of Louisville (1981)

Rowell, Peter P., Professor Emeritus, Ph.D., Pharmacology and Therapeutics, University of Florida (1975).

Williams, W. Michael, Professor Emeritus, Ph.D., University of Louisville (1970); M.D., University of Louisville (1974).

FACULTY WITH ADJUNCT APPOINTMENTS

Osama El-Tawil, Adjunct Professor of Pharmacology and Toxicology, PhD, Toxicology, University of Medicine and Dentistry of New Jersey/Cairo University (1997)

Adrian J. Fretland, Adjunct Assistant Professor of Pharmacology and Toxicology; PhD, Pharmacology and Toxicology, University of Louisville School of Medicine (2000)

John C. Lipscomb, Adjunct Associate Professor of Pharmacology and Toxicology; PhD, Pharmacology and Toxicology, University of Arkansas for Medical Sciences (1991)

Kevyn E. Merten, Adjunct Assistant Professor of Pharmacology and Toxicology, PhD, Pharmacology and Toxicology, University of Louisville School of Medicine (2007)

Kristin J. Metry-Baldauf, Adjunct Assistant Professor of Pharmacology and Toxicology; PhD, Pharmacology and Toxicology, University of Louisville School of Medicine (2007)

Arnold J. Schecter, Adjunct Professor of Pharmacology and Toxicology, MD, Howard University Medical School (1962); MPH, Columbia University (1975)

Irina Tcherepanova, Adjunct Professor of Pharmacology and Toxicology; PhD, Molecular Pharmacology, Albert Einstein College of Medicine (1996)

Joshua M. Thornburg, Adjunct Assistant Professor of Pharmacology and Toxicology, PhD, Pharmacology and Toxicology, University of Louisville School of Medicine (2007)

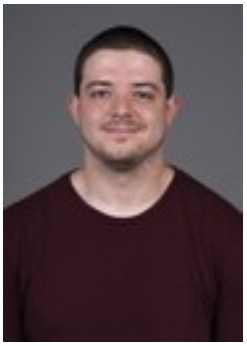
Eric M. Vela, Adjunct Assistant Professor of Pharmacology and Toxicology, PhD, Virology and Gene Therapy, University of Texas Sciences Center at Houston (2005)

ADMINISTRATIVE STAFF

Lisa Bentley	Sponsored Awards Assistant
Sonya Cary	Unit Business Manager, Graduate Student Coordinator
Kelly Holland	Administrative Associate
Delaine Scandlyn	Accountant III

2019 NEW GRADUATE STUDENT CLASS

Neil Bodduluri,
B.S., Biology, Duke University
A.B., History, Duke University



Tyler Gripshover
B.S., Chemistry (conc in Biochemistry), Eastern Kentucky University

Nicholas Hoffman
B.S., Chemistry, Centre College

Samantha McFall
B.S., Biology, Illinois State University

Idoia Meaza Isusi
B.S., Biology, Universidad del Pais Vasco/ Euskal Herriko Unibertsitatea (UPV-EHU)
M.S., Marine Environment and Resources, Universidad del Pais Vasco/ Euskal Herriko Unibertsitatea (UPV-EHU)

Andrew Orwick
B.S., Biology, Indiana University-Purdue University Indianapolis (IUPUI)
PharmD., Sullivan University

Breandon Tayler
B.S., Chemistry, University of Louisville

Kennedy Walls
B.S., Chemistry (conc in Biochemistry), University of Louisville

Aggie Williams
B.A., Chemistry (conc in pre-pharmacy), Eastern Kentucky University

Graduate Students

Amin ElNagdy, Mohamed
Attia, Rasha
Bakhaty, Omar
Bodduluri, Neil
Bushau-Sprinkle, Adrienne
Croom-Perez, Taylor
Dent, Mathhew
Dwenger, Marc
El-Baz, Nagwa
Finch, Jordan
Gripshover, Tyler
Habel, Mariam
Harrell-Stewart, Desmond
Hoffman, Nicholas
Jiang, Mengwei
Jin, Jian
Jin, Lexiao
Kim, Christine
Krueger, Austin
Kyakulaga, Al Hassan
Laun, Alysa
Li, Fengyuan
Li, Yihong
Lu, Haiyan
Lykoudi, Angeliki
McFall, Samantha
Meaza Isusi, Idoia
Meng, Shuhan
Miller, Hunter
Orwick, Andrew
Raph, Sean
Reeves, Micaela
Richardson, Andre
Royal, Joshua
Sears, Sophie
Shrader, Sarah
Speer, Rachel
Taylor, Breandon
Toyoda, Jennifer
Walls, Kennedy
Warner, Jeffrey
Wei, George
Whitt, Aaron
Williams, Aggie
Young, Jamie
Zheng, Yuxuan

2019 Graduates

Graduate	Degree	Year	Mentor	Dissertation/Thesis Title
Al Hassan Kyakulaga	Ph.D.	2019	Ramesh C. Gupta, Ph.D.	Therapeutic potential of Withaferin A against non-small cell lung cancer
Joshua M. Royal	Ph.D.	2019	Nobuyuki Matoba, Ph.D.	A recombinant cholera toxin B subunit variant with a endoplasmic retention KDEL motif (CTB-KDEL) exhibits unique colon mucosal healing effects that have therapeutic implications for inflammatory bowel disease
Kevin M. Tyo	Ph.D.	2019	Jill Steinbach-Rankins, Ph.D.	Electrospun fibers and nanoparticles for the prevention of sexually transmitted infections
Sarah H. Shrader	M.S.	2019	Zhao-Hui (Joe) Song, Ph.D.	Discovery of novel molecular targets for endogenous and phytocannabinoids
Andre D. Richardson	M.S.	2019	Daniel J. Conklin, Ph.D.	Tobacco-derived aldehydes: Platelet activation, thrombosis and the role of TRPA1
Sophia M. Sears	M.S.	2019	Leah J. Siskind, Ph.D.	Characterizing the roles of neutral ceramidase in cisplatin-induced kidney injury
Aditya S. Barve	Ph.D.	2019	Levi Beverly, Ph.D.	Characterization of a more clinically relevant human leukemia xenograft model to examine perturbation of MET/SAM metabolism as a novel paradigm for MLL-R leukemia in vivo
Douglas J. O. Saforo	Ph.D.	2019	Levi Beverly, Ph.D. & Leah J. Siskind, Ph.D.	Characterizing the role of extracellular matrix in non-small cell lung carcinoma metastasis using a 3D microenvironment mimetic in-vitro culture system
Christine E. Dolin	Ph.D.	2019	Gavin E. Arteel, Ph.D. & Michael L. Merchant, Ph.D.	Novel mechanisms and biomarkers in alcohol-induced organ injury

	Mohamed Y. Mahmoud	Ph.D	2019	Jill M. Steinbach-Rankins, Ph.D. & Donald R. Demuth, Ph.D.	Development of BAR-peptide nanoparticles and electrospun fbers for the prevention and treatment of oral biofilms
	Matthew W. Dent	M.S.	2019	Nobuyuki Matoba, Ph.D.	Development of a lectin-FC fusion protein with antiviral and anti-cancer activity

FACULTY HONORS

Chen, Shao-Yu

- Senior author on a poster awarded a junior investigator award from the Research Society on Alcoholism, RSA annual meeting, 2019, Minneapolis, MN.
- Senior author on a poster awarded a student merit award from the Research Society on Alcoholism, RSA annual meeting, 2019, Minneapolis, MN.

Clark, Geoff

- Promotion to full professor

Fuqua, Joshua

- EPIC Inventor Award 2019 for Commercialization Success.

Gupta, Ramesh

- Awarded a plaque for receiving a U.S. patent on the milk exosome technology from UofL.
- Awarded framed license certificate from UofL.

Hood, Joshua

- Our Distinction in Research track medical student, Jeremy B. Jones, received a competitive travel award to present his research findings at the First joint meeting of the International society for extracellular vesicles and the metastasis research society (ISEV-MRS), August 4th, 2019 Vanderbilt University, Nashville TN.

Kidd, LaCreis

- Multicultural Teaching Award, School of Medicine
- Epic Innovator Award, University of Louisville
    - 11078-04 – Genetic Determinants of Prostate Cancer Risk US Patent 9,863,002
    - 11078-05 – Genetic Determinants of Prostate Cancer and Breast Cancer Risk US Patent 9,879,324
- Kentucky Biomedical Research Infrastructure Network Travel Award, The SE Regional IDEA Conference, Louisville, KY.

Palmer, Kenneth

- University of Louisville EPIC Inventor Award 2019 for Commercialization Success.

States, Christopher

- Albert Nelson Marquis Lifetime Achievement Award
- Appointed to Society of Toxicology Board of Publishers
- Nominated for election to Society of Toxicology Awards Committee

Wise, John

- Education Award, Environmental Mutagenesis and Genomics Society (EMGS)

STUDENT HONORS

Bushau-Sprinkle, Adrienne (Lederer)

- Received third place for best research poster presentation for doctoral basic science graduate student at Research!Louisville

Dent, Matthew (Matoba)

- Won best oral presentation award at the OVSOT student/post-doc summer meeting

Fan, Huadong (Chen)

- Received a Junior Investigator Award from the Research Society on Alcoholism in 2019.

Kim, Christine (Ceresa)

- Student Travel Award to attend the 16th annual APA Environmental Health Scholars Retreat in Providence, RI
- Received second place award for her poster presentation at the OVSOT
- Student Travel Award, Society of Toxicology

Li, Yihong (Chen)

- Received a Student Merit Award from the Research Society on Alcoholism in 2019.

Lu, Haiyan (Wise, J.)

- Student Travel Award, Society of Toxicology

Lykoudi, Angeliki (States)

- Received second place for best research poster presentation for basic science graduate student at Research!Louisville

Meaza, Idoia (Wise, J.)

- Third place, poster presentation award, Ohio Valley Chapter of the Society of Toxicology

Meng, Shuhan (Li, C.)

- Received 1st place award for research poster at the Experimental Biology meeting

Raph, Sean (Nystoriak)

- Received second place for best research poster presentation for basic science graduate student at Research!Louisville

Shrader, Sarah (Song)

- Received an individual predoctoral fellowship award from the Autism Speaks Foundation

Speer, Rachel (Wise, J.)

- Third place, oral presentation award, 3 min talk, Ohio Valley Chapter of the Society of Toxicology
- First place, poster presentation award, Ohio Valley Chapter of the Society of Toxicology
- Student Travel Award, Society of Toxicology

Toyoda, Jennifer (Wise, J.)

- First place, oral presentation award, 3 min talk, Ohio Valley Chapter of the Society of Toxicology

Warner, Jeffrey (Kirpich)

- Received first place for best research poster presentation for basic science graduate student at Research!Louisville

Young, Jamie (Cai)

- Elected president of the student group for the national SOT
- Received first place award for her platform at the OVSOT
- Received an award to honor her excellent oral presentation at the 13th Conference of International Society for Trace Element Research in Human (ISTERH) in Bali, Indonesia

PHARMACOLOGY & TOXICOLOGY PUBLICATIONS

Faculty with Primary Appointments and Students/Post-Doctoral Fellows

1. Abudurexiti, A., S. Adkins, D. Alioto, S. V. Alkhovsky, T. Avsic-Zupanc, M. J. Ballinger, D. A. Bente, M. Beer, E. Bergeron, C. D. Blair, T. Briese, M. J. Buchmeier, F. J. Burt, C. H. Calisher, C. Chang, R. N. Charrel, I. R. Choi, J. C. S. Clegg, J. C. de la Torre, X. de Lamballerie, F. Deng, F. Di Serio, M. Digiaro, M. A. Drebot, X. Duan, H. Ebihara, T. Elbeaino, K. Ergunay, C. F. Fulhorst, A. R. Garrison, G. F. Gao, J. J. Gonzalez, M. H. Groschup, S. Gunther, A. L. Haenni, R. A. Hall, J. Hepojoki, R. Hewson, Z. Hu, H. R. Hughes, M. G. Jonson, S. Junglen, B. Klempa, J. Klingstrom, C. Kou, L. Laenen, A. J. Lambert, S. A. Langevin, D. Liu, I. S. Lukashevich, T. Luo, C. Lu, P. Maes, W. M. de Souza, M. Marklewitz, G. P. Martelli, K. Matsuno, N. Mielke-Ehret, M. Minutolo, A. Mirazimi, A. Moming, H. P. Muhlbach, R. Naidu, B. Navarro, M. R. T. Nunes, G. Palacios, A. Papa, A. Pauvolid-Correa, J. T. Paweska, J. Qiao, S. R. Radoshitzky, R. O. Resende, V. Romanowski, A. A. Sall, M. S. Salvato, T. Sasaya, S. Shen, X. Shi, Y. Shirako, P. Simmonds, M. Sironi, J. W. Song, J. R. Spengler, M. D. Stenglein, Z. Su, S. Sun, S. Tang, M. Turina, B. Wang, C. Wang, H. Wang, J. Wang, T. Wei, A. E. Whitfield, F. M. Zerbini, J. Zhang, L. Zhang, Y. Zhang, Y. Z. Zhang, Y. Zhang, X. Zhou, L. Zhu, and J. H. Kuhn. 2019. 'Taxonomy of the order Bunyavirales: update 2019', *Arch Virol*, 164: 1949-65.
2. Aqil, F., R. Munagala, A. K. Agrawal, and R. Gupta. 2019. 'Anticancer Phytocompounds: Experimental and Clinical Updates', *Science Direct*: 237-72.
3. Aqil, F., R. Munagala, J. Jeyabalan, A. K. Agrawal, A. H. Kyakulaga, S. A. Wilcher, and R. C. Gupta. 2019. 'Milk exosomes - Natural nanoparticles for siRNA delivery', *Cancer Lett*, 449: 186-95.
4. Bardi, G. T., N. Al-Rayan, J. L. Richie, K. Yaddanapudi, and J. L. Hood. 2019. 'Detection of Inflammation-Related Melanoma Small Extracellular Vesicle (sEV) mRNA Content Using Primary Melanocyte sEVs as a Reference', *Int J Mol Sci*, 20.
5. Barve, A., A. Vega, P. P. Shah, S. Ghare, L. Casson, M. Wunderlich, L. J. Siskind, and L. J. Beverly. 2019. 'Perturbation of Methionine/S-adenosylmethionine Metabolism as a Novel Vulnerability in MLL Rearranged Leukemia', *Cells*, 8.
6. Bushau-Sprinkle, A., M. Barati, C. Conklin, T. Dupre, K. B. Gagnon, S. J. Khundmiri, B. Clark, L. Siskind, M. A. Doll, M. Rane, M. Brier, S. Coventry, and E. D. Lederer. 2019. 'Loss of the Na(+)/H(+) Exchange Regulatory Factor 1 Increases Susceptibility to Cisplatin-Induced Acute Kidney Injury', *Am J Pathol*, 189: 1190-200.
7. Chauhan, R., N. El-Baz, R. S. Keynton, K. T. James, D. A. Malik, M. Zhu, A. El-Baz, C. K. Ng, P. J. Bates, M. T. Malik, and M. G. O'Toole. 2019. 'Targeted Gold Nanoparticle(-)Oligonucleotide Contrast Agents in Combination with a New Local Voxel-Wise MRI Analysis Algorithm for In Vitro Imaging of Triple-Negative Breast Cancer', *Nanomaterials (Basel)*, 9.
8. Diamos, A. G., D. Larios, L. Brown, J. Kilbourne, H. S. Kim, D. Saxena, K. E. Palmer, and H. S. Mason. 2019. 'Vaccine synergy with virus-like particle and immune complex platforms for delivery of human papillomavirus L2 antigen', *Vaccine*, 37: 137-44.
9. Fan, H., F. Yuan, Y. Yun, T. Wu, L. Lu, J. Liu, W. Feng, and S. Y. Chen. 2019. 'MicroRNA-34a mediates ethanol-induced impairment of neural differentiation of neural crest cells by targeting autophagy-related gene 9a', *Exp Neurol*, 320: 112981.

