

DEPARTMENT OF ANESTHESIOLOGY AND PERIOPERATIVE MEDICINE



RESEARCH DAY

Monday, January 13, 2020

Agenda

- 3:30 p.m. Welcome and Opening Remarks**
- 3:40 p.m. Visiting Professor Miles Berger, M.D., Ph.D.**
- 4:40 p.m. Outstanding Research – Clinical Science: Jack Crawford, M.D., Ph.D.**
- 5:00 p.m. Outstanding Research – Basic Science: Nithya Mariappan, Ph.D.**
- 5:20 p.m. Poster presentations**
- 6:45 p.m. Awards and Closing Remarks**

Guest Speaker - Miles Berger, M.D., Ph.D.



Miles Berger completed his M.D. and Ph.D. at the University of California, San Francisco. He is a neuro-anesthesiologist and human translational neuroscientist at Duke University, where his group studies pathophysiologic mechanisms of perioperative neurocognitive disorders such as neuroinflammation, and their interaction with Alzheimer's disease pathology. His team uses a variety of methods ranging from electroencephalogram and functional magnetic resonance imaging, to cognitive testing and delirium screening, to cerebrospinal fluid biomarker studies and flow cytometry. Dr. Berger's research has been funded by the National Institute on Aging, Foundation for Anesthesia Education and Research, International Anesthesia Research Society, the Alzheimer's Drug Discovery Foundation and the American Geriatrics Society.

Presentations

Jack Crawford, M.D., Ph.D.

Dr. Jack Crawford was the first trainee to participate in the Resident Academic Career Development (now STAR) Program during which time he investigated the changes that occur in red blood cells during storage prior to donation. These changes in red blood cells accelerate reactions with nitric oxide and thereby alter regulation of microvascular tone following transfusion. After completing the program, Dr. Crawford joined the faculty of the UAB Department of Anesthesiology and Perioperative Medicine in 2011 and went on to develop a new division that focuses on his primary interest, congenital heart disease and currently serves as the Vice Chair and Director of the Division of Congenital Cardiac Anesthesiology. Dr. Crawford's research focuses on the inflammatory response and multi organ dysfunction in children after surgery involving cardiopulmonary bypass. He has ongoing clinical research projects aimed at improving perioperative care for these patients and was awarded a Young Investigator Award by the Society for Pediatric Anesthesiology in 2015.

Nithya Mariappan, Ph.D.

Dr. Nithya Mariappan is a Senior Postdoctoral Research Fellow in the Department of Anesthesiology and Perioperative Medicine at University of Alabama at Birmingham. Dr. Mariappan graduated with a doctoral degree from the University of Madras, Chennai, India. Thereafter, she was selected for the National Award by the Department of Biotechnology, Government of India, for her postdoctoral research at Central Leather Research Institute, Madras. She continued her training at Louisiana State University and studied the role of inflammation on mitochondrial function in the context of cardiovascular and metabolic disorders such as obesity and diabetes. Dr. Mariappan continued her research at the University of Arkansas for Medical Sciences as an NIH-funded T32 fellow. To pursue further research in inflammation, she joined UAB, focused on applying her knowledge and expertise in inflammation for the development of therapeutic strategies against warfare chemical agent-induced lung injury and toxicity. Dr. Mariappan has presented over 35 conference abstracts, published 30 peer-reviewed journal articles and received several awards from different associations (DBT-Govt of India, American Heart Association, Society of Toxicology and the American Thoracic Society).

Posters on Display

<u>Poster Number</u>	<u>Title and Participants</u>
1	Nucleic acid scavenging rescues rats from chemical-induced ARDS Nithya Mariappan, Maroof Husain, Iram Zafar, Vinodkumar Singh, Kenneth G. Smithson, Jean-Francois Pittet, Shama Ahmad and Aftab Ahmad
2	Post-exposure treatment with esomeprazole protects pregnant mice from mortality and from compromised fetal growth after exposure to chlorine gas Molyvdas A., Ren C., Dunigan K., Tipple T.E., Matalon S. and Jilling T.
3	Novel Biomarkers of Preeclampsia: Aquaporins and Fatty Acids, and S100B Dina Ford, Brittany Hatter, Adam Sturdivant, Sadis Matalon, Tamas Jilling and Tekuila Carter
4	Primary Air-Liquid Interface (ALI) cultures of human, ferret and mouse tracheal/bronchial cells (HBEC, FTEC and MTEC) are effective models for the study of airway pathogens, host responses and therapeutic interventions Jennifer L. Tipper, Bethany B. Brock, Courtney F. Moon and Kevin S. Harrod
5	α1G T-type Calcium Channel Determines the Angiogenic Potential of Pulmonary Microvascular Endothelial Cells Zhen Zheng, Hairu Chen, Peilin Xie, Carol A. Dickerson, Judy A. C. King, Mikhail F. Alexeyev and Songwei Wu
6	Cardiac specific SERCA knock out mice replicate adverse cardiac effects of bromine and demonstrate enhanced myocardial injury

