Wednesday, October 14, 2020

Platform Sessions – 3:00 PM - 4:15 PM including Q&A

Track: Respiratory Bioengineering

**Lung Tissue and Device Development**

3:00 PM - 3:20 PM

**Stretch and Contract: Dynamic Forces in Lung Development** (Invited)

Xin Sun¹

¹University of California San Diego, San Diego, CA

3:20 PM - 3:30 PM

**FGF10-Induced Buckling Morphogenesis of the Embryonic Airway Epithelium**

Kara Peak¹ and Victor Varner¹

¹The University of Texas at Dallas, Richardson, TX

3:30 PM - 3:40 PM

**Fully Biological Channels for a Biomimetic Gas Exchange Device**

Erica Comber¹, Rachelle Palchesko¹, Daniel Shiwarshi¹, Kalliope Roberts¹, Xi Ren¹, Adam Feinberg¹, and Keith Cook¹

¹Carnegie Mellon University, Pittsburgh, PA

3:40 PM - 3:50 PM

**A Microfluidic System for the Functional Measure of Lung Mechanics in Preterm Birth**

Laurel Schappell¹, Daniel Minahan¹, and Jason Gleghorn¹

¹University of Delaware, Newark, DE

3:50 PM - 4:00 PM

**Cross-Validating *in vitro* and *in situ* Models of Diaphragm Motion for Medical Device Testing**

Lucy Hu¹, Mossab Saeed², Markus Horvath¹, and Ellen Roche¹

¹Massachusetts Institute of Technology, Cambridge, MA, ²Boston Children's Hospital, Boston, MA

4:00 PM - 4:15 PM

Session Q&A

Track: Translational Biomedical Engineering

**Translational Biomedical Engineering**

3:00 PM - 3:10 PM

**Glucose Clearance Of An Intravascular Bioartificial Pancreas In A Diabetic Porcine Model**

Alonso Torres¹, Ana Santandreu¹, Rebecca Shaheen¹, Gregory Szot¹, Nathan Wright¹,², Charles Blaha¹,², Rebecca Gologorsky¹, Jarrett Moyer¹, Eun Jung Kim¹, Andrew Posselt¹, and Shuvo Roy¹,²

¹University of California, San Francisco, San Francisco, CA, ²Silicon Kidney, LLC, San Francisco, CA

3:10 PM - 3:20 PM

**Integrated Human Organ-on-a-chip for Predictive Studies of Anti-Tumor Drug Efficacy & Cardiac Safety**

Diogo Teles¹,²,³, Alan Chramiec¹, Keith Yeager¹, Alessandro Marturano-Kruik¹,⁴, Joseph Pak¹, Timothy Chen¹, Luke Hao¹, Miranda Wang¹, Roberta Lock¹, Daniel Naveed Tavakol¹, Marcus Busub Lee¹, Jinho Kim¹,⁵, Kacey Ronaldson-Bouchard¹,
3:20 PM - 3:30 PM
**Ultra-Fast Cycling for Multiplexed Cellular Fluorescence Imaging**
Jina Ko1,2, Juhyun Oh1, Maaz Ahmed1, Jonathan Carlson1, and Ralph Weissleder1
1Massachusetts General Hospital, Boston, MA, 2Wyss Institute at Harvard University, Boston, MA

3:30 PM - 3:40 PM
**Defining Circadian Rhythm-dependent Programs in Cultured Primary Human Hepatocytes and Their Implications for Chronopharmacology**
Sandra March1, Niketa Nerurkar 1, Linda Andrus3, Liliana Mancio-Silva 3, Charlie Whittaker1, Charles Rice3, and Sangeeta Bhatia1
1MIT, Cambridge, MA, 2Rockefeller University, New York, NY, 3Institute Pasteur, Paris, France

3:40 PM - 3:50 PM
**Adaptive Biohybrid Pump-bots with Flow Loop Feedback**
Zhengwei Li1, William Ballance2, Shrey Patel1, Roger Kamm3, Hyunjoon Kong1, and Taher Saif2
1University of Illinois at Urbana-Champaign, Urbana, IL, 2University of Illinois at Urbana Champaign, Urbana, IL, 3Massachusetts Institute of Technology, Cambridge, MA