10. Finch, J., D. W. Riggs, T. E. O'Toole, C. A. Pope, A. Bhatnagar, and D. J. Conklin. 2019. 'Acute exposure to air pollution is associated with novel changes in blood levels of endothelin-1 and circulating angiogenic cells in young, healthy adults', *Aims Environmental Science*, 6: 265-76.
11. Freedman, J. H., and D. W. Hein. 2019. "The University of Louisville superfund research center training core." In *Sustain*, 20-28. Louisville, KY: Envirome Institute.
12. Gunaydin, G., G. Edfeldt, D. A. Garber, M. Asghar, L. Noel-Romas, A. Burgener, C. Wahlby, L. Wang, L. C. Rohan, P. Guenthner, J. Mitchell, N. Matoba, J. M. McNicholl, K. E. Palmer, A. Tjernlund, and K. Broliden. 2019. 'Impact of Q-Griffithsin anti-HIV microbicide gel in non-human primates: In situ analyses of epithelial and immune cell markers in rectal mucosa', *Sci Rep*, 9: 18120.
13. Hamorsky, K. T., J. C. Kouokam, M. W. Dent, T. N. Grooms, A. S. Husk, S. D. Hume, K. A. Rogers, F. Villinger, M. K. Morris, C. V. Hanson, and N. Matoba. 2019. 'Engineering of a Lectibody Targeting High-Mannose-Type Glycans of the HIV Envelope', *Mol Ther*, 27: 2038-52.
14. Hardesty, J. E., B. Wahlang, K. C. Falkner, H. Shi, J. Jin, Y. Zhou, D. W. Wilkey, M. L. Merchant, C. T. Watson, W. Feng, A. J. Morris, B. Hennig, R. A. Prough, and M. C. Cave. 2019. 'Proteomic Analysis Reveals Novel Mechanisms by Which Polychlorinated Biphenyls Compromise the Liver Promoting Diet-Induced Steatohepatitis', *J Proteome Res*, 18: 1582-94.
15. Harrell Stewart, D., K. Hobbing, M. L. Schmidt, H. Donninger, and G. J. Clark. 2019. 'The role of RASSF proteins in modulating RAS driven lung tumors in vivo', *J Thorac Dis*, 11: S1436-S37.
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PHARMACOLOGY & TOXICOLOGY ABSTRACTS

Faculty with Primary Appointments and Students

Ceresa, Brian

1. C.Kim and B. Ceresa, Assessing the role of chronic arsenic in disrupting the EGFR signaling axis, Society of Toxicology, Baltimore, MD, March 10-14, 2019C.
2. Kim and B. Ceresa, Assessing the role of chronic arsenic in disrupting the EGFR signaling axis, UK Society of Postdoctoral Scholars Symposium, Lexington, KY, May 31, 2019
3. C. Kim and B. Ceresa Assessing the role of chronic arsenite in disrupting the EGFR signaling axis Research!Louisville September 10, 2019, Louisville, KY
4. O. Ahmed and B. Ceresa, Targeting c-cbl to improve corneal wound healing and homeostasis Research!Louisville September 10, 2019, Louisville, KY
5. K. Crider, L. Al-Eryani, J.C. States, M. Banerjee, and B. Ceresa, Chronic Arsenic Exposure Suppresses EGFR Activity in the Early Stages of Squamous Cell Carcinoma, Research!Louisville September 10, 2019, Louisville, KY
6. K. Tarvestad, C. Kim, and B. Ceresa, Low-Level Chronic Arsenic Exposure and its Effect on the ErbB Family Receptor Tyrosine Kinases, Research!Louisville September 10, 2019, Louisville, KY
7. C.Kim and B. Ceresa, Assessing the role of chronic arsenic in disrupting the EGFR signaling axis.16thAPA Environmental health Scholars Retreat, November 1-3, 2019 Providence, RI
8. C.Kim and B. Ceresa, Assessing the role of chronic arsenic in disrupting the EGFR signaling axis,Ohio Valley Society of Toxicology, Proctor and Gamble, Mason, OH, November 18, 2019

Chen, Shao-Yu

1. Li YH,Yuan FQ, Wu T, Lu LH, Liu J, Chen S-Y. Sulforaphane protects against ethanol-induced apoptosis in human neural crest cells through epigenetically modulating the expression of anti-apoptotic genes. Alcohol Clin Exp Res 43: S1: 161A, 2019.
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5. Li YH, Yuan F, Wu T, Lu L, Liu L, Chen S-Y. Epigenetically modulating the expression of anti-apoptotic genes by sulforaphane prevented ethanol-induced apoptosis in human neural crest cells. Research! Louisville, 2019, University of Louisville.

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7. Fan H, Yuan F, Wu T, Lu L, Liu J and Chen S-Y. Ethanol-induced disruption of neural crest cell-placode interaction is mediated through the repression of SDF1/CXCR4 signaling by miR-126 shuttled from the exosomes derived from human neural crest cells. Research! Louisville, 2019, University of Louisville.
8. Li YH, Yuan F, Wu T, Lu L, Liu J and Chen S-Y. Ethanol-induced apoptosis in human neural crest cells can be prevented by sulforaphane through epigenetically restoring the expression of anti-apoptotic genes. American College of Toxicology 40th Annual meeting. 2019.
9. Fan H, Yuan F, Liu J and Chen S-Y. Down-regulation of SDF1/CXCR4 signaling mediates ethanol-induced craniofacial and cranial nerve defects in zebrafish embryos by disrupting neural crest cell-placode interaction. IUTOX 15th International Congress of Toxicology. 2019.

Freedman, Jonathan

1. Zhang, Y., Young, J.L., Kong, M., Freedman, J.H. and Cai, L.Chronic exposure to arsenic and high fat diet induces sex-dependent renal effects. Fifty-Eight Annual Meeting of the Society of Toxicology, Baltimore, MD (2019)
2. Zhou, B., Gentry, A., Pagidas, K., Young, J.L., Kong, M., Cai, L. and Freedman, J.H. Prenatal exposure to cadmium (Cd) and postnatal exposure to Cd and high-fat diet (HFD) impairs spermatogenesis and increases testicular apoptosis. Fifty-Eight Annual Meeting of the Society of Toxicology, Baltimore, MD (2019)
3. Young, J.L., Freedman, J.H., Watson, W.H., Kong, M., Arteel, G.E. and Cai, L. The effects of whole life, chronic cadmium exposure on the development of non-alcoholic fatty liver disease in male and female mice. Fifty-Eight Annual Meeting of the Society of Toxicology, Baltimore, MD (2019)
4. Mazzocco, J.C., Gozal, E., Jagadapillai, R., Freedman, J.H. and Barnes, G.N.Effects of Cadmium and High Fat Diet on Metal Homeostasis in the Brain. Research!Louisville (2019)
5. Shrader, S.H, Tong, Y.- G., Freedman, J.H. and Song, Z.-H. Cannabinoid-induced swimming-induced paralysis in the nematode Caenorhabditis elegans. Society of Neuroscience Meeting. Chicago IL (2019).

Fuqua, Joshua

1. Paul Eapen, Ian Sebastian, Kenneth Palmer, Krystal Hamorsky, Joshua Fuqua." Characterization of a Novel Variant of the Antiviral Lectin Griffithsin (GRFT V98T)". Research!Louisville, Louisville, KY. Sept. 2019.
2. Ian Santisteban, Samantha Islam, Krystal Hamorsky, Joshua Fuqua. "Expression, Purification and Characterization of a Lysine Free Griffithsin Variant". Research!Louisville, Louisville, KY. Sept. 2019.

Gupta, Ramesh

National and International Meetings

1. Aqil, F., Munagala, R. Jeyabalan, J., A., Agrawal, AK., Kyakulaga, AH., Gupta, RC. Milk derived exosomes for siRNA delivery. Annual Meeting of American Society for Exosomes and Microvesicles. Oct 6 – 10, 2019, California USA
2. Gupta R, Aqil F, Jeyabalan J, Kyakulaga AH, Agrawal A, Tyagi N, Kandimalla R, Schultz DJ, Spencer W and Munagala R. Milk-derived exosomes – a nano platform for delivery of small and large molecules. 24th World Congress on Advances in Oncology, October 10-12, 2019

Regional/Local Meetings

1. Henley S., Kandimalla R., Aqil F., and Gupta R., Targeting Chemotherapy Resistance in Non-Small Cell Lung Cancer Via Berry Anthocyanidins. Research Louisville, Univ. of Louisville, Louisville, September 10-13, 2019.

Hein, David

1. Salazar-González, R.A.,Zhang, X., Doll, M.A., Lykoudi, A. and Hein, D.W.: Role of the human N-acetyltransferase genetic polymorphism in metabolism and toxicity of 4,4;-methylenedianiline. Proceedings of the annual meeting of the Society of Toxicology, Abstract 1557, Baltimore Maryland, March 2019.
2. 2Habil, M.R., Doll, M.A., and Hein, D.W.: N--acetyltransferase 2 acetylator genotype-dependent N-acetylation of the arylamine carcinogens 4-aminobiphenyl and beta-naphthylamine in cryopreserved human hepatocytes. Proceedings of the annual meeting of the Society of Toxicology, Abstract 2633, Baltimore Maryland, March 2019.
3. Hodge, D., Salazar-González, R.A., Hong, K., Ray, A., and Hein D.: The effects of arylamine N-acetyltransferase 1 on tumor immune response. Proceedings of Research!Louisville, Abstract MED-R25-86, Louisville, Kentucky, September 2019.
4. Ray, A., Doll, M., Hong, K., Salazar-González, R.A., Hodge, D., Beverly, L, and Hein, D.: Role of arylamine N-acetyltransferase 1 in breast cancer growth and metastasis. Proceedings of Research!Louisville, Abstract MED-R25-98, Louisville, Kentucky, September 2019.
5. Salazar-González, R.A., Doll, M.A. and Hein, D.W.: Acetylation/Deacetylation of arylamine N-acetyltransferase 1 in breast cancer as a regulator of catalytic activity and expression. Proceedings of Research!Louisville, Abstract PRF-9, Louisville, Kentucky, September 2019.
6. Hong, K., Doll, M. and Hein, D.: Transcriptional regulation of human arylamine N-acetyltransferase 2 (NAT2) as a novel factor in development of insulin resistance. Proceedings of Research!Louisville, Abstract F-9, Louisville, Kentucky, September 2019.
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10. Kidd, L.R. and Hein, D.W.: Results of the R25 cancer education experience. Southeast Regional IDeA Conference, p. 91, Louisville, Kentucky, November 2019.

