

FINAL PROGRAM



Society For  
Biomaterials

2021

ANNUAL  
MEETING &  
EXPOSITION

**BIOMATERIALS RESEARCH:**  
*Hitting all the right notes, and  
avoiding the translational blues*

VIRTUAL

APRIL 20-23, 2021

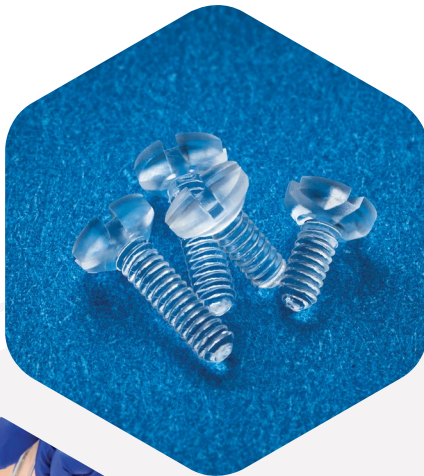
[www.biomaterials.org](http://www.biomaterials.org)



## YOUR NAME, OUR REPUTATION

### DELIVERING CLINICAL UTILITY

Our business model is designed to adapt to our client's specific manufacturing and material development needs. We offer the resources, knowledge, and experience necessary to provide rapid research and development and a smooth transition into commercial production.



To find out more about what we can do for you:  
[www.tescoassociates.com](http://www.tescoassociates.com)



#### ✓ QUALITY

Our team puts the quality and integrity of the device first in every stage of development. TESco has a stringent and robust quality management system, certified to ISO 13485:2016 and registered with FDA 1226183.

#### ✓ CLEAN ROOMS

- 12 ISO Class 7 Cleanroom Suites that are ISO Class 6 capable
- Independent suite design to facilitate proper line clearance
- The multiple phases of production, prototyping and material preparation can be completed simultaneously
- Stringent BioBurden control
- Controlled anteroom to allow the transferring of product from one process stage to another without leaving the cleanroom environment

#### ✓ EXPERIENCE

- Injection Molding & Extrusion
- Material Selection and Compounding
- FDA Submission Assistance
- Packaging and Sterilization Support
- Assembly

#### ✓ MATERIAL INNOVATION

We have a full portfolio of material formulations with FDA master files in place. Our knowledge of bioabsorbable/biodurable polymers and co-polymers covers a wide range of molecular weights.



APRIL 20-23, 2021

**BIOMATERIALS RESEARCH: HITTING ALL THE RIGHT NOTES, AND AVOIDING THE TRANSLATIONAL BLUES**



# WELCOME

## to the Society For Biomaterials 2021 Annual Meeting & Exposition

We would like to extend a warm welcome to everyone attending the Society For Biomaterials 2021 Annual Meeting & Exposition!

As we emerge from the cacophony of the global pandemic, what better place to gather as a community and explore the many challenges facing the field of biomaterials research? This year's program will focus on research that has direct patient impact and many of the challenges facing new materials in garnering regulatory approval for clinical use. It will also include discussing many of the issues facing the biomaterials community including COVID-related adjustments to education and creating a more equitable environment in the biomaterials community and the STEM fields in general. We hope to realize the vision for this meeting- Biomaterials Research: Hitting all the right notes and avoiding the translational blues!

We would like to particularly thank the members of the Program Committee- Danielle Benoit, Rebecca Carrier, Balakrishna Haridas, Robert Hastings, Suping Lyu, Lakshmi S. Nair, Shelly Sakiyama-Elbert, Carl G Simon, Jr., Ankur Singh, and Cherie Stabler— for all their efforts and forward thinking approach in these unprecedented times. We have been able to transition and host this event virtually for the first time in SFB history! We are also grateful to the numerous individuals who have worked to create each session, workshop, and panel, as well as those who dedicated time to reviewing abstracts. It is through this process that we are best able to highlight the most exciting scientific findings each year and we are therefore truly grateful for your efforts. Of course, we are especially appreciative of our generous sponsors and exhibitors, without whom this meeting would not be possible.

Finally, we would like to give our thanks to you, the attendees of the first virtual 2021 Annual Meeting & Exposition! You are the "musicians" of this meeting and we sincerely hope that you find that the program inspires further connections to help guide your own journey while avoiding the pitfalls of the translational blues.

Kris Kieswetter, PhD, MBA  
2021 Program Co-Chair  
3M

Guillermo Ameer, ScD  
2021 Program Co-Chair  
Northwestern University

## SFB 2021 Sponsors

### GOLD

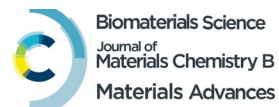


### SILVER



TEXAS A&M UNIVERSITY  
Department of  
Biomedical Engineering

### BRONZE





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## About the Society

The Society For Biomaterials is a professional society that promotes advances in biomedical materials research and development by encouragement of cooperative educational programs, clinical applications, and professional standards in the biomaterials field. Biomaterials scientists and engineers study cells, their components, complex tissues and organs, and their interactions with natural and synthetic materials and implanted prosthetic devices, as well as develop and characterize the materials used to measure, restore, and improve physiologic function, and enhance survival and quality of life.

## General Information

All sessions of the meeting will take place virtually and will be available for on-demand viewing until June 24, 2021 at [www.biomaterials2021.com](http://www.biomaterials2021.com). Photographs and/or videos of any slide or Rapid Fire presentation are strictly prohibited.

### REGISTRATION

All attendees are expected to register for the meeting. Registration fees include: admittance to all scientific sessions, panel discussions, exhibits, Opening Reception, Rapid Fire presentations, the Virtual Exhibit Hall, and the Virtual Biomaterials BASH. Additional fees apply to workshops.

### EXHIBITS

Each year, the Society For Biomaterials Annual Meeting & Exposition serves as the central gathering point for the entire biomaterials field. While this year's Annual Meeting looks a bit different, it promises to offer an exciting interaction between conference registrants and exhibitors.

### RAPID FIRE SESSIONS:

With the shift to a virtual meeting platform, the typical Poster Sessions have been transformed to Rapid Fire presentations. We hope you support and attend these scientific presentations! All abstracts will be available throughout the duration of the meeting accompanied by 5-minute video presentations. Attendees are expected to view Rapid Fire presentations prior to the live Q&A sessions. Bring your questions!

#### Thursday, April 22, 2021

Exhibits and Rapid-Fire Presentations: . . . . . 3:15 pm – 5:15 pm

#### Friday, April 23, 2021

Exhibits and Rapid-Fire Presentations: . . . . . 3:15 pm – 4:15 pm

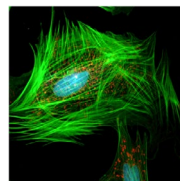
### BASH

SFB understands the importance of networking at its meetings and the Biomaterials Bash always provides this opportunity with a local backdrop. While we all may not be meeting in person this year, we are eager to provide you with ample virtual opportunities to network and connect with your colleagues during the SFB Virtual Annual Meeting. The Virtual Bash provides multiple chat and video features – both publicly and one-on-one. Chat, and meet new people on our 2D world!

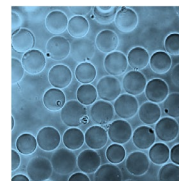
## Capture the complexity of life

**High-throughput mechanical screening**

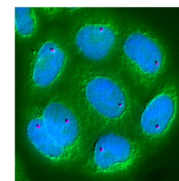
**Visit our booth to learn more!**



Single cells



Hydrogels



Tissues

**OPTICS11** life [www.Optics11Life.com](http://www.Optics11Life.com)

### STARS

Once again, the Society For Biomaterials has presented Student Travel Achievement Recognitions (STARS) for outstanding abstracts submitted by students. These STARS present a major opportunity to recognize research excellence and develop future leaders within our Society. STARS recipients are indicated in this program with the star symbol (shown above).



### STAFF LIAISONS

Dan Lemyre, CAE  
 Shena Seppanen  
 Jeana Hoffman

### PROGRAM CO-CHAIRS

Guillermo Ameer, ScD  
 Kris Kieswetter, PhD, MBA

### PROGRAM COMMITTEE MEMBERS

Danielle Benoit	Lakshmi S. Nair
Rebecca Carrier	Shelly Sakiyama-Elbert
Balakrishna Haridas	Carl G Simon, Jr.
Robert Hastings	Ankur Singh
Suping Lyu	Cherie Stabler



# 2021 SFB Annual Meeting Highlights

## 2021 KEYNOTE SPEAKER

WEDNESDAY, APRIL 21, 2021 - 9:00AM TO 10:30AM CDT



**Cheryl Blanchard, PhD**  
Anika Therapeutics



**John Rogers, PhD**  
Northwestern University

## ACTA GOLD MEDAL SESSION I:

TUESDAY, APRIL 20, 2021 - 1:00PM TO 3:00PM CDT



**2020 Gold Medalist:**  
Cato Laurencin, MD, PhD, University of Connecticut



**2020 Silver Medalist:**  
Molly Stevens, PhD, Imperial College London

## ACTA GOLD MEDAL SESSION II:

TUESDAY, APRIL 20, 2021 - 3:15PM TO 5:15PM CDT



**2021 Gold Medalist:**  
Prof. Xingdong Zhang, Sichuan University,



**2021 Silver Medalist:**  
Tatiana Segura, PhD, Duke University

# 2021 Award Winners

## Plenary Session I: Clemson Awards

Thursday, April 22, 2021 - 9:00am to 11:00am



**Clemson Award for Applied Research**  
Karen Christman, PhD,  
University of California, San Diego



**Clemson Award for Basic Research:**  
Brendan Harley, PhD,  
University of Illinois at Urbana-Champaign



**Clemson Award for Contributions to the Literature:**  
Guillermo Ameer, ScD,  
Northwestern University

## Plenary Session II: Society Awards

FRIDAY, APRIL 23, 2021 - 9:00AM TO 11:00AM CDT



**Founders:**  
William R. Wagner, PhD, University of Pittsburgh



**Young Investigator:**  
Nasim Annabi, PhD, University of California, Los Angeles



**Mid-Career:**  
Sarah Stabenfeldt, PhD, Arizona State University



**Technology Innovation & Development:**  
Lonnie Shea (University of Michigan), Stephen Miller (Northwestern University), John Puisis, Jim Herrmann,

## 2021 Award Winners (CONTINUED)



**SFB Award for Service**  
 Liisa Kuhn, PhD, UConn Health

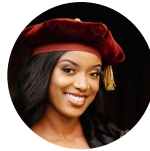


**C. William Hall Award:**  
 SuPing Lyu, PhD, Medtronic

### Student Award for Outstanding Research – PhD Candidates:



Marian Ackun-Farmmer,  
 University of Rochester



Taneidra Buie,  
 University of Texas at Austin



Zoe Lynn Harrison,  
 University of Memphis

### C. William Hall Scholarship: Honoring the memory of the Society's first President Dr. C. William Hall:



Kaylee Bundy, Mississippi State University

### Cato T. Laurencin, MD, PhD Travel Fellowship:



Breajah Tyson,  
 University of Connecticut



Sophia Saenz,  
 University of Florida

**SFB gratefully acknowledges support from  
 our sponsors of the Cato T. Laurencin, MD, PhD  
 Travel Fellowship:**



TEXAS A&M UNIVERSITY  
 Department of  
 Biomedical Engineering

#### Impacting Health Outcomes

##### Regenerative Medicine Research Areas

- "Smart" materials
- Biomimetic nanomaterials
- Functionalized hydrogels
- Therapeutic delivery systems
- Bioreactors
- 3D printing and cell manufacturing

##### Areas of Application

- Tissue engineering
- Wound healing and hemostasis
- Regeneration of musculoskeletal tissues

*BME@TAMU moves beyond diversity to promote  
 gender, racial and social equity.*



Learn more at: [tx.ag/REDlBmen](http://tx.ag/REDlBmen)





## Tuesday, April 20, 2021

All times are listed in central time

### WORKSHOPS

9:00 am – 1:00 pm

**Regenerative Engineering Society Workshop (Separate event registration required.)**

9:00 am – 11:00 am

**Recent Advances in 3D Printing of Biomaterials:**

Industrial and academic researchers have recently examined the use of 3D printing technologies to overcome the limitations associated with conventional manufacturing processes. These technologies involved fabrication of three-dimensional structures through joining of materials in a layer-by-layer manner. This workshop will review recent developments in 3D printing technologies for processing biomaterials into artificial tissues, biosensors, drug delivery devices, medical instruments, medical models, and food products. Several topics related to 3D printing, including processing of radiographic images, development of computer models, novel 3D printing technologies, and novel materials for use in 3D printing, will be discussed.

