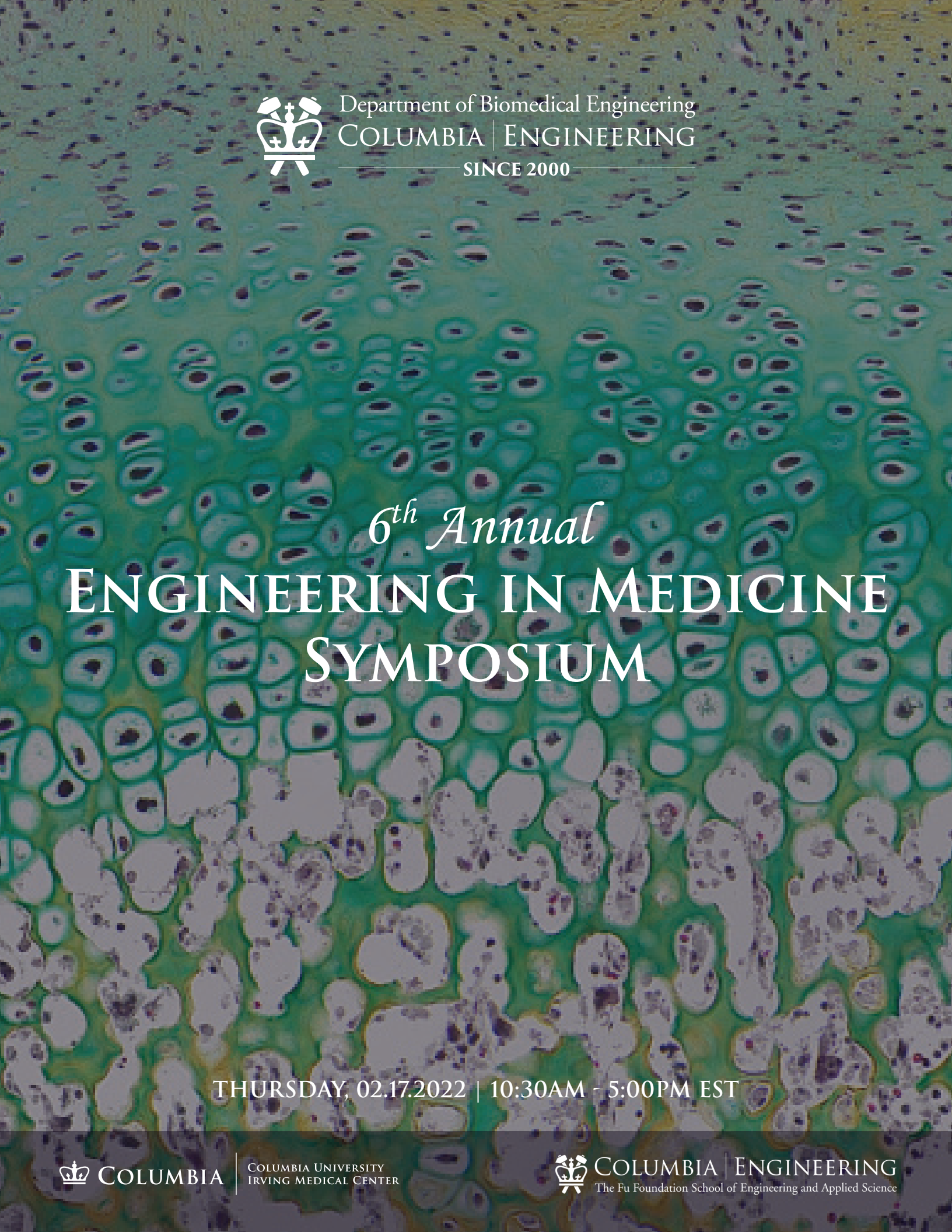
Department of Biomedical Engineering
COLUMBIA | ENGINEERING
SINCE 2000
6th Annual
ENGINEERING IN MEDICINE
SYMPOSIUM
THURSDAY, 02.17.2022 | 10:30AM - 5:00PM EST
COLUMBIA | COLUMBIA UNIVERSITY IRVING MEDICAL CENTER
COLUMBIA | ENGINEERING
The Fu Foundation School of Engineering and Applied Science