Hong, Kyung

1. The effects of arylamine N-acetyltransferase 1 on tumor immune response.Daniel Hodge, Raul Salazar-Gonzalez, Kyung Hong, Andrew Ray, David Hein. (Research!Louisville, Sep. 2019)
2. Transcriptional regulation of human arylamine N-acetyltransferase 2 (NAT2) as a novel factor in development of insulin resistance. Kyung U. Hong, Mark A. Doll, and David W. Hein. (Research!Louisville, Sep. 2019)
3. Role of Arylamine N-acetyltransferase 1 in Breast Cancer Growth and Metastasis. Andrew Ray, Mark Doll, Kyung Hong,Raúl Salazar-González, Daniel Hodge, Levi Beverly, David Hein (Research!Louisville, Sep. 2019)
4. Transcriptional regulation of human arylamine N-acetyltransferase 2 (NAT2) as a novel factor in development of insulin resistance. Kyung U. Hong, Mark A. Doll, and David W. Hein. (Southeast Regional IDeA Conference, Louisville, KY. Nov. 2019)

Hood, Joshua

1. Burroughs MJ, Bardi GT, and *Hood JL. Induction of Macrophages by Liver Tumor-Derived Small Extracellular Vesicles, Undergraduate research symposium, R25 Cancer Education Program, U of L Dept. of Pharmacology & Toxicology & JGBCC. Research!Louisville, Louisville, KY, August 2, 2019.
2. Jones JB, Bardi GT, and *Hood JL. Differential reduction in inflammatory mediator production by AML cells using normal human plasma-derived extracellular vesicle subtypes, R25 Cancer Education Program, U of L Dept. of Pharmacology & Toxicology & JGBCC. Research!Louisville, Louisville, KY, September 10, 2019.
3. Burroughs MJ, Bardi GT, and *Hood JL. Liver tumor-derived small extracellular vesicles modulate macrophage function. Southeast Regional NIH IDeA conference, Galt House Conference Center, Louisville Kentucky, November 8th, 2019
4. Jones JB, Bardi GT, and *Hood JL. Attenuating inflammatory mediator production by AML cells using normal human plasma-derived extracellular vesicle subtypes. Southeast Regional NIH IDeA conference, Galt House Conference Center, Louisville Kentucky, Nov.8th, 2019

Kidd, La Creis

1. Okeke, C.,Kidd, L.R., Impact of Mitogen-activated Protein Kinase (MAPK14/p38) Sequence Variant Partners on Aggressive Prostate Cancer,Research Louisville!, Louisville, Kentucky, September 2019
2. Okeke, C.,Kidd, L.R., Impact of Mitogen-activated Protein Kinase (MAPK14/p38) Sequence Variant Partners on Aggressive Prostate Cancer,Undergraduate SSRP/R25 Research Poster Symposium, Louisville, Kentucky, August, 2019

3. Kidd, L.R., Hein, D.W. Strategies to Enhance the UofL R25 Cancer Education Experience. Research Louisville!, Louisville, Kentucky, September, 2019.
4. Kidd, L.R., Hein, D.W. Strategies to Enhance the UofLR25 Cancer Education Experience. South East Regional IDEA Conference, Louisville, Kentucky, November, 2019.

Kouokam, Calvin

1. Kiahra Burns, Dakotah Cathey, Milena Mazalovska and J. Calvin Kouokam. Not Just for Kissing: Mistletoe Against Cancer? Transient Expression of Mistletoe Lectin II in Nicotiana benthamiana and its Anticancer Activity (KBRIN Poster Day, August 2, 2019. Louisville, KY, USA)
2. Milena Mazalovska, Dakotah Cathey, J. Calvin Kouokam. Transiently expressed mistletoe lectin II in nicotiana benthamiana shows anticancer activity in vitro through induction of apoptosis (Research!Louisville 2019)
3. Kiahra Burns, Dakotah Cathey, Milena Mazalovska and J. Calvin Kouokam. Transient Expression in Nicotiana benthamiana and Anticancer Activity of Mistletoe Lectin II (Annual Meeting of the Kentucky Academy of Science 2019 at Berea College), 2nd place in Cellular & Molecular Biology section.

Lukashevich, Igor

1. Lukashevich, I.S. “Lassa Virus Vaccine with Full Coverage”. 2019 ASM Biothreats, January 29-31, Arlington, VA.Program and Abstracts.
2. Tretyakova, J. Jokinen, A. Tibbens, R. Gannon, D. Johnson, I. S. Lukashevich, P. Pushko.“DNA-Launched Vaccines with Rearranged Structural Genes for Venezuelan Equine Encephalitis & Chikungunya”. 2019 ASM Biothreats, January 29-31, Arlington, VA.Program and Abstracts.
3. Lukashevich, I.S.“Lassa fever: evidence of T cell-mediated protection”. Coalition for Epidemics Preparedness Innovations (CEPI), Workshop on Standards and Assays, June, 19-20, Oslo, Norway.
4. Johnson, D.M., J.D. Jokinen, I. S Lukashevich.“Lassa Virus Vaccine Candidate ML29 is more attenuated and immunogenic in STAT-1-/-Mice than non-pathogenic Mopeia virus”. The 38 Annual Meeting, American Society of Virology, Scientific Program & Abstracts, University of Minnesota, July 20-24, Minnesota.
5. Iwasaki M, Cubitt B, Motooka D, Johnson DM, Lukashevich IS, de la Torre JC. Establishment of recombinant ML29 platform for the generation ofpolyvalent live-attenuated vaccines against Lassa virus and other infectious agents. The 18th Awaji International Forum on Infectionand Immunity; September 10, 2019; Awaji, Japan.Program and Abstracts.
6. Johnson, D.M., R. Sattler, B. Cubitt, T. Pfeffer, J. D. Jokinen, S. Paessler, J. C. de la Torre, I. S. Lukashevich. “Lassa virus vaccine candidate ML29 enriched with interfering particles demonstrates excellent safety in STAT1-/-mice, a model to assess sensorineural hearing loss in infected individuals”. The 1st Midwest Virology Symposium. The Ohio State University Infectious Diseases Institute. October 11-13, 2019. The Ohio State University, Columbus, OH. Program and Abstracts.

Matoba, Nobuyuki

1. Matoba N*,Royal J, Oh YJ, Galandiuk S. "Avariant of cholera toxin b subunit enhances colon epithelial wound healing via an unfolded protein response" Crohn's & Colitis Congress, Las Vegas, NV, Feb 7–9, 2019.
2.Atsumi K*, Oh YJ, Matoba N, Fujiwara K, Matsuda R. "The effect of temperature post inoculation on the transcription level of hemagglutinin in Nicotiana benthamiana leaves in viral vector-based transient gene expression." Plant-Based Vaccines, Antibodies & Biologics, Riga, Latvia, June 10 –12, 2019.
3.Dent M*, Matoba N. Effects of an oligomannose cluster-binding lectibody against ovarian cancer. Research!Louisville, Louisville, KY, September 10, 2019.
4.Reeves M*, Morris D, Royal J, Matoba N, Hamorsky K. Development of an oral solid dosage formulation of a cholera toxin B subunit variant that induces intestinal mucosal healing.Research!Louisville, Louisville, KY, September 10, 2019.

Palmer, Kenneth

1.Tyo K, Palmer KE, Steinbach-Rankins JM. Rapid Release Griffithsin Fibers for Use Against Sexually Transmitted Infections. Research!Louisville Louisville, KY September 2019.
2.Eapen P, SanEsteban I, Palmer KE, Hamorsky K, Fuqua J.Characterization of a Novel Variant of the Antiviral Lectin Griffithsin (GRFT V98T). Research!Louisville, Louisville, KY. September. 2019.

Siskind, Leah

1. Sharp C, Doll M, Dupre T, Walls K, Beverly L, and **Siskind LJ**. Repeated administration of cisplatin increases EGFR/EGFR activation and renal fibrosis in Kras4bG12D lung adenocarcinoma-bearing mice, but kidney injury is further exacerbated with erlotinib/cisplatin combination treatment. Society of Toxicologic Pathology Annual Meeting. June 18, 2018.
2. Sharp C, Doll M, Dupre T, Beverly L, and **Siskind LJ**. Repeated administration of cisplatin causes worsened renal fibrosis in Kras4bG12D lung adenocarcinoma-bearing mice that cannot be prevented with erlotinib. American Physiological Society-KY Chapter Annual Meeting. March 2018.
3. Shah PP, Kurlawal Z, Saforo D, Doll M, **Siskind LJ,** and Beverly LJ. Studying metastatic mechanisms of lung adenocarcinoma. Cell death in cancer and toxicology, CSIR IITR, Lucknow India. February 2018.
4. Sears, S., Sharp, C., Saforo, D., Doll, M., **Siskind, LJ**. Neutral ceramidase inhibition as a potential treatment for cisplatin-induced kidney injury. Research!Louisville Poster. Louisville, KY, October 9, 2018.
5. Saforo D, Beverly LJ, **Siskind LJ**. Tumor microenvironment mimetic culture aids isolation, expansion, and potency of tumor stromal progenitors from primary lung cancer resections. Research Louisville 2018. Poster. October 2018.
6. Bushau-Sprinkle A., Conklin C., Barati M., Dupre T., Gagnon K., **Siskind L.,** Doll M., Rane Madhavi., Clark B., Merchant M., Klinge C., Brier M., Coventry S., Lederer E. (2018)

NHERF1 Loss Results in Metabolic Stress and Increased Susceptibility to Cisplatin-induced Acute Kidney Injury. (2019) Experimental Biology Abs. #3438, April 6-9, 2019, Orlando, FL.

7. Bushau-Sprinkle A., Conklin C., Barati M., Dupre T., Gagnon K., **Siskind L.,** Doll M., Rane Madhavi., Clark B., Merchant M., Klinge C., Brier M., Coventry S., Lederer E. (2018) NHERF1 Loss Results in Metabolic Stress and Increased Susceptibility to Cisplaitin-induced Acute Kidney Injury. Research!Louisville Abs. #GRD-3, October 10-12, 2018, Louisville, KY.

Song, Zhao-Hui (Joe)

1. Shrader, SH, Laun, AS, Seltzman, HH, Navas III F, Reggio PH and Song ZH. The effects of SR144528 analogues on GPR3 and GPR6. International Cannabinoid Research Society Conference, Leiden, Netherland, June 2018.
2. Laun AS, Reggio PH and Song ZH. Cannabinoids as inverse agonists for GPR3 and GPR6, novel molecular targets for cannabidiol. International Cannabinoid Research Society Conference, Leiden, Netherland, June 2018.
3. Shrader, SH, Laun, AS, Seltzman, HH, Navas III F, Reggio PH and Song ZH. The Effects of CB2-Selective Antagonist SR144528 and Structural Analogues on GPR3 and GPR6. Research ! Louisville, October 2018.
4. Laun AS and Song ZH. Cannabinoids as inverse agonists for GPR3 and GPR6, novel molecular targets for cannabidiol. Research ! Louisville, October 2018.
5. Khalily C, Laun AS, Shrader SH, Song ZH. GPR12-mediated alteration of the mTOR pathway by phytocannabinoids. Research ! Louisville, October 2018.

States, Christopher

Published abstracts:

1. Banerjee M, CardosoAPF, Al-Eryani L, Sayed M, Park JW, States JC. Chronic Arsenic Exposure in a HaCaTCell Model of Squamous Cell Carcinoma: Altered Splicing Events as Regulatory Mechanisms? The Toxicologist: Late-Breaking Supplement, Supplement to Toxicological Sciences, 168 (1), Abstract #3424 , 2019

2. Cardoso APF, Banerjee M, Al-Eryani L, Sayed MA, Park JW, States JC. Alternative Splicing Events and RT-PCR Analysis of SHC1 in Arsenic Exposed Human Keratinocytes. The Toxicologist, Supplement to Toxicological Sciences, 168 (1), Abstract #2333, 2019

3. Watson WH, Young JL, Burke TJ, Kalbfleisch T, Cai L, StatesC, Arteel GE,. Freedman JH. Sexually Dimorphic Hepatic Responses to Environmental Arsenic Exposure in a Mouse Model of Non-alcoholic Fatty Liver Disease. The Toxicologist, Supplement to Toxicological Sciences, 168 (1), Abstract #2332, 2019

4. States JC. hsa-miR-186 Overexpression Induces Aneuploidy in Human Keratinocytes. The Toxicologist, Supplement to Toxicological Sciences, 168 (1), Abstract #3257, 2019

5. Banerjee M, Cardoso APF, Al-Eryani L, Sayed M, Park JW, States JC. Altered Splicing Events as Potential Multimodal Regulatory Mechanisms in Chronic Arsenic Exposure-Induced

Squamous Cell Carcinoma. Eucaryotic mRNA Processing, Abstract #38, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY (2019)
6. Cardoso APF, Banerjee M, Al-Eryani L, Sayed MAA, Park JW, States JC. Identification and Validation of Alternative Splicing in the Human Keratinocytes Model for Arsenic-Induced Skin Carcinogenesis, Abstract #62, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY (2019)

Abstracts at local/regional meetings:

1. Cardoso APF, Banerjee M, Al-Eryani L, Sayed M, Park J, States JC. Alternative splicing events and RT-PCR analysis of SHC1 in arsenic exposed human keratinocytes. Research!Louisville, University of Louisville, Louisville, KY, September 10-13, 2019
2. BanerjeeM, Wilkey DW, Watson WH, Garbett NC, Merchant ML, States JC. Arsenite can displace zinc from the zinc finger domains of alternative splicing regulator ZRANB2. Research!Louisville, University of Louisville, Louisville, KY, September 10-13, 2019
3. Crider K, Banerjee M, Al-Eryani L, Ceresa B, States JC. Chronic Arsenic Exposure Suppresses EGFR Activity in the Early Stages of Squamous Cell Carcinoma. Research!Louisville, University of Louisville, Louisville, KY, September 10-13, 2019
4. Lykoudi A, Cardoso APF, WuJ, Wise SS, States JC. Overexpression of hsa-miR-186 induces anchorage-independent growth and chromosomal alterations in arsenic exposed human keratinocytes: A preliminary study. Research!Louisville, University of Louisville, Louisville, KY, September 10-13, 2019
5. Sparling N, Cardoso APF, Banerjee M, Wu J, States JC. Arsenic and hsa-miR-186 Overexpression Impair the DNA Damage Response Pathway in Human Keratinocytes. Research!Louisville, University of Louisville, Louisville, KY, September 10-13, 2019

Wise, John

1. Speer, R.M., Wise, C.F., Wise, S.S., Martin Bras, M., Barandiarin, M., Marquez, L., Bermudez, E., and Wise, Sr., J.P. Environmental Impacts on Leatherback Sea Turtle Health: Using a One Health Approach to Study Metal Pollution in WIldlife. Presented at the International Sea Turtle Symposium, February, 2019.
2. Speer, R.M., Browning, C.L., and Wise, Sr., J.P. Suppression of E2F1 and RAD51 in Chromate-Induced Failure of Homologous Recombination. Presented at the annual meeting of the Society of Toxicology (SOT), Baltimore, Maryland, March, 2019.
3. Croom-Perez, T.J., Ziemba, C.R., Anglin, C.R., and Wise, Sr., J.P. The Cytotoxic and Genotoxic Effects of Prolonged Particulate Hexavalent Chromium Exposure on Human LungEpithelial Cells. Presented at the Annual Meeting of the Society of Toxicology (SOT), Baltimore, Maryland, March, 2019.
4. Toyoda, J.H., Croom-Pérez, T. J., Wise, S.S., and Wise, Sr., J.P. Particulate Hexavalent Chromium Does Not Induce Centrosome Amplification in Sperm Whale and Bowhead Whale Cells. Presented at the Annual Meeting of the Society of Toxicology (SOT), Baltimore, Maryland, March, 2019.
5. Lu, H., Browning, C.L, Wise, S.S., Toyoda, J.H., and Wise, Sr., J.P. Homologous Recombination Repair Protects Against Genomic Instability in Bowhead Whale Lung Cells

After Prolonged Particulate Chromate Exposure. Presented at the Annual Meeting of the Society of Toxicology (SOT), Baltimore, Maryland, March, 2019.

