

2022 CENTER FOR BIOMEDICAL RESEARCH SYMPOSIUM AND POSTER SESSION

March 4, 2022

9:00 AM - 4:30 PM

Hasselmann Alumni House

1100 North Pine Street, Rolla



MISSOURI
S&T

Center for Biomedical
Research

CONFERENCE SCHEDULE

POSTER SESSION:	9:00 AM – 11:00 AM 11:00 AM – 11:30 AM Poster judging and awards
LUNCHEON:	11:30 AM – 12:50 PM Luncheon is provided to CBR members, Poster Presenters, Center Directors and Guests Speakers.
ORAL PRESENTATIONS:	1:00 PM – 3:30 PM Moderator: Dr. Yue-Wern Huang, Associate Director of CBR
1:00 PM-1:10 PM	Dr. Mo Dehghani, S&T Chancellor, Opening Remarks
1:10 PM – 1:40 PM	M.D. Tim Ley , Professor of Medicine, Lewis T. and Rosalind B. Apple Chair in Oncology, Washington University School of Medicine, National Academy of Sciences Fellow Title: Acute Myeloid Leukemia Multiomics: new paradigms, lessons learned
1:40 PM – 2:10 PM	Professor Honglan Shi, and Dr. Casey Burton , Missouri S&T Chemistry, CBR, and Phelps Health Hospital Title: Advancing Collaborative Opportunities in Oncology and Traumatic Brain Injury Research
2:10 PM– 2:30 PM	Break
2:30 PM – 3:00 PM	M.D. Zhenguo Liu , Professor of Medicine, Director of the Division of Cardiovascular Medicine, Margaret Proctor Mulligan Endowed Professor in Heart and Cardiovascular Research, UM-Columbia Medical School. Title: Helicobacter Pylori Infection and Endothelial Dysfunction
3:00 PM – 3:30 PM	Dr. Carolina Salvador Morales, Program Director, NIH Division of Cancer Treatment & Diagnosis Title: NCI Funding Opportunities <i>Note: Due to the NIH travel restriction during the pandemic, Dr. Morales will give a zoom presentation. She will stay online to interact with the audience regarding NIH funding opportunities.</i>
3:30 PM– 4:30 PM	Breakout Session: Idea exchange and identify collaborative opportunities. The breakout will be held across the hallway of the lecture room. Refreshments will be provided
4:30 PM	Closing

POSTER PRESENTATIONS

1. **Fire smoke and heat spread study using experimental and numerical methods** - Dr. Guang Xu, Associate Professor, Mining & Nuclear Engineering. Student Presenter: Oluwafemi Salami
2. **Low-cost particulate matter sensor for coal dust monitoring** - Dr. Guang Xu, Associate Professor, Mining & Nuclear Engineering. Student Presenter: Nana Amoako Amoah
3. **Head motion detection for imaging applications** – Dr. Mina Esmaelpour, Assistant Professor, Electrical & Computer Engineering. Student Presenter: Behzad Boroomandisorkhabi
4. **Acoustic transmission detection for imaging applications** - Dr. Mina Esmaelpour, Assistant Professor, Electrical & Computer Engineering. Student Presenter: Md Abu Zobair
5. **Electronic Cigarette Aerosols: Metals, Organics, and Associated Cell Damage** - Dr. Yang Wang, Assistant Professor, Civil, Arch & Environmental Engineering. Student Presenter: Kapiamba Fabrice
6. **Measuring the Load and Viability of Biological Aerosols** - Dr. Yang Wang, Assistant Professor, Civil, Arch & Environmental Engineering. Student Presenter: Weixing Hao
7. **On-demand Multidrug Delivery via Individualized Three-Dimensional Wound Dressings** - Dr. Jonghyun Park, Associate Professor, Mechanical & Aerospace Engineering. Student Presenters: Hiep Pham and Gracie Boyer
8. **Dendrimer-based Nanoparticles for Dual-Modality Imaging and Therapy of Atherosclerosis** - Dr. Hu Yang, CBR Director, Professor and Chair Chemical & Biomedical Engineering. Student Presenter: Huari Kou
9. **Fate and Uptake of Nanoparticles in the Plant-soil System Revealed by Single Particle ICP-MS** - Dr. Hu Yang, CBR Director, Professor and Chair Chemical & Biomedical Engineering. Student Presenter: Lei Xu
10. **Treating Pulmonary Arterial Hypertension with a Scalable ML-098 Drug Delivery System** - Dr. Hu Yang, CBR Director, Professor and Chair Chemical & Biomedical Engineering. Student Presenter: Vidit Singh
11. **Drug and Gene Delivery for Glaucoma Therapy: Pathophysiology, Design Principles, &Emerging Concepts**- Dr. Hu Yang, CBR Director, Professor and Chair Chemical & Biomedical Engineering. Student Presenter: Abdullah Al Moinee
12. **Scalable and Continuous Fabrication of Dendrimer-based gene and protein delivery system**- Dr. Hu Yang, CBR Director, Professor and Chair Chemical & Biomedical Engineering. Student Presenter: Joseph Johnston
13. **Scalable Fabrication of Solid Drug Nanoparticles for Efficient Glaucoma Therapy**- Dr. Hu Yang, CBR Director, Professor and Chair Chemical & Biomedical Engineering. Presenter: Da Huang, Post-Doctoral Fellow
14. **Making and Testing Prompt Nano Radioisotopes, Assembling the Jigsaw Puzzle**- Dr. Carlos H. Castano Giraldo, Associate Professor, Nuclear Engineering & Radiation Science