Juan Xavier Masjoan Juncos, Shazia Shakil, Wayne E. Bradley, Iram Zafar, Nithya Mariappan, William E. Louch, Louis J. Dell'Italia, Ganesh Halade, Aftab Ahmad and Shama Ahmad

- 7 [A role of voltage-gated potassium channel Kv4.3 in controlling orofacial nociception of cooling temperatures](#)
Ya-Ting Chang, Hirosato Kanda and Jianguo G Gu
- 8 [Influenza conferred susceptibility to pneumococcal virulence is mediated through oxidative stress](#)
Kevin S. Harrod, Norberto Gonzales, Jennifer Tipper, Alexander Jureka, John Trombley, Jeffrey Brand, Ashleigh Riegler, Ninecia Scott and Carlos Orihuela
- 9 [Acute Pulmonary and Serologic Changes in the Proteomes of Bromine Exposed Mice](#)
James A. Mobley, Stephen Doran, Saurabh Aggarwal, Dylan Addis, Kyoko Kojima and Sadis Matalon
- 10 [T1 Erector Spinae Plane Block Catheter as a Novel Treatment Modality for Pancoast Tumor Pain](#)
Hari Kalagara, Paige Deichmann, Brandon Brooks, Peter Nagi, Promil Kukreja
- 11 [Chauncey D. Leake, Ph.D. Scientist, Historian, Humanitarian](#)
Mark G. Mandabach
- 12 [Emerging role of extracellular nucleic acids in a gastric aspiration model of ARDS](#)
Nithya Mariappan, Iram Zafar, Chih-Chang Wei, Wayne Bradley, Shama Ahmad and Aftab Ahmad
- 13 [S-nitrosothiols as Nitric Oxide Donors to Protect against Cardiovascular Disease risk factors of Endothelial Dysfunction, Arterial Stiffness and Hypertension](#)
Nagababu Enika and Dan E. Berkowitz
- 14 [Doppler indices of diastolic function in pregnant mice after bromine gas exposure](#)
Dylan R. Addis, Tamas Jilling and Sadis Matalon
- 15 [Characterizing electrophysiological properties of the nodes of Ranvier at motor nerve fibers using the in situ pressure-patch-clamp recording technique](#)

Sotatsu Tonomura, Hirosato Kanda, Jennifer Ling and Jianguo G. Gu

- 16 Solvent/detergent-treated plasma vs. fresh frozen plasma for cardiopulmonary bypass surgery in children: single center, case control comparison

Jack H. Crawford, Krissie Hock and Santiago Borasino

- 17 Effects of spinal contusion injury on lower urinary tract function in a female mouse model

Salvador Lopez, Cary DeWitte, Chan-Ho Lee and Jennifer J. DeBerry

- 18 Estrogens Alleviate Parasympathetic-induced, $\alpha 7$ nAChR-mediated Mortality from secondary *P. aeruginosa* lung infection after Traumatic Brain Injury in Mice

Jean-Francois Pittet, Angela P. Brandon, Cilina A. Evans, Rebekah J. Muthalaly and Brant M. Wagener

- 19 Reserved bed pilot program increases transfer volume and improves capacity strain in a large neurosciences intensive care unit

Christopher D. Shank, Nicholas J. Erickson, David W. Miller, Brittany F. Lindsey and Beverly C. Walters

- 20 Comparing Traditional, Immersive Simulation with Rapid Cycle Deliberate Practice in Postgraduate Year 2 Anesthesiology Residents

Tekuila Carter, Erin Blanchard, Lee Ann Riesenber, Lisa Bergman and Emma O'Hagan

- 21 Preoperative low-dose PO Baclofen administration as an analgesic adjuvant

Cathy Q. Zhang, Mark Mandabach, Robert Sorge, Timothy Ness, Dean Assimios and Kyle Wood

- 22 Impairment of slowly adapting type 1 mechanoreceptors in mice following vincristine treatment

Mayumi Sonekatsu, Akihiro Yamada and Jianguo G. Gu

- 23 Mechanisms of delayed cardiac hypertrophy, ultrastructural damage and systolic dysfunction after a single bromine exposure