6. Wise, S.S. Daniel, S. and Wise, Sr., J.P. Thefate of cells that escape Cr(VI)-induced cell death. Presented at the Annual Meeting of the Society of Toxicology (SOT), Baltimore, Maryland, March, 2019.

7. Wise, Jr., J.P., Croom-Perez, T.J., Meaza, I., Montalvo, C.L., Wise, C.F., Wise, S.S., Wise, J.T.F., Speer, R.M., Abouiessa, A., Bras, M.M., Savery, L.C., Urbán, J., Young, J.L., and Wise, Sr., J.P. A Whale of a Tale: A One Environmental Health Approach to Study Metal Pollution in the Sea of Cortez. Presented at the Annual Meeting of the Society of Toxicology (SOT), Baltimore, Maryland, March, 2019.

8. Wise, Sr., J.P., Toyoda, J.H., Croom-Perez, T.J., Wise, S.S. Whale Cells Are Resistant to Metal-Induced Chromosome Instability and Centrosome Amplification. Presented at the triennial meeting of the EMBO workshop: Chromosome Segregation and Aneuploidy, Cascais, Portugal, May, 2019.

9. Wise, Sr., J.P. and Kondo, K. The Carcinogenicity of Hexavalent Chromium: A Global Public and Environmental Health Concern Proceedings of the XV International Congress of Toxicology (ICTXV), Honolulu, Hawaii, July, 2019.

10. Wise, S.S., Browning, C. Wise, Sr., J.P. and Mechanisms of Hexavalent Chromium-Induced Genomic Instability: How a Lung Carcinogen Breaks DNA and Inhibits Repair. Proceedings of the XVI International Congress of Toxicology (ICTXV), Honolulu, Hawaii, July, 2019.

11. Lu, H., Browning, C.L, Wise, S.S., Toyoda, J.H., Speer, R.M., and Wise, Sr., J.P. Bowhead Whale Lung Cells Maintain Homologous Recombination Repair and Resist Genomic Instability during Prolonged Particulate Chromate Exposure. Presented at the Annual Meeting of the Environmental Mutagenesis and Genomics Society (EMGS), Washington, D.C., September, 2019.

12. Wise,S.S., and Wise, Sr., J.P. The fate of cells that escape Cr(VI)-induced cell death. Presented at the Annual Meeting of the Environmental Mutagenesis and Genomics Society (EMGS), Washington, D.C., September, 2019.

13. Wise, Sr., J.P. and G, Jia. Metal Carcinogenesis: Insights from Hexavalent Chromium and Arsenic. Presented at the 13th Conference of the International Society for Trace Element Research in Humans (ISTERH), Bali, Indonesia, September, 2019.

14. Wise, S.S., and Wise, Sr., J.P. Mechanism of Cr(VI)-induced Chromosome Instability. Presented at the 13th Conference of the International Society for Trace Element Research in Humans (ISTERH), Bali, Indonesia, September, 2019.

15. Croom-Perez, T.J., Meaza, I., and Wise, Sr., J.P. Chromate-Induced Changes in the Fibroblast Secretome and its Effects on Epithelial Cells. Presented at the annual meeting of theOhio Valley Regional Chapter of the Society of Toxicology (OVSOT), Cincinnati. Ohio, October 2019.

16. Toyoda, J., Martino, J., Kondo, K., and Wise, Sr., J.P. Prolonged Particulate Hexavalent Chromium Exposure Disrupts Centrosome Regulation Proteins and Causes Centrosome Amplification. Presented at Ohio Valley Society of Toxicology (OVSOT) Annual Meeting, October 2019.

17. Speer, R.M., Zhou, X., Liu, K.J., Browning, C.L., Kondo, K., and Wise, Sr., J.P. Chromate-Induced Loss of E2F1 Inhibits RAD51 Response in Homologous

Recombination Repair. Presented at the annual meeting of the Ohio Valley Regional Chapter of the Society of Toxicology (OVSOT), Cincinnati. Ohio, October 2019.

18. Meaza I., Speer, M.R., Toyoda, J.H. and Wise, Sr., J.P. Particulate Hexavalent Chromium Induces Cytotoxicity and Genotoxicity in Female and Male Fin Whale Primary Cells. Presented at Ohio Valley SOT, Cincinnati, Kentucky 2019.

19. Lu, H., Browning, C.L, and Wise, Sr., J.P. Why Do Whales Have Lower Cancer Rates: Whale Cells Avoid Particulate Chromate Induced Homologous Recombination Repair Inhibition. Presented at the annual meeting of the Ohio Valley Regional Chapter of the Society of Toxicology (OVSOT), Cincinnati. Ohio, October 2019.

20. Wise, Jr., J.P., Lu, H., Meaza, I., Wise, S.S., Croom-Perez, T., Speer, R., Toyoda, J., Ali, A., Cai, L., Liu, K.J., Wise, J.T.F., Young, J.L., and Wise, Sr., J.P. An Environmental Toxicology Assessment of Heavy Metal Accumulation in American Alligators in Florida. Presented at the Ohio Valley Chapter of the Society of Toxicology (OVSOT) annual meeting, October 2019.

21. Wise, Sr., J.P., Wise, Jr., J.P., Toyoda, J.H., Croom-Perez, T.J., Aboueissa, A., , Montalvo, C.L., Isusi, I.M., Wise, S.S., Wise, C.F., Wise, J.T.F., Li Chen, T., Perkins, C.R., Bras, M.M., Speer, R.M., and Urbán, J. Of Whales and Men: Understanding Metal Pollution in the Sea of Cortez through a One Environmental Health Approach. Presented at the World Marine Mammal Science Conference, Barcelona, Spain, December, 2019.

22. Young, J.L., Wise, Jr., J.P., Wise, J.T.F., Wise, C.F., Wise, S.S., Zhu, C., Browning, C., Zheng T, Perkins C, Gianios, Jr, C., Xie H, Lu, C., and Wise, Sr., J.P. A Whale of a Tale: A 3-Year Study of Metals in Gulf of Maine Whales. Presented at the World Marine Mammal Science Conference, Barcelona, Spain, December, 2019.

23. Isusi, I.M., Speer, R.M., Toyoda, J.H., and Wise, Sr., J.P. The Characterization of the Toxicologic Effects of Particulate Hexavalent Chromium in Female and Male Fin Whale Cells. Presented at the World Marine Mammal Science Conference, Barcelona, Spain, December, 2019.

24. Poirier, Lair, Michaud, Hernandez-Ramon, Divi, Dwyer, Loseto, Raverty, St. Leger, Van Bonn, Colegrove, Burek-Huntington, Suydam, Stimmelmayr, Wise, Sr., J.P., Wise, S., Beauchamp and Martineau, D. Evidence of DNA Damage links exposure to gastrointestinal cancers in St. Lawrence Estuary Beluga. Presented at the World Marine Mammal Science Conference, Barcelona, Spain, December, 2019.

25. Croom-Perez, T.J., Meaza, I., and Wise, Sr., J.P. Chromate-Induced Changes in the Fibroblast Secretome and its Effects on Epithelial Cells. Presented at Research!Louisville, Louisville, Kentucky, 2019.

26. Isakov, R.V., Croom-Perez, T.J., Young, J.L., Jaggers, H.D., Cai, L., Hoyle, G.W., and Wise, Sr., J.P. The Effects of Whole Life, Low Dose Cadmium Exposure on Mouse Lung Histology and DNA Damage. Presented at Research!Louisville, Louisville, Kentucky, 2019.

27. Jaggers, H.D., Croom-Perez, T.J., Young, J.L., Isakov, R.V., Cai, L., Hoyle, G.W., and Wise, Sr., J.P. The Effects of Whole Life, Low Dose Cadmium Exposure on Mouse Lung Histology and DNA Damage Repair. Presented at Research!Louisville, Louisville, Kentucky, 2019.

28. Toyoda, J., Martino, J., Kondo, K., and Wise, Sr., J.P. Prolonged Particulate Hexavalent Chromium Exposure Disrupts Centrosome Regulation Proteins and Causes

Centrosome Amplification. Presented at Research!Louisville, University of Louisville, Louisville, KY, September 2019.
29. Meaza I., Speer, M.R., Toyoda, J.H. and Wise, Sr., J.P. Particulate Hexavalent Chromium Induces Cytotoxicity and Genotoxicity in Female and Male Fin Whale Primary Cells. Presented at Research! Louisville, Louisville, Kentucky 2019.
30. Wise, S.S., Miller, E., Daniel, S., Meaza, I., Toyoda, J.H., Lu, H., Speer, R. M., Young, J. L., Isakov, R., Jaggers, H., Wise, Jr., J. P., Croom-Perez, T. J., Cai, L., Hoyle, G., and Wise, Sr., J. P. Effects of Chronic Exposure to Particulate Chromate in Rat Lungs. Presented at Research!Louisville, Louisville, Kentucky, 2019
31. Speer, R.M., Zhou, X., Liu, K.J., Browning, C.L., Kondo, K., and Wise, Sr., J.P. Chromate-Induced Loss of E2F1 Inhibits RAD51 Response in Homologous Recombination Repair. Presented at Research!Louisville!, 2019.
32. Lu, H., Browning, C.L, and Wise, Sr., J.P. Why Do Whales Have Lower Cancer Rates: Whale Cells Avoid Particulate Chromate Induced Homologous Recombination Repair Inhibition. Presented at Research!Louisville, Louisville, Kentucky, 2019.

Wise, Sandra

1. Speer, R.M., Wise, C.F., Wise, S.S., Martin Bras, M., Barandiarin, M., Marquez, L., Bermudez, E., and Wise, Sr., J.P. Environmental Impacts on Leatherback Sea Turtle Health: Using a One Health Approach to Study Metal Pollution in WIldlife. Presented at the International Sea Turtle Symposium, February, 2019.
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3. Lu, H., Browning, C.L, Wise, S. S., Toyoda, J. H., and Wise, Sr., J. P. Homologous Recombination Repair Protects Against Genomic Instability in Bowhead Whale Lung Cells After Prolonged Particulate Chromate Exposure. To be presented at the Annual Meeting of the Society of Toxicology (SOT), Baltimore, Maryland, March, 2019.
4. Wise, S.S., Daniel, S. and Wise, Sr., J.P. The fate of cells that escape Cr(VI)-induced cell death. To be presented at the Annual Meeting of the Society of Toxicology (SOT), Baltimore, Maryland, March, 2019.
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6. Wise, Sr., J.P., Toyoda, J.H., Croom-Perez, T.J., Wise, S.S. Whale Cells Are Resistant to Metal-Induced Chromosome Instability and Centrosome Amplification. Presented at the triennial meeting of the EMBO workshop: Chromosome Segregation and Aneuploidy, Cascais, Portugal, May, 2019.
7. Wise, S.S., Browning, C. Wise, Sr., J.P. Mechanisms of Hexavalent Chromium-Induced Genomic Instability: How a Lung Carcinogen Breaks DNA and Inhibits Repair. Presented at the XV International Congress of Toxicology (ICTXV), Honolulu, Hawaii, July, 2019.

8. Lykoudi, A., Cardoso, A.P.F., Wu, J., Wise, S.S., States, C.J. Overexpression of has-miR-186 induces anchorage-independent growth and chromosomal alterations in arsenice exposed human keratinocytes: A preliminary study. Presented at Research!Louisville, University of Louisville, 2019.
9. Wise, S.S., Miller, E., Daniel, S., Meaza, I., Toyoda, J.H., Lu, H., Speer, R. M., Young, J. L., Isakov, R., Jaggers, H., Wise, Jr., J. P., Croom-Perez, T. J., Cai, L., Hoyle, G., Wise, Sr., J. P. Effects of Chronic Exposure to Particulate Chromate in Rat Lungs. Presented at Research!Louisville, Louisville, Kentucky, 2019.
10. Wise, S.S., Daniel, S. Wise, Sr., J.P. The fate of cells that escape Cr(VI)-induced cell death. Presented at the annual meeting of the Environmental Mutagenesis and Genomics Society, Raleigh, North Carolina, September, 2019. Environmental and Molecular Mutagenesis 60(S1), 2019
11. Wise Sr., J.P., Lu, H., Browning, C.L., Wise, S.S., Toyoda. J.H., Speer, R.M. Bowhead Whale Lung Cells Maintain Homologous Recombination Repair and Resist Genomic Instability during Prolonged Particulate Chromate Exposure. Presented at the annual meeting of the Environmental Mutagenesis and Genomics Society, Raleigh, North Carolina, September, 2019. Environmental and Molecular Mutagenesis 60(S1): P39, 2019.
12. Wise, S.S., and Wise, Sr., J.P. Mechanism of Cr(VI)-induced Chromosome Instability. To be presented at the 13th Conference of the International Society for Trace Element Research in Humans (ISTERH), Bali, Indonesia, September, 2019.
13. Lykoudi, A., Cardoso, A.P.F., Wu, J., Wise, S.S., States, C.J. Overexpression of has-miR-186 induces anchorage-independent growth and chromosomal alterations in arsenice exposed human keratinocytes: A preliminary study. Presented at OVSOT, October 2019.
14. Wise, Jr., J.P., Lu, H., Meaza, I., Wise, S.S., Croom-Perez, T., Speer, R., Toyoda, J., Ali, A., Cai, L., Liu, K.J., Wise, J.T.F., Young, J.L., and Wise, Sr., J.P. An Environmental Toxicology Assessment of Heavy Metal Accumulation in American Alligators in Florida. Presented at the Ohio Valley Chapter of the Society of Toxicology (OVSOT) annual meeting, October 2019.
15. Wise, Sr., J.P., Wise, Jr., J.P., Toyoda, J.H., Croom-Perez, T.J., Aboueissa, A., , Montalvo, C.L., Isusi, I.M., Wise, S.S., Wise, C.F., Wise, J.T.F., Li Chen, T., Perkins, C.R., Bras, M.M., Speer, R.M., and Urbán, J. Of Whales and Men: Understanding Metal Pollution in the Sea of Cortez through a One Environmental Health Approach. Presented at the World Marine Mammal Science Conference, Barcelona, Spain, December, 2019.
16. Young, J.L., Wise, Jr., J.P., Wise, J.T.F., Wise, C.F., Wise, S.S., Zhu, C., Browning, C., Zheng T, Perkins C, Gianios, Jr, C., Xie H, Lu, C., and Wise, Sr., J.P. A Whale of a Tale: A 3-Year Study of Metals in Gulf of Maine Whales. Presented at the World Marine Mammal Science Conference, Barcelona, Spain, December, 2019.