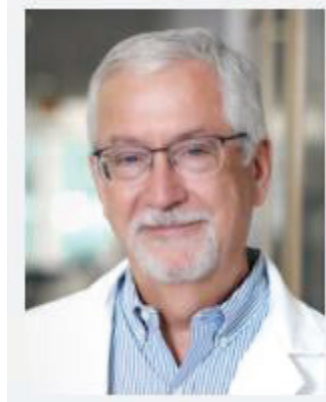
POSTER PRESENTATIONS

15. **Understanding Rural Healthcare Professional's Perceptions of Organization Support Strategies During a Pandemic** - Dr. Clair Reynolds Kueny, Assistant Professor, Psychological Science. Student Presenter: Jadeyn Metcalf
16. **Developing a Patient-Experience Model of Healthcare** - Dr. Clair Reynolds Kueny, Assistant Professor, Psychological Science
17. **Effects of Autoimmune Disease on Mesenchymal Stem Cells** - Dr. Julie Semon, Associate Professor, Biological Sciences. Student Presenter: Hailey Swain
18. **Effects of age and sex on mTBI severity** - Dr. Julie Semon, Associate Professor, Biological Sciences. Student Presenter: Jennifer Harrell
19. **MXene-Graphene Field-Effect Transistor Sensing of Influenza Virus and SARS-CoV-2** - Dr. Chenglin (Bob) Wu, Assistant Professor, Civil, Arch & Environmental Engineering. Student Presenter: Jiaoli Li
20. **Fabrication of ultrasensitive electrochemical DNA biosensor** - Dr. Risheng Wang, Associate Professor, Chemistry. Student Presenter: Krishna Thapa
21. **3D printed dressings for burn wound healing** - Dr. Ming Leu, Professor, Mechanical & Aerospace Engineering. Presenter: Fateme (Sha) Fayyazbakhsh, Post-Doctoral Fellow
22. **Cellular Uptake and Killing Efficacy of Dendrimer with uPA or ACPP on Triple Negative Breast Cancer Cells** - Dr. Yue-Wern Huang, Associate CBR Director, Professor, Biological Sciences. Student Presenter: Hsin-Yin Chuang
23. **An individualized Bayesian method for precision medicine** - Dr. Jinling Liu, Assistant Professor, Engineering Mgt & Sys Engineering. Student Presenter: Asad Rahman
24. **Biodegradable sensors toward temporary implantable systems** - Dr. Chang-Soo Kim, Professor and Graduate Coordinator, Electrical and Computer Engineering
25. **Sensing bandage for transcutaneous oxygen monitoring** - Dr. Chang-Soo Kim, Professor and Graduate Coordinator, Electrical and Computer Engineering
26. **Low-Level Repeat Blast Exposures Alter Urinary and Serum Metabolites in Military Training Environments** - Dr. Honglan Shi, Adjunct Professor, Chemistry. Student Presenter: Austin (Chase) Sigler
27. **CBR Vivarium and Confocal Microscope** - Rich Watters, Vivarium Research Lab Manager and Dr. Katie Shannon, Director Laboratory of Cytokinesis, Teaching Professor
28. **Simultaneous Analysis of Phytohormones and Lipid Peroxidation Products in Corn Seeds by HPLC-Tandem Mass Spectrometry** - Dr. Paul K Nam, Associate Professor, Chemistry. Student Presenter: Sargun Kaur
29. **Therapeutic Assessment of N-Acetylcysteine Amide in Traumatic Brain Injury** - Dr. Paul K Nam, Associate Professor, Chemistry. Student Presenter: Olajide Adetunji