9:00 am – 11:00 am

**Mental Health and Wellbeing as a Scientist: FREE TO ATTEND**

Scientific research – whether it's graduate school, postdoctoral research, or academia itself – presents significant stressors to mental and emotional health. The job search and transition to independency can also introduce pressure for young scientists, especially during uncertain times. Come join the National Student Chapter and Young Scientist Group for a workshop on stress management, work/life balance, and mental health, organized by trainees and wellbeing specialists. We will also be discussing critical skills you can develop to better support your friends and peers.

Through this workshop, we hope to provide you with new tools to support your own mental and emotional health in academia and industry, as well as strategies to better support those around you.

9:00 am – 11:00 am

**Science Communication and Personal Branding for Biomaterials Scientists:**

Academic and industry professionals in the biomaterials field require the ability to concisely convey the impact of their individual research niche to colleagues, the general public, and potential investors/funding agencies. In this workshop, graduate students, postdoc trainees, assistant professors, and other young scientists will learn key strategies for developing their personal and/or laboratory brand. Strategies will include: how to develop a theme and identity, self-promote research, deliver a one-minute elevator pitch, know your audience, engage in social media, and optimize networking.

11:00 am – 1:00 pm

**Biomaterials Science Excellence and Technology Translation Workshop:**

Biomaterials Science has gained increasing importance at the forefront of interdisciplinary research and undoubtedly the advance of biomaterial science will have great impact on the health and economy development. This workshop discussion, co-sponsored/organized by (Oversea) Chinese Association for Biomaterials (CAB), includes invited presentations/lectures from global biomaterial leaders in biomaterials science and a panel discussion to discuss biomaterial innovation, international collaboration, venture investment, company startups, intellectual property, and other key elements en route to successful biomaterial technology translation. The panelists consist of investors, business attorneys, faculty entrepreneurs, and industrial leaders. It is expected the workshop/panel discussion will attract a significant number of international participants, especially from Asian countries and Australia. This workshop/panel discussion is a platform where biomaterial excellence finds exit to technology translation and a networking opportunity for friendship and collaboration with Chinese-American/Chinese faculty, students, and thought leaders in the field.

11:00 am – 1:00 pm

**Meet the Editors of Wiley's Biomaterials Journals: FREE TO ATTEND**

Meet the Editors of the official journals of the SFB (Journal of Biomedical Materials Research Part A and Journal of Biomedical Materials Research Part B: Applied Biomaterials), as well as Wiley Advanced journals. You will hear about publication opportunities for Biomaterials papers at Wiley. The Editors will present which articles they are looking for in their journals, the publication workflow and how peer review works. This interactive session is the place to ask all your questions around getting your work published.

11:00 am – 1:00 pm

**If I Were a Student Now: Life Lessons from Experts in Academia and Industry: FREE TO ATTEND**

Ever wonder how leaders in the field got to where they are today? Join us for a panel discussion with current leaders in the field of biomaterials and healthcare product development for a historical perspective on their fields, how they developed leadership and project management skills in their careers, and what they would do if they were a graduate student today. We will explore the skillsets that help you succeed in both academia and industry.

TUESDAY,  
APRIL 20, 2021

# SOCIETY FOR BIOMATERIALS

## 2021 VIRTUAL ANNUAL MEETING & EXPOSITION

### Tuesday, April 20, 2021

- 9:00 am – 1:00 pm** **Regenerative Engineering Society Workshop**
- 9:00 am - 11:00 am** **Workshop:** Recent Advances in 3D Printing of Biomaterials  
**Workshop:** Mental Health and Wellbeing as a Scientist  
**Workshop:** Science Communication and Personal Branding for Biomaterials Scientists
- 11:00 am - 1:00 pm** **Workshop:** Biomaterials Science Excellence and Technology Translation  
**Workshop:** Meet the Editors of Wiley's Biomaterials Journals  
**Workshop:** If I Were a Student Now: Life Lessons from Experts in Academia and Industry
- 1:00 pm – 3:00 pm** **Acta Gold Medal Session I**  
**2020 Gold Medalist:**  
Cato Laurencin "Regenerative engineering of musculoskeletal tissues"  
**Invited Lecturer:**  
Robert Langer "Biomaterials and Cato Laurencin: from a brilliant graduate student to a pioneer in regenerative engineering"  
**2020 Silver Medal:**  
Molly Stevens "Designing materials for ultra-sensitive biosensing and therapeutics"  
**Invited Lecturer:**  
Heather Maynard "Carbohydrate polymers and nanoparticles for therapeutic protein delivery"
- 3:00 pm - 3:15 pm** **Break**
- 3:15 pm – 5:15 pm** **Acta Gold Medal Session II**  
**2021 Gold Medalists:**  
Xingdong Zhang "Tissue inducing biomaterials"  
**Invited Lecturer:**  
Tony Mikos "3D printed scaffolds for tissue engineering"  
**2021 Silver Medalists:**  
Tatiana Segura "Hydrogel biomaterials to promote endogenous regeneration"  
**Invited Lecturer:**  
Lonnie Shea "Tissue engineered scaffolds for disease monitoring"

### Wednesday, April 21, 2021

- 9:00 am - 10:30 am** **Opening Ceremony**
- 10:30 am - 10:45 am** **Break**
- 10:45 am – 12:15 pm** **CONCURRENT SESSION I**  
STAR Award Session  
Black and LatinX Voices in Biomaterials Science and Engineering  
Biomaterials Education SIG  
Bio-metals and Electronics assisted tissue regeneration  
BioInterfaces SIG  
Immunomodulatory Biomaterials 1  
Translational Organ-on-a-Chip Technology
- 12:15 pm - 12:30 pm** **Break**
- 12:30 pm – 2:00 pm** **CONCURRENT SESSION II**  
Panel: Transitioning Technology from Bench to Market  
Bioelectronic Devices & Conducting Biomaterials  
Biomaterials for Regenerative Engineering - 1  
Cardiovascular Biomaterials SIG 1  
Engineering Cells and Their Microenvironments SIG - 1  
Orthopaedic Biomaterials SIG 1  
Targeted and Stimuli-Responsive Biomaterials for Drug Delivery - 1
- 2:00 pm – 3:00 pm** **Improving Workplace Climate: Bystander Intervention Training**
- 3:00 pm - 3:15 pm** **Break**
- 3:15 pm - 4:45 pm** **CONCURRENT SESSION III**  
STAR Award Session  
Biomaterial-Tissue Interaction SIG  
Dental/Craniofacial Biomaterials  
Immune Engineering SIG  
Nanomaterials SIG  
Biomaterials-based Strategies for Endogenous Tissue Regeneration - 1  
Postdoctoral Recognition Award (PRA) Competition
- 4:45 pm - 6:15 pm** **CONCURRENT SESSION IV**  
Panel: Biomaterials Education and Research in the Time of COVID  
Biomaterials-based Strategies for Endogenous Tissue Regeneration - 2  
Biomaterials for Women's and Fetal Health \*BTJ\*  
Supramolecular Nanomaterials for Drug Delivery, Imaging, and Immunoengineering  
Surface Modification of Biomaterials 1  
Business Plan Competition
- 6:30 pm - 8:00 pm** **Virtual Biomaterials Bash**

TUESDAY, APRIL 20, 2021

WEDNESDAY, APRIL 21, 2021



## Thursday, April 22, 2021

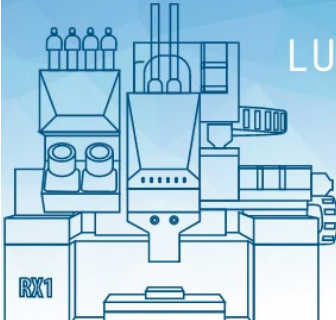
<b>9:00 am – 11:00 am</b>	<b>Plenary Session I</b>
<b>11:00 am - 12:30 pm</b>	<b>CONCURRENT SESSION V</b> Panel: Say What? I Should Follow a Standard? Characterizing Products for Commercialization Biomaterials for Regulating Immune Responses Engineered Biomaterials for Neural Applications - 1 Engineering Cells and Their Microenvironments SIG - 2 Drug Delivery SIG 1 Orthopaedic Biomaterials SIG 2 Tissue Engineering SIG 1
<b>12:30 pm - 1:30 pm</b>	<b>Student Luncheon: Tips for Writing Successful Fellowship Applications</b>
<b>1:30 pm - 1:45 pm</b>	<b>Break</b>
<b>1:45 pm - 3:15 pm</b>	<b>CONCURRENT SESSION VI</b> Panel: Identifying the Commercial Value of Tissue Regenerative Biomaterials 3-minute Thesis Competition Biomaterials for Regenerative Engineering - 2 Cardiovascular Biomaterials SIG 2 Drug Delivery SIG 2 Engineering Tissues with Immune Cells Translational Orthopedic Biomaterials – Progress and Challenges *BTI*
<b>3:15 pm - 4:15 pm</b>	<b>National Student Chapter Meeting</b>
<b>3:15 pm - 4:15 pm</b>	<b>Annual Business Meeting</b>
<b>3:15 pm - 4:15 pm</b>	<b>Exhibits and Rapid Fire Presentations 1</b>
<b>4:15 pm - 5:15 pm</b>	<b>Exhibits and Rapid Fire Presentations 2</b>
<b>5:30 pm - 6:15 pm</b>	<b>Underrepresented Minority Mixer</b>
<b>6:15 pm - 7:00 pm</b>	<b>LGBTQIA Mixer</b>

## Friday, April 23, 2021

<b>9:00 am – 11:00 am</b>	<b>Plenary Session II</b>
<b>11:00 am – 12:30 pm</b>	<b>CONCURRENT SESSION VII</b> Panel: Emerging Bionanomaterials and Nanotoxicity Biomaterials and Medical Products Commercialization SIG *BTI* Biomaterials Systems and Devices for Hemostasis, Resuscitation and Wound Care Engineered Biomaterials for Neural Applications 2 Immunomodulatory Biomaterials 2 Targeted and Stimuli-Responsive Biomaterials for Drug Delivery - 2 Tissue Engineering SIG - 2
<b>12:30 pm - 1:30 pm</b>	<b>Lunch Panel: Building Equitable Policies in STEM to Increase Representation, Inclusion and Diversity in the SFB Community</b>
<b>1:30 pm - 1:45 pm</b>	<b>Break</b>
<b>1:45 pm - 3:15 pm</b>	<b>CONCURRENT SESSION VIII</b> Panel: Dental Biomaterials in Translation: Considerations in Regulatory Approval and Clinical Adoption (Joint Inter-Society SFB-IADR) Biomaterials for Detection, Drug Delivery and Treatment of Microbial Infections Biomaterials for Regenerative Engineering - 3 Biomaterials for Organoids Biosensor/Nanotechnology Drug Delivery 3 Surface Modification of Biomaterials 2
<b>3:15 pm - 4:15 pm</b>	<b>Exhibits and Rapid Fire Presentations</b>
<b>4:30 pm - 5:15 pm</b>	<b>Students &amp; Young Scientist Group Mixer</b>
<b>5:30 pm - 6:30 pm</b>	<b>Young Scientist Group Business Meeting</b>