RESEARCH GRANTS ACTIVE

Ceresa, Brian

Agency/Number	Title	Role	PI	Project Period	Budget Award
NIH/NEI EY028911	c-Cbl Antagonists for Corneal Epithelial Regeneration	PI (30%)	Ceresa	1/1/19 – 12/31/23	$1,925,088
Jewish Heritage Foundation for Excellence	c-Cbl Antagonists for Corneal Epithelial Regeneration	PI (30%)	Klein	11/1/18 – 10/31/19	$50,000
NIH/NCI R01CA193220	Ubiquilin1 Regulates EMT and Metastasis of Human Lung Adenocarcinoma	Co-I (1%)	Beverly	08/1/15 – 07/31/20	$1.7M
NIH/NEI T35EY026509	Summer Vision Sciences Training Program	Co-PI (5%)	Ceresa/ Guido	07/1/17 – 04/28/22	$193,732
NIH/NEI EY027032	Identifying novel c-Cbl Antagonists to promote corneal epithelial regeneration	PI (25%)	Ceresa	8/01/16 – 01/31/19 (NCE)	$423,000

Chen, Shao-yu

Agency/Number	Title	Role	PI	Project Period	Budget Award
NIAAA/**RO1** AA021434	Role of microRNA in ethanol-induced apoptosis and teratogenesis	PI	Shao-yu Chen	07/2013 – 06/2020	$1,125,000 (direct cost)
NIAAA/**RO1** AA020265	Role of Siah1 in ethanol-induced apoptosis and teratogenesis	PI	Shao-yu Chen	07/2012 – 06/2019	$1,125,000 (direct cost) (NCE)
NIAAA/**P50** AA024337 Alcohol Center grant	The role of nutrition in the development/progression of alcohol-induced organ injury. Project 3: Sulforaphane-mediated epigenetic modulation of ethanol-induced apoptosis and teratogenesis	Project 3 PI	Craig McClain	05/2016 – 04/2021	$8,000,000.000 (Total Budget) Project 3 budget: $750,000.00 (Direct cost)

NIEHS/**T32** ES011564	UofL environmental health sciences training program	Faculty mentor	David Hein	07/2016 – 06/2021	$2,311,000.00
NIEHS/**T35** ES014559	Summer Environmental Health Sciences Training Program	Faculty mentor	States	04/2016 03/2021	$190,000.00
NCI/**R25**	Cancer Education Program for Professional and Undergraduate Students	Faculty mentor	David Hein/ LaCreis Kidd	04/2017 – 03/2022	$1,620.000

Clark, Geoffrey

Agency/Number	Title	Role	PI	Project Period	Budget Award
NIH Excite Award: 1U01HL127518-01	Generation of best in class RAS inhibitors	PI	Bates	2018-2019	100K Direct
CDMRP (DOD)NF180094	Novel Inhibitors of MPNST	PI		01/07/2019 -2/06/2022	525K
KLCRP	Novel small molecule inhibitors of the Ras Oncoprotein for Lung cancer	PI		2016-2019	150K Direct
NCI R21 R21CA216722	A novel RALGEF inhibitor for Pancreatic cancer	PI		2018-2020	275K Direct
Qualigen LCC	Development of RAS inhibitors	PI	Co-I Trent Bates	01/05/2019 30/11/2020	~700K
R25CA134283	University of Louisville Cancer Education Program	Mentor	Hein	09/01/16-08/31/21	$1,500,000

Freedman, Jonathan

Agency/Number	Title	Role	PI	Project Period	Budget Award
NIEHS R01ES028102	The Role of Autophagy in Cadmium Induced Prostate Carcinogenesis	PI	Freedman	12/01/2017-11/30/2022	1,934,000 (total)
NIEHS/T32 ES011564	UofL Environmental Health Sciences Training Program	Member	Hein	06/2016 - 05/2021	$2,211,776 ($2,183,57 direct)

NIEHS/T35 ES014559	Summer Environmental Health Sciences Training Program	Member	States	04/2016 - 03/2021	$190,00 ($175,000 direct)
NCI/R25 CA134283	University of Louisville Cancer Education Program	Member	Hein	09/2015 - 08/2016	$293,984
NIEHS/P42 ES023716 (Training Core)	Molecular and Cellular Mechanisms of Cardiometabolic Toxicity of VOCs	Co-Director	Srivastava	4/2017-3/2024	$1,669,954 (Direct)

Fuqua, Joshua

Agency/Number	Title	Role	PI	Project Period	Budget Award
University of Louisville –Innovation Grant Proposal	Developing and Characterizing Pegylated Griffithsin variants to improve systemic pharmacokinetic and immunogenicity to treat influenza.	PI	Fuqua Hamorsky Arnold	08/01/2019 – 07/31/2020	$99,953
NIH/NIAID U19AI113182 Core A	Griffithsin-based rectal microbicides for Prevention of Viral Entry (PREVENT) Core A: Administrative	Program Manager	Palmer	07/01/2014 – 6/30/2019 NCE	$250,571
NIH/NIAID U19AI113182 Core D	Griffithsin-based rectal microbicides for Prevention of Viral Entry (PREVENT) Core D: Regulatory Affairs Core	PI	Fuqua	07/01/2014 – 06/30/2019 NCE	$296,603
NIH/NIAID R44AI150235Phase1/2 Fast-Track SBIR	Deimmunization of Griffithsin for Topical Prophylaxis Against HIV and HSV-2 (UofL Subaward)	Key Personnel (1% Salary inYear 1, 20% Salary in years 2-4)	Palmer	Phase 1 : 12/20/2019–11/30/2020 Phase 2: TBD	$89,516 ~$728,000

Gupta, Ramesh

Agency/Number	Title	Role	PI	Project Period	Budget Award
PureTech Health, Boston	Sponsored Research Funding	PI	Gupta	9/17 – 8/20	$750,000
NCI SBIR Phase II CA-221487-01	Exosomal Drug Delivery	MPI	Gupta, Spencer	09/17– 8/20	$1,700,000
3P Bio Contract	Effect of Exosomal Formulations on Lung and Breast cancer	MPI	Gupta, Aqil	07/18– 6/20	$173,250

PureTech Health, Boston	Sponsored Research Funding	PI	Gupta	9/18 – 8/21	$500,000

Hein, David

Agency/ Number	Title	Role	PI	Project Period	Award
NCI R25- CA134283	University of Louisville Cancer Education Program	Contact PI	Hein & Kidd	04/01/17-03/31/22	$1,593,000
NIEHS T35- ES014559	Summer Environmental Health Sciences Training Program	Mentor	Prough	05/15/16 – 03/31/21	$186,540
NIH P20- GM113226	Hepatobiology and Toxicology COBRE	Director for faculty career development; project lead renovation & alternations	McClain	06/10/16 – 03/31/21	$11,530,145
NIEHS T32 ES011564	UofL Environmental Health Sciences Training Program	PI	Hein	07/01/16 – 06/31/21	$2,314,825
NIH R15 HD087911	The interaction between NAT2 acetylator status and exposure to tobacco smoke on ovarian reserve and in vitro fertilization outcomes	Co-I	Taylor	07/08/16 - 06/30/19	$460,018
NIEHS P42-ES023716	Environmental Exposure and Cardiometabolic Disease	Leader, Training Core	Srivastava	09/01/17 – 03/31/22	$6,700,000
Society of Toxicology	First integrated international workshop: acetyltransferases, sulfotransferases, and UDP-glucuronosyltransferases	PI	Hein	2019-2020	$2,000

Hood, Joshua

Agency/Number	Title	Role	PI	Project Period	Budget Award
Elsa U. Pardee Foundation	Tuning exosomes to activate anti-lung cancer macrophages	PI	Hood	10/01/18-9/30/21	$185,241(Total) $161,079(Direct)
2 R25 CA134283-06A1	University of Louisville Cancer Education Program	Faculty Mentor	Hein, Kidd	4/1/17 - 3/31/22	$1,800

U of L Hepatobiology and Toxicology COBRE Pilot Project Application	Differential modulation of immune-relevant RNAs in hepatocellular carcinoma-derived small extracellular vesicles by M1 vs. M2 polarized Kupffer cell conditioned media	PI	Hein, Kidd	1/1/20 - 3/31/21	~$156,250(Total) ~$100,000 (Direct) Awaiting approvals

Kidd, La Creis

Agency/Number	Title	Role	PI	Project Period	Budget Award
NIH, NIEHS T32-ES011564	UofL Environmental Health Science Training Program	Mentor	Hein	04/1/16-3/31/21	$2,310,776
R25-CA134283-06	University of Louisville Cancer Education Program	Co-I, Cancer Education Coordinator Mentor	Hein/ Kidd	9/1/17-08/31/21	$1,620,000

Kouokam, Calvin

Agency/Number	Title	Role	PI	Project Period	Budget Award
CPM/BRU	Laboratory start up	PI	Kouokam	7/17-6/20	$645,425
CPM	Evaluation of the Pyocin PaeM4 in Murine Models	Co-I	Fuqua Kouokam Lawrenz	11/1/18 – 10/31/19	$14,933

Lukashevich, Igor

Agency/Number	Title	Role	PI	Project Period	Budget Award
NIH/NIAID 2R44AI094863-03A1	Novel DNA-launched Attenuated Vaccine for VEE Virus, SBIR Phase II	PI on sub		02/01/17-6/30/19 (NCE)	$465,000
NIH/NIAID 1R56AI1357700-01A1 (bridge award)	Reverse Genetics To Forward The Pan-Lassa Fever Vaccine Lead Candidate ML29	MPI		08/01/18-7/31/20	$256,000

Matoba, Nobuyuki

Agency/Number	Title	Role	PI	Project Period	Budget Award
UofL ExCITE Product Development Grant Cycle 2 (NIH U01 HL127518 ExCITE Program)	Oral Solid Dosage Formulation of Cholera Toxin B Subunit	Co-PI	Hamorsky/ Matoba	2/1/16 – 1/31/19	NCE
UofL ExCITE Product Development Grant Cycle 4 (NIH U01 HL127518 ExCITE Program)	Avaren-Fc lectibody for liver graft protection against hepatitis C virus infection	Contact PI	Matoba/ Hamorsky	3/1/17 – 2/28/19	NCE
UofL ExCITE Product Development Grant Cycle 5 (NIH U01 HL127518 ExCITE Program)	CTBp for oral mucositis treatment	Contact PI	Matoba/ Hamorsky	7/1/17 – 6/30/18	NCE
NIH NIAID/ U19 AI113182 Core C	Griffithsin-based Rectal Microbicides for PREvention of Viral ENTry (PREVENT) Core C: Pharmacokinetics and Pharmacodynamics Core	PI	Matoba	7/01/14 – 6/30/19	NCE
NIH NCI / 1R21CA216447-01A1	Investigation of a lectibody targeting tumor-associated oligomannose glycans	PI	Matoba	2/08/18 – 1/31/20	$239,250 (total direct costs)

Palmer, Kenneth

Agency/Number	Title	Role	PI	Project Period	Budget Award
NIH/NIAID U19 AI113382	Griffithsin-based rectal microbicides for Prevention of HIV Entry (PREVENT)	Program Director	Palmer	07/01/14 – 06/30/20	$890,280
NIH/NIAID U19 AI113182-6661	CORE A: PREVENT Administrative Core	Core Leader	Palmer	07/01/14 – 06/30/20	$87,863

NIH/NIHLB U01HL127518	The EXCITE Program: Expediting Commercialization, Innovation, Translation and Entrepreneurship	Member, Intenal Advisory Board	Bates, Miller, Krentsel	03/20/15-02/28/20	$996,487
NIH/NIGMS P20 GM 125504	Functional Microbiomics, Inflammation and Pathogenicity	Faculty mentor for COBRE of Jill Steinbach-Rankins *and* Member, Internal Advisory Board	Lamont	03/01/18-02/28/23	$2,544,491
NIH/NIAID 1UC6AI066844	Center for Predictive Medicine for Biodefense	PI and Director	Palmer	09/01/05 - 08/31/30	Construction grant with ongoing operations obligations $21,945,188
Jewish Heritage Fund for Excellence	Griffithsin based nanocarriers for prevention and treatment of viral infections	Co-I	Steinbach -Rankins	07/01/16-06/30/19	$300,000
NIH/NIAID R44AI150235Phase1/2 Fast-Track SBIR	Deimmunization of Griffithsin for Topical Prophylaxis Against HIV and HSV-2 (UofL Subaward)	PI of Academic Component	Palmer	Phase 1 : 12/20/2019 11/30/2020 Phase 2: TBD	$89,516 ~$728,000

Siskind, Leah

Agency/Number	Title	Role	PI	Project Period	Budget Award
NIH/NIDDK	Targeting Ceramide-Induced Kidney Cell Apoptosis and Necrosis for the Treatment of Acute Kidney Injury	**PI**	Siskind	09/17/12 - 04/30/19	$217,000 annual direct costs