GUEST SPEAKERS

Timothy J. Ley, M.D.

Washington University School of Medicine in St. Louis



Dr. Timothy J. Ley is the Lewis T. and Rosalind B. Apple Chair in Oncology, Professor of Medicine and of Genetics, director of the Stem Cell Biology Section in the division of Oncology and co-director of the Physician-Scientist Training Program in the Department of Medicine. He specializes in hematology, oncology, leukemia, and cancer biology.

Ley is a pioneer in the field of cancer genomics, leading the team that sequenced the first two cancer genomes, from patients with Acute Myeloid Leukemia (AML). This pioneering work has led to an explosion of new studies of the genomes of many cancer types, which has ushered in a new era of understanding of the mutations that cause this disease. Ley and his colleagues have developed genomic methods to understand how AML starts and evolves, and designed methods to track the clearance of AML cells after initial treatment. These approaches are now being used in clinical studies to choose the best therapies for patients at presentation.

Ley is past president of the American Society for Clinical Investigation, past treasurer of the American Association of Physicians, a fellow of the American Association for the Advancement of Science and the American Academy of Arts and Sciences, and an elected member of the National Academy of Medicine and the National Academy of Sciences. He was chair of the Board of Scientific Counselors for the National Human Genome Research Institute of the NIH from 2008-2013, and served on the National Cancer Advisory Board from 2015-2021 (appointed by President Obama).

In 2012, Ley received the E. Donnell Thomas Prize from the American Society of Hematology, and in 2015, he received the Erasmus Hematology Prize and the National Cancer Institute's Alfred G. Knudson Prize for pioneering contributions in cancer genetics. In 2022, he won the Leopold Griffuel Prize for basic cancer research from the Fondation ARC (Cancer Research Foundation) in Paris.

An expert on the subject of the physician-scientist career path, Ley has mentored more than 60 pre- and post-doctoral fellows in his laboratory. Most of these individuals now hold positions in academic medicine or at pharmaceutical companies. Ley was a key advocate for establishing the extramural Loan Repayment Programs at the National Institutes of Health.

Ley earned his bachelor's degree from Drake University and his medical degree from Washington University School of Medicine in 1978. He went on to perform his residency in internal medicine at Massachusetts General Hospital and completed fellowships in hematology and oncology at the National Institutes of Health and at Washington University. He joined the School of Medicine faculty in 1986.

Dr. Honglan Shi
Missouri S&T Professor



Dr. Honglan Shi is an Adjunct Research Professor and Emeritus Research Professor of Chemistry at Missouri S&T. She received a B.S. degree in chemistry in 1981 from Zhengzhou University in China, a M.S. degree in biochemistry in 1990 from Iowa State University, and a Ph.D. degree in analytical chemistry in 2010 from Missouri S&T. Shi was a Research Associate at A.T. Still University and a Sr. Instrumentation/Lab Manager at Truman State University before joining Missouri S&T in 2001. She served as a Research Chemist at two Missouri S&T research centers before and while pursuing her Ph.D. degree. Dr. Shi then joined the chemistry faculty as Research Professor and remained her full-time appointment until her retirement in 2021.