THURSDAY,  
APRIL 22, 2021

FRIDAY,  
APRIL 23, 2021



LUNCH SESSION AT SFB 2021

**3D bioprinting strategies to create perfusable & heterogeneous soft tissue constructs**



## STAR Awards - Session 1



### BioInterfaces

266. "Using Vesicle Lipid Domains to Enhance Liposomal TRAIL," Timothy Vu

12. "Variation of Chitosan-Hyaluronic Acid Scaffold Processing Parameters Produces In Vitro Breast Cancer Tumor Microenvironments That Promote Different Phenotypes," Zi Wang

### Biomaterials Education

"Development and Optimization of a 3D printed strategy for Contiguous Culture of Dorsal Root Ganglion Cells and Endothelial Cells," Binata Joddar

### Biomaterials & Medical Products Commercialization

24. "Dielectric Barrier Discharge Plasma Enhances Cellular Response of MSCs and Osteoblasts In Vitro and Improves Osseointegration In Vivo in a Rabbit Femur Model," Michael Berger

49. "Conducting Polymer Nanofibers for Biorobotics," Mohammadjavad Eslamian

### Biomaterial-Tissue Interaction

66. "Laminin Interactions with the Islet in a 3D Reverse Thermal Gel Scaffold Protect Against Cytokine-Mediated -cell death," Meghana Hosahalli Shivananda Murthy

14. "Gene Expression Analysis in Tissue-Microelectrode Interface of Cd14<sup>-/-</sup> and WT Mice Reveals Potential Secondary Molecular Target in Neuroinflammatory," Sydney Song

### Cardiovascular Biomaterials

378. "Immobilization of a Collagen-mimicking Peptide to the Surface of Poly(vinyl alcohol) Hydrogels Promotes Endothelialization While Minimizing Thrombosis," Novella Bates

168. "Mechanical Performance of a Hydrogel-Fiber Mesh Composite as a Synthetic Heart Valve Material," Shruti Motiwale

### Drug Delivery

110. "Engineering Lipid Nanoparticles for In Utero mRNA Delivery," Margaret Billingsley

140. "Scalable Parallelized Microfluidic Device for Precise RNA Lipid Nanoparticle Formulations," Sarah Shepherd

### Engineering Cells & Their Microenvironments

191. "In vitro Generation of Antibody Class-Switched Primary B Cells Using Liposome-Based Presentation of Antigen," Liana Kramer

152. "Dissecting the Microenvironmental Control of Liver Stellate Cell Epigenetics and Fibrogenic Phenotypes," Ishita Jain

## STAR Awards - Session 2



### Dental/Craniofacial Biomaterials

91. "Do Quaternary Ammonium Based-Dental Composites Affect the Subgingival Microbiota? A Study on Microcosm Biofilms Cultured from Subgingival Plaque," Abdulrahman Balhaddad

### Immune Engineering

99. "Exogenous Delivery of Indoleamine 2,3-Dioxygenase Reverses Disease Severity in Psoriasis," Sabrina Macias

100. "Quality of CD8<sup>+</sup> T cell Immunity Evoked in Lymph Nodes is Compartmentalized by Route of Antigen Transport and Functional in Tumor Context," Meghan J. O'Melia

### Nanomaterials

36. "Stimuli-Responsive Nanoreporter for Early Monitoring of Immunotherapy Response," Anh Nguyen

107. "Protein Corona Formed on Nanoparticles Is Sensitive to Isomeric Differences In Surface Chemistry," Sridevi Conjeevaram

### Ophthalmic Biomaterials

545. "Mucoadhesion and Mucopenetration of Self-assembled Poly(Lactic Acid)-Block-Poly(Oligoethylene Glycol Methacrylate) Block Copolymer Nanoparticles with Different Ethylene Oxide Side-Chain Lengths," Ridhdhi Dave

### Orthopaedic Biomaterials

159. "Biomimetic Mg-Doped Type I Collagen / Hydroxyapatite Scaffold and Membrane Induces Osteogenesis in Mesenchymal Stem Cells Faster than in 2D Environment," Ava Brozovich

76. "Using Chemical Imaging in Probing Spectral Biomarker of Pseudocapsule Macrophages in Response to Metal Debris," Songyun Liu

### Surface Characterization & Modification

271. "Effects of Zwitterionic Polymer Brush Density and Chain Length on Resisting Protein Adsorption," Julia King

130. "Tannin/glycosaminoglycan-based Polyelectrolyte Multilayers Improve the Endothelialization of TiO<sub>2</sub> Nanotubes," Roberta Sabino

### Tissue Engineering

58. "Bio-Mimetic Peptide Nanofiber Hydrogel Promotes Regenerative Healing in the Murine and Porcine In Vivo Models," Maksym Krutko

43. "Engineered Human Tissues for Assessing Cosmic Radiation Damage," Daniel Tavakol

109. "A Gelatin Hydrogel Model of the Endometrium and Trophoblast Invasion," Samantha Zambuto



## Honorable Mentions

### BioInterfaces

27. "Starch-Based Shape Memory Polymers for Crohn's Fistula Healing," Henry Beaman
241. "Bacteria-Responsive Shape Memory Polymer Wound Dressing," Maryam Ramezani
490. "Nanonet-nano Fiber Electrospun Mesh of PCL-chitosan for Controlled Release of Hydrophilic Drug," Sheikh Saudi

### Biomaterial-Tissue Interaction

219. "Comparison of Immunoisolation Platforms for Pancreatic Islet Transplantation: Polyethylene Glycol Conformal Coating, Alginate Single and Double Capsules," Teresa De Toni
207. "Controlled Oxygen Release to Accelerate Diabetic Wound Healing by Simultaneously Promoting Epithelialization and Angiogenesis, and Decreasing Tissue Inflammation," Ya Guan

### Dental/Craniofacial Biomaterials

89. "Polymeric Coatings for Percutaneous Devices Direct Pericellular Laminin for Hemidesmosome Formation," Nicholas Fischer

### Drug Delivery

139. "Macrophage depletion increases target specificity of bone-targeted nanoparticles," Marian Ackun-Farmmer
144. "Scalable Production of pDNA/IPEI Nanoparticles via Kinetically Controlled Assembly for Gene Delivery with Enhanced Efficiency and Biocompatibility," Yizong Hu
268. "The Development of Lubricated Drug-Eluting Composite Coatings for Endotracheal Tubes," Solaleh Miari
242. "Bacteria Responsive Biopolymer-Coated Gelatin Nanoparticles to Combat Bacterial Biofilms," Yingying Wang
230. "Ternary Complex Nanoparticles Enable Sustained Release of Bortezomib for Local Chemotherapy of Hepatocellular Carcinoma," Yicheng Zhang

### Engineering Cells & Their Microenvironments

506. "Microcontact Printing on Shape Memory Polymers for Altering Cell Morphology," Fred Donelson
153. "Biasing Hematopoietic Response In Single-Cell Microenvironments," Aidan Gilchrist
67. "Investigating Overload in Triggering Hypertrophic Cardiomyopathy Pathogenesis using iPSC Cardiomyocytes," Mimi Guo
446. "Evaluating Mechanical Force in the Tumor Microenvironment through Actuating Biomimetic Lung Platform," Sarah Libring
155. "Development of an In-vitro Microphysiological Model of the Tracheal Epithelium," Solaleh Miari

### Immune Engineering

221. "Dual Inhibition of CSF1R and MAPK Pathways Using Supramolecular Nanoparticles Enhances Macrophage Immunotherapy," Anthony Brouillard
95. "An Antigen-Specific Microparticle System Shows Efficacy in a Mouse Model of Multiple Sclerosis," Alexander Kwiatkowski
188. "Dynamic 3D Tracking of Pancreatic Islet and Immune Cell Interactions In Vitro," Magdalena Samojlik

### Nanomaterials

108. "Targeting Scavenger Receptor Type B1 and Cellular Cholesterol with High-Density Lipoprotein Mimetic Nanoparticles Inhibits SARS-CoV-2 Infection," Stephen Henrich
123. "Methacrylate-Modified Gold Nanoparticles Enable Non-Invasive Monitoring of Photopolymerized Hydrogel Scaffolds," Lan Li
105. "Dual-Nanoparticle System for Enhanced Drug Accumulation and Prolonged Retention in Metastatic Cancers," Michaela Prado Larrea

### Surface Characterization & Modification

356. "A Novel Synthesis Method of Carbide Derived Carbon (CDC) Surface Modification for Hip Implants," Yani Sun

### Tissue Engineering

243. "Engineered Fibrin Nanoparticles for Efficient Drug Delivery to Biofilms," Grant Scull
57. "Novel 3D Printed Poly (Ethylene Glycol) Dimethacrylate Based Photocurable Scaffolds for Cranial Bone Regeneration in the Lewis Rat Model," Janitha Unagolla