Kentucky Lung Cancer Program	Whole genome CRISPR/Cas9 screens to identify novel vulnerabilities of human lung cancer cells	**PI**	Siskind Beverly Clark	01/01/16 – 6/01/18	$65,000 (Annual DC)
Kentucky Lung Caner Program	Developing pigs as models of lung cancer progression and therapeutics	**PI**	Siskind Beverly Clark	04/01/16 – 3/31/19	$200,000 total DC
NIH NIDDK	CSN8 regulation of S1P-enriched extracellular vesicles to modulate NAFLD by gut-liver axis	**Co-I**	ZhongBin Deng	07/20/18 -4/30/23	$270,000 Annual DC
The Research Foundation for SUNY	Validation of neutral ceramidase (NCD) as a novel target for therapy of ischemia and reperfusion-induced acute kidney injury	**PI**	Siskind	9/17/12-4/30/19 (NCE)	$217,000 annual direct costs

Song, Zhao-Hui (Joe)

Agency/Number	Title	Role	PI	Project Period	Budget Award
R25CA134283-06	University of Louisville Cancer Education Program	Faculty Mentor	David W. Hein and LaCreis R. Kidd	9/1/16 -8/31/21	$1,620,000
R01DA003934	Molecular Determinants of Cannabinoid Activity	PI, U of L subcontract	P Reggio	4/1/15-7/31/18	$ 375,000

States, Christopher

Agency/Number	Title	Role	PI	Project Period	Budget Award
NIH-NIEHS 5R01ES027778-03	MECHANISM FOR ARSENIC INDUCED CARCINOGENESIS	PI	States	8/1/17 – 7/31022	$2,056,394 (total costs)

P30ES020957-06	Center For Urban Responses To Environmental Stressors (CURES)	EAC member	Runge-Morris	06/5/14 – 03/31/22	$7.5M (total costs)
NIH/NCI R25CA134283-08	University Of Louisville Cancer Education Program	Mentor	Hein	09/14/11 - 03/31/22	$3,089,675 (total costs)
NIH/NIEHS, T32ES011564-14	UofL Environmental Health Sciences Training Program	Mentor	Hein	07/01/04 –06/30/21	$2,316,985 (total costs)
NIH-NIEHS 5T35ES014559-14	SUMMER ENVIRONMENTAL HEALTH SCIENCES TRAINING PROGRAM	Contact PI	MPI: States, Prough, et al.	4/1/19 – 4/30/21	$78,344 (total costs)
NIH-NIGMS 5P20GM113226-04	Hepatobiology and Toxicology COBRE	Mentor	McClain	6/10/16 – 03/31/21	$11.5M

Wise, John

Agency/Number	Title	Role	PI	Project Period	Budget Award
NIEHS/R01 ES016893	Particulate Cr(VI) Toxicology in Human Lung Epithelial Cells and Fibroblasts	PI	Wise, J.	07/01/08 - 10/31/23	$3,090,764
Kentucky Lung Cancer Research Program	Particulate Hexavalent Chromium-Induced Exosome Release in Human Lung Cells	PI	Wise, J.	07/01/18 - 06/30/20	$150,000
University of Louisville School of Medicine	Survival Pathways in Metal Induced Carcinogenesis	Collaborator	Wise, S.	06/15/18-05/14/20	$25,000
NIEHS/T32 ES011564	UofL Environmental Health Sciences Training Program	PI (Multi)	Hein & Wise, J.	04/01/16-03/31/21	$2,183,597
NCI/R25CA134283	University of Louisville Cancer Education Program	Mentor	Hein and Kidd	09/01/16-08/31/21	$1,500,000
NIGMS/P20GM113226	Hepatobiology & Toxicology COBRE	Mentor	McClain	06/10/16-03/31/21	$11,250,000
NIEHS/T35ES014559	Summer Environmental Health Sciences Training Program	Mentor	Prough	04/01/06 – 04/30/21	$516,565

Wise, Sandra

Agency/Number	Title	Role	PI	Project Period	Budget Award
NIEHS/R01 ES016893	Particulate Cr(VI) Toxicology in Human Lung Cells	Co-I	Wise, J.	07/01/08 - 10/31/23	$3,090,764

NIEHS/1RO1ES02778-01A1	Mechanism for arsenic induced carcinogenesis	Co-I	States	07/01/17-06/30/22	$2,488,085
University of Louisville, School of Medicine	Survival Pathways in Metal Induced Carcinogenesis	PI	Wise, S.	06/15/18-05/14/20	$25,000

REASEARCH GRANTS SUBMITTED

Chen, Shao-Yu

Agency/Number	Title	Role	PI	Project	Budget Request
RO1/NIAAA AA028435	Role of exosomes in the coordinated migration of neural crest cells and placodes and ethanol-induced teratogenesis	PI	Chen	04/01/2020-03/31/2025	$1,953,750
RO1/NIAAA AA028698	Epigenetic dysregulation of enhancers in neural crest cells and ethanol-induced teratogenesis.	PI	Chen	07/01/2020-06/30/2025	$1,953,750
P50/NIAAA AA024337	The role of nutrition in the development/progression of alcohol-induced organ injury.	Project 3 PI	McClain	11/01/2020-10/31/2025	$8,989,168
P20/NIGMS GM113226	UofL Hepatobiology and Toxicology COBRE	Mentor	McClain	07/01/2020-06/30/2025	
RO1/NIAAA AA027842	Intraflagellar transport-mediated regulation of Sonic hedgehog	PI	Chen	07/01/2019 – 06/30/24	$1,925,000.00
U54/NIGMS GM128728	University of Louisville's Clinical and Translational Institute	Mentor	Klein	07/01/2019-06/30/2024	$13,215,636
NIEHS P30 ES030283	University of Louisville Center for Integrated Environmental	Member	States	4/01/2019-3/30/2024	$7,700,000

Clark, Geoff

Agency/Number	Title	Role	PI	Project Period	Budget Request
NCI R21	Inhibiting the RAS/RAL pathway to suppress lung cancer.	PI		2018-2020	275K Direct
JGBCC	Identification of essential biomarkers to optimize the curative potential of novel cancer drug As1411	PI		2020 – 2021	14,279
NIH U01CA253385	Developing a porcine model for small cell lung cancer and therapeutic outcomes	Co-I	Beverly	2020 – 2025	1.5 million

CDMRP	*RAS* inhibitors for Luminal B breast cancer	PI		2019-2022	525K Direct

Freedman, Jonathan

Agency/Number	Title	Role	PI	Project Period	Budget Request
NIEHS/R21 ES030780-01	Impact of Cadmium Exposure on Autism Spectrum Disorder Pathogenesis	PI	Freedman	7/2019-6/2021	$275,000
DoD Peer Reviewed Medical Research ProgramDiscovery Award PR192528 - GRANT12837310	Impact of Cadmium Exposure on Autism Spectrum Disorder Pathogenesis	PI	Freedman	10/2019-9/2021	$284,000
University of Louisville Clinical/Translational pilot project grants program	Molecular impact of environmental toxicant exposure in the mouse brain	PI	Freedman	4/2019-3/2020	$50,000
MacArthurFoundation 100&Change	Consortium for Environmental Omics and Toxicology	Investigator	Colbourne	9/2020	$100,000,000

Fuqua, Joshua

Agency/Number	Title	Role	PI	Project Period	Budget Request
NIH/NIAID R-01 AI 150435	Optimizing Griffithsin Biotherapy for Sustained anti- HIV Response	MPI	Griswold Bailey-Kellogg Fuqua Palmer	12/01/2019 – 11/30/2024	$3,963,383 Unfunded
NIH/NIAID R25 AI 140450-01A1	University of Louisville Emerging and Re-emerging Infectious Diseases Research Education Program	Key Personnel/ Mentor *	Lawrenz Palmer Hopp	07/01/2020 – 06/30/2025	$1,713,946 Pending IRG review

Gupta, Ramesh

Agency/Number	Title	Role	PI	Project Period	Budget Request
NCI R01	Exosomal-Anthos for prevention and treatment of breast cancer	PI	Gupta	09/01/19 – 08/30/24	$1,925,000
NCI R01	Targeting drug resistance and metastasis in non-small-cell lung cancer	PI	Gupta	09/01/19 – 08/30/24	$1,925,000 (Total)

NIH SBIR Fast Track	Exosome-mediated siRNA delivery	MPI	Gupta, Spencer	11/01/19 – 10/30/22	$2,304,000 (Total)
NIH SBIR Fast Track	Novel exosomal vector for siRNA delivery	MPI	Gupta, Spencer	04/01/20 – 03/30/23	$2,310,000 (Total)
DoD-Idea Development Award	Exosomal delivery of celastrol for lung cancer	PI	Aqil	04/01/20 – 03/31/22	$546,000 (Total)
NIH R01 1R01CA248305-01	Exosomal delivery of celastrol against non-small-cell lung cancer	PI	Aqil	04/01/20 – 03/31/25	$1,925,000 (Total)

Hein, David

Agency/ Number	Title	Role	PI	Project Period (requested)	Budget Request
NIH-NIEHS/P30 ES030283	University of Louisville Center for Integrated Environmental Health Sciences	Faculty Member	States	04/01/20 - 03/30/25	$7,700,000
JHFE Clinical & Translational Research Pilot Program	Novel role of human N-acetyltransferase 2 in development of metabolic syndrome	Co-I and Mentor	Hong	04/01/2019 – 03/31/2020	$50,000
NIH R01-DK123324	Novel role of NAT2 in development of metabolic syndrome	Co-I and mentor	Hong	09/01/2019 – 08/31/2024	$1,925,000
NIH R13-ES031839	First integrated international workshop: acetyltransferases, sulfotransferases, and UDP-glucuronosyltransferases	PI	Hein	03/15/2020-03/14/2021	$15,903
Society of Toxicology	First integrated international workshop: acetyltransferases, sulfotransferases, and UDP-glucuronosyltransferases	PI	Hein	2019-2020	$2,000
NIH P20-GM113226	Hepatobiology and Toxicology COBRE	Deputy Director and Co-I	McClain	07/01/20–06/30/25	$11,722,500

Hong, Kyung

Agency/Number	Title	Role	PI	Project	Budget Request
NIH R01 PA-19-056(Feb. 2019)	Novel Role of NAT2 in Development of Metabolic Syndrome	PI	Hong	2020-2025	$250,000 per year(Not funded)
Jewish Heritage Foundation of Excellence(Clinical/Translational pilot project grant)	Novel Role of Arylamine N-Acetyltransferase 2 in Development of Metabolic Syndrome	PI	Hong	2019	$50,000 per year(Not funded)

Hood, Joshua

Agency/Number	Title	Role	PI	Project Period	Budget Request
Melanoma Research Alliance	Neutrophil and endothelium education by melanoma extracellular vesicles	PI	Hood(lead),Limonta (Universitadegli Studi di Milano, Italy), Maurichi (NCI, Milano Italy)	6/1/20-5/31/23	$900,000 (Direct)
MSM-RCMI pilot grant	Role of miR-1976 in malaria pathogenesis	Co-I	Driss, (Morehouse School of Medicine, Atlanta, GA)	7/1/20-6/30/21	$50,000 (Direct)
U of L Hepatobiology and Toxicology COBRE Pilot Project Application	Differential modulation of immune-relevant RNAs in hepatocellular carcinoma-derived small extracellular vesicles by M1 vs. M2 polarized Kupffer cell conditioned media	PI	Hood	1/1/20-3/31/21	~$156,250 (Total) ~$100,000 (Direct) Awaiting approvals
2 P20 GM113226-06	Extracelluar vesicle-based immunotherapy for hepatocellular carcinoma	PI (Project 2)	McClain	7/1/20-6/30/25	$7,500,000(Direct), $11,722,500(Total)

Kouokam, Calvin

Agency/Number	Title	Role	PI	Project Period	Budget Request
1R01HD101343-01	The Assessment of Multipurpose Griffithsin Formulations for Antiviral and Contraceptive Applications	PI	Kouokam/ Steinbach-Rankins	12/01/2019-11/30/2024	$2,889,120

Lukashevich, Igor

Agency/Number	Title	Role	PI	Project Period	Budget Request
NIH/NIAID, 1R01AI149729-01	Reverse Genetics To Forward The Pan-Lassa Fever Vaccine Lead Candidate ML29	MPI		12/01/2019-11/30/2023	$1,026,664

NIAID/Medigen,SBIR Phase 1,OIEV200215	Genetic Rearrangement of CHIKV iDNA Vaccine (score 30, JIT info was requested)	PI on sub		04/01/2020-03/30/2022	$98,000

Matoba, Nobuyuki

Agency/Number	Title	Role	PI	Project Period	Budget Request
NIH/NIDDK1 R01 DK123712-01	Preclinical validation of topical therapeutic lead proteins targeting epithelial GM1 ganglioside for ulcerative colitis therapy	PI	Matoba	12/1/19–11/30/24	$1,484,088(total direct costs)Impact score: 37
W81XWH-19-OCRP-PA Ovarian Cancer Research Program 2019GRANT12902681	High-Mannose Glycans as a Potential Target for Ovarian Cancer	PI	Matoba	9/1/20–8/31/22	$250,000 (total direct costs)Score: 1.9 (Excellent) Alternate list
NIH/NIDDK 1 R01 DK123712-01A1	Preclinical validation of oraltherapeutic lead proteins targeting epithelial GM1 ganglioside	PI	Matoba	7/1/20 – 6/30/24	$1,608,620(total direct costs)Pending
Crohn's & Colitis Foundation Litwin IBD Pioneers Program	Epicertin as a novel oral biotherapeutic for mucosal healing in ulcerative colitis	PI	Matoba	1/1/2020 – 12/31/2020	$130,000 (total Costs) Not funded

