5th Annual
Engineering in Medicine Symposium

THURSDAY, 02.18.2021 | 10:30AM - 5:30PM EST
OPENING (Listed times are in EST)

10:30  Opening Remarks

- Mary C. Boyce, PhD
  Dean, Fu Foundation School of Engineering and Applied Science and Morris A. and Alma Schapiro Professor
- Shih-Fu Chang, PhD
  Senior Executive Vice Dean, Fu Foundation School of Engineering and Applied Science and Richard Dicker Professor
- Anil K. Rustgi, MD
  Interim Executive Vice President and Dean of the Faculties of Health Sciences and Medicine, Vagelos College of Physicians and Surgeons; Director of the Herbert Irving Comprehensive Cancer Center, Columbia University Irving Medical Center (CUIMC)

10:55  Welcome from Symposium Chair

Christoph Juchem, PhD  Associate Professor, Biomedical Engineering and Radiology (Physics); Director, MR SCIENCE Laboratory

SESSION 1: HEART & LUNGS

11:00  Remarks from the Session Chair

Andrew F. Laine, PhD
Percy K. and Vida L. W. Hudson Professor of Biomedical Engineering and Radiology (Physics); Director, Heffner Biomedical Imaging Laboratory

11:02  “Ex Vivo Repair of Human Lungs for Transplantation”

Gordana Vunjak-Novakovic, PhD
University and Mikati Foundation Professor of Biomedical Engineering and Medical Sciences; Director, Laboratory for Stem Cells and Tissue Engineering

11:14  “Imaging-based Approaches to Cardiopulmonary Disease”

R. Graham Barr, MD, DrPH
Hamilton Southworth Professor of Medicine, Professor of Epidemiology, Chief, Division of General Medicine

11:26  “New Tools from Engineering for Imaging-guided Cardiac Care”

Andrew Einstein, MD, PhD
Associate Professor of Medicine (in Radiology); Director of Nuclear Cardiology, Cardiac CT, and Cardiac MRI, Director of the Advanced Cardiac Imaging Fellowship, CUIMC

11:38  “Functional and Structural Durability of Bioprosthetic Valves”

Giovanni Ferrari, PhD
Associate Professor of Surgical Sciences, Department of Surgery; Director, Cardiothoracic Surgery Research; Director, Columbia Biobank for Translational Science (CBTS)

11:50  SESSION 1 Q&A

12:00  Break (10 min.)

SESSION 2: BRAIN

12:10  Remarks from the Session Chair

Elizabeth M. C. Hillman, PhD
Herbert and Florence Irving Professor at the Zuckerman Institute and Professor of Biomedical Engineering and Radiology (Physics); Director, Laboratory for Functional Optical Imaging

12:12  “Neurostimulation in Psychiatric Disorders”

Diana Martinez, MD
Professor of Psychiatry, CUIMC

12:24  “Brain-controlled Assistive Hearing Technologies”

Nima Mesgarani, PhD
Associate Professor, Electrical Engineering; Director, Neural Acoustic Processing Laboratory

12:36  “Controversial Stimuli: Pitting Neural Networks Against Each Other as Models of Human Visual Recognition”

Nikolaus Kriegeskorte, PhD
Professor of Psychology and Neuroscience; Director of Cognitive Imaging; Principal Investigator at Columbia’s Zuckerman Institute

12:48  “Magnetic Resonance Research from Bench to Bedside”

Christoph Juchem, PhD
Associate Professor, Biomedical Engineering and Radiology (Physics); Director, MR SCIENCE Laboratory

13:00  SESSION 2 Q&A

13:10  Break (10 min.)
SESSION 3: CANCER

13:20 Remarks from the Session Chair
Elham Azizi, PhD
Assistant Professor; Biomedical Engineering; Herbert and Florence Irving Assistant Professor, Cancer Data Research (in the Herbert and Florence Irving Institute for Cancer Dynamics and in the Herbert Irving Comprehensive Cancer Center)

José L. McFaline-Figueroa, PhD
Assistant Professor; Biomedical Engineering; Director, The Chemical Genomics Laboratory

13:34 “Synthetic Biology: From Engineered Bacteria Gene Circuits to Cancer Therapy”
Tal Danino, PhD
Associate Professor; Biomedical Engineering; Director, Synthetic Biological Systems Laboratory

13:46 “Predicting Response to Immune Checkpoint Inhibitors”
Simon Tavaré, PhD
Professor, Biological Sciences and Statistics; Herbert and Florence Irving Director, Irving Institute for Cancer Dynamics

13:58 “Genetics and Mechanisms of Chemotherapy Resistance in Acute Lymphoblastic Leukemia”
Adolfo A. Ferrando, MD, PhD
Professor of Pediatrics, Pathology and Cell Biology and Systems Biology, Institute for Cancer Genetics

14:10 SESSION 3 Q&A

14:20 Break (10 min.)