# CONCURRENT SESSION 1

APRIL 21, 2021, 10:45 AM – 12:15 PM CDT

STAR Award Session	BioInterfaces SIG	Biomaterials Education SIG	Bio-Metals and Electronics Assisted Tissue Regeneration	Black and LatinX Voices in Biomaterials Science and Engineering	Immunomodulatory Biomaterials 1	Translational Organ-on-a-Chip Technology
<p><b>No Moderator</b></p> <p><b>Moderator:</b> Stephanie Florczyk, PhD</p>	<p><b>Moderator:</b> Amber Jennings, PhD</p>	<p><b>Moderator:</b> Kelvin Yeung, PhD. David Mills, PhD. Bingyun Li, PhD.</p>	<p><b>Moderators:</b> Brian Aguado, PhD Edward Botchwey, PhD Ana Maria Porras, PhD</p>	<p><b>Moderator:</b> Ashish Kulkarni, PhD</p>	<p><b>Moderators:</b> Nureddin Ashammakhi, MD, PhD Scott Taylor</p>	
<p>See STARS LISTING Page 10</p> <p>9. Improved Biocompatibility of Polymer Biomaterials by Surface Texturing and Nitric Oxide Release. Christopher Siedlecki, PhD, Lichong Xu-Xu, PhD, Penn State Hershey, PA, USA</p>	<p>15. Teaching Standardization of Bioprinting. Lisa Kuhn, PhD1, Sangya Varma, PhD2, University of Connecticut, Storrs, CT, USA, 2Rutgers, The State University of New Jersey, New Brunswick, NJ, USA</p>	<p>21. Therapeutic Delivery of Smooth Muscle Cells Encapsulated in Porous Collagen Scaffolds for Treatment of Abdominal Aortic Aneurysm. Ngan Huang1, Joscha Mulorz1,2, Cynthia Alcazar2, Caroline Hu2, Mahdis Shayan1, Yan Wen, Mason Briggs1, Joshua Spin1,2, Bertha Chen1, Phillip Tsoo1,2, Stanford University, Palo Alto, CA, USA, 2Veterans Affairs Palo Alto Health Care System, Palo Alto, CA, USA</p>	<p>28. Controlling Multi-Peptide Organization in 3D-Printed Scaffolds to Drive Osteochondral Tissue Formation. Paula Camacho, Matthew Fainor, Anne Behre, Hannah Dailey, Lesley Chow, Lehigh University, Bethlehem, PA, USA</p>	<p>35. Engineering Injectable Artificial T-Cell Stimulation Microparticles. Natalie Livingston, B.S., John Hickey, PhD, Sebastian Salathe, B.S., Hai-Qun Mao, PhD, Jonathan Schneck, MD, PhD, Johns Hopkins University, Baltimore, MD, USA</p>	<p>36. Stimuli-Responsive Nanoreporter for Early Monitoring of Immunotherapy Response. Anujan Ramesh Ramesh1, Sahana Kuma1,2, Dipika Nandi3, Anthony Brouillard2, Alexandria Wells3, Leonid Pobeznysky, Ph.D.3,4, Barbara Osborne, Ph.D.3,4, Ashish Kulkarni, Ph.D.1,2,3,4, Anh Nguyen2, University of Massachusetts Amherst, Amherst, MA, USA, 3University of Massachusetts - Amherst, Amherst, MA, USA, 4University of Massachusetts - Amherst, Amherst, MA, USA</p>	<p>Invited Speaker: 45. The NIH Tissue Chips Program: Novel tools for translational science. Lucie Low NCATS/NIH</p>
<p>10. Advanced Glycation-End Product Cross-links on Collagen Regulates Myoblast Proliferation and Differentiation. Lucas Olson, BS1, Zvi Schwartz, DMD, PhD1,2, Barbara Boyan, PhD1,3, Michael McClure, PhD1, Virginia Commonwealth University, Richmond, VA, USA, 2University of Texas Health Science Center at San Antonio, San Antonio, TX, USA, 3Georgia Institute of Technology, Atlanta, GA, USA</p>	<p>16. Teaching students in the field of Dental materials science in the COVID-19 pandemic setting in Varna, Bulgaria. Mario Milkov, PhD1, Miroslav Stoykov1, Ivaylo Parushev, PhD1, Stefan Peev, PhD, DSC2, Daniela Petrova1, Faculty of Dental medicine, Medical University "Prof. Dr. Paraskev Stoyanov", Varna, Bulgaria, 2Medical University "Prof. Dr. Paraskev Stoyanov", Varna, Bulgaria</p>	<p>22. Machine learning guided biomaterials development. Ying Mei, PhD1, Sophia Silver1, Jianjun Hu, PhD2, Clemson University, Charleston, SC, USA, 2University of South Carolina, Columbia, SC, USA</p>	<p>29. Nail Matrix Regenerative Engineering: In Vitro Evaluation of Poly(lactide-co-glycolide)/Gelatin Fibrous Substrates. Aundhya Montgomery, MS, Aneesah McClinton, MD, Lakshmi Nair, PhD, Cato Laurencin, MD, PhD, UConn Health, Farmington, CT, USA</p>	<p>37. Harnessing Sustained Release to Produce Robust, Durable, and High-Quality Influenza Immunity. Gillie Roth, PhD1, Olivia Saouaf2, Eric Appel, PhD1,2, Stanford University School of Medicine, Stanford, CA, USA, 2Stanford University, Stanford, CA, USA</p>	<p>41. Effects of macrophage phenotype on osteogenic differentiation of MSCs in the presence of wear particles. Qi Gao, PhD1, Claire Rhee1, Masahiro Maruyama1, Zhong Li2, Huaishuang Shen1, Zhenyu Yao1, Bruce Bumell3, Hang Lin2, Rocky Tuan2, Stuart Goodman1, Stanford University, Palo Alto, CA, USA, 2University of Pittsburgh, Pittsburgh, PA, USA, 3University of North Texas, Fort Worth, TX, USA</p>	
<p>11. Dynamic Microgels for Expansion of Mesenchymal Stem Cells. Han Nguyen, MS1, Zhongliang Jiang, PhD2, Chun-Yi Chang, MS1, Chien-Chi Lin, PhD1,2, Purdue University, West Lafayette, IN, USA, 2Indiana University-Purdue University Indianapolis, Indianapolis, IN, USA</p>	<p>17. Customer Discovery Processes to Realize Commercially Ready Biomaterials Technologies. Karen Burg, Timothy Burg, University of Georgia, Athens, GA, USA</p>	<p>23. Antibacterial and biocompatible Co-Cr surface via Sputtering-based Metal Ion Etching. Hyoun-Ee Kim, PhD1, Tae-Sik Jang, PhD2, Chang-Ha Hwang, BS1, Minkyu Lee, BS1, Seoul National University, Seoul, Republic of Korea, 2Chosun University, GWANGJU, Republic of Korea</p>	<p>29. Nail Matrix Regenerative Engineering: In Vitro Evaluation of Poly(lactide-co-glycolide)/Gelatin Fibrous Substrates. Aundhya Montgomery, MS, Aneesah McClinton, MD, Lakshmi Nair, PhD, Cato Laurencin, MD, PhD, UConn Health, Farmington, CT, USA</p>	<p>37. Harnessing Sustained Release to Produce Robust, Durable, and High-Quality Influenza Immunity. Gillie Roth, PhD1, Olivia Saouaf2, Eric Appel, PhD1,2, Stanford University School of Medicine, Stanford, CA, USA, 2Stanford University, Stanford, CA, USA</p>	<p>41. Effects of macrophage phenotype on osteogenic differentiation of MSCs in the presence of wear particles. Qi Gao, PhD1, Claire Rhee1, Masahiro Maruyama1, Zhong Li2, Huaishuang Shen1, Zhenyu Yao1, Bruce Bumell3, Hang Lin2, Rocky Tuan2, Stuart Goodman1, Stanford University, Palo Alto, CA, USA, 2University of Pittsburgh, Pittsburgh, PA, USA, 3University of North Texas, Fort Worth, TX, USA</p>	

# CONCURRENT SESSION 1

APRIL 21, 2021, 10:45 AM – 12:15 PM CDT

STAR Award Session	BioInterfaces SIG	Biomaterials Education SIG	Bio-metals and Electronics...	Black and LatinX Voices...	Immunomodulatory...	Translational organ-on-a-chip...
12. Variation of Chitosan-Hyaluronic Acid Scaffold Processing Parameters Produces In Vitro Breast Cancer Tumor Microenvironments That Promote Different Phenotypes, Zi Wang, PhD, Kaili Xu, PhD, Dana Rowley, BS, Minh-chau Le, PhD, Annette Khaled, PhD, Stephanie Florczyk, PhD, University of Central Florida, Orlando, FL, USA	24. Dielectric Barrier Discharge Plasma Enhances Cellular Response of MSCs and Osteoblasts In Vitro and Improves Osseointegration In Vivo in a Rabbit Femur Model, Michael Bergerl, D. Joshua Cohen, MB1, Kyla Bosh1, Michael Lewit1, Barbara Boyan, PhD1,2, Zvi Schwartz, PhD, DMD1, 31Virginia Commonwealth University, Richmond, VA, USA, 2Georgia Institute of Technology, Atlanta, GA, USA, 3University of Texas Health Science Center at San Antonio, San Antonio, TX, USA	21. Invented Speaker: Maria Coronel	38. Plasticity of primary human macrophages in crosstalk with blood vessels, Beatriz Hernandez-Estrada, Grad Student1,2, Edorta Santos-Vizcaino, PhD1,3,4, Rosa Hernandez, PhD1,3,4, Kara Spiller, PhD21University of the Basque Country, Vitoria-Gasteiz, Spain, 2Drexel University, Philadelphia, PA, USA, 3Bioaraba, Vitoria-Gasteiz, Spain, 4Instituto de Salud Carlos III, Madrid, Spain	42. Serial Assessment of Pancreatic Islets in 3D Organoid Microphysiological System Demonstrates Retention of Function,	43. Engineered human tissues for assessing cosmic radiation damage, Daniel Javakol1, Trevor Nash1, Manuel Tamargo1, Youngbin Kim1, Sharon Fleischer, PhD1, Martin Liberman1, Guy Garty, PhD2, Jorlene de Nooij, PhD3, David Brenner, PhD2, Gordana Vunjak-Novakovic, PhD11Columbia University Biomedical Engineering, New York City, NY, USA, 2Columbia University Center for Radiological Research, New York City, NY, USA, 3Columbia University Medical Center, New York City, NY, USA	44. CARTiFlo: A Gioblastoma-on-Chip Platform to Assess In Vitro Potency of CART Cell Therapy, Chaitanya Iondepu, Meghan Logan, Yang Liu, Leidong Mao, PhD, Lohitash Karumbahai, University of Georgia, Athens, GA, USA
13. Design Build and Validate Strategy to 3D Print Biomimetic Bioglass Gradient Matrices for ACL Reconstruction, Nilabh Kajave, Trevor Schmitt, Vipul Kishore, Florida Institute of Technology, Melbourne, FL, USA	25. Improved Mechanical Property and Biocompatibility of Binary Zinc Alloys, Yingchao Su, PhD1, Yufeng Zheng2, Yadong Wang3, Donghui Zhu11Stony Brook University, Stony Brook, NY, USA, 2Peking University, Beijing, China, 3Cornell University, Ithaca, NY, USA	Invented Speaker: Lola Eniola-Adefeso	39. Take-Out or Dine-in: Immunogenicity of Peptide Nanofibers Presenting Exogenous or Endogenous Forms of the Same Antigen, Paresch Shrimali, PhD, Jeremy Buck, BS, Daren Kim, BA, Jai Rudra, PhD, Washington University in Saint Louis, Saint Louis, MO, USA	43. Engineered human tissues for assessing cosmic radiation damage, Daniel Javakol1, Trevor Nash1, Manuel Tamargo1, Youngbin Kim1, Sharon Fleischer, PhD1, Martin Liberman1, Guy Garty, PhD2, Jorlene de Nooij, PhD3, David Brenner, PhD2, Gordana Vunjak-Novakovic, PhD11Columbia University Biomedical Engineering, New York City, NY, USA, 2Columbia University Center for Radiological Research, New York City, NY, USA, 3Columbia University Medical Center, New York City, NY, USA	44. CARTiFlo: A Gioblastoma-on-Chip Platform to Assess In Vitro Potency of CART Cell Therapy, Chaitanya Iondepu, Meghan Logan, Yang Liu, Leidong Mao, PhD, Lohitash Karumbahai, University of Georgia, Athens, GA, USA	
14. Gene Expression Analysis in Tissue-Microelectrode Interface of Cd147- and Wf Mice Reveals Potential Secondary Molecular Target in Neuroinflammatory Pathway, Sydney Song 1, Hillary Bedell1, Evon Erefeij2, Ricky Chan1, Jeffrey Capadona11Case Western Reserve University, Cleveland, OH, USA, 2Veterans Affairs Ann Arbor Health Care System, Ann Arbor, MI, USA	26. Use of Transient Cuff Electrodes for Chronic HFAC Conduction Nerve Block Implants, Emily Ray, Sabrina Genova, Washington University School of Medicine in St. Louis, St. Louis, MO, USA	Invented Speaker: Koia de Adebawale	40. The Extracellular Matrix Scaffold Type-2 Host Immune Response Facilitates Cancer Protection, Matthew Wolf, PhD1,2,3, Sudipto Ganguly, PhD3, Radhika Narain, MS2, Drew Pardoil, MD, PhD3, Jennifer Elisseeff, PhD2, 31National Cancer Institute, Frederick, MD, USA, 2Johns Hopkins University, Baltimore, MD, USA, 3Johns Hopkins University School of Medicine, Baltimore, MD, USA	44. CARTiFlo: A Gioblastoma-on-Chip Platform to Assess In Vitro Potency of CART Cell Therapy, Chaitanya Iondepu, Meghan Logan, Yang Liu, Leidong Mao, PhD, Lohitash Karumbahai, University of Georgia, Athens, GA, USA	44. CARTiFlo: A Gioblastoma-on-Chip Platform to Assess In Vitro Potency of CART Cell Therapy, Chaitanya Iondepu, Meghan Logan, Yang Liu, Leidong Mao, PhD, Lohitash Karumbahai, University of Georgia, Athens, GA, USA	