3:50 PM - 4:00 PM
**Low Intensity Vibration May Accelerate CAR T Cell Biomanufacturing for Cancer Immunotherapy**
Sishir Pasumarthy1, Steven Crimarco1, Chanpreet Singh1, Clinton Rubin1, and Mei Lin Chan1
1Stony Brook University, Stony Brook, NY

4:00 PM - 4:15 PM
**Session Q&A**

Track: Nano and Micro Technologies

**Micro and Nano Technologies in Diagnostics - I**

3:00 PM - 3:10 PM
**Ultrasensitive molecular diagnostics with optofluidic devices**
Holger Schmidt1
1UC Santa Cruz, Santa Cruz, CA

3:10 PM - 3:20 PM
**Engineering Volatile-releasing Nanosensors to Enable Respiratory Disease Monitoring via Breath Analysis**
Leslie Chan1, Melodi Anahtar1, Ta-Hsuan Ong2, Kelsey Hern1, Roderick Kunz2, and Sangeeta Bhatia1
1Massachusetts Institute of Technology, CAMBRIDGE, MA, 2MIT Lincoln Laboratory, Lexington, MA

3:20 PM - 3:30 PM
**An Integrated Dielectrophoresis -Trapping and Nanowell Transfer Approach to Enable Double-Sub-Poisson Single-Cell RNA-Sequencing**
ZHILIANG BAI1,2, Yanxiang Deng1, Dongjoo Kim1, and Rong Fan1
1Yale University, NEW HAVEN, CT, 2Tianjin University, Tianjin, China, People's Republic of
3:30 PM - 3:40 PM

**A Microfluidic Platform Incorporating Plasma Separation and Active Mixing for Biomarker Analysis in Microliter Sample of Whole Blood**

Alan M. Gonzalez-Suarez, Yong-Duk Han, William A. Carey, Gulnaz Stybayeva, and Alexander Revzin

Mayo Clinic, Rochester, MN

3:40 PM - 3:50 PM

**Spatial Exosome Quantification in Micro-scaled Organized Neurite Networks**

Zeynep Malkoc, Stephanie E McCalla, and Anja Kunze

Montana State University, Bozeman, MT

Track: Bioinformatics, Computational and Systems Biology

**Systems Approaches to Therapy, Therapeutics, and Precision Medicine**

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3:00 PM - 3:10 PM

**A Personalized Approach to Evaluate Antibody-Fc Receptor Activation Post Vaccination**


University of Michigan, Ann Arbor, MI, University of Melbourne, Parkville, Australia, Ministry of Public Healthy, Bangkok, Thailand, Mahidol University, Bangkok, Thailand, Armed Forces Research Institute of Medical Sciences, Bangkok, Thailand, Burnet Institute, Melbourne, Australia, Monash University Central Clinical School, Melbourne, Australia, University of Melbourne, Melbourne, Australia

3:10 PM - 3:20 PM

**Computational Prediction of Cleavage Sites For SARS-CoV-2 Spike Protein by Cysteine Cathepsins**

Hannah Song, Sophia Upshaw, Maggie Lee, Jiabei Yang, Tiffanie Leeman, Akhil Kullkarni, Keval Bollavaram, and Manu Platt

Georgia Institute of Technology, Atlanta, GA

3:20 PM - 3:30 PM

**Computational Modeling of Gut-Bone Axis and Implications of Butyrate Treatment on Osteoimmunology**

Mohammad Aminul Islam, Carley V. Cook, Brenda J. Smith, and Ashlee Ford Versypt

Oklahoma State University, Stillwater, OK

3:30 PM - 3:40 PM

**An Optimal Control Theoretic Approach to Engineering Robust Natural Killer Cells (Invited)**

Sahak Makaryan and Stacey Finley

University of Southern California, Los Angeles, CA

3:40 PM - 3:50 PM

**Modeling The Global Signaling State Changes During AXL Activation in Erlotinib-Resistant Lung Cancer**

Marc Creixell, Jacqueline Gerritsen, Scott Taylor, Forest White, and Aaron Meyer

UCLA, Los Angeles, CA, MIT, Cambridge, MA

3:50 PM - 4:00 PM

**Multiscale analysis of circulatory shock: a new approach to pathophysiology and therapy**

Geert Schmid-Schönbein, Federico Aletti, Rafi Mazor, Fernando dos Santos, Joyce Li, and Erik Kistler

University of California San Diego, La Jolla, CA

4:00 PM - 4:15 PM

Session Q&A

BMES 2020 Virtual Annual Meeting.