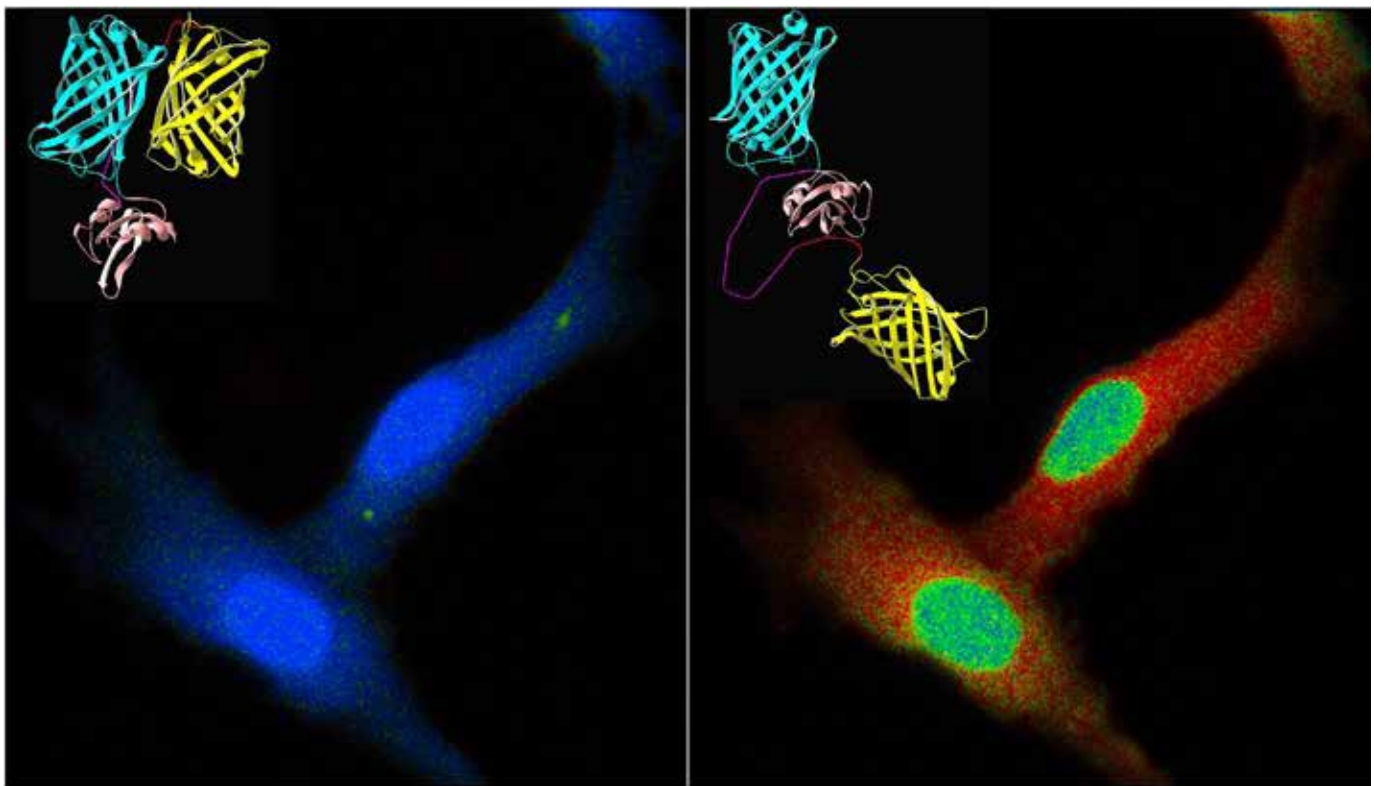


2017 Cellular and Molecular Bioengineering Conference

Hapuna Beach Prince Hotel, Kohala Coast, The Big Island of Hawaii

January 3 – 7, 2017

A Gateway Toward the Future – Imaging and Reprogramming of the Cell



-EGF

+EGF

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SAVE THE DATE

2018 Cellular and Molecular Bioengineering Conference

The Ocean Reef Club in Key Largo, Florida
January 2 – 6, 2018

BMES CMBE SPECIAL INTEREST GROUP

BIOMEDICAL ENGINEERING SOCIETY (BMES)

The Biomedical Engineering Society (BMES) is the professional society for biomedical engineering and bioengineering. Founded in early 1968, the Society now boasts more than 7,500 members and is growing.

MISSION

The Mission of the BMES is to build and support the biomedical engineering community, locally, nationally and internationally, with activities designed to communicate recent advances, discoveries, and inventions; promote education and professional development; and integrate the perspectives of the academic, medical, governmental, and business sectors.

VISION

The Vision of the Biomedical Engineering Society (BMES) is to serve as the world's leading society of professionals devoted to developing and using engineering and technology to advance human health and well-being.

BMES CELLULAR AND MOLECULAR BIOENGINEERING (CMBE) SPECIAL INTEREST GROUP

To maintain its multidisciplinary character and central research focus, the Cellular and Molecular Bioengineering Special Interest Group (CMBE-SIG) is committed to recruiting new people, new ideas, and new activities.

The CMBE-SIG brings together researchers with diverse backgrounds in scientific and clinical interests with a common goal of understanding how physical forces control biological processes and a desire to improve the practice of medicine, human and veterinary, through the results of their research.

All BMES members are welcome to join the CMBE SIG. For more information visit www.bmes.org/cmbesig.

BMES CMBE SHU CHIEN ACHIEVEMENT AWARD

The Shu Chien Achievement Award is bestowed upon an individual who has demonstrated meritorious contributions to the field of cellular and molecular bioengineering as a dedicated BMES Cellular and Molecular Bioengineering (CMBE) Special Interest Group (SIG) award. This Award will be evaluated annually and presented to an individual at the CMBE Annual Conference.

For more information visit www.bmes.org/2017bmescmbeshuchienaward.

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CMBE Journal Editor-in-Chief
Professor, Vanderbilt University

CONFERENCE WELCOME

Welcome to the 2017 BMES CMBE Annual Conference, **A Gateway toward the Future—Imaging and Reprogramming of the Cell.**

The goal of this meeting is to foster interdisciplinary interaction and to capitalize on the rapidly expanding scientific developments in several cutting-edge fields: molecular engineering, genomic editing, molecular imaging and manipulation in live cells. The main outcome of the meeting will be new strategies for the integrated application of these different technologies toward immuno-engineering and stem cell engineering for therapeutics, under the context of mechanical microenvironment.

There are three specific aims of this meeting: (1) Delineate the current status of different fields of molecular engineering, genomic editing, molecular imaging and actuation, immune and stem cell engineering, as well as mechanobiology and biomechanics. Leaders from these different fields will provide an overview of the dynamic landscape of development in their own fields as well as their visions of emerging unmet needs; (2) Brainstorm the emerging field of cellular and molecular bioengineering with a focus on integration and leveraging the strength of these different fields for therapeutic applications. (3) Foster the free exchange of information across regions around the Pacific Rim in order to jointly push forward the boundaries of engineering and science in CMBE by leveraging the strength from different regions.

We believe that this conference is the first of its kind and will create a gateway for the next generation of bioengineers and will be a vehicle toward future development in the midst of an amazing convergence of multiple cutting-edge areas in engineering technology and biomedical science.

Peter Yingxiao Wang & Michael King



Peter Yingxiao Wang
CONFERENCE CO-CHAIR
Professor of Bioengineering
UC San Diego



Michael King
CONFERENCE CO-CHAIR
Professor and Chair
Vanderbilt University

IMPORTANT INFORMATION

ATTIRE

Business casual attire is appropriate for the CMBE Conference. Session rooms can sometimes be cool, so it might be helpful to grab a sweater when you leave your hotel room.

BADGES

Attendees must wear their 2017 CMBE Conference name badge to all conference functions. Full registration name badges permit access to all sessions, and conference meals.

Guest gala badges can be purchased at the registration desk by 1:00pm for family members and guests. Guest gala badge permits access to the gala dinner only.

Guest meal ticket badges can be purchased at the registration desk for family members and guests, for access to all breakfasts, the welcome reception, and the gala dinner. Meal tickets must be purchased by 1:00pm Wednesday, January 4. More information will be available at registration.