Invented Speaker: Tibra Wheeler

# CONCURRENT SESSION 2

## APRIL 21, 2021, 12:30 PM – 2:00 PM CDT

Panel Discussion: Transitioning Technology from Bench to Market	Bioelectronic Devices & Conducting Biomaterials	Biomaterials for Regenerative Engineering - 1	Cardiovascular Biomaterials SIG 1	Engineering Cells and Their Microenvironments SIG - 1	Orthopaedic Biomaterials SIG 1	Targeted and Stimuli-Responsive Biomaterials for Drug Delivery – 1
<p><b>Moderators:</b> Deanna Bousalis Jason Guo</p> <p><b>Moderator:</b> Alexandra Rutz</p> <p>Invited Speaker: Larry Thatcher, IESco Associates</p> <p>Invited Speaker: 52 Biomaterial Innovations through Understanding Brain-Technology Interfaces Takashi Daniel Yoshida Kozai, University of Pittsburgh</p>	<p><b>Moderator:</b> Ngan F. Huang, PhD and Chris Bashur, PhD</p> <p>Invited Speaker: Cato Laurencin, MD, PhD, University of Connecticut</p>	<p><b>Moderator:</b> Gulden Camci-Unal, PhD Cato Laurencin, MD, PhD</p>	<p><b>Moderators:</b> Ashley Brown, PhD Chris Highley, PhD Scott Wood, PhD</p>	<p><b>Moderators:</b> Toiou Shokufar, PhD Kelvin Yeung, PhD</p>	<p><b>Moderator:</b> Danielle Benoit, PhD</p>	
<p>Invited Speaker: Michaela McCrory, Ph.D.</p> <p>Invited Speaker: Dr. Jordan Miller</p> <p>Invited Speaker: Johnny Lam</p>	<p>Invited Speaker: 52 Biomaterial Innovations through Understanding Brain-Technology Interfaces Takashi Daniel Yoshida Kozai, University of Pittsburgh</p>	<p>Invited Speaker: Cato Laurencin, MD, PhD, University of Connecticut</p>	<p>61. Antagonistic Effect of Magnesium Hydroxide Nanoparticle on Vascular Endothelial Activation Induced by Acridic PLGA Degradation Product, Kyoung-Won Ko, Dong Keun Han, CHA University, Seongnam-si, Republic of Korea</p>	<p>65. Hydrogel Cultures Reveal Sex Differences in Valvular Myofibroblasts with Links to Genes that Escape X-Chromosome Inactivation, Brian Aguado, PhD, Ciera Walker, Joseph Grimm, Megan Schroeder, Dilara Batan, Brandon Vogt, Andrea Gonzales-Rodriguez, Donald Heistad, Leslie Lenwand, Kristi Anceith University of Colorado Boulder, Boulder, CO, USA</p>	<p>71. Multi-functional Cerium Oxide Nanoparticles Protect Against Irradiation-Induced Cellular Damage while Augmenting Osteogenesis In Vitro, Fei Wei, PhD, Craig Neal, BS, Tamil Sakthivel, PhD, Sudipta Seal, PhD, Thomas Kean, PhD, Mehdi Razavi, PhD, Melanie Coathup, PhD, University of Central Florida, Orlando, FL, USA</p>	<p>223. Injectable Acylhydrazide Hydrogels for Sustained Protein Release, Fang-Yi Lin, PhD, Nathan Dimmitt, Chien-Chi Lin, PhD, Indiana University-Purdue University Indianapolis, Indianapolis, IN, USA</p>
<p>Invited Speaker: Michaela McCrory, Ph.D.</p>	<p>54. Water-in-Oil Emulsion Bioink for 3D Bioprinting of Living Rigid Scaffolds, Yonghui Ding, PhD, Cheng Sun, PhD, Guillermo Ameer, DSc, Northwestern University, Evanston, IL, USA</p>	<p>62. Decreasing tissue stiffness improves extracellular matrix hydrogel therapeutic efficacy for myocardial infarction, Xinming Wang, MS, Samuel Senyo, PhD, Paul Park, PhD, Case Western Reserve University, Cleveland, OH, USA</p>	<p>66. Laminin interactions with the islet in a 3d reverse thermal gel scaffold protect against cytokine-mediated <math>\beta</math>-cell death, Meghana Shivananda Murthy, MS1,2, Nikki Farnsworth, PhD1,2, Colorado School of Mines, Golden, CO, USA, 2 University of Colorado Anschutz Medical Campus, Aurora, CO, USA</p>	<p>72. Repair of Rat Calvaria Defect with Injectable Strontium (Sr<sup>2+</sup>)-Doped Polymeric Strucite Ceramics, David Markell, Z, Therese Bou-Akl, Paula Diaz,1, Bin Wu1, Tong Shi,2, Paul Begeman,2, Weiping Ren, PhD1,2, Ascension Providence Hospital, Southfield, MI, USA, 2Wayne State University, Detroit, MI, USA</p>	<p>224. Polydopamine-Mesoporous Silica Core-Shell Nanoparticles for Combined Photothermal-immunotherapy, Anushree Seth, PhD, Hamed Derami, Prashant Gupta, Zheyu Wang, Priya Gupta, Rohit Gupta, Thao Cao, Jeremiah Morrissey, PhD, Srikanth Singamaneni, PhD</p>	<p>225. Hydrolytically degradable hydrogels for therapeutic delivery, Maria Shah, PhD, Karen Martin, Rahul Colonel, PhD, Karen Martin, Rahul Shah, Andres Garcia, PhD, Georgia Institute of Technology, Atlanta, GA, USA</p>
<p>Invited Speaker: Johnny Lam</p>	<p>49. Conducting Polymer Nanofibers for Biobotics, Mohammadjavad Eslamiyan, Fereshahsadat Mirab, Vijaykrishna Raghunathan, PhD, Sheereen Majid, PhD, Mohammad Reza Abidian, PhD, University of Houston, Houston, TX, USA</p>	<p>55. Nucleic Acid-Collagen Complexes (NACCs) Stabilization via Physiological Ions, Paxton James, Bryan James, Josephine Allen, University of Florida, Gainesville, FL, USA</p>	<p>63. Model-directed Design of Kink Resistant Vascular Grafts with High Compliance, Andrew Robinson 1, David Jiang,2, Lucas Timmins, PhD,2, Elizabeth Cosgriff-Hernandez, PhD,1 The University of Texas at Austin, Austin, TX, USA, 2The University of Utah, Salt Lake City, UT, USA</p>	<p>67. Investigating Overload in Triggering Hypertrophic Cardiomyopathy Pathogenesis using iPSC Cardiomyocytes, Jigxuan Guo, MS, Huanzhu Jiang, Kasoorelope Oguntayo, Brandon Rios, Anand Boordram, Nathaniel Huebsch, PhD, Washington University in St. Louis, St. Louis, MO, USA</p>	<p>73. Temporally Controlled Release of Perostein   Paracrine Factor Mimetics for Efficient Bone Allograft Healing: A Cell and Growth Factor Free Approach, Sayantani Basu, Ph.D., Amy Van Hove, Ph.D., Yiming Li, Ph.D., Danielle Benoit, Ph.D, University of Rochester, Rochester, NY, USA</p>	<p>226. Modular Oxygen-Generating Biomaterials for in situ Support of Cell-based Therapies, Robert Accolla<sup>1</sup>, Jia-Pu Liang<sup>1</sup>, Cherie Stabler, PhD<sup>1,2</sup>, University of Florida, Gainesville, FL, USA, 2UF Diabetes Institute, Gainesville, FL, USA</p>
<p>Invited Speaker: Johnny Lam</p>	<p>56. Nucleic Acid Elastin Collagen Complex (NAECC) Fibers and Gels Working Towards an ECM Mimic, Sophia Saenz, Bryan James, Josephine Allen, University of Florida, Gainesville, FL, USA</p>	<p>64. Revelation of Vasculature Tree Structure Inside Sesamoid Bone and Its Impact on Bone Mechanical Integrity, Guigen Zhang, PhD<sup>1</sup>, Erik Davis, BS<sup>1</sup>, University of Kentucky, Lexington, KY, USA</p>	<p>68. Myofibroblast persistence promotes inflammation via IL-8 secretion in valvular interstitial cells, Ciera Walker, Megan Schroeder, PhD, Leslie Lenwand, PhD, Kristi Anceith, PhD, University of Colorado Boulder, Boulder, CO, USA</p>	<p>74. Comparison of Two Nerve Ablation Models and their Impact on Titanium Implant Osseointegration, Jingyao Deng, IV, David Cohen, MD<sup>1</sup>, Barbara Boyan, PhD<sup>1,2</sup>, Zvi Schwartz, PhD, DMD<sup>1,3</sup>, Virginia Commonwealth University, Richmond, VA, USA, 2Georgia Institute of Technology, Richmond, VA, USA, 3University of Texas Health Science Center at San Antonio, Richmond, VA, USA</p>	<p>226. Modular Oxygen-Generating Biomaterials for in situ Support of Cell-based Therapies, Robert Accolla<sup>1</sup>, Jia-Pu Liang<sup>1</sup>, Cherie Stabler, PhD<sup>1,2</sup>, University of Florida, Gainesville, FL, USA, 2UF Diabetes Institute, Gainesville, FL, USA</p>	