OPENING *(Listed times are in EST)*

10:30 **Opening Remarks**

Shih-Fu Chang, PhD
Interim Dean, The Fu Foundation School of Engineering and Applied Science at Columbia University 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)

10:44 **Welcome from Symposium Chair**

Clark T. Hung, PhD *Professor of Biomedical Engineering and Orthopedic Sciences (in Orthopedic Surgery); Director, Cellular Engineering Laboratory, Columbia University*

SESSION 1: HEART & LUNGS

10:50 **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, Columbia University*

10:52 **"Machine learning applications in cardiology"**

Pierre Elias, MD *Cardiology Fellow, Columbia University Vagelos College of Physicians and Surgeons and NewYork-Presbyterian*

11:04 **"Engineering human tissues for medical impact"**

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

11:16 **"Engineering approaches to treat lung injury"**

Meghan Pinezich, *PhD Candidate, Laboratory for Stem Cells and Tissue Engineering, Columbia University; Program Manager, BiomedX*

11:28 **"Studying the pathophysiology of Multisystem Inflammatory Syndrome in children via use of an induced pluripotent stem cell (iPSC) cardiomyocyte and cardiac fibroblast model"**

Mark Gorelik, MD, *Assistant Professor of Pediatrics, Division of Rheumatology, Allergy and Immunology, CUIMC*

11:40 **SESSION 1 Q&A**

11:50 **Break (10 min.)**

SESSION 2: BRAIN

12:00 **Remarks from the Session Chair**

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

12:02 **"Examining the neural mechanism of apathy in neurodegenerative diseases"**

Yunglin (Elaine) Gazes, PhD, *Assistant Professor, Cognitive Neuroscience Division, Neurology Department, CUIMC*

12:14 **"Noradrenergic neuromodulation to enhance sensory processing"**

Qi Wang, PhD, *Associate Professor of Biomedical Engineering; Director of Neural Engineering and Control Laboratory, Columbia University*

12:26 **"Focused ultrasound in neuromodulation"**

Elisa Konofagou, PhD, *Robert and Margaret Hariri Professor of Biomedical Engineering and Professor of Radiology; Director of the Ultrasound and Elasticity Imaging Laboratory (UEIL), Columbia University*

12:42 **"Building customizable protein-based sensors to diagnose and treat disease"**

Anum Glasgow, PhD, *Assistant Professor of Biochemistry and Molecular Biophysics, CUIMC*

12:54 **SESSION 2 Q&A**

13:04 **Break (16 min.)**

SESSION 3: CANCER

13:20 **Remarks from the Session Chair**

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

SESSION 3: CANCER *(continued)*

13:22 **"Synthetic biology: From engineered bacteria gene circuits to cancer therapy"**

Tal Danino, PhD, *Associate Professor, Biomedical Engineering; Director, Synthetic Biological Systems Laboratory, Columbia University*

13:34 **"Therapeutic nanocarriers for cancer therapy"**

Kam W. Leong, PhD, *Samuel Y. Sheng Professor of Biomedical Engineering; Director, Nanotherapeutics & Stem Cell Engineering Laboratory, Columbia University*

13:46 **"Emerging challenges in cancer and the need for engineering partnerships"**

Adam J. Bass, MD, *Professor of Medicine, Columbia University Herbert Irving Comprehensive Cancer Center, CUIMC; Founding Director, Columbia Center for Precision Cancer Medicine*

13:58 **"Emergency myelopoiesis pathways in blood regeneration and leukemia"**

Emmanuelle Passegué, PhD, *Professor of Genetics & Development, CUIMC; Director, Columbia Stem Cell Initiative*

14:10 **SESSION 3 Q&A**

14:20 **Break (10 min.)**

SESSION 4: WOMEN'S HEALTH

14:30 **Remarks from Session Chair**

Kristin M. Myers, PhD *Associate Professor of Mechanical Engineering (in Biomedical Engineering), Columbia University; Director, Myers Soft Tissue Laboratory*