Palmer, Kenneth

Agency/Number	Title	Role	PI	Project Period	Budget Request
NIH/NIAID R25 AI 154631	University of Louisville Emerging and Re-emerging Infectious Diseases Research Education Program	PI	Lawrenz Palmer Hopp	07/01/2020 - 06/30/2025	$1,586,989 Pending IRG review
NIH/NIAID R01 AI150435	Optimizing Griffithsin Biotherapy for Sustained Anti-HIV response	PI	Bailey-Kellogg Fuqua Griswold Palmer	04/01/2019 - 03/31/2024	$3,963,483 Not funded
NIH/NIAID R44AI150235Phase1/2 Fast-Track SBIR	Deimmunization of Griffithsin for Topical Prophylaxis Against HIV and HSV-2 (UofL Subaward)	PI of Academic Component	Palmer	Phase 1 : 12/20/2019 - 11/30/2020 Phase 2: TBD	$89,516 funded ~$728,000

NIH IDeA Clinical and Translational Research Centers	University of Louisville's Clinical and Translational Research Institute	Key Personnel	Klein	07/01/2019 - 06/30/2024	

Siskind, Leah

Agency/Number	Title	PI	Project Period	Budget Request
1R21CA227385-01 (PQ12)	Repurposing Suramin as a nephroprotectant in cisplatin-induced kidney injury	Siskind, Beverly		
RO1	Regulation of gut-liver-adipose axis by Lactobacillus rhamnosus GG in non-alcoholic fatty liver disease.	Feng, Wenke	9/1/19 – 8/30/24	
RO1	Stimulation of Trained Immunity by Dietary Supplement Beta-Glucan As An Adjunctive Immunotherapy in Cancer	Yan, Jun	9/1/19 – 8/30/24	
S10 OD025178-A1	*Imaging and Physiology Core: High Frequency, High Resolution Ultrasound System*	Jones, Steven	2/1/19 – 1/31/20	
NIH IDeA-CTR	University of Louisville's Clinical and Translational Sciences Institute	Klein, Jon		
Jewish Heritage Foundation Research Enhancement Grant Program	Developing a clinically relevant model for lung cancer chemotherapy	Siskind, Leah	12/1/18 – 11/30/19	
1R21CA227385-01A1 (PQ12)	The role of P2X7 receptor in cisplatin-induced kidney injury	Siskind, Beverly		
1R01CA233478-01	Prevention of cisplatin-induced kidney injury and progression to chronic kidney disease	Siskind, Leah	9/1/19 – 8/31/22	

Song, Joe

Agency/Number	Title	Role	PI	Project	Budget Request
NIH R21EY030186-01 Impact Score 30	The effect of cannabidiol and the role of GPR3 in experimental autoimmune uveitis	Multi-PI	Hui Shao ZH Song	04/01/2019-03/31/2021	$ 423,500
NIH R21EY030280-01	Novel endocannabinoid systems - targets for	PI	ZHSong	04/01/2019-03/31/2021	$ 423,500

	glaucoma therapy				
DoD AR180167P1 (pre-application)	The Role of Endocannabinoid Systems in the Therapeutic Effects of CBD/CBDV in Autism Spectrum Disorders	PI	ZH Song GN Barnes (Partnering PI)	04/01/2019-03/31/2022	$ 500,000

States, Christopher

Agency/Number	Title	Role	PI	Project Period	Budget Request
NIH-NIEHS/P30 ES030283	University of Louisville Center for Integrated Environmental Health Sciences	PD	States	04/01/20 - 03/31/25	$7,700,000 total costs Impact Score: 23
NIH-NIEHS/R21 ES030334	Alternative splicing in arsenical skin carcinogenesis	PI	States	04/01/20 – 03/31/22	$429,000 total costs, Impact Score: 20, Percentile: 4
NIH-NIEHS/K99 ES030474	Arsenic-induced miRNA changes: role in cell cycle and chromosomal instability	Mentor	Ferragut Cardoso	04/01/20 – 03/31/25	$702,249 (total cost)
1R01ES032168-01	Mechanisms of cadmium Transformation of Benign Prostatic Hyperplasia	Co-I	Damodaran	07/01/20 - 06/30/25	$1,811,697

Wise, John

Agency/Number	Title	Role	PI	Project Period	Budget Request
NCI/R01CA254371	Particulate Hexavalent Chromium-Induced Chromosome Instability	PI	Wise	07/01/20-06/30/25	$3,522,022
NIEHS/ R21 ES032348	The Toxicology of Metals in Altered Gravity	PI	Wise	07/01/20-06/30/22	$429,000
NIEHS/R35 ES030438	Chromosome Instability in Metal-Induced Lung Cancer	PI	Wise	04/01/20-03/31/28	$9,391,608

NIEHS/R01 ES031672	Mechanisms of Hexavalent Chromium-Induced Chromosome Instability	PI	Wise	04/01/20 - 03/31/25	$2,861,452
EPA/WS00290082-EPA-G2019-ORD	Environmental Metal Pollution in Vieques, Puerto Rico	PI	Wise	02/01/20-01/31/23	$800,000
DOD/PR192553	The Toxicology of Metals in Zero Gravity	PI	Wise	10/01/20-09/30/21	$308,000
European Union/SEP-210641438	Multi-component novel nanomaterials and multi-scale approaches for an advanced safe-by-designregulatory framework	Partner Laboratory	Kohl	04/01/19-03/31/24	$8,745,000
NIEHS/P30 ES030283	University of Louisville Center for Integrated Environmental Health Sciences	Deputy Director	States	04/01/20-03/31/25	$7,700,000

Wise, Sandra

Agency/Number	Title	Role	PI	Project Period	Budget Request
NCI/R01CA254371	Particulate Hexavalent Chromium-Induced Chromosome Instability	Co-I	Wise	07/01/20-06/30/25	$3,522,022
NIEHS/ R21 ES032348	The Toxicology of Metals in Altered Gravity	Collaborator	Wise	07/01/20-06/30/22	$429,000
NIEHS/R01 ES031672	Mechanisms of Hexavalent Chromium-Induced Chromosome Instability	Co-I	Wise	04/01/20 - 03/31/25	$2,861,452
DOD/PR192553	The Toxicology of Metals in Zero Gravity	Co-I	Wise	10/01/20-09/30/21	$308,000
NIH/K99/R00 PA-18-398	Arsenic-induced miRNA changes: role in cell cycle and chromosomal instability	Mentor	Cardoso	04/01/20-03/31/25	$1,355,374

NIEHS/ R35 ES030438	Chromosome Instability in Metal-Induced Lung Cancer	Co-PI	Wise	04/01/20-03/31/28	$9,391,608

INVITED SCIENTIFIC PRESENTATIONS

Faculty with Primary Appointments

Ceresa, Brian

1. May 8, 2019 "Spatial Regulation of EGFR Signaling" –JBCC

Chen, Shao-yu

1. Down-regulation of SDF1/CXCR4 signaling mediates ethanol-induced craniofacial and cranial nerve defects in zebrafish embryos by disrupting neural crest cell-placode interaction. IUTOX 15th International Congress of Toxicology. Honolulu, Hawaii, July 18, 2019.
2. Epigenetic mechanisms underlying Fetal Alcohol Spectrum Disorders. Departmental Seminar, Nov. 26, 2019

Clark, Geoffrey

1. University of Cincinnati Rasopathies program: *New signaling modalities and therapeutic approaches to the RAS oncoprotein*
2. Midwest Blood Club (St. Judes, Memphis): *A direct inhibitor for AML*

Freedman, Jonathan

1. Presentation at Sustainability Roundtable

Gupta, Ramesh

1. Gupta, R. Plenary Talk: 24th World Congress on Advances in Oncology, October 15, 2019
2. Gupta, R. Plenary Seminar: University of Antwerp, Antwerp, Belgium, October 15, 2019
3. Gupta, R. Special Seminar: Department of Biochemistry, National Dairy Research Institute, Karnal, India, November 26, 2019

Hein, David

1. ***A Revamped Approach to Post-Tenure Review***. Association of Medical School Pharmacology Chairs, Kauai, Hawaii, January 2019.
2. ***N-Acetyltransferase 2 Acetylator Genotype-dependent N-Acetylation of the Arylamine Carcinogens 4-Aminobiphenyl and Beta-naphthylamine in Cryopreserved Human 3Hepatocytes***. Hepatobiology and Toxicology COBRE, University of Louisville, Louisville, Kentucky March 2019.

3. ***Role of Human NAT2 Acetylator Polymorphism on Cancer Risk Assessment from Arylamine Carcinogens***. Southeast Regional IDeA Conference, Louisville, Kentucky, November 2019.

Hood, Joshua

1. Jones JB, *Hood JL. Induction of macrophages using attenuated lung cancer cell-derived small extracellular vesicles. First joint meeting of the International society for extracellular vesicles and the metastasis research society (ISEV-MRS), August 4th, 2019 Vanderbilt University, Nashville TN
2. *Hood JL. Liver tumor-derived small extracellular vesicles modulate macrophage function. Southeast Regional NIH IDeA conference, Galt House Conference Center, Louisville Kentucky, November 7th, 2019
3. Jones JB, *Hood JL. Attenuating inflammatory mediator production by AML cells using normal human plasma-derived extracellular vesicle subtypes. Southeast Regional NIH IDeA conference, Galt House Conference Center, Louisville Kentucky, Nov.7th, 2019

Kidd, LaCreis

1. **Kidd, L.R.**, Hein, D.W. *Preparing the Next Generation of Cancer Researchers.* International Cancer Education Conference: Solving Cancer Education Challenges through Innovative, Interdisciplinary, Community and Global Collaboration, October 3-5, 2018, Atlanta, GA.
2. Kidd, L.R. Micro-RNa-186-5p inhibition attenuates proliferation, anchorage independent growth and invasion in metastatic prostate cancer cell. Cancer Center, Senegal, Dakar.

Kouokam, Calvin

1. **Kouokam JC.** Invited Speaker for the GRFT-PREVENT Annual meeting. November 6, 2018: **"Safety studies of Q-GRFT in cultured cell lines and mice with DSS- induced colitis"**.

Lukashevich, Igor

1. Lukashevich, I.S. "Lassa Virus Vaccine with Full Coverage". 2019 ASM Biothreats, January 29-31, Arlington, VA.
2. Invited speaker for 2019 ASM Biothreats.2.Lukashevich, I.S."Lassa fever: evidence of T cell-mediated protection". Coalition for Epidemics Preparedness Innovations (CEPI), Workshop on Standards and Assays, June, 19-20, Oslo, Norway. Invited Lassa virus expert for CEPI/WHO workshop.

Matoba, Nobuyuki

1. "Development of Unique Biopharmaceuticals Using a Plant-based Transient Overexpression System" International Center for Biotechnology, Osaka University, Osaka, Japan, November 15, 2019.

2. "Development of biopharmaceuticals using transient overexpression vectors in Nicotiana benthamiana" PMPs Research Workshop, Sapporo, Japan, July 19, 2019.

Palmer, Kenneth E.

1. Palmer KE. A Research Journey, from Laboratory Concept to Clinical "Study May Proceed". Seminar in the Department of Biochemistry and Molecular Genetics, University of Louisville. February 2019

Siskind, Leah

1. Invited Speaker, Stony Brook University, Department of Nephrology, Talk title: Repeated low dose cisplatin dosing induces CKD. October 2018, Long Island, NY
2. Invited Seminar Speaker, University of Louisville Dental School, Oral Biology Graduate Program Seminar Series, Title: Mechanisms of Cisplatin Nephrotoxicity, October 26, 2018
3. Invited Seminar Speakr, University of Louisville School of Engineering, Department of Bioengineering, Improved Models for Studying Mechanisms of Cisplatin Nephrotoxicity, Spetember 11, 2018
4. Invited Speaker, Gordon Research Conference: Glycolipids and Sphingolipids, Galveston, TX, February 11-16, 2018
5. Invited Speaker, Gordon Research Conference: Glycolipids and Sphingolipids, Galveston, TX, February 11-16, 2018

Song, Joe

1. Novel molecular targets of cannabidiol, University of Louisville Autism Center, January 26, 2018
2. Cannabinoid receptors as novel therapeutic targets. University of Louisville Visual Science Retreat, September 26, 2018

States, J. Christopher

1. "MicroRNA Dysregulationand Chromosome Instability in Arsenic Carcinogenesis", Dept Pharmacology & Toxicology, University of Louisville, Lousiville, KY, 11/7/19
2. States, JC. "hsa-miR-186 Overexpression Induces Aneuploidy in Human Keratinocytes", Society of Toxicology, Baltimore,MD, March 10-14, 2019
3. States, JC. "MicroRNA Dysregulation and Chromosome Instability in Arsenic Carcinogenesis", 23rd International Charles Heidelberger Symposium, Stintino, Italy, September 23-28, 2019

Wise, John

1. Invited Speaker: "Fantastic Beasts and Where to Find Them: What Whales from around the World Are Telling us about Chromium from a One Environmental Health Perspective". Presented at the University of Murcia, Murcia, Spain, December 2019.

2. Invited Speaker:“Careers in One Environmental Health”. Presented at the Superfund Trainee Program, Seattle, Washington, November 2019.
3. Invited Speaker: “The Genotoxicity and Carcinogenicty of Hexavalent Chromium from a One Environmental Health Perspective”. University of Wisconsin-Milwaukee, Milwaukee, Wisconsin.
4. Invited Speaker: “Mechanism of Cr(VI)-induced Chromosome Instability”. The 13th Conference of the International Society for Trace Element Research in Humans (ISTERH), Bali, Indonesia.
5. Invited Speaker: “A Whale of a Tale: Are Whales Resistant to Cancer and Chemical Carcinogens?”. Brown Cancer Center, University of Louisville, Lousiville, Kentucky.
6. Invited Speaker: “Mechanisms of Hexavalent Chromium-Induced Genomic Instability: How a Lung Carcinogen Breaks DNA and Inhibits Repair”. 15th International Congress of Toxicology, Honolulu, Hawaii.
7. Invited Speaker: “Mechanisms of Metal-Induced Lung Cancer: Mechanisms of Particulate Cr(VI)-Induced Centrosome Amplification from a One Environmental Health Perspective”. The 15th International Symposium on Recent Advances in Environmental Health Research, Jackson, Mississippi.
8. Invited Speaker: “Of Whales and Men: Whale Cells Resist Chromium-Induced DNA Repair Inhibition”. University of Kentucky, Lexington, Kentucky.