Dr. Shi has been conducting interdisciplinary research in biomedical and environmental health, focusing on disease-related biomarker discovery, advanced instrumental method development, drinking water quality improvement, nanoparticle characterization, and quantification in biomedical and environmental applications. Dr. Shi has established broad collaborations with medical and medicine development organizations, minority and other universities, EPA research labs, drinking water facilities, and other industries. Her research has been supported by NIH, NSF, DoD through collaboration with US Army Research Laboratory, EPA, USDA, Missouri Department of Nature Resources, and industries. She published more than 100 peer-reviewed papers and received one patent since she started her Ph.D. program in 2007. Dr. Shi received Faculty Achievement Award 3 times at Missouri S&T in last several years. Dr. Shi and her husband Dr. Yinfa Ma, a retired Curators' Distinguished Teaching Professor of chemistry and former CBR director, recently established a Shi/Ma Award for Excellence in Biomedical Research at Missouri S&T through endowment fund to recognize undergraduate and graduate students for their outstanding research performance.

Dr. Casey Burton
Phelps Health County Regional Medical Center



Dr. Casey Burton is the Director of Medical Research at Phelps County Regional Medical Center. His experience includes over 10 years of professional research aiming at the development and application of advanced analytical techniques for small molecule analysis with diagnostic applications, including early cancer detection and traumatic brain injury diagnostics. His current role as Director of Medical Research at Phelps Health has provided him with a unique opportunity to build a successful research program in a community hospital setting that has ultimately enabled their patients to gain expanded access to new treatments and improved quality of care. Dr. Burton has helped establish several strategic research partnerships and consortia across the State of Missouri to strengthen

our medical research enterprise and its ability to engage rural Missourians. More recently, his role has expanded to include governmental affairs with the aim of advancing public health policy that benefits the health and wellness of our communities.

Zhenguo Liu, MD, PhD
UM-Columbia Medical School



Dr. Zhenguo Liu, MD, PhD, obtained his medical education in Hunan Medical College in China in 1984, and PhD in cardiovascular pharmacology at Queen's University in Kingston, Canada, in 1995. After his research fellowship in vascular biology, residency in Internal Medicine, and fellowships in cardiovascular diseases and clinical cardiac electrophysiology, Dr. Liu started his career as a physician-scientist and independent investigator in vascular biology and oxidative stress. He is currently a Professor of Medicine and Medical Pharmacology, Margaret Proctor Mulligan Endowed Professor in Cardiovascular Research, and Director of Cardiovascular Medicine, University of Missouri School of Medicine in Columbia, Missouri, USA.

Dr. Carolina Salvador Morales
NIH Division of Cancer Treatment and Diagnosis



Dr. Carolina Salvador Morales is a Program Director for the NCI Division of Cancer Treatment and Diagnosis' Nanodelivery Systems and Devices Branch. She manages nanotechnology-focused grants and co-develops new initiatives with other NCI divisions and centers. Dr. Salvador Morales received her Ph.D. in Chemistry from Oxford University. She has a Master's degree in Biochemistry from Trinity College, Dublin, and a Bachelor's degree in Physics from the National Autonomous University of Mexico. She conducted her postdoctoral training at MIT and Brigham and Women's Hospital-Harvard Medical School.

For nearly a decade, she worked as an Assistant Professor on Tenure-Track and later earned tenured as an Associate Professor. Her research program included cancer nanotechnology, molecular imaging, and agricultural chemistry projects. She was the recipient of several grants funded by the National Institutes of Health, National Science Foundation, Center for Innovative Technology, and Jeffress Trust Fund. She has published multiple peer-reviewed articles in leading journals in Colloidal Chemistry and Nanoscience. She is the author of book chapters as well. Furthermore, she was a visiting scholar at Memorial Sloan Kettering Cancer Center, New York.

Apart from having a multidisciplinary and interdisciplinary academic background, Dr. Salvador Morales has received training and experience in entrepreneurship. She was a Kaufman Fellow in 2010 and taught courses on entrepreneurship in bioengineering for over 8 years. Her passion for medical translation led her to perform an extensive customer discovery process within the NSF I-Corp program and co-establish Nano-Guided Technologies, LLC



Center for Biomedical Research

Dr. Hu Yang - CBR Director

Dr. Yue-Wern Huang - CBR Associate Director

Dr. Katie Shannon - Laboratory of Cytokineses Director

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