SESSION 4: MUSCULOSKELETAL SYSTEM

14:30 Remarks from Session Chair
Clark T. Hung, PhD
Professor of Biomedical Engineering and Orthopedic Sciences (in Orthopedic Surgery); Director, Cellular Engineering Laboratory

14:32 “Diffusion Tensor MR Imaging for Evaluation of the Growth Plate (Physis) and Adjacent Metaphysis”
Diego Jaramillo, MD, MPH
Professor of Radiology, CUIMC; Director of MRI at Morgan Stanley Children’s Hospital; Vice Chair of Diversity

14:44 “Inflammation Alters Cellular Mechanobiology in Intervertebral Disc Degeneration”
Nadeen Chahine, PhD
Associate Professor of Biomechanics (in Orthopaedic Surgery) and Biomedical Engineering

14:56 “Insights into Fracture Risk from New Imaging and Bioengineering Techniques”
Marcella Walker, MD
Associate Professor of Medicine, Vagelos College of Physicians and Surgeons

15:08 “Decoding Synovial Joint Regeneration in Zebrafish”
Joanna Smeeton, PhD
H.K. Corning Assistant Professor Rehabilitation and Regenerative Medicine Research (in Rehabilitation and Regenerative Medicine) (in Genetics and Development), CUIMC

15:20 SESSION 4 Q&A

15:30 Break (5 min.)

SESSION 5: DOCTORAL ALUMNI Awardee Presentations
2020 Recipients of the Yuen-huo Hung & Chao-chin Huang Award in Biomedical Engineering

15:35 Remarks from Session Chair
Clark T. Hung, PhD
Professor of Biomedical Engineering and Orthopedic Sciences (in Orthopedic Surgery); Director, Cellular Engineering Laboratory

15:40 “Focused Ultrasound-induced Blood-brain Barrier Opening”
Maria Eleni (Marilena) Karakatsani, PhD (Columbia BME PhD ’20)
Associate Scientist, Regeneron Pharmaceuticals

15:50 “Pulsed Electromagnetic Field Stimulation as a Non-Invasive Strategy to Promote Cartilage Repair and Regeneration”
Robert M. Stefani, PhD (Columbia BME PhD ’20)
Lead Reviewer, U.S. Food & Drug Administration (FDA)

16:00 SESSION 5: Q&A

16:05 Closing Announcements
X. Edward Guo, PhD
Chair and Stanley Dicker Professor of Biomedical Engineering; Professor of Medical Sciences (in Medicine)
SESSION 6: INTERACTIVE DISCUSSION & NETWORKING (Attendance by invitation only)

16:10 Remarks from the Session Chair
X. Edward Guo, PhD
Chair and Stanley Dicker Professor, Biomedical Engineering; Professor, Medical Sciences (in Medicine); Director, Bone Bioengineering Laboratory

16:15 Panel Discussion

Henry Hess, PhD
Chair of Graduate Studies; Professor, Biomedical Engineering; Director, Laboratory for Nanobiotechnology and Synthetic Biology

Maria Eleni (Marilena) Karakatsani, PhD (Columbia BME PhD ’20)
Associate Scientist, Regeneron Pharmaceuticals

Aaron Kyle, PhD
Senior Lecturer, Biomedical Engineering Design; Director, Undergraduate Studies in Biomedical Engineering

Helen H. Lu, PhD
Percy K. and Vida L. W. Hudson Professor, Biomedical Engineering; Director, Biomaterials & Interface Tissue Engineering Laboratory

Katherine Reuther, PhD
Senior Lecturer, Biomedical Engineering; Director, Master’s Studies in Biomedical Engineering

Paul Sajda, PhD
Professor, Biomedical Engineering, Electrical Engineering and Radiology (Physics); Director, Laboratory for Intelligent Imaging & Neural Computing (LIINC)

Robert M. Stefani, PhD (Columbia BME PhD ’20)
Lead Reviewer, U.S. Food & Drug Administration (FDA)

16:45 Networking

VIRTUAL NETWORKING AREAS
- Coffee Corner
- Biomedical Imaging
- Biomechanics
- Cell & Microbiology
- Neuroengineering
- Systems Biology
- Tissue Engineering

17:30 Adjourn