INVENTIONS, DISCLOSURES, LICENSE/OPTION AGREEMENTS, PATENT AWARDS, AND BUSINESS STARTUPS
Faculty with Primary Appointments

Clark, Geoff

- PATENT APPLICATION: INHIBITORS OF THE RAS ONCOPROTEIN, METHODS OF MAKING AND METHODS OF USE THEREOF

Fuqua, Joshua

- Griffithsin oxidation resistant mutants. **PCT/US15/550,323**. Inventors: O'Keefe BR, Palmer KE, **Fuqua JL**, Rohan LC. Assignee: University of Louisville, National Cancer Institute/Public Health Service, University of Pittsburgh.
- Optimizing Pegylation of Griffithsin to Improve Systemic Delivery. RDF 19051. Inventors:Fuqua JL, Hamorsky KT.Assignee: University of Louisville.
- Founded GROW Biomedicine, LLC –The company is focused on commercialization of UofL technologies, Epicertinand Q-Griffithsin. The first STTR was submitted in September and the impact score was below 2019 paylines – 2020 paylines TBD.

Gupta, Ramesh

- Isolation of exosomes from colostrum powder and exosomal drug formulations using the same. RC Gupta (U.S. Patent No. 10,166,259), January 2019.
- Milk-Derived Microvesicle Compositions and Related Methods. RC Gupta, R Munagala, F Aqil, J Jeyabalan. U.S. Patent App. 16/531,215; Patent # US20190374467A1; September 2019.
- Exosome-Mediated Transfection for Delivery of Nucleic Acids. RC Gupta, R. Munagala, F. Aqil, J. Jeyabalan, A. Agarwal, Al-Hassan Kyakulaga. U.S. Patent filed January 27, 2019.

Matoba, Nobuyuki

- Business startup: Founded GROW Biomedicine LLC with colleagues. Role: Chief Scientific Officer

Palmer, Kenneth

- New United States Patent Issued: US Patent 10,501,507, "GriffithsinMutants". Inventors: Barry O'Keefe, Kenneth Palmer, Joshua Fuqua, Lisa Rohan, Lindsay Fergusson-Kramzer
- European Patent EP3256486 issued: US Patent 10,501,507, "Griffithsin Mutants". Inventors: Barry O'Keefe, Kenneth Palmer, Joshua Fuqua, Lisa Rohan, Lindsay Fergusson-Kramzer
- Co-founder of a New University of Louisville business startup: Grow Biomedicine LLC, The company is focused on commercialization of UofL technologies, Epicertin and Q-Griffithsin.

DEPARTMENTAL COURSES

Pharmacology instruction in the medical school curriculum was provided in an integrated Disease and Therapeutics course. Dr. Brian Ceresa served as thread director.

Pharmacology and Dental Therapeutics course (BMSC 807-05; 4 credits) to dental (D3) students. Dr. David Hein served as course director and Dr, Joshua Hood served as course co-director.

Pharmacology course (DHED 402- 4 credits) to students in the Dental Hygiene Program. Dr. Kyung Hong served as course director.

The Department team taught several courses for graduate students. The individual courses and course directors are listed below:

- PhTx 641; Pharmacology I -3 credits (Dr. Leah Siskind)
- PhTx 642; Pharmacology II – 3 credits (Dr. Joe Song)
- PhTx 606; Seminar -1 credit (Dr. Calvin Kouokam)
- PhTx 625; Scientific Writing – 2 credits (Dr. Ken Palmer)
- PhTx 618; Topics-Statistics – 2 credits (Dr. La Creis Kidd)
- PhTx 619; Research (Dr. Leah Siskind)
- PhTx 643, Toxicology I – 3 credits (Dr. John Wise)
- PhTx 644, Toxicology II – 3 credits (Dr. Geoff Clark)
- PhTx 661, Molecular Toxicology- 3 credits (Dr. Chris States)
- PhTx 631, Introduction to Human Risk Assessment – 1 credit (Dr. John Lipscomb)

STANDING COMMITTEES

Graduate Affairs Committee

Dr. Leah Siskind (Chair)
Dr. Geoff Clark (ex officio)
Dr. Brian Ceresa
Dr. Chris States
Dr. Zhao-hui (Joe) Song

Graduate Recruitment and Admissions Committee

Dr. Geoff Clark (Chair)
Dr. Leah Siskind (Ex officio)
Dr. Shao-yu Chen
Dr. John Wise Sr.
Dr. Nobuyuki Matoba
Dr. La Creis Kidd

SIBUP/Grievance Committee

Nobuyuki Matoba (Chair)
Dr. Ramesh Gupta
Dr. Joe Song
Dr. Michael Merchant

Teaching Evaluation Committee

Dr. John Wise Sr. (Chair)
Dr. Joshua Hood
Dr. Kyung Hong
Dr. Demitrius Antimisiaris

Seminar Committee

Dr. Calvin Kouokam (Chair)
Dr. Geoff Clark
Dr. Levi Beverly
Dr. Jon Freedman
Dr. John Wise, Sr.

Events Committee

Dr. La Creis Kidd (Chair)
Dr. Sandra Wise (2018)
Dr. Irina Kirpich (2019)

NCI CANCER RESEARCH PROGRAM

2019 Undergraduate Participants

Jala Beasley-Williams

University of Southern California
Faculty Mentor: Sucheta Telang
Research Project: Examination of Effects of PFKFB4 Inhibition on HER2+ Breast Cancer Cells

Alicia Brinegar

Holmes Community College
Faculty Mentor: Donghan Lee
Research Project: Functional and Biophysical Characterization of Cancer-Related PTP4A3 Mutations

Mackenzie Burroughs

Oklahoma State University
Faculty Mentor: Joshua Hood
Research Project: Induction of Macrophages by Liver Tumor-Derived Small Extracellular Vesicles

Destine Ede

Emory University
Faculty Mentor: Geoff Clark
Research Project: A Potential Novel Treatment for Neurofibromatosis Type 1 via RAS Inhibition

Claire Feller

University of Dayton
Faculty Mentor: Norman Lehman
Research Project: Comparing Effects of Combination Treatments Containing Alisertib and DNA Damage-Inducing Agents in Glioblastoma Cells

Kelly Feng

Knox College
Faculty Mentor: Levi Beverly
Research Project: Nucleoporin 210 Interacts with Ubiquilin 1 Through its STI-1 Domain

Sydney Fischer

University of Louisville
Faculty Mentor: Haixun Gao
Research Project: Site-specific Modification for Enhancement of Tumor Microenvironment Delivery of Anti-PD-L1 Antibody

Sara Hanna,

University of Kentucky
Cancer Faculty Mentor: Leah Siskind
Research Project: Validation of Novel KRAS-mutant Synthetic Lethal Target in Non-Small Cell Lung

Stacy Henley

University of Louisville
Faculty Mentor: Ramesh Gupta
Research Project: Targeting Chemotherapy Resistance in Non-Small Cell Lung Cancer via Berry Anthocyanidins

Alyssa Kabithe

University of Louisville
Faculty Mentor: Sandra Sephton
Research Project: Exploring the Relationship Between Trauma, Smoking, and Leukocyte Telomere Length (LTL) in Minority and Caucasian Non-small Cell Lung Cancer Patients

Grace Lian

University of North Carolina
Mentor: Paula Bates
Research Project: Investigating Molecules That Confer Sensitivity to AS1411 in Lung Adenocarcinoma

Steven Nguyen-Ho

University of Louisville
Faculty Mentor: Yan Li
Research Project: Lack of FGF21 promotes hepatic steatosis and insulin resistance (IR) leading to de novo lipogenesis

Chidum Okeke

University of Louisville
Faculty Mentor: La Creis Kidd
Research Project: Impact of mitogen-activated protein kinase (MAPK14/p38) sequence variant partners on aggressive prostate cancer

Meenakshi Pattabiraman

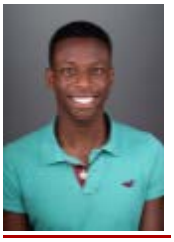
Purdue University
Faculty Mentor: Nobuyuki Matoba
Research Project: Understanding the biological significance of high mannose glycans in terms of ovarian cancer metastasis

Conner Slone

University of Louisville
Faculty Mentor: Brian Clem
Research Project: Investigation of Small Molecule Inhibitors of PHGDH and Endocrine Therapies in Endocrine Resistant ER+ Breast Cancer

Nicole Sparling

University of Louisville
Faculty Mentor: J. Christopher States
Research Project: Arsenic and hsa-miR-186 Overexpression Impair the DNA Damage Response Pathway in Human Keratinocytes



Onajia Stubblefield

University of Louisville
Faculty Mentor: Shesh Rai
Research Project: Factors that Influence Survivability of Individuals with Brain

Manasa Sunkara

University of Cincinnati
Faculty Mentor: Michael Egger
Research Project: Effect of preoperative narcotics and benzodiazepines on perioperative and postoperative outcome in cancer-related surgeries

Kate Tarvestad

University of Notre Dame
Faculty Mentor: Brian Ceresa
Research Project: Chronic Arsenic Exposure and its Effect on the ErbB Family Receptor Tyrosine Kinases

2019 Medical Student Participants

Samuel Bochhorst

Faculty Mentor: Jill Steinbach-Rankins
Research Project: Personalized Nanomedicine Tailored to Lung Cancer Metabolomic Analysis

James Burton

Faculty Mentor: Susan Galandiuk
Effect of Long Non-Coding RNA ZFAS1 on Epithelial-To-Mesenchymal Transition
Research Project: Protein Expression in Colorectal Cancer Cell Lines

Toni Carter

Faculty Mentor: Robert Martin
Research Project: Outcomes of Esophageal Stent Therapy for the Management of Anastomotic Leaks

Steven Chapman

Faculty Mentor: Richard Lamont
Research Project: Streptococcus gordonii antagonizes Porphyromonas gordonii-induced OLFM4 in epithelial cells

Tristan Crady

Faculty Mentor: Sean Fu
Research Project: Lung Cancer Detection: Analysis of Trace Volatile Organic Compounds in Exhaled Breath Using Silicon Microreactor Technology

Max Duff

Faculty Mentor: Zhao-hui Song
Research Project: Effects of Cannabinoids on Retinal Endothelial Cell Function

Andrew Hey

Faculty Mentor: Norman Lehman
Research Project: Potentiation of Alisertib by Cabozantinib in Glioblastoma Cells

Daniel Hodge

Faculty Mentor: David Hein
Research Project: The effects of arylamine N-acetyltransferase 1 on tumor immune response

Roman Isakov

Faculty Mentor: John Wise, Sr.
Research Project: The Effects of Whole Life, Low Dose Cadmium Exposure on Mouse Lung Histology and DNA Damage

Hannah Jaggers

Faculty Mentor: John Wise Sr.
Research Project: The Effects of Whole Life, Low Dose Cadmium Exposure on Mouse Lung Histology and DNA Damage Repair

Jeremy Jones

Faculty Mentor: Joshua Hood
Research Project: Differential reduction in inflammatory mediator production by AML cells using normal human plasma-derived extracellular vesicle subtypes

Alborz Kalantar

Faculty Mentor: Levi Beverly
Research Project: Ubiquilin 1 Interaction with Ubiquilin 2 and Implications in Formation and Metastasis of Lung Adenocarcinoma

Phillip Lindsey

Faculty Mentor: Michael Egger
Research Project: Impact of Glucose Concentration of Perfusate on Perioperative Outcomes in Patients Undergoing Cytoreductive Surgery and Hyperthermic Intraperitoneal Chemotherapy

Bryce Marshall

Faculty Mentor: Robert Martin
Research Project: Minimally Invasive Esophagectomy in Esophageal Cancer—Predictors of Success

Evan Meiman

Faculty Mentor: Sucheta Telang
Research Project: 6-Phosphofructo-2-kinase/fructose-2,6-bisphosphatase 4 (PFKFB4) Inhibition in Lung Cancer

Derek Menefee

Faculty Mentor: Kelly McMasters
Research Project: Wnt signaling in age-related Transcriptome Changes in Sentinel Lymph Node and Their Association with Recurrence in Node-Positive Melanoma Patients

Haley Moss

Faculty Mentor: Melissa Potts
Research Project: Hepatic Arterial Variant Anatomy and Predisposition to Hepatocellular Carcinoma

Sarah Mudra

Faculty Mentor: Beth Riley
Research Project: Treatment delays of >90 days associated with poor outcomes in localized breast cancer: a National Cancer DataBase (NCDB) analysis

Ajay Patel

Faculty Mentor: Susan Galandiuk
Research Project: Effect of Long Non-coding RNA on Colon Cancer Migration and Phenotype

Ankur Patel

Faculty Mentor: Susan Galandiuk
Research Project: ZEB mRNA Expression is Affected by Long Non-coding RNA ZFAS1

Andrew Ray

Faculty Mentor: David Hein
Research Project: Role of Arylamine N-acetyltransferase 1 (NAT1) in Breast Cancer Growth and Metastasis

Andre Rochet

Faculty Mentor: Susan Galandiuk
Research Project: The Effect of Long Non-coding RNA ZFAS1 Knockdown on microRNA Expression in Colon Adenocarcinoma

Ayana Wilson

Faculty Mentor: Melissa Potts
Research Project: Hepatic Arterial Variant Anatomy and Predisposition to Hepatocellular Carcinoma

Khaleel Wilson

Faculty Mentor: Robert Martin
Research Project: Treatment of Locally Advanced Pancreatic Cancer with Irreversible Electroporation: Predictors of Survival

Steven Winter

Faculty Mentor: Jill Steinbach-Rankins
Research Project: Evaluation of Surface-Modified Nanoparticle Transport and Metastatic Invasion Using a Novel Multicellular Ovarian Tumor Spheroid Model

Eric Zuberi

Faculty Mentor: Robert Martin
Research Project: An Analysis of Recurrence-Free Survival and Adverse Events in Thermal Ablative Techniques for the Treatment of Primary and Secondary Liver Cancers