14:32 **"Ovarian aging: A target for gero-protection in women"**

Yousin Suh, PhD, *Charles and Marie Robertson Professor of Reproductive Sciences, Department of Obstetrics & Gynecology, Department of Genetics & Development, Director of Reproductive Aging Program, Columbia Vagelos College of Physicians & Surgeons*

14:44 **"Dynamic cerebral autoregulation in the postpartum period: The maternal brain at risk"**

Eliza Miller, MD, MS, *Assistant Professor of Neurology, Division of Stroke and Cerebrovascular Disease, CUIMC and NewYork-Presbyterian*

14:56 **"High-speed, high-resolution optical imaging to improve breast cancer pathology workflow"**

Christine P. Hendon, PhD, *Associate Professor of Electrical Engineering. Director of the Structure Function Imaging Laboratory, Columbia University*

15:08 **"Bone microstructure in women of different racial backgrounds"**

X. Edward Guo, PhD
Chair and Stanley Dicker Professor of Biomedical Engineering; Professor of Medical Sciences (in Medicine), Columbia University; Director, Bone Bioengineering Laboratory

15:20 **SESSION 4 Q&A**

15:30 **Break (10 min.)**

SESSION 5: MUSCULOSKELETAL SYSTEM

15:40 **Remarks from Session Chair**

Nadeen Chahine, PhD, *Associate Professor of Biomedical Engineering (in Orthopaedic Surgery), Columbia University; Director, The Chahine Lab, Robert E. Carroll MD and Jane Chace Carroll Laboratories for Orthopedic Surgery*

15:42 **"Fibrocartilage stem cells in TMJ development and disease"**

Mildred Embree, DMD, *Dr. Edwin S. Robinson Assistant Professor of Dental Medicine (in Orthodontics), College of Dental Medicine, CUIMC*

15:54 **"Biomedical Engineering with motor proteins and enzymes"**

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

16:06 **"Development and regeneration of the tendon enthesis"**

Stavros Thomopoulos, PhD, *Robert E. Carroll and Jane Chace Carroll Laboratories Professor; Professor of Biomechanics (in Orthopedic Surgery and Biomedical Engineering), Columbia University; Director, Carroll Laboratories for Orthopedic Surgery*

16:18 **"Modeling tendon development and regeneration"**

Alice H. Huang, PhD
Associate Professor of Bioengineering (in Orthopedic Surgery), Columbia University

16:30 **SESSION 5: Q&A**

16:40 **CLOSING REMARKS - Symposium Zoom Webinar Adjourned**

INTERACTIVE DISCUSSION

SESSION 6: INTERACTIVE DISCUSSION & NETWORKING *(Zoom Meeting - Attendance by invitation only)*

17:00 **Remarks from the Department Chair**

X. Edward Guo, PhD
Chair and Stanley Dicker Professor of Biomedical Engineering; Professor of Medical Sciences (in Medicine), Columbia University; Director, Bone Bioengineering Laboratory

17:02 **Panel Discussion**

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

Helen Cen
Associate Director of Academic and Student Affairs, Department of Biomedical Engineering

Kristen Henlin
Assistant Director of Career Placement, Department of Biomedical Engineering

Clark T. Hung, PhD
Professor of Biomedical Engineering and Orthopedic Sciences (in Orthopedic Surgery); Director, Cellular Engineering Laboratory; Director of Master's Studies in Biomedical Engineering

Carolyn Kim
PhD Candidate in Biomedical Engineering, focusing on traumatic brain injury, Morrison Lab; Vice President, Graduate Organization of Biomedical Engineers (GoBME)

Naveed Tavakol
PhD Candidate in Biomedical Engineering, focusing on stem cells and tissue engineering, Vunjak-Novakovic Lab; President, Graduate Organization of Biomedical Engineers (GoBME)

17:30 **Virtual Networking**

Networking Areas

- Biomedical Imaging
- Biomechanics
- Cell & Microbiology
- Neuroengineering
- Systems Biology
- Tissue Engineering

18:30 **VIRTUAL MEETING ADJOURNS**

19:00 **RECEPTION *(Faculty House)***

Pictured on Cover: Engineered human cartilage-bone grafts for temporomandibular joint regeneration from Vunjak-Novakovic Lab. Image from: Chen, Wu, et al., Science Translational Medicine (2020).