# CONCURRENT SESSION 2

APRIL 21, 2021, 12:30 PM – 2:00 PM CDT

Panel Discussion:...	Bioelectronic Devices ...	Biomaterials for...	Cardiovascular Biomaterial...	Engineering Cells and...	Orthopaedic Biomaterials...	Targeted and...
Invited Speaker: Dr. Sarah Meyers	50. Identifying Fabrication Parameters for Tuning Material Properties of Electrochemically Aligned Collagen Threads with Deep Neural Networks, Weihuan Sun <sup>1</sup> , Victoria Webster-Wood, PhD <sup>1,2</sup> Dept. Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA, USA, 2 Dept. Biomedical Engineering, Carnegie Mellon University, Pittsburgh, PA, USA	57. Novel 3D printed poly(ethylene glycol) dimethacrylate based photocurable scaffolds for cranial bone regeneration in the Lewis rat model, Janitha Unagolla, MS <sup>1</sup> , Champa Jayasuriya, Ph.D <sup>2</sup> University of Toledo, Toledo, OH, USA, 2 University of Toledo Health science campus, Toledo, OH, USA	69. Sliding Hydrogels with Tunable Molecular Mobility Enhance Cartilage formation by Chondrocytes and Stem Cells in a dose-dependent manner, Xinming Tong, Manish Ayushiman, Fan Yang Stanford University, Stanford, CA, USA	75. Microribbon-based macroporous matrices enhance cartilage repair in rat osteochondral defect model, Xinming Tong, Masahiro Maruyama, Daniel Barati, Stuart Goodman, Fan Yang Stanford University, Stanford, CA, USA	227. Ultrasound-Controlled Release of Basic Fibroblast Growth Factor (bFGF) from Acoustically-Responsive Scaffolds Improves Recovery in the Murine Model of Hind Limb Ischemia, Hai Jim <sup>1,2</sup> , Carole Quesada <sup>1</sup> , Mitra Aliabouzar <sup>1</sup> , Oliver Kripfgans <sup>1</sup> , J. Brian Fowlkes <sup>1</sup> , Renny Franceschi <sup>1</sup> , Jianhua Liu <sup>2</sup> , Andrew Punam <sup>1</sup> , Mario Fabilli <sup>1</sup> University of Michigan, Ann Arbor, MI, USA, 2 South China University of Technology, Guangzhou, China	
	51. Wireless Smart Contact Lens for Diabetic Diagnosis and Therapy, Su-Kyoung Kim, Ph.D Candidate, Sei Kwang Hahn, Professor Pohang University of Science and Technology (POSTECH), Pohang, Republic of Korea	58. Bio-Mimetic Peptide Nanofiber Hydrogel Promotes Regenerative Healing in the Murine and Porcine In Vivo Models, Maksym Krutko, Daria Narmoneva, Ph.D, Nava Rijal, Aditya Kaul, Swathi Balaji, PhD, Shelby Carr, University of Cincinnati, Cincinnati, OH, USA	70. Supramolecular Click Product Interactions Induce Dynamic Stiffening of Extracellular Matrix-Mimetic Hydrogels, Samantha Holt, Julio Arroyo, Emily Poux, Marissa Heintschel, Austen Fricks, Isabelle Agurcia, Amanda Rakoski, Daniel Alge, Ph.D Texas A&M University, College Station, TX, USA	76. Using chemical imaging in probing spectral biomarker of pseudo-capsule macrophages in response to metal debris, Songyun Liu <sup>1,2</sup> , Deborah Hall <sup>1</sup> , Stephanie McCarthy <sup>1</sup> , Joshua Jacobs, MD <sup>1</sup> , Robin Pourzal, PhD <sup>1</sup> Rush University Medical Center, Chicago, IL, USA, 2 University of Illinois at Chicago, Chicago, IL, USA	228. Spatially-Directed Angiogenesis via the Ultrasound-Controlled Release of Basic Fibroblast Growth Factor (bFGF) from Acoustically-Responsive Scaffolds, Lerdan Huang <sup>1,2</sup> , Carole Quesada <sup>1</sup> , Mitra Aliabouzar <sup>1</sup> , Oliver Kripfgans <sup>1</sup> , Renny Franceschi <sup>1</sup> , Zheng Liu <sup>2</sup> , Andrew Punam <sup>1</sup> , Mario Fabilli <sup>1</sup> University of Michigan, Ann Arbor, MI, USA, 2 Second Affiliated Hospital of Army Medical University, Chongqing, China	
	52. Biomaterial Innovations through Understanding Brain-Technology Interfaces Takashi Daniel Yoshida Kozai, University of Pittsburgh	59. ROS degradable Urethane Scaffold Mediated Repair of Porcine Excisional Wounds, Prarthana Patil <sup>1</sup> , Katherine Russo <sup>1</sup> , Joshua McCune <sup>1</sup> , Alonda Pollins <sup>2</sup> , Nancy Cardwell <sup>2</sup> , Jeffrey Davidson <sup>2</sup> , Scott Guelcher <sup>1</sup> , Craig Duval <sup>1</sup> Vanderbilt University, Nashville, TN, USA, 2 Vanderbilt University Medical Center, Nashville, TN, USA				

# CONCURRENT SESSION 3

## APRIL 21, 2021, 3:15 PM – 4:45 PM CDT

Star Award Session 2



Biomaterials-based Strategies for Endogenous Tissue Regeneration - 1

Biomaterial-Tissue Interaction SIG

Dental/Craniofacial Biomaterials

Immune Engineering SIG

Nanomaterials SIG

Postdoctoral Recognition Award (PRA) competition

No Moderator

Moderator: Hongli Sun, PhD  
Bin Duan, PhD

Moderator: Floyd Karp, PhD

Moderator:  
Santiago Orrego, PhD,  
and Xiaohua Liu, PhD

Moderators: Kara Spiller, PhD  
Lance Kam, PhD  
Rebecca Pompano, PhD

Moderator: Ming Su, PhD

Moderators:  
Maria Coronel, PhD  
Claudia Loebele, MD, PhD

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83. Artificial meninges reduce fibroblastic and astroglial responses in a rabbit cord transection. Barbie Varghese<sup>1</sup>, Duke Shereen<sup>2</sup>, Alan Seifert<sup>3</sup>, Lauren Bright<sup>1</sup>, Antonio Merolli<sup>1</sup> Rutgers University, Piscataway, NJ, USA, 2City University of New York, New York, NY, USA, 3Icahn School of Medicine Mount Sinai, New York, NY, USA

89. Polymeric Coatings for Percutaneous Devices: Direct Pericellular Laminin for Hemidesmosome Formation. Nicholas Fischer, David De Jong, Conrado Aparicio University of Minnesota, Minneapolis, MN, USA

95. An Antigen-Specific Microparticle System Shows Efficacy in a Mouse Model of Multiple Sclerosis. Alexander Kwiatkowski<sup>1</sup>, Joshua Stewart, PhD<sup>1</sup>, Eric Helm<sup>2</sup>, Theodore Drashansky, PhD<sup>2</sup>, Dorina Avram, PhD<sup>2</sup>, Benjamin Keselowsky, PhD<sup>1</sup> University of Florida, Gainesville, FL, USA, 2University of Florida, Gainesville, FL, USA, 3H. Lee Moffitt Cancer Center and Research Institute, Tampa, FL, USA

103. Sustained & Localized Cyclosporine Delivery and Activity Using Nanomicelles and Nanofibrils. Diana Velluto, PhD, Damir Bojdzic, Teresa De Toni, Peter Buchwald, PhD, Alice Tomei, PhD University of Miami, Miami, FL, USA

A Potent Branched-tail Lipid Nanoparticle Enables Multiplexed mRNA Delivery and Gene Editing in vivo. Jilian Melamed, PhD

77. Sulfated Hydrogels to Prolong Localized Availability of the Stromal Cell Secretome. Marissa Gionet-Gonzales<sup>1</sup>, Daphne Diloretto<sup>1</sup>, Clara Ginnelli<sup>1</sup>, J. Kent Leach<sup>1,2</sup>, University of California Davis, Davis, CA, USA, 2UC Davis Health, Sacramento, CA, USA

84. ECM Components Recruited with Peritoneal Preimplantation and Correlation with Vascular Graft Outcomes. Valentina Ochoa Mendoza, Mahyar Sameti, PhD, Lisa Moore, PhD, Chris A Bashur, PhD Florida Institute of Technology, Melbourne, FL, USA

90. A new approach to evaluate the bond strength of dental restorations. Carolina Montoya, PhD, Anubhav Jain, DDS, Santiago Orrego, PhD Temple University, Philadelphia, PA, USA

96. Lipid Nanoparticle-Mediated mRNA Delivery for CAR T Cell Engineering. Margaret Billingsley, Michael Mitchell, PhD University of Pennsylvania, Philadelphia, PA, USA

104. Application of Magnetic Particle Imaging Technology to Understand Nanoparticle Biodistribution in Osteoarthritic Joints. Toluope Ajayi University of Florida, Gainesville, FL, USA

Functional Heterogeneity of FN-1 Licensed Mesenchymal Stromal Cell Immunosuppressive Capacity on Biomaterials, Brian Kwee, PhD

78. Modifying Mineralized Collagen Scaffolds to Modulate the Inflammatory Response in Cranio-maxillofacial Defects and Enhance Bone Regeneration. Vasiliki Kolipoulos, Marley Dewey, Brendan Harley, PhD, Mai Ngo, University of Illinois at Urbana-Champaign, Urbana, IL, USA

85. Toll-like receptor mediated macrophage responses to adsorbed cellular damage molecules. Laura McKiel, PhD, Kimberly Woodhouse, PhD, Lindsay Fitzpatrick, PhD Queen's University, Kingston, ON, Canada

91. Do Quaternary Ammonium Based-Dental Composites Affect the Subgingival Microbiota? A Study on Microcosm Biofilms Cultured from Subgingival Plaque. Abdurahman Balhaddad<sup>1,2</sup>, Isadora Garcia<sup>3</sup>, Lamia Mokeem<sup>1</sup>, Maria Ibrahim<sup>1,2</sup>, Fabrício Colares<sup>3</sup>, Michael Weir<sup>1</sup>, Huakun Xu<sup>1</sup>, Many Anne Melo<sup>1</sup> University of Maryland, Baltimore, Baltimore, MD, USA, 2Imam Abdulrahman Bin Faisal University, Baltimore, Saudi Arabia, 3Federal University of Rio Grande do Sul, Porto Alegre, Brazil

99. Exogenous Delivery of Indoleamine 2,3-Dioxygenase Reverses Disease Severity in Psoriasis. Sabrina Macias, Marija Zovko, Isha Verma, Arun Wanchoo, PhD, Gregory Hudalla, PhD, Benjamin Kesselowsky, PhD University of Florida, Gainesville, FL, USA

105. Dual-Nanoparticle System for Enhanced Drug Accumulation and Prolonged Retention in Metastatic Cancers. Michaela Prado<sup>1,2,3</sup>, Pere Dosta, PhD<sup>1,2</sup>, Pau Hurtado, MSc<sup>1,2</sup>, Natalie Atzi, PhD<sup>1,2</sup> Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA, 2Massachusetts Institute of Technology, Cambridge, MA, USA, 3Tecnológico de Monterrey, Monterrey, Mexico

Synthetic Hydrogels to Study ECM Dynamics of Intestinal Organoids, Michael Blatchley, PhD