CELL PHONE USAGE

Out of consideration for your CMBE Conference colleagues and to ensure a quiet environment in sessions, all cellular phones should be turned off or set to vibrate. Please leave the general session area to conduct calls. Thank you for your cooperation

EVENING EVENTS

The **Welcome Reception** is Wednesday, January 4, 6:00pm—7:30pm, Poolside.

The **Gala Dinner, sponsored by the University of Missouri College of Engineering**, is Thursday, January 6, 6:00pm—9:30pm, at the Courtyard.

IMPORTANT: Drink tickets are issued to full registrants as well as guest gala and meal ticket holders, one for the Welcome Reception and two for the Gala Dinner. Please don't lose your drink tickets, as they cannot be replaced. GALA DINNER TICKETS MUST BE PURCHASED BY 1:30PM THURSDAY, JANUARY 5. DINNER TICKETS CANNOT BE PURCHASED AT THE DINNER.

FAMILY POLICIES

Note that if family members attend any portion of the 2017 CMBE Conference (e.g. sessions, meals, or paid activities), they must be paid registrants of the conference, and wear a conference badge.

Meals: Anyone entering the conference meal areas must be registered and show a 2017 CMBE Conference badge. Meal tickets can be purchased at the registration desk .

Sessions: The presence of young children at the sessions is discouraged because this may distract conference attendees.

IMPORTANT INFORMATION

HOTEL

Hapuna Beach Prince Hotel
62-100 Kauna'oa Drive
Kohala Coast, Hawaii 96743
Phone: (808) 880-1111
Fax: (808) 880-3142

Hapuna Beach Prince Hotel is located at beautiful white sand Hapuna Beach, which is on the sunny Kohala Coast of Hawaii's Big Island (official name: Hawaii Island).

HOTEL ACTIVITIES

Experience the Big Island in true Hawaiian style, with the endless amount of activities and events at the Hapuna Beach Prince Hotel and its sister property, Mauna Kea Beach Hotel. Enjoy the beach, pool, tennis, spa & salon, golf or the fitness center. For more information:

www.princeresortshawaii.com/hapuna-beach-prince-hotel/recreation

INTERNET

Outside of your guest room, complimentary Wi-Fi is available in the hotel lobby first and second floors, near the pool Beach Bar area, and in the meeting room, Makia Salon, where the general sessions will take place.

WEATHER

January weather on the Kohala Coast is very warm. Average temperatures are high 80°F and low 60°F

POSTER SESSIONS & VIEWINGS

Poster viewings are scheduled throughout the conference starting at 10:00am Wednesday, January 4, in the Mauka Salon next to the General Session room. Hours are as follows:

| | Poster Viewing | Poster Session |
|----------------------|----------------|----------------|
| Group A | | |
| Wednesday, January 4 | 10am—1:30pm | 2pm—4pm |
| Thursday, January 5 | 7am—1pm | |
| Group B | | |
| Friday, January 6 | 7am—3:30pm | 4pm—6pm |

REGISTRATION

| Location | Makai Salon |
|----------------------|---------------------------------|
| Tuesday, January 3 | 2:00pm—6:00pm |
| Wednesday, January 4 | 7:00pm—1:00pm 2:00pm—6:00pm |
| Thursday, January 5 | 7:00am—1:30pm 4:00pm—12:30pm |
| Friday, January 6 | 7:00am—12:30pm 4:00pm—6:30pm |
| Saturday, January 7 | 7:00am—1:00pm |

GETTING AROUND

There are a number of ways to get around the island.

- Car Rentals
- Pre-arranged Ground Transportation
- Taxi Cabs
- Shuttle Services

For more information:

www.hawaii.gov/koa/ground-transportation

SCHEDULE AT A GLANCE

| TUESDAY, JANUARY 3, 2017 | | |
|-----------------------------------|--|-------------|
| 2:00 pm – 6:00 pm | Registration | Makai |
| WEDNESDAY, JANUARY 4, 2017 | | |
| 7:00 AM – 1:00 PM | Registration | Makai |
| 7:00 am – 8:00am | Continental Breakfast | Breezeway |
| 7:45 am – 8:00am | Welcome/Introduction | Makai |
| 8:00 am – 10:00 am | SESSION I – GENETIC AND MOLECULAR ENGINEERING | Makai Salon |
| 10:00 am – 10:20 am | Networking Coffee Break | Breezeway |
| 10:20 am – 1:00 pm | SESSION II – IMMUNO-ENGINEERING AND MECHANOMICROENVIRONMENT FOR DISEASES | Makai Salon |
| 1:00 pm – 2:00 pm | Break and Poster Viewing | Mauka Salon |
| 2:00 pm – 4:00 pm | Poster Session w/Refreshments – Group A | Mauka Salon |
| 2:00 pm – 6:00 pm | Registration | Makai |
| 4:00 pm – 6:30 pm | Rising Stars (talks selected from young investigators) | Makai Salon |
| 6:30 pm – 8:00 pm | Welcome Reception | Poolside |
| THURSDAY, JANUARY 4, 2017 | | |
| 7:00 am – 1:30 pm | Registration | Makai |
| 7:15 am – 8:00 am | Continental Breakfast | Breezeway |
| 8:00 am – 10:05 am | SESSION III – FLUROESCENT PROTEIN ENGINEERING AND LIVE CELL IMAGING | Makai Salon |
| 10:05 am – 10:20 am | Networking and Coffee Break | Breezeway |
| 10:20 am – 1:00 pm | SESSION IV – STEM CELL ENGINEERING AND MECHANOMICROENVIRONMENT FOR REGENERATIVE MEDICINE | Makai Salon |
| 1:00 pm – 4:30 pm | Afternoon Break and Poster Viewing | Mauka Salon |
| 1:00 pm – 3:00 pm | Industry Exhibitions/Demos | Makai Salon |
| 4:00 pm – 6:30 pm | Registration | Makai Salon |
| 4:30 pm – 5:30 pm | NSF Grant Writing Workshop | Makai Salon |
| 6:00 pm – 9:30 pm | Gala Dinner | Courtyard |
| Friday, January 6, 2017 | | |
| 7:00 am – 12:30 pm | Registration | Makai |
| 7:15 am – 8:00 am | Continental Breakfast | Breezeway |
| 8:00 am – 10:00 am | SESSION V – GENOMIC ENGINEERING AND EDITING | Makai Salon |
| 10:00 am – 10:20 am | Networking and Coffee Break | Breezeway |
| 10:20 am – 12:20 pm | Special Speakers, Awarded Fellows, Student Talks | Makai Salon |
| 12:20 pm – 1:20 pm | Lunch w/Leaders (by invitation only) | Koa Salon |
| 12:20 pm – 4:00 pm | Afternoon Break and Individual Collaboration Discussions (Coffee provided) | Breezeway |
| 4:00 pm – 6:30 pm | Registration | Makai |
| 4:00 pm – 6:00 pm | Poster Session w/Refreshments – Group B | Mauka Salon |
| 6:00 pm – 8:00 pm | Panel Discussion – Cooperation around the Pacific Rim for the future of CMBE | Makai Salon |
| Saturday, January 6, 2017 | | |
| 7:00 am – 1:30 pm | Registration | Makai |
| 7:15 am – 8:00 am | Continental Breakfast | Breezeway |
| 8:00 am – 10:20 am | SESSION VI MOLECULAR ACTIVATION AND MANIPULATION IN LIVE CELLS | Makai Salon |
| 10:20 am – 10:40 am | Networking and Coffee Break | Breezeway |
| 10:40 am – 1:00 pm | SESSION VII – MOLECULAR/CELLULAR ENGINEERING INTEGRATED WITH THE EXTRACELLULAR MATRIX AND ENVIRONMENT | Makai Salon |
| 12:40 pm – 1:00 pm | Awards Ceremony - Closing Comments - Collect Surveys | Makai Salon |

LEGEND

| | | | | |
|----------------------------|----------------------------|------------------|--------------------|------------------|
| Registration | Sessions I - VII | Poster Sessions | Rising Stars | Evening Events |
| Industry Exhibitions/Demos | NSF Grant Writing Workshop | Special Speakers | Lunch with Leaders | Panel Discussion |

PROGRAM

TUESDAY/WEDNESDAY

Tuesday, January 3, 2017

- 2:00 p.m. Arrival and registration
6:00 p.m. CMBE Council meeting

Wednesday, January 4, 2017

- 7:00 a.m. Continental breakfast
7:45 Welcome/introduction

8:00-10:00 **Session I – Genetic and Molecular Engineering (Session Chair Song Li)**

- 8:00-8:40 **Keynote – George Georgiou, UT Austin**
Unanticipated Facets of Human Adaptive Immunity Revealed by Molecular-Level Analysis of the Serum Antibody Repertoire

- 8:40-9:00 **Huimin Zhao, UI Urbana-Champaign**
Genome Engineering: An Emerging Frontier in Synthetic Biology

- 9:00-9:20 **Jennifer Cochran, Stanford University**
Tumor Targeting and Immunotherapy Enabled By an Engineered Peptide-Fc Fusion

- 9:20-9:40 **Jie Sun, Memorial Sloan Kettering Cancer Center**
Engineered Proteins with Sensing and Actuating Modules for Automated Reprogramming of Cellular Functions

- 9:40-10:00 **William Bentley, University of Maryland**
Synthetic Biology and Biofabrication for Conveyance of Molecular Communication

- 10:00-10:20 Networking and coffee break

10:20-1:00 **Session II – Immuno-Engineering and MechanoMicroenvironment for Diseases (Session Chair Brent Hoffman)**

- 10:20-11:00 **Keynote – Justin Eyquem, Memorial Sloan Kettering Cancer Center**
CRISPR/Cas9 CAR delivery enhances CAR T cell-mediated tumor eradication

- 11:00-11:20 **Cameron Turtle, Fred Hutchinson Cancer Research Center**
CD19-targeted CAR-T cell therapy for adult B cell malignancies

- 11:20-11:40 **Cheng Dong, Penn State University**
Immune Cell-mediated Nanoparticles and Drug Delivery Across the Blood-Brain Barrier Targeting Brain Tumors

- 11:40-12:00 **Special Speaker Michael Jensen, University of Washington School of Medicine**
Enhancing the Synthetic IQ of CAR T Cells

- 12:00-12:20 **Cheng Zhu, Georgia Institute of Technology**
Microenvironment induced impairments of T-cell mechanosensing of melanoma antigens

PROGRAM

WEDNESDAY

12:20-12:40

Lance Kam, Columbia University
T cell Mechanobiology

12:40-1:00

Junsang Doh (Korea), Pohang University of Science and Technology
Biophysical cues regulating T cell extravasation

1:00-2:00

Break and Poster Viewing

2:00-4:00

Poster session—Group A

4:00-6:30

Rising Stars (talks selected from young investigators) (session chair Eric Darling)

Allen Liu, University of Michigan, Ann Arbor

Repurposing bacterial mechanosensitive channel for cell mechanics and cell migration study

Jenny Jiang, University of Texas at Austin

Systems Immunology Approach to Engineering Immunity to Malaria in Children

Ngan Huang, Stanford University

Engineering Pre-Vascularized Skeletal Muscle with Physiologically-Relevant Cellular Organization for Treatment of Volumetric Muscle Loss

Jason Gleghorn, University of Delaware

Connecting mechanical and molecular regulators of lung development

Jianping Fu, University of Michigan, Ann Arbor

Mechanobiology, Pluripotent Stem Cells, and early Embryonic development

Evan Scott, Northwestern University

Tailoring nanostructure morphology for enhanced targeting of immune cells in atherosclerosis without the use of targeting ligands

Brandon DeKosky, National Institute of Allergy and Infectious Diseases

Paired Heavy and Light Chain Antibody Repertoire Analysis to Accelerate HIV Vaccines

Penney Gilbert, University of Toronto

Three-dimensional culture models to study satellite cell-mediated skeletal muscle repair

Rong Fan, Yale University

Single Cell Proteomic Analysis of CAR T Cell Activation Reveals a Complex Polyfunctional Response and Significant Interpatient Heterogeneity

Qiaobing Xu, Tufts University

Efficient Delivery of Genome-Editing Proteins using Bioreducible Lipid Nanoparticles

Tzahi Cohen-Karni, Carnegie Mellon University

3D nanosensors for electrical interrogations of engineered micro-tissues

Megan McCain, University of Southern California

Micromolded Gelatin Hydrogels Enable Maturation of Engineered Skeletal Myotubes

PROGRAM

WEDNESDAY/THURSDAY

- 4:00-6:30 **Chelsey Simmons, University of Florida**
Pancreatic Tumor Microenvironments Reveal Immune-Independent Remodeling
- Stephanie Fraley, University of California San Diego**
3D Matrix Confinement Triggers Vascular Mimicry Through a Conserved Migration and Transcriptional Response
- Kareen Coulombe, Brown University**
Optimization of a Collagen-Fibrin Matrix for Human iPSC-derived Cardiac Tissue Formation and Function
- 6:30 p.m. Welcome reception

Thursday, January 5, 2017

- 7:15 a.m. Continental breakfast
- 8:00-10:05 **Session III – Fluorescent Protein Engineering and Live Cell Imaging (Dedicated in honor of Prof. Roger Y. Tsien and his contributions) (Session Chair Fan Yuan)**
- 8:00-8:05 Opening Remarks, Shu Chien, UC San Diego.
- 8:05-8:45 **Keynote Atsushi Miyawaki (Japan), Riken Brain Science Institute**
Genetically encoded tools based on fluorescent proteins
- 8:45-9:05 **Jin Zhang, UC San Diego**
Illuminating Biochemical Activity Architecture of the Cell
- 9:05-9:25 **Rob Campbell, University of Alberta**
Molecular engineering of a new generation of fluorescent reporters and actuators of cell signalling
- 9:25-9:45 **Peter Yingxiao Wang, UC San Diego**
Molecular Imaging and Cellular Manipulation in Immuno-engineering
- 9:45-10:05 **Ed Guo, Columbia University**
Muscle-like “beating” osteocytes under loading enhance vesicle release to mediate bone formation
- 10:05-10:20 Networking and coffee break
- 10:20-1:00 **Session IV – Stem Cell Engineering and MechanoMicroenvironment for Regenerative Medicine (Session Chair Elizabeth Loba)**
- 10:20-11:00 **Keynote Shu Chien, UC San Diego**
FRET Imaging of Nucleosome Epigenetics in Single Cells
- 11:00-11:20 **Hanjoong Jo, Emory/Georgia Tech**
Knockdown of mechanosensitive miRNA cluster—miR-106b~25 decreases endothelial proliferation and prevents atherosclerosis in ApoE^{-/-} mice

PROGRAM

THURSDAY/FRIDAY

| | |
|----------------|---|
| 11:20-11:40 | CT Lim (Singapore), National University of Singapore <i>Mechanobiology of Collective Cell Migration in Epithelial Cell Sheets</i> |
| 11:40-12:00 | Sanjay Kumar, University of California, Berkeley <i>There's a time and a place: Biological discovery with spatially and temporally engineered materials</i> |
| 12:00-12:20 | Adam Engler, UC San Diego <i>Improving on "Disease-in-a-dish:" How Engineered Niche Induce Novel Phenotypes from induced Pluripotent Stem Cells (iPSCs)</i> |
| 12:20-12:40 | Deborah Leckband, University of Illinois <i>Intercellular Force Transduction Activates a Mechanically Sensitive Signaling Network</i> |
| 12:40-1:00 | Josh Wu (Chinese Taipei), National Cheng Kung University <i>Microenvironmental inductions of adipose-derived stem cells for regenerative medicine</i> |
| 1:00-4:30 | Afternoon Break and poster viewing |
| 1:00-3:00 | Industry Exhibitions/Demos |
| 4:30-5:30 | NSF Grant Writing Workshop Dr. David Paul Fyhrie, CMMI, NSF <i>Seeking an Award from NSF/ENG/CMMI</i> |
| 6:00-9:30 p.m. | Gala dinner, Shu Chien Achievement Award, Awardee Tony Mikos, Rice University <i>Award Speech: Biomaterials for Tissue Engineering</i> |

Friday, January 6, 2017

| | |
|-------------|---|
| 7:15 a.m. | Continental breakfast |
| 8:00-10:00 | Session V – Genomic Engineering and Editing (Session Chair Mike King) |
| 8:00-8:40 | Keynote Dana Carroll, University of Utah <i>Genome Editing with Programmable Nucleases</i> |
| 8:40-9:00 | Prashant Mali, UC San Diego <i>De novo mapping of genetic interactions via combinatorial CRISPR-Cas9 screens</i> |
| 9:00-9:20 | Charlie Gersbach, Duke University <i>Genome and Epigenome Editing for Gene Therapy and Cell Programming</i> |
| 9:20-9:40 | Amy Wagers, Harvard University <i>Therapeutic gene editing in muscles and muscle stem cells</i> |
| 9:40-10:00 | Yingxin Qi (China), Shanghai Jiao Tong University <i>Nuclear Envelope Proteins Modulate Vascular Remodeling in Hypertension</i> |
| 10:00-10:20 | Networking and coffee break |

PROGRAM

FRIDAY

10:20-12:20

Special Speakers/Awarded Fellow/Student Talk (Session Chair Roland Kaunas)

Special Speeches:

Xunbin Wei, Shanghai Jiaotong University

In vivo trapping of cells in living animals by infrared optical tweezers

Ankur Singh, Cornell University

Ex vivo engineered immune organoids for controlling the kinetics of B cell differentiation

Awarded fellow/student talk

Jevgenia Zilberman-Rudenko, Oregon Health and Science University

Dynamics of blood flow and thrombus formation in a multi-bypass microfluidic network

Andy LaCroix, Duke University

The role of lamellipodial protrusions and stress fibers in vinculin mechanotransduction

Katheryn Rothenberg, Duke University

Force Activated Protein Dynamics in Directed Cell Migration

Kabir Dhada, University of Texas at Austin

Hybrid Polymer-Gold Nanoshell for Live Stem Cell Imaging

Yiqian Wu, University of California, San Diego

In-Situ Coupling between Kinase Activities and Protein Dynamics within Single Focal Adhesions

Rachel Nordberg, University of North Carolina Chapel Hill

Corin: A Mediator of Osteogenic/Angiogenic Crosstalk Mechanisms

Kelsey Gray, University of Maryland

Biomimetic Matrices for Blood-brain Barrier-on-chip: Potential of Microelectronics

Michael Mitchell, MIT

Mechanical Amplification Of Tumor Death Using Polymeric Nanoparticles

Luo Gu, Harvard University

Directing Stem Cell Fate by Tuning Matrix Stress Relaxation

Karin Wang, Harvard University

Unjamming to initiate collective migration in breast cancer

12:20-1:20

Lunch with Leaders (keynote speakers, student/fellow awardees, rising stars)

12:20-4:00

Afternoon Break, individual collaboration discussions, coffee provided

4:00-6:00

Poster session—Group B

6:00-8:00

Panel Discussion on Cooperation around the Pacific Rim for the future of CMBE:

Integrating Engineering Technology and Biomedical Science for Therapeutic Applications

PROGRAM

SATURDAY

Saturday, January 7, 2017

| | |
|-------------|--|
| 7:15 a.m. | Continental breakfast |
| 8:00-10:20 | Session VI – Molecular Activation and Manipulation in Live Cells (Session Chair Leo Wan) |
| 8:00-8:40 | Keynote Michael Lin, Stanford University <i>Developing technologies for sensing and controlling biology with modular protein design</i> |
| 8:40-9:00 | Rob Campbell, University of Alberta <i>Optogenetic control with a photocleavable protein</i> |
| 9:00-9:20 | Bianxiao Cui, Stanford University <i>Optogenetic manipulation of neurotrophin activities</i> |
| 9:20-9:40 | Chris Jacobs, University of Columbia <i>The Primary Cilium: A Subcellular Signaling Nexus Regulated by Physical Manipulation</i> |
| 9:40-10:00 | Won Do Heo (Korea), KAIST University of South Korea <i>Optogenetic Control of Diverse Cellular Components in Mammalian Cells</i> |
| 10:00-10:20 | Moritoshi Sato (Japan), University of Tokyo <i>Optical control of the genome</i> |
| 10:20-10:40 | Networking and coffee break |
| 10:40-1:00 | Session VII – Molecular/Cellular Engineering integrated with the extracellular matrix and environment (Session Chair Robert Mauck) |
| 10:40-11:20 | Keynote Geert Schmid-Schoenbein, UC San Diego <i>Autodigestion and Proteolytic Receptor Cleavage as Basis for Cell Dysfunction and Organ Failure</i> |
| 11:20-11:40 | David Odde, University of Minnesota <i>Optimality in cell adhesion and migration in mechanically compliant microenvironments</i> |
| 11:40-12:00 | Special Speaker Kirk Shung, USC <i>Cellular Applications of Very High Frequency (>100 MHz) Ultrasound</i> |
| 12:00-12:20 | Song Li, UCLA <i>Mechanical regulation of direct cell reprogramming</i> |
| 12:20-12:40 | Cheng Zhu, Georgia Institute of Technology <i>Microenvironment induced impairments of T-cell mechanosensing of melanoma antigens</i> |
| 12:40-1:00 | Awards ceremony, closing comments, collect surveys |

KEYNOTE SPEAKERS

DANA CARROLL, UNIVERSITY OF UTAH

Dana Carroll is Distinguished Professor of Biochemistry at the University of Utah School of Medicine. He received his B.A. degree from Swarthmore College and his Ph.D. in Chemistry from the University of California, Berkeley. After two postdoctoral positions, he joined the University of Utah faculty in 1975. He served as Chair of the Department of Biochemistry between 1985 and 2009. His research has focused on genome organization, DNA repair and genetic recombination. He is considered a pioneer in the development and applications of genome editing with programmable nucleases. He received the Novitski Prize from the Genetics Society of America in 2012, was elected as a Fellow of the AAAS in 2013, and was awarded the Sober Lectureship Award by the ASBMB in 2014. He continues to pursue research with each of the current nuclease technologies – ZFNs, TALENs, and CRISPR-Cas.



SHU CHIEN, UC SAN DIEGO

Shu Chien received his medical degree from National Taiwan University and Ph.D. in Physiology from Columbia. He is University Professor of Bioengineering and Medicine and Director of Institute of Engineering in Medicine at UC San Diego. His research focuses on molecular, cellular and integrative bioengineering. He has published over 500 research papers and edited 14 books. He has served as presidents of AIMBE, BMES, FASEB, American Physiological Society, International Society of Biorheology, and Microcirculatory Society. He is member of National Academies of Sciences, Engineering, and Medicine, American Academy of Arts and Sciences, National Academy of Inventors, Academia Sinica, and Chinese Academy of Sciences (foreign member). He has received six Honorary Doctoral Degrees, the Melville Medal (twice), Fahraeus Medal, Landis Award, ALZA Award, Zweifach Award, Poiseuille Medal, Galletti Award, Revelle Medal, Franklin Medal, Asian American Engineer of the Year, and NAE's Founders Award. He has received the Taiwan ROC Presidential Prize in sciences and U.S. National Medal of Science from President Obama.



KEYNOTE SPEAKERS

GEORGE GEORGIU, UT AUSTIN

George Georgiou is a Professor at the University of Texas, Austin. He received his B.Sc. from the University of Manchester, U.K. and Ph.D. from Cornell. His research is focused on understanding the serological antibody repertoire (as well as the BCR and TCR repertoires) in human health and disease and on the discovery and preclinical development of enzyme and antibody therapeutics for cancer and for inborn errors of metabolism. Professor Georgiou was elected to the National Academy of Engineering (2005), National Academy of Medicine (2011) and the American Academy of Arts and Sciences (2016). He is also a Fellow of the American Institute for Biological and Medical Engineers (AIMBE), the American Academy of Microbiology and the American Association for the Advancement of Science (AAAS). He is the author of >240 research publications and co-inventor of 87 issued or pending US patents, more than 65% of which (comprising 24 distinct technology suites) have been licensed to 27 pharma & biotech companies. He founded GGMJD (1999; acquired by Maxygen in 2000), Aeglea Biotherapeutics (2013-Present; NASDAQ: AGLE) and Kyn Therapeutics Inc. (2015-Present) and currently serves as a Director and Chairman of the SAB for both companies. In 2013 Georgiou was selected as one of the top 20 Translational Researchers by Nature Biotechnology.



MICHAEL LIN, STANFORD UNIVERSITY

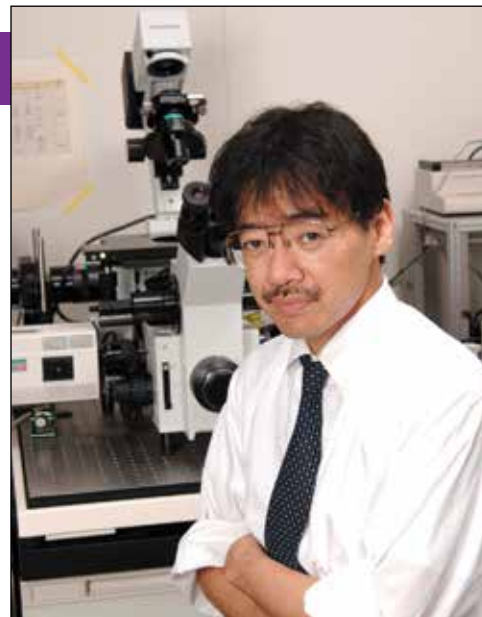
Michael Z. Lin received an A.B. summa cum laude in Biochemistry from Harvard in 1994. His PhD training with Michael Greenberg at Harvard Medical School investigated how extracellular cues signaled to the cytoskeleton. After receiving a MD degree at UCLA, Dr. Lin then performed postdoctoral research with Roger Y. Tsien at UCSD, where he developed far-red fluorescent proteins and methods for visualizing protein age in neuronal synapses. In 2010, Dr. Lin was appointed Assistant Professor of Bioengineering at Stanford. At Stanford, Dr. Lin has engineered additional fluorescent proteins for FRET, whole animal imaging, and multiplexed reporting. He has also created sensors of neuronal activity and plasticity. Finally, he has been developing a unique fluorescent protein-based method for controlling proteins with light. Dr. Lin is a recipient of a Burroughs Wellcome Career Award for Medical Scientists, a Rita Allen Scholar Award, a Damon Runyon-Rachleff Innovation Award, and the NIH Pioneer Award.



KEYNOTE SPEAKERS

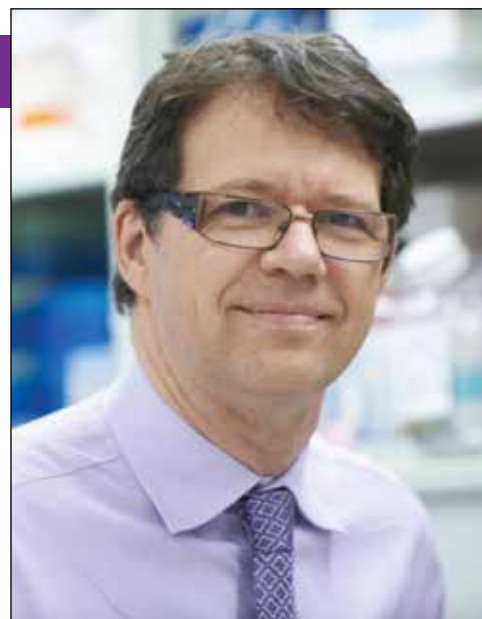
ATSUSHI MIYAWAKI, RIKEN BRAIN SCIENCE INST, JAPAN

Atsushi Miyawaki received his M.D. in medicine at Keio University School of Medicine in 1987 and his Ph.D. in signal transduction at Osaka University School of Medicine in 1991. He served as a researcher and then an assistant professor in the Institute of Medical Science, the University of Tokyo from 1991 to 1998. His main research was focused on calcium signaling. He also joined Department of Pharmacology, the University of California, San Diego as an HFSP long-term fellowship and a research pharmacologist from 1995 to 1998, to work on technological innovations in fluorescence imaging. In 1999, after returning to Japan, he set out a laboratory in RIKEN. He has been directing RIKEN Brain Science Institute as a vice director since 2004. He also launched a laboratory in the RIKEN Center for Advanced Photonics in 2013.



MICHEL SADELAIN, MEM SLOAN-KETTERING CA CTR

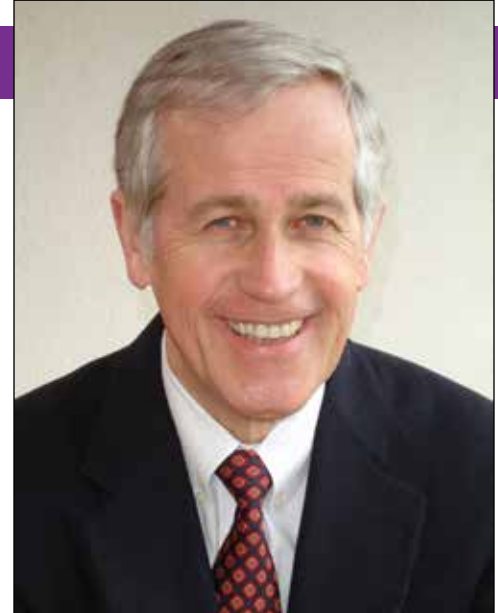
Dr. Michel Sadelain, M.D, Ph.D., is Scientific Co-Founder of Juno Therapeutics Inc. Dr. Sadelain serves as Head of the Gene Transfer and Gene Expression Laboratory at Memorial Sloan-Kettering Cancer Center (MSKCC). Dr. Sadelain's research focuses on novel approaches to enhance T cell costimulation and function. His clinical program focuses on B cell malignancies as well as solid tumors. He is the incumbent of the Stephen and Barbara Friedman Chair and the founding director of the Center for Cell Engineering at MSKCC. He served on the board of directors of the American Society of Gene Therapy from 2004 to 2007 and serves on the editorial boards of Molecular Therapy, Human Gene Therapy and Gene Therapy. Dr. Sadelain serves as Member of Scientific Advisory Board at Biocurex Inc. and TMune Therapeutics, Inc.



KEYNOTE SPEAKERS

GEERT SCHMID-SCHOENBEIN, UC SAN DIEGO

Geert W. Schmid-Schönbein is Distinguished Professor and Chairman of the Department of Bioengineering at the University of California San Diego. He teaches bioengineering of living tissues and cell and molecular mechanics. He published over 385 original peer-reviewed research reports, several books and patents. He is the 2008 Landis Award winner of the Microcirculatory Society, the recipient of the 2009 Outstanding Educator Award in the National Engineering Week, and the 2015 Poiseuille Award winner of the International Society for Biorheology. He is Founding Member of AIMBE, former President of the Biomedical Engineering Society, the Microcirculatory Society and the North American Society of Biorheology, Fellow of the American Heart Association, the Biomedical Engineering Society, the Physiological Society, and the International Federation for Medical and Biological Engineering. He is Past Chair of the US National Committee on Biomechanics and Past Chair of the World Council for Biomechanics and Member of the US National Academy of Engineering. He has research interest in molecular/cell mechanics and bioengineering analysis of the microcirculation in disease. His group pioneered the role of inflammatory mechanisms in heart disease, stroke, diabetic retinopathy and other forms of pathophysiology. Recently they discovered a fundamental mechanism for cell dysfunctions and inflammation due to "Auto-digestion". The team proposed a previously unrecognized mechanism for Shock and Multi-organ Failure and also discovered a mechanism for Type II Diabetes, Hypertension and co-morbidities in the Metabolic Syndrome X due to unchecked degrading protease activity.



POSTER ABSTRACTS

Abstracts are also available online at www.BMES.org/CMBEConf17Abstracts

Group A – Poster Session: Wednesday, January 4, 2pm – 4pm

| Poster No. | Last Name | First Name | Affiliation | Abstract Title |
|------------|---------------|------------|---|---|
| 1 | Aijaz | Ayesha | Rutgers University | Insulin-Secreting Cells and Mesenchymal Stem Cells for Chronic Wound Closure |
| 2 | Allen | Kyle | University of Florida | Magnetic Capture of Intra-articular Biomarkers from the Rat Knee |
| 3 | Allen | Shane | University of Texas at Austin | Dynamic Increase in Matrix Stiffness Reduces Macrophage Polarization to an Inflammatory Phenotype |
| 4 | Banda | Omar | University of Delaware | A New Approach to Traction Force Microscopy Using Embedded Arrays of Fiducial Markers with Implied Zero-Displacement States |
| 5 | Batalov | Ivan | Carnegie Mellon University | Using Fibronectin Architecture in the Embryonic Heart to Engineer Developmentally-Inspired Human Cardiac Tissues |
| 6 | Bhattacharyya | Roby | Broad Institute of MIT and Harvard | Rapid antibiotic susceptibility testing using RNA-hybridizing molecular probes |
| 7 | Bhuiyan | Didarul | University of Minnesota Twin Cities | Identification of a critical signaling link between extracellular matrix engagement and cardiomyocyte differentiation. |
| 8 | Bhutani | Nidhi | Stanford University | The Epigenetic Toolkit for Cellular Reprogramming and Engineering |
| 9 | Boerckel | Joel | University of Notre Dame | YAP/TAZ feedback control of neovascular mechanosensation |
| 10 | Boodoo | Chelsie | Florida International University | Attraction of Glucose on a Gold or Silver Nanoparticle Coated with Mixed Thiols |
| 11 | Brock | Amy | University of Texas at Austin | High Resolution Lineage Tracking and Lineage-Specific Control of Gene Expression |
| 12 | Brooks | Oliver | Queen Mary University of London | The relationship between pluripotency state and susceptibility of nuclear shape and organisation to cell traction in mouse ESCs |
| 13 | Brown | Justin | The Pennsylvania State University | Bio-Instructive Scaffolds: Guiding Design Through Understanding Geometry Sensing |
| 14 | Chan | Manwai | University of Illinois, Chicago | Smartphone-fluidics based Smartphone-Fluidics Based Microscopy and Flow Cytometry for Islet Quantification |
| 15 | Chen | Weiqiang | New York University | Cellular Mechanoadaptation: When Biology Meets Mechanics |
| 16 | Chen | Xiaoyang | USC Roski Eye Institute | Development of the ultrahigh frequency ultrasonic transducer (300-MHz to 500-MHz) for flexible sized single beam acoustic tweezers and high-resolution ultrasound imaging |
| 17 | Chen | Lei | First Affiliated Hospital of Sun Yat-Sen University | Engineering Pre-vascularized Human Mesenchymal Stem Cell Sheets for Full Thickness Skin Wound Repair |
| 18 | Cheng | Gong | The Pennsylvania State University | Functional Nanomaterial for Protein Enrichment and Delivery into Mammalian Cells |
| 19 | Chowdhury | Farhan | Southern Illinois University | Nano yoyo force sensors define single molecular forces for Notch activation |
| 20 | Chu | Yu-Pu | National Cheng Kung University | Expansible and Microporous Polyurethane Hydrophilic Foam for Wound Dressing: In Vitro and In Vivo Evaluation |
| 21 | Dang | Alex | Columbia University | Expansion of Exhausted T Cells via Electrospun Poly(Dimethyl Siloxane)-based Fibrous Meshes |
| 22 | Dawson | Michelle | Brown University | Biophysical Interactions of Stromal Cells with Invasive Breast Cancer Cells |
| 23 | Deguchi | Shinji | Osaka University | Local Geometry Sensing by Individual Focal Adhesions |
| 24 | Doolin | Mary | University of Maryland | The Impact of Mechanical Confinement on Stem Cell Migration and Mechanobiology |
| 25 | Dorsey | Taylor | Rensselaer Polytechnic Institute | Regulating Arterial Venous Differentiation of Pluripotent Stem Cells Through Immobilized EphrinB2/EphB4 Signals |
| 26 | Doyle | Adele | University of California, Santa Barbara | Predicting Mechanical Sensitivity of Oncogenes |
| 27 | Du | Jing | Tsinghua University | Heat shock factor is a mechanical sensor for left-right axis determination in zebrafish embryogenesis |

POSTER ABSTRACTS

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Group A – Poster Session: Wednesday, January 4, 2pm – 4pm

| Poster No. | Last Name | First Name | Affiliation | Abstract Title |
|------------|---------------|------------|--|--|
| 28 | Fang | Shao-Yu | National Cheng Kung University | The role of inflammatory responses in endothelial damage in vein graft |
| 29 | Field | Lauren | University of Maryland | Semiconductor Quantum Dots as Förster Resonance Energy Transfer Donors for Intracellular Biosensors |
| 30 | Fu | Kai-Jing | National Taiwan University | Wavy Structures Change Nuclear Shape and Mechanotransduction |
| 31 | Gates | Evan | Duke University | Force-activated protein dynamics of E-cadherin |
| 32 | Gligorijevic | Bojana | Temple University | Real-time intravital microscopy of invadopodia reveals microenvironment role in metastasis |
| 33 | Grosberg | Anna | University of California, Irvine | Local and Global Structure Effects on Cardiac Contractility |
| 34 | Han | Jeonghun | Sungkyunkwan University | Rapid emergence of concentration gradient-induced cancer drug resistance and its mechanism study |
| 35 | Haun | Jered | University of California, Irvine | The Evolution and Biophysics of Multivalent Nanoparticle Adhesion |
| 36 | Hong | Yi | University of Texas at Arlington | Bioactive hydrogel cell niches from naturally derived extracellular matrix |
| 37 | Hooks | Joshua | Georgia Institute of Technology | Response of Lymphatic Collecting Vessels to PEG Hydrogels with Tunable Properties |
| 38 | Huang | Chia-Wei | National Cheng Kung University | Involvement of microRNAs for the synergistic targets in ASC-differentiated endothelial and neural lineage cells to prevent hypoxic-ischemic brain injury |
| 39 | Huang | Tzu-Chieh | National Cheng Kung University | Assembling Composite Dermal Papilla Spheres with Adipose-derived Stem Cells to Enhance Hair Follicle Induction |
| 40 | Hwang | Priscilla | Washington University | CXCR4 and hypoxia drive directional cancer cell migration |
| 41 | Jeon | Tae-Joon | Inha University | Encapsulating Biologically Functional Materials into Giant Unilamellar Vesicles |
| 42 | Jiang | Yong | Zhengzhou University | Electrospun Polycaprolactone/Gelatin Composites with Enhanced Cell–Matrix Interactions as Blood Vessel Endothelial Layer Scaffolds |
| 43 | Jin | Yang | Changzhou University | Micro-curvature environment is a determinant of changing structural organization and mechanical properties of airway smooth muscle cells during embryonic lung development |
| 44 | Jung | Jieun | Dankook University | Application of cultured dermal fibroblasts-derived decellularized matrix as an effective culture substrate of primary dental pulp-stem cells |
| 45 | Juran | Cassandra | NASA's Ames Research Center | Osteogenic signaling control of MSCs regulated by exaggerated mechanical loading of osteocyte-osteoblast cellular network |
| 46 | Kang | Hongyan | Beihang University | Regional specific modulation of the glycocalyx and smooth muscle cell contractile apparatus in conduit arteries of tail-suspended rats |
| 47 | Kelmendi-Doko | Arta | University of Pittsburgh | Double Wall Microsphere Controlled Delivery System for Adipose Tissue Retention and Enhancement |
| 48 | Kidambi | Srivastan | University of Nebraska-Lincoln | Mechanobioengineering Approach to Study the Role of Matrix Rigidity in Liver Fibrosis |
| 49 | Kim | Sehee | Wooridul Huebrain Ltd. | Effects of osteoinduction in hMSC by newly synthetic peptide (OP-5) derived from BMP-2 and its application with OP-5 conjugated PLLA for clinical use |
| 50 | Konno | Masamitsu | | New Trans-omics Analysis revealed Novel Functions of the Cancer Specific Metabolic Pathway in Cancer Stem Cells |
| 51 | Kumar | Sandeep | Georgia Institute of Technology and Emory University | Knockdown of mechanosensitive miRNA cluster—miR-106b~25 decreases endothelial proliferation and prevents atherosclerosis in ApoE ^{-/-} mice |
| 52 | Labriola | Nicholas | Brown University | Microbead Cellular Mimics for Biomedical Applications |
| 53 | Leandre | Verida | Brown University | Encapsulated proteins recruit progenitor cell populations via intra-peritoneal implantation of mesh constructs |

POSTER ABSTRACTS

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Group B – Poster Session: Friday, January 6, 4pm – 6pm

| Poster No. | Last Name | First Name | Affiliation | Abstract Title |
|------------|--------------|-------------|---|---|
| 1 | Leary | Elizabeth | Brown University | Advancing the Use of 3D Spheroids for Quantitative Live-Cell, High-Throughput Screening |
| 2 | Leight | Jennifer | Ohio State University | Matrix stiffness and cell phenotype regulate invasive potential in breast cancer cells |
| 3 | Lim | Wan | Sungkyunkwan University | The efficacy of anticancer drugs on microfluidic spheroid culture system with concentration gradient generator |
| 4 | Lucas | Sarah | Oak Ridge National Laboratory | Decoding DNA-Repair via Crystallographic Diffraction |
| 5 | McDermott | Anna | University of Notre Dame | Mechanical control of endochondral bone regeneration by engineered mesenchymal condensations |
| 6 | Mehta | Geeta | University of Michigan | Breast Cancer Cells Acquire Chemoresistant, Metastatic and Invasive Phenotypes when Exposed to Pulsatile Fluid Shear Stress in a 3D Bioreactor Platform |
| 7 | Mellott | Adam | University of Kansas Medical Center | Teaching Human Wharton's Jelly Cells New Tricks with Parafilm for Wound Healing |
| 8 | Monroe | Madeline | Rice University | Understanding the Role of Extracellular Matrix Environments in Aortic Valvular Interstitial Cell Development via Three-dimensional Filter Paper Platform |
| 9 | Moonga | Surinder | Stony Brook University | Promotion of osteoblast mineralization within bovine trabecular scaffold in a dynamic flow bioreactor by acoustic radiation force induced fluid flow |
| 10 | Moore | Emily | Columbia University | Molecular manipulations of calcium/ cAMP dynamics in osteocyte mechanotransduction |
| 11 | Nam | Jin | University of California, Riverside | Mechano-modulation of Human Pluripotent Stem Cells for Directed Heterogeneous Differentiation in 3D |
| 12 | Ngo | Anh | Oregon Health and Science University | Ilb or not Ilb: Novel insights into the regulation of GPIIb expression and localization in activated platelets |
| 13 | Nichol | Jason | Endicott College | Elucidating the Role of 3D Mechanical Environment on Cancer Cell Gene Expression |
| 14 | Nishida | Naohiro | Osaka University | Epigenetic modifications on non-coding RNAs in cancer |
| 15 | Park | Yongkuk | University of Seoul | Fabrication of nucleic acid-based materials for efficient gene delivery |
| 16 | Paul | Arghya | University of Kansas | Cell Secretome-rich nanoengineered hydrogel to repair damaged heart tissue |
| 17 | Peng | Qin | University of California, San Diego | Single Cell Imaging of Epigenetic Dynamics |
| 18 | Perez Pinera | Pablo | University of Illinois at Urbana-Champaign | Nuclease-Assisted Vector Integration For Gene Activation And Transcript Engineering: A Robust Platform For Tunable and Multiplexed Activation of Endogenous Genes |
| 19 | Priya Rajan | Shiny Amala | Virginia Tech–Wake Forest School of Biomedical Engineering and Sciences | Motility and biochemical assessment of cells in 3D tumor model on a microfluidic platform |
| 20 | Qian | Weiyi | New York University | Nanotopography-dependent Mechanobiology in Regulating Human Mesenchymal Stem Cell Fate |
| 21 | Ramirez | John | Del Mar College | Membrane Protein Expression of Engineered Escherichia coli Strains After Single / Multiple Plasmid Transformation |
| 22 | Ratcliff | Gabriel | University of Oklahoma | Effectiveness of Gelatin Coatings on Cancer Cell Attachment to Scaffolds in 3D Perfusion Bioreactors |
| 23 | Ray | Poulomi | Rensselaer Polytechnic Institute | Cellular Intrinsic Left-Right Asymmetry in Cardiac C-Looping |
| 24 | Resutek | Lauren | University of Maryland | Role of Cytokeratin Intermediate Filaments in Maintaining Vacuolar Morphology of Chordoma Cells |
| 25 | Ryu | Jiheun | Korea Advanced Institute of Science and Technology | High-speed fluorescence lifetime imaging microscopy for live cell imaging |

POSTER ABSTRACTS

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Group B – Poster Session: Friday, January 6, 4pm – 6pm

| Poster No. | Last Name | First Name | Affiliation | Abstract Title |
|------------|---------------|--------------|--|---|
| 26 | Sarkar | Biplab | Tufts University | Mechanistic Insight into the Interaction of Silk Fibroin with Ions and Small Molecules |
| 27 | Seong | Jihye | University of Illinois at Urbana-Champaign | FRET-based Visualization of PDGF Receptor Activation at Membrane Microdomain |
| 28 | Sewell-Loftin | Mary Kathryn | Washington University | Cancer-Associated Fibroblasts Mechanically Regulate Blood Vessel Formation |
| 29 | Sharma | Poonam | University of Maryland | Vimentin intermediate filaments alters substrate-specificity of adhesion and spreading of hMSCs |
| 30 | Shim | Hyeun | Wooridul Huebrain Ltd. | The influence of hair loss using natural extracts by inhibiting the activation of 5 α -reductase and preventing apoptosis in hair follicle dermal papillar cells |
| 31 | Shin | Hyeok Jun | Hanyang University | Development of micropatterned nanofibers for mimicking of endothelium |
| 32 | Slater | John | University of Delaware | A New Approach to Traction Force Microscopy Using Embedded Arrays of Fiducial Markers with Implied Zero-Displacement States |
| 33 | Soto | Mario | University of Puerto Rico | Osteoblast Proliferation Restriction Due to Metal Trace Elements Released from Oxidized Ti Alloys |
| 34 | Spasic | Milos | Columbia University | Targeting primary cilia-mediated mechanotransduction to enhance bone formation and intercellular paracrine signaling |
| 35 | Tran | Quyen | University of Wisconsin–Madison | Developmental pathways pervade stem cell responses to evolving extracellular matrices of 3D microenvironments |
| 36 | Vekilov | Dragoslava | Rice University | Longitudinal Changes in Mitral Valve in Response to Altered Mechanical Stimuli |
| 37 | Verida | Leandre | Brown University | Encapsulated proteins recruit progenitor cell populations via intra-peritoneal implantation of mesh constructs |
| 38 | Villasante | Aranzazu | Columbia University | Engineering Tumor Microenvironments for Studies of Osteolysis |
| 39 | Walsh | Kevin | Colorado State University | Bio Logic Gate: AND Gate Constructed in Cyanobacteria |
| 40 | Wang | Weina | Hubei University of Medicine | Bmi-1 expression of bone marrow mesenchymal stem cells induced by fluid shear stress mediated with Akt signal molecule |
| 41 | Wang | Ting-Yun | National Cheng Kung University | Dynamics of integrin-FAK-Src signaling for artery and vein in response to shear stress |
| 42 | Wang | Christine | Stanford University | Matrix stiffness modulates patient-derived glioblastoma xenograft cell proliferation and invasion in 3D biomimetic hydrogels |
| 43 | Wei | Xunbin | Shanghai Jiao Tong University | In vivo trapping of cells in living animals by infrared optical tweezers |
| 44 | Wong | Lian | University of California | Experimental and Computational Modeling for Directing Vascular Fate |
| 45 | Wyatt | Meghan | University of Pittsburgh | Influencing Differentiation of Neural Progenitor Cells with Gene Silencing |
| 46 | Xing | Yuan | University of Illinois, Chicago | A Pumpless Microfluidic Device Driven by Surface Tension for Pancreatic Islet |
| 47 | Xiong | Niya | University of Electronic Science and Technology of China | The Roles of the Caveolin-1 in Cytoskeleton Reorganization, Adhesion and Protrusion Formation under Low Shear Flow |
| 48 | Yoon | Sangpil | University of Southern California | Single-cell level targeting and simultaneous intracellular delivery of macromolecules using super high frequency ultrasound |
| 49 | Yuan | Fan | Duke University | Environmental resistance to three-dimensional growth of single cells |
| 50 | Zhao | Ping | Beihang University | Mechanotransduction mediated by endothelial glycocalyx layer affects the interactions between endothelial cells and vascular smooth muscle cells |
| 51 | Zhou | Ji | Widener University | A Targeted Drug Delivery System for Selective Deliver of Insulin-like Growth Factor-1 to Infarcted Myocardium to Improve Stem Cell Survival |
| 52 | Zhu | Wei | The George Washington University | 3D Bioprinting Mesenchymal Stem Cell-laden Construct with Core-shell Nanospheres for Cartilage Regeneration |
| 53 | Zhu | zeng | Guizhou Medical University | G protein coupling receptor-one of the mechanosensor for dendritic cells |

SPONSOR INFORMATION

GRAND SPONSOR

Health Longevity Biotechnology Inc.

The Shanghai Longevity Health Science and Technology Group was founded in 2005 and has since dedicated to the human health in order to understand the underlying rules, and study how to live a long life with high quality. In 2012, the company name was changed to "Shanghai Longevity Health Science and Technology Group Company Limited." The company mission is to explore the mysteries of longevity and to achieve a healthy life. The company culture is to promote Chien family's innovation spirit in science and technology, to inherit the excellent traditional culture of Chien Family, such as practical, simple, efficient, creative and dedication. The company strategy is as following: first, we will use stem cell research, transplantation and treatment as core products and take genetic examination as the basic technology to provide a comprehensive services; Second, we will set up a chain of comprehensive clinics to provide chronic disease services to middle- and high-end homes for accurate health management; Third, we will cooperate with the US Ivy League medical care to provide overseas medical examination and referral services; Fourth, we will establish Chinese herbal medicine planting bases to promote the food productivity and achieve a consensus on the source of both food and medicine; Fifth, we will establish "An International Medical Engineering Shanghai Technology Innovation Center" and "Cambodia Oriental Life Science Industrial Park" in Cambodia by Cambodian-US-China tripartite cooperation, to integrate the world's top medical resources to serve the general public in a broad range. www.bsom-ch.com



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Chongqing University

The school of Biomedical Engineering at Chongqing University was established in 1998. There are several departments and research institutes, focusing on biomedical engineering, bioengineering, biomedical electrical engineering, applied biotechnology. The school of Biomedical Engineering at Chongqing University has established itself among the best of its kind in China, being part of the prestigious programs of "211 Program," "985 Program," and "111 Program." www.bio.cqu.edu.cn



Chongqing University of Science and Technology (CQUST)

Chongqing University of Science and Technology (CQUST) originally founded in 1951, is a full-time public university. The campus is situated in the beautiful mountain city--Chongqing, with a total area of about 2200 hectares and a construction space of 600,000 square meters. At present, it has over 20,000 students and more than 1,500 faculty and staff. Altogether, it has 13 schools or departments which cover 50 undergraduate and two post-graduate programs. Currently, there are 143 professors, 346 associate professors and 266 teachers with PhD's in our university. The advancement of the faculty and staff guarantees the fast development of CQUST. We have established relationships with universities or enterprises from over 20 countries, and signed a cooperative agreement with more than 30 overseas universities. In 2013, academican Shu Chien was appointed as the professor of CQUST. Then Shu Chien Biomedical Engineering Research Institute was established. In 2014, Shu Chien Experimental Class (BIC) was established, aiming to cultivate composite and internationalized top-notch engineering talents with innovative and practical abilities. The major of this class are medical devices and medical electronics, which are strategic emerging industries. www.cqust.edu.cn/index/sy.htm



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Southern University of Science and Technology (SUSTech) is a new university founded in Shenzhen, China. It aims to be a top-tier international university that excels in interdisciplinary and innovative research and education. The Department of Biomedical Engineering was established in June 2016. Research areas include biomechanics, cell and tissue engineering, medical imaging and biomedical signal analysis, and neural engineering. We sincerely welcome more global talents to join us to create a world-class biomedical engineering program. www.bme.sustc.edu.cn/



生物医学工程系
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SPONSOR INFORMATION

Dendritic Cell Research Group of Guizhou Medical University

Guizhou Medical University (GMU) was established in Guiyang of China in 1938, which holds 18 teaching units, including Medicine, Science, Engineering, Education, Literature, Laws, and Management, and 18045 undergraduate and 1862 postgraduate full-time students. The School of Biology and Engineering is founded in 2013, which focuses on the Biotechnology, Biomedical Engineering, and Chemical Biology. Four research directions have been formed, including basic research and application development of dendritic cells (DCs), ecological immunity and application of medical insect, medicinal plant technology, and medical big data. One of the Science and Technology Innovative Talent Team of Guizhou Province was awarded by government in 2015, which is headed by Dr. and Professor Zhu Zeng. Since 2001, based on the challenges of clinical application of DCs-based immunotherapy against cancers, this group devotes to the studies on the effects of chemical (suppressive cytokines) and physical factors (fluid flow-derived shear stress and extracellular matrix-derived mechanical forces) on the motility and immune functions of DCs as well as underlying molecular mechanisms from interdisciplinary viewpoints of tumor immunology, biophysics and mechanobiology. In addition, a mathematical model simulated DC's migration in vivo and a DC-based vaccination targeted prostatic cancer are also developed. This group has published dozens of SCI papers. In 2015, Prof. Zeng has published an academic monograph "Dendritic cells: Biophysics, Tumor Microenvironment and Chinese Tradition Medicine" and brought forward the concept of Immunomechanobiology and Mechanoimmunology. It's significant for understanding the biological behavior of DCs and the immune escape mechanism of cancers. www.english.gmc.edu.cn



University of California at San Diego Bioengineering

UC San Diego is at the forefront of bioengineering. In recognition of the unique features and requirements of bioengineering and the excellence of the Bioengineering faculty and programs, the University of California established a Department of Bioengineering in August 1994. In 1995, the National Research Council of the National Academy of Science, National Academy of Engineering and the Institute of Medicine published a comprehensive report in which they ranked the UCSD Bioengineering graduate program number 1 in the nation for effectiveness in teaching and number 2 for scholarly quality. It remains the #1 ranked Bioengineering doctoral program according to the most recent National Research Council study (2010). The 2015 U.S. News & World Report ranked our graduate program #2 and our undergraduate program #7 in the nation. At UCSD, the cooperative arrangement between the Schools of Engineering and Medicine is the foundation of this success by providing an ideal research and training environment that leads to effective collaborations between engineers and medical scientists. www.be.ucsd.edu



University of California at San Diego Institute of Engineering in Medicine

The Institute for Engineering in Medicine (IEM) was established at UCSD in 2008 to facilitate interdisciplinary research for the integration of engineering principles and technologies with biomedical innovation and clinical translation. It is under the Directorship of Dr. Shu Chien and consists of 15 Centers, each of which is co-directed by an engineering and a medical faculty. The Institute gathers over 150 scientists on the UCSD campus, including all relevant Schools and Divisions, as well as neighboring institutes. IEM has an Industrial Advisory Board composed of representatives from twenty national and local companies to foster academia-industry collaboration. IEM has close collaborations with international universities and institutions. The overall mission of IEM is to improve health and wellbeing of humankind. www.iem.ucsd.edu



Vanderbilt School of Engineering

Vanderbilt's biomedical engineering department is a pioneer in its field, offering the B.E. degree in biomedical engineering since 1968. The program was one of the first of its kind and is a highly ranked program nationally. The B.E., M.Eng., M.S. and Ph.D. degrees are offered, and the department participates in the School of Medicine's M.D./Ph.D. program. The close affiliation with the medical school and Vanderbilt University Medical Center, located less than a block away, facilitates a wide variety of collaborative efforts. Research strengths include medical devices and modeling, nanomedicine and biomaterials, medical imaging and photonics, and cellular sensing and control. www.engineering.vanderbilt.edu/bme



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Cellular and Molecular Bioengineering (CMBE), an official journal of the Biomedical Engineering Society, focuses on research that studies how cellular behavior arises from molecular-level interactions to tackle the challenge of improving human health. It offers investigators a forum for the dissemination of research that utilizes engineering principles and methods to advance fundamental knowledge and technological solutions related to cellular and molecular systems. www.link.springer.com/journal/12195



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University of Missouri College of Engineering

Established in 1849, the University of Missouri College of Engineering's excellence includes 9 disciplines, 130 faculty members, 3,319 of the brightest undergraduates on campus and more than 600 exceptional graduate students at the flagship campus of the UM System. With seven ABET-accredited departments, the College aims to educate the next generation of engineering leaders and lead the charge in research and education in several cross-disciplinary fields, including Big Data Analytics, Biomedical Innovations and Sustainability. The College also includes two, federally-funded research centers and more than 30 signature research programs and labs. Located in the heart of Missouri, the College of Engineering at Mizzou operates the University of Missouri Research Reactor, the most powerful nuclear research reactors on a university campus nationwide. It currently is under the leadership of Elizabeth G. Loba, the first female dean in the College's history. www.bioengineering.missouri.edu



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