Juan Xavier Masjoan Juncos, Shazia Shakil, Wayne E. Bradley, Wei Chih-Chang, Iram Zafar, Pamela Powell, Nithya Mariappan, William E. Louch, Aftab Ahmad, Louis J. Dell'Italia and Shama Ahmad

- 24 [The alveolar epithelium produces cytotoxic amyloids that disrupt naïve alveolar-capillary integrity via the Receptor for Advanced Glycation End-products](#)
Jean-Francois Pittet, Angela P. Brandon, Ryan D. Berry, Steven Gu, Ron Balczon, Troy Stevens and Brant M. Wagener
- 25 [Precision Medicine in Anesthesia: Genetic Component in Opioid-induced Respiratory Depression](#)
Alethia Sellers
- 26 [Codeployment of a percutaneous edge-to-edge mitral valve repair device and a ventriculoseptal defect occluder device to address complex mitral regurgitation with leaflet perforation](#)
Dylan R. Addis
- 27 [Chemical-based portable inhaled nitric gas generating drug-device for the treatment of pulmonary hypertension](#)
Nagababu Enika and Dan E. Berkowitz
- 28 [Characterization of lung injury in mice exposed to inhaled arsenic trioxide](#)
Nithya Mariappan, Iram Zafar, Chi-Chang Wei, Shama Ahmad, Hannah M. Goymer, Mohammad Athar, Veena B. Antony and Aftab Ahmad
- 29 [Heme induces aberrant pulmonary remodeling and alveolar damage following inhalation lung injury](#)
Israr Ahmad, Adam Lam, Matthew A. Carlisle, Changzhao Li, J. Michael Wells, S. Vamsee Raju, Mohammad Athar, Steven M. Rowe, Mark T. Dransfield, Saurabh Aggarwal and Sadis Matalon
- 30 [Anterior quadratus lumborum block analgesia for total hip arthroplasty: a randomized, controlled study](#)
Promil Kukreja, Lisa MacBeth, Adam Sturdivant, Charity J. Morgan, Elie Ghanem, Hari Kalagara, Daniel Johns, Benjamin Wilson and Vincent W. S. Chan
- 31 [Neuronal Wiskott–Aldrich syndrome protein regulates Pseudomonas aeruginosa-induced lung vascular permeability through modulation of actin cytoskeletal dynamics](#)
Pulin Che, Brant M. Wagener, Xueke Zhao, Angela P. Brandon, Cilina A. Evans, Guo-Qiang Cai, Rui Zhao, Zhi-Xiang Xu, Xiaosi Han, Scott Snapper, Jean-Francois Pittet and Qiang Ding
- 32 [AMPK activation increases survival in animal models of acute lung injury](#)

Ming-Yuan Jian, Israr Ahmad, Ting Zhou, Yilan Liu, Zhihong Yu, Stephen F. Doran, Paul Wolkowicz, Judy Creighton and Sadis Matalon

- 33 [Intraoperative hemodynamic changes under general anesthesia in patients receiving preoperative neuraxial interventions](#)

G.J. Gallegos, C.J. Morgan, G. Scott, D. Cochran, D. Benz and T.J. Ness

- 34 [Improving Adherence to Intraoperative Lung Protective Ventilation Strategies Using Near Real-Time Feedback and Individualized Electronic Reporting](#)

Dale A. Parks, Roland T. Short, Philip J. McArdle, Joshua M. Hagood, Sandra J. Crump, Ayesha S. Bryant, Thomas R. Vetter, Charity J. Morgan and Keith A. Jones

- 35 [Calcium-Sensing Receptor expression and function regulation by hyaluronan](#)

Ahmed Lazrak, Zhihong Yu and Sadis Matalon

- 36 [Characterization of lung injury in mice exposed to cutaneous Lewisite](#)

Shajer Manzoor, Nithya Mariappan, Iram Zafar, Chih-Chang Wei, Shama Ahmad, Mohammad Athar, Jeremy Foote, Veena Antony and Aftab Ahmad

- 37 [Circulating biomarkers to assess cardiopulmonary toxicity due to inhaled chemicals](#)

Juan Xavier Masjoan Juncos, Shazia Shakeel, Louis J Dell'Italia, David A Ford, Aftab Ahmad and Shama Ahmad

- 38 [Chronic Widespread Pain in HIV: Novel Mechanisms and Therapeutics](#)

Saurabh Aggarwal, Jennifer DeBerry, Israr Ahmad, Sonya Heath and Sadis Matalon