# CONCURRENT SESSION 3

APRIL 21, 2021, 3:15 PM – 4:45 PM CDT

STAR AWARD SESSION 2	Biomaterials-based...1	Biomaterial-Tissue...	Dental/Craniofacial...	Immune Engineering SIG	Nanomaterials SIG	Postdoctoral Recognition...
	79. Single-step peptide functionalization for spatially organized 3D-printed scaffolds. Paula Camacho, Kelly Seims, Haliz Busari, Hannah Dailey, Lesley Chow	86. Generation of Mesenchymal Meta-Tissues Using Multi-Photon Lithography. Chenyan Wang, Zacharias Vangelatos, Tackla Winston <sup>1</sup> , Costas Grigoriopoulos, PhD2, Zhen Ma, PhD11.Syracuse University, Syracuse, NY, USA, 2University of California, Berkeley, Berkeley, CA, USA	92. Translation of 3D-Printed Hyperelastic Bone <sup>®</sup> Advanced Biomaterial Products for Off-the-Shelf and Patient-Matched Dental and Maxillofacial Repair and Regeneration. Adam Jakus, PhD2Dimension Inx, Chicago, IL, USA	100. Quality of CD8+ T cell Immunity Evoked in Lymph Nodes is Compartmentalized by Route of Antigen Transport and Functional in Tumor Context. Meghan O'Melia <sup>1,2</sup> , Nathan Rohner <sup>1</sup> , Margaret Manspeaker <sup>1</sup> , David Francis <sup>1</sup> , Haydn Kissick <sup>2</sup> , Susan Thomas <sup>1,2</sup> Georgia Institute of Technology, Atlanta, GA, USA 2Emory University, Atlanta, GA, USA	106. Multi-step Compositional Screening of pDNA Lipid Nanoparticles to Optimize Transfection Efficiency for Oral Gene Delivery. Yizong Hu, Yining Zhu, Hai-Quan Mao Johns Hopkins University, Baltimore, MD, USA	Macrophage Depletion Increases Target Specificity of Bone-targeted Nanoparticle. Marian Ackun-Farmer, PhD
	80. Characterization of Highly Elastic, Biodegradable Citrate-based Elastomer for Tissue Engineering. Thao Nguyen, Madeleine Goedegebuure, Arun Sharma, PhD, Guillermo Ameer, PhD, Northwestern University, Evanston, IL, USA	87. Tunable CaproGlu adhesives for enhanced tissue compatibility. Ivan Solic, Ivan Djordjevic, Manisha Singh, Terry SteeleNanyang Technological University, Singapore, Singapore	93. Siloxane-Containing Shape Memory Polymer (SMP) Scaffolds for Cranial Bone Defect Repair. Felipe Beltran, Christopher Houk, Melissa Grunlan, PhDTexas A&M University, College Station, TX, USA	101. PE Glycation of Indoleamine 2,3-Dioxygenase for Addressing Systemic Immune Regulation. Jennifer Simonovich <sup>1</sup> , Arun Warchool <sup>1</sup> , Alexander Kwiatkowski <sup>1</sup> , Dorina Avram <sup>2</sup> , Gregory Hudlall <sup>1</sup> , Benjamin Keselowsky <sup>1</sup> University of Florida, Gainesville, FL, USA, 2H. Lee Moffitt Cancer Center and Research Institute, Tampa, FL, USA	107. Protein corona formed on nanoparticles is sensitive to isomeric differences in surface chemistry. Sridevi Baradhvaj Conjeevaram, Ryan BlanchardTexas A&M University, College Station, TX, USA	Injectable Granular Hydrogels with Tunable Porosity to Promote Cell and Vessel Invasion. Iaimoor H. Oazi, PhD
	88. Glycosaminoglycans and Dexamethasone Influence Trabecular Meshwork Cell Behavior on 3D Scaffolds. Bikram Adhikari <sup>1</sup> , Melissa Krebs <sup>1</sup> , Mina Pantcheva, MD21 Colorado School of Mines, Golden, CO, USA, 2University of Colorado School of Medicine, Aurora, CO, USA	94. Surpassing Short-term Antibacterial Activity for Bioactive Dental Composites with Quaternary Ammonium compound: A Long-term Evaluation after Artificial Aging. Abdulrahman Balhaddad <sup>1,2</sup> , Iamia Mokeem <sup>1</sup> , Michael Weir <sup>1</sup> , Huakun Xu <sup>1</sup> , Mary Anne Melo <sup>1</sup> University of Maryland, Baltimore, Baltimore, MD, USA, 2Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia	102. Liver targeting synthetic glycosylations: Engineering humoral tolerance to protein therapeutics. Scott Wilson, PhD <sup>1</sup> , Kym Brung-Wallace <sup>2</sup> , Michael Racz <sup>2</sup> , Rachel Jeffrey Hubbell, PhD2 Johns Hopkins University, Baltimore, MD, USA, 2University of Chicago, Chicago, IL, USA	108. Targeting Scavenger Receptor Type B1 and Cellular Cholesterol with High-Density Lipoprotein Mimetic Nanoparticles inhibits SARS-CoV-2 Infection. Stephen Henrich, Kaylin McMahon, PhD, Nicole Palacio, Pablo Penaloza-McMaster, PhD, Colby Thaxton, MD, PhDNorthwestern University, Chicago, IL, USA	Microparticle-based Delivery of Bacteriophage to Treat Staphylococcus Aureus and Pseudomonas Aeruginosa Coinfections. Pranav Kalelkar, PhD	Therapeutics for Neural Injury Using Natural-based Hydrogels and Chondroitinase ABC-Galactin-3, Nora Hlavac, PhD

# CONCURRENT SESSION 4

## APRIL 21, 2021, 4:45 PM – 6:15 PM CDT

Panel Discussion: Biomaterials Education and Research in the Time of COVID	Biomaterials for Women's and Fetal Health *BTI*	Biomaterials-based Strategies for Endogenous Tissue Regeneration - 2	Supramolecular Nanomaterials for Drug Delivery, Imaging, and Immunoengineering	Surface Modification of Biomaterials 1	Business Plan Competition
<p><b>Moderators:</b> Cheryl Gomillion, PhD Jessica Amber Jennings, PhD</p> <p>Invited Speaker: Karin Jensen, Ph.D.</p> <p>109. A Gelatin Hydrogel Model of the Endometrium and Trophoblast Invasion, Samantha Zambuto, ScM1, Ishita Jain1, Shernona Rattilaz, Kathryn Clancy, PhD1, Gabriela Dyckster, PhD2, Gregory Underhill, PhD1, Brendan Harley, PhD11University of Illinois Urbana-Champaign, Urbana, IL, USA, 2Uniformed Services University of the Health Sciences, Bethesda, MD, USA</p>	<p><b>Moderators:</b> Christaina Bailey-Hytholt, PhD David Martin, PhD</p> <p>110. Engineering Lipid Nanoparticles for In Utero mRNA Delivery, Margaret Billingsley, Michael Mitchell, PhD1University of Pennsylvania, Philadelphia, PA, USA</p>	<p><b>Moderator: Hongli Sun, PhD</b></p> <p>115. Controlling Osteogenesis by Grafting Peptide Mimetics via Orthogonal Click Chemistries to Aliginate Hydrogels, Xiahong Tan1, Hannah Graf2, Rama Balasubramaniam1, Nathaniel Huebsch, PhD11Washington University in St. Louis, St. Louis, MO, USA, 2Eberhard-Karls University, Tübingen, Germany</p>	<p><b>Moderators: Eunji Chun, PhD Bret Ulery, PhD</b></p> <p>121. Randomized Peptide Assemblies for Improving the Efficacy of Epitope-Based Influenza Vaccines, Nicole Votaw, Lucas Shores, Andy Miranda, Alfred Harding, Nicholas Heaton, PhD, Joel Collier, PhDDuke University, Durham, NC, USA</p>	<p><b>Moderator: Guigen Zhang, PhD Bingyun Li, PhD</b></p> <p>Invited Speaker: Buddy Ratner, PhD, University of Washington</p>	<p><b>Moderator: Bob Hastings, PhD</b></p> <p>276. Bioresorbable stents for congenital heart disease, Tre Raymond Welch, PhD, Jamie Wright, PhD, UT Southwestern Medical Center</p>
<p>Invited Speaker: Elizabeth Cosgriff-Hernandez, PhD</p> <p>110. Engineering Lipid Nanoparticles for In Utero mRNA Delivery, Margaret Billingsley, Michael Mitchell, PhD1University of Pennsylvania, Philadelphia, PA, USA</p>	<p>116. Neurotization of Decellularized Muscle Matrix Improves Functional Recovery and Promotes Unique mRNA Profiles in a Volumetric Muscle Loss Model, James Redden, B.S. Biomedical Engineering, David Cohen, Lucas Olson, Luke Krebs, Gettanjali Bendale, Jonathan Isaacs, Zvi Schwartz, Michael McClure1Virginia Commonwealth University, Richmond, VA, USA</p>	<p>112. Synthetic Self-Assembled Nanorod Vaccine Confers Protection Against Influenza A Virus, Mélanie Côté-Cyr1,2, Ximena Zottig1,2, Soulihan Al-Halifa1,2, Denis Archambault1, Steve Bourgauff1,21Université du Québec à Montréal, Montréal, QC, Canada, 2Quebec Network for Research on Protein Function, Engineering and Applications (PROTEO), Québec, QC, Canada</p>	<p>128. Controlling Microbial Infection by Submicron Textured Surfaces, Lichong Xu Xu, PhD, Christopher Siedlecki, PhDPenn State University College of Medicine, Hershey, PA, USA</p>	<p>127. Modular cell culture platform for preclinical testing, Ram Saraswat South Dakota School of Mines &amp; Technology</p>	
<p>Invited Speaker: Tom Dziubla, PhD</p> <p>111. Fully Absorbable Poly-4-hydroxybutyrate (P4HB) Scaffold Provides Mechanical Support at 12 months Following Vaginal Implantation in an Ovine Model, Zeliha Guler, PhD, University of Amsterdam, Amsterdam, Netherlands</p>	<p>117. The Macroarchitecture of Biomimetic Proteoglycans is Responsible for the Micromolecular Engineering of Cartilage-Pericellular Matrix, Elizabeth Kahle1, Biao Han, PhD1, Prashant Chandrasekaran, PhD1, Katsiaryna Prudnikova, PhD1, Michele Marcolongo, PhD, PE1,2, Lin Han, PhD11Drexel University, Philadelphia, PA, USA, 2Villanova University, Villanova, PA, USA</p>	<p>122. Development of needle free transdermal microparticulate vaccine for Coronavirus Diseases, Sharon Vijayanand, B.Pharm, Smital Patel, B.Pharm, Devyani Joshi, B.Pharm, Keegan Braz Gomes, B.S., Ipsahita Menon, M.Pharm, Martin D'Souza, PhD, Mohammad Uddin, PhDMercer University College of Pharmacy, Atlanta, GA, USA</p>	<p>123. Methacrylate-Modified Gold Nanoparticles Enable Non-invasive Monitoring of Photopolymerized Hydrogel Scaffolds, Lan Li1, Carmen Gil2, Yahid Serpooshan, PhD2, Ryan Roeder, PhD11University of Notre Dame, South Bend, IN, USA, 2Emory University and Georgia Institute of Technology, Atlanta, GA, USA</p>	<p>129. Smart ZnO Nanorod Arrays and PLGA Hybrid Coatings – A Biodegradable and Multifunctional Drug Release System on Titanium Implants, Juncen Zhou, PhD, Donghui Zhu, PhDStony Brook University, stony brook, NY, USA</p>	<p>277. Immuno-protection Device for Hypoxia Reduction in Cellular Therapy Chen Yang, Tran Minh Phuong Nam, Pham Hoang Linh Chi, Dang Thuy Tram* School of Chemical and Biomedical Engineering, Nanyang Technological University, Singapore.</p>
<p>Invited Speaker: Jason L. Guo, PhD</p> <p>112. Design and Prototyping of Dynamic Midurethral Sling for The treatment of Stress Urinary Incontinence, Seelye Iasmim1, Philippe Zimmerm2, Taylor Ware11Texas A&amp;M University, College Station, TX, USA, 2The University of Texas Southwestern Medical Center, Dallas, TX, USA</p>	<p>118. Enhanced satellite cell differentiation and muscle regeneration by semi-synthetic Hyaluronic acid hydrogel-mediated delivery of Fibrinogen Progenitors in Volumetric Muscle Loss, Shane Browne, PhD1, Anouk Killars, PhD1, Mengyao Liu, BAZ, Xuhui Li, MD2, Hubert Kim, MD, PhD2, Brian Feeley, MD2, Kevin Healy, PhD11University of California, Berkeley, Berkeley, CA, USA, 2University of California, San Francisco, San Francisco, CA, USA</p>	<p>124. Development of needle free transdermal microparticulate vaccine for Coronavirus Diseases, Sharon Vijayanand, B.Pharm, Smital Patel, B.Pharm, Devyani Joshi, B.Pharm, Keegan Braz Gomes, B.S., Ipsahita Menon, M.Pharm, Martin D'Souza, PhD, Mohammad Uddin, PhDMercer University College of Pharmacy, Atlanta, GA, USA</p>	<p>130. Tannin/glycosaminoglycan-based Polyelectrolyte Multilayers improve the Endothelialization of TiO2 Nanotubes, Roberta Maria Sabino, BS, Matt Kipper, PhD, Alessandro Martins, PhD, Ketul Popat, PhDColorado State University, Fort Collins, CO, USA</p>	<p>278. Metastatic Precision - Rapid Diagnostic Test for Canine Lymphoma Kelsey Collins1, Scott Taylor2, Karen J.L. Burg1 Department of Small Animal Medicine &amp; Surgery, University of Georgia and 2PolyMed, Inc.</p>	

# CONCURRENT SESSION 4

APRIL 21, 2021, 4:45 PM – 6:15 PM CDT

Panel Discussion: Biomaterials...	Biomaterials for Women's and...	Biomaterials-based Strategies...	Supramolecular Nanomaterials...	Surface Modification of...	Business Plan Competition
<p>113. Evaluation of Immunomodulatory Mesh for Pelvic Floor Reconstruction in a Rabbit Colpopexy Model, Bryan Brown, PhD1,2, Almon Ifkhar, PhD1,2, Alexis Nofri1,2, Clint Skillen1,2, Branimir Popovic, DVM1,2, Pamela Moalli, MD, PhD1,2/1University of Pittsburgh, Pittsburgh, PA, USA, 2McGowan Institute for Regenerative Medicine, Pittsburgh, PA, USA</p>	<p>125. A polymeric particulate vaccine for Zika for transdermal immunization using microneedle patch, Akanksha Kale, Martin D'Souza, PhD/Mercer University College of Pharmacy, Atlanta, GA, USA</p>	<p>131. Ultraviolet Functionalized Surface Treatment of 3D Printed PEEK resulted in Calcium Phosphate Layer Formation, Paul DeSantis1, Tony Yu, PhD1, Cemile Basgul1, Steven Kurtz, PhD1,2, Michele Marcolongo, PhD, PE1/Drexel University, Philadelphia, PA, USA, 2Exponent, Inc., Philadelphia, PA, USA</p>	<p>280. Biodegradable Piezoelectric Surgical Mask, Vinayak Mishra Molecular &amp; Cell Biology   University of Connecticut</p>	<p>132. Development of a Fully Reversible In Vitro Platform to Spatiotemporally Control Multiple Bioactive Peptides Using DNA Handles, Fallon Fumasi, Tara MacCulloch, Nicholas Stephanopoulos, PhD, Julianne Holloway, PhD, Arizona State University, Tempe, AZ, USA</p>	<p>126. Fighting the Flu: Pain-free administration of a cross-protective subunit influenza vaccine, Sharon Vijayamand, B.Pharm, Keegan Braz Gomes, B.S. in Biology, Kimberly Braz Gomes, PhD, Martin D'Souza, PhD, Sang Moo Kang, PhD</p>
<p>114. Poly-4-hydroxybutyrate (P4HB) Fully Absorbable Scaffolds for Soft Tissue Support in 3D Applications, David Martin, PhD, Kai Guo, PhD, Jeffrey Scott, PhD, Antonio Fosco, Amit Ganatra, Said RizkIepha, Inc., Lexington, MA, USA</p>					<p>Q&amp;A and Judging</p>

# CONCURRENT SESSION 5

## APRIL 22, 2021, 11:00 AM - 12:30 PM CDT

Panel: Say What? I Should Follow a Standard? Characterizing Products for Commercialization	Biomaterials for Regulating Immune Responses	Drug Delivery SIG 1	Engineered Biomaterials for Neural Applications – 1	Engineering Cells and Their Microenvironments SIG – 2	Orthopaedic Biomaterials SIG 2	Tissue Engineering SIG 1
Moderators: Kris Kieswetter, PhD, Carl G. Simon Jr., PhD	Moderator: Shijie Cao, PhD	Moderators: Michael Mitchell, PhD Omid Veisesh, PhD	Moderators: Sarah Stabenfeldt, PhD Shelly Sakiyama-Elbert, PhD Kyle Lampe, PhD	Moderators: Ashley Brown, PhD Chris Highley, PhD Scott Wood, PhD	Moderators: Tolou Shokufar, PhD Kelvin Yeung, PhD	Moderators: Jeff Jacot, PhD Ngan Huang, PhD
Invited Speaker: Richard McFarland	Invited Speaker: Greg Hudalla, PhD, University of Florida	139. Macrophage depletion increases target specificity of bone-targeted nanoparticles. Marian Ackun-Farmer, Baixue Xiao, Danielle Benoit. University of Rochester, Rochester, NY, USA	145. Bioengineered Tissue Mimetic Hydrogels to Study Brain Tumor Biology. Sara Pedron, PhD, Brendan Harley. University of Illinois at Urbana-Champaign, Urbana, IL, USA	151. Synthetic Hydrogels to Study ECM Dynamics of Intestinal Organoids, Michael Blatchley <sup>1</sup> , Arda Gunay <sup>1</sup> , Max Yavitt <sup>1</sup> , Peter Dempsey <sup>2</sup> , Kristi Anseth <sup>1</sup> . <sup>1</sup> University of Colorado Boulder, Boulder, CO, USA, <sup>2</sup> University of Colorado School of Medicine, Aurora, CO, USA	157. Magnesium cationic niche in bone tissue microenvironment facilitates intramembranous ossification. Jie Shen, PhD <sup>1,2</sup> , Kenneth Cheung, MD <sup>1,2</sup> , Kelvin Yeung, PhD <sup>1,2</sup> . <sup>1</sup> The University of Hong Kong, Hong Kong, Hong Kong, <sup>2</sup> The University of Hong Kong, Shenzhen Hospital, Shenzhen, China	163. Multifunctional Nanoparticles Containing SDF-1-ELP and vRAGE-ELP Accelerate Diabetic Wound Healing. Hwan June Kang <sup>1</sup> , Suneel Kumar, PhD <sup>1</sup> , Biraja Dash, PhD <sup>2</sup> , Henry Hsia, MD <sup>2</sup> , Martin Yarmush, MD, PhD <sup>1</sup> , Francois Berthiaume, PhD <sup>1</sup> . Rutgers University, Piscataway, NJ, USA, <sup>2</sup> Yale School of Medicine, New Haven, CT, USA
Invited Speaker: Dr. Michael P. Francis	140. Scalable Parallelized Microfluidic Device for Precise RNA Lipid Nanoparticle Formulations, Sarah Shepherd, BS, David Issadore, PhD, Michael Mitchell, PhD. University of Pennsylvania, Philadelphia, PA, USA	146. Neurotrophin-3 Loaded Hyaluronic Acid Hydrogels Promote Axonal Growth In Vitro, Pablo Ramos Ferrer, Shelly Sakiyama-Elbert. The University of Texas at Austin, Austin, TX, USA	152. Dissecting the Microenvironmental Control of Liver Stellate Cell Epigenetics and Fibrogenic Phenotypes, Ishita Jain, Aidan Brougham-Cook, Gregory Underhill, PhD. University of Illinois at Urbana Champaign, Urbana, IL, USA	158. Multi-functional Cerium Oxide Nanoparticles Increase Osteogenesis and Deliver a Disparate but Protective Effect to Macrophages when Under Either Acute or Chronic Inflammatory Conditions In Vitro, Fei Wei, PhD, Craig Neal, BS, Tamil Sakthivel, PhD, Sudipta Seal, PhD, Thomas Kean, PhD, Melanie Coathup, PhD. University of Central Florida, Orlando, FL, USA	164. Development of Zonated Artificial Liver Tissue via Spatial Gene Patterning, Daniel Corbett <sup>1,2</sup> , Wesley Fabyan <sup>1,2</sup> , Bagrat Grigoryan <sup>3</sup> , Colleen O'Connor <sup>1,2</sup> , Fredrik Johansson <sup>1,2</sup> , Ivan Batalovi <sup>1,2</sup> , Mary Regier <sup>1,2</sup> , Cole Deforest <sup>1,2</sup> , Jordan Miller <sup>3</sup> , Kelly Stevens <sup>1,2</sup> . <sup>1</sup> University of Washington, Seattle, WA, USA, <sup>2</sup> Institute for Stem Cell and Regenerative Medicine, Seattle, WA, USA, <sup>3</sup> Rice University, Houston, TX, USA	165. FRESH 3D Bioprinting Full-Scale Collagen Constructs for Surgical Training Models, Andrew Lee, PhD <sup>1</sup> , Riley Patten <sup>1,2</sup> , Thomas Hinton, PhD <sup>1</sup> . Fluidform, Inc., Acton, MA, USA, <sup>2</sup> Tufts University, Medford, MA, USA
Invited Speaker: Alyce Linthorst Jones, PhD.	133. Delivery of STING Agonist Using pBAEs Nanoparticles Inhibits Tumor Growth in Different Tumor Models, Pere Dosta Pons, PhD <sup>1,2</sup> , Alexander Cyer, PhD <sup>1,2</sup> , Santhosh Kalash, PhD <sup>1,2</sup> , Michelle Dion <sup>1,2</sup> , Shiran Ferber, PhD <sup>1,2</sup> , Natalie Artzi, PhD <sup>1,2</sup> . Brigham and Women's Hospital (Harvard Medical School), Cambridge, MA, USA, <sup>2</sup> Massachusetts Institute of Technology, Cambridge, MA, USA	141. Uricase Functionalized Hydrogel for the Localized Treatment of Gout, Madeline Fuchs, Gregory Hudalla, PhD, Benjamin Keselowsky, PhD. University of Florida, Gainesville, FL, USA	147. Understanding the role of subcutaneous priming for improving tissue engineered scaffolds for spinal cord injury treatment, Mohammad Hamrangsekachae, Hanmah Baumann, PhD, Dipak Pukale, Leah Shriver, PhD, Nic Leipzig, PhD. The University of Akron, Akron, OH, USA	153. Biasing Hematopoietic Response in Single-Cell Microenvironments, Aidan Gilchrist <sup>1</sup> , Julio Serrano <sup>1</sup> , Michael Hunckler <sup>2</sup> , Andres Garcia <sup>2</sup> , Brendan Harley <sup>1</sup> . <sup>1</sup> University of Illinois at Urbana-Champaign, Champaign, IL, USA, <sup>2</sup> Georgia Institute of Technology, Atlanta, GA, USA	159. Biomimetic Mg-Doped Type I Collagen/ Hydroxyapatite Scaffold and Membrane Induces Osteogenesis in Mesenchymal Stem Cells Faster than in 2D Environment, Ava Brozovich, MPH <sup>1,2,3</sup> , Stefania Lenna, PhD <sup>2,3</sup> , Francesca Paradiso <sup>2,3,4</sup> , Stefano Serpelloni <sup>2,3,5</sup> , Patrick McCulloch, MD <sup>3</sup> , Antonios Mikos, PhD <sup>6</sup> , Bradley Weiner, MD <sup>2,3</sup> , Francesca Taraballi, PhD <sup>2,3</sup> . <sup>1</sup> Texas A&M, Bryan, TX, USA, <sup>2</sup> Houston Methodist Research Institute, Houston, TX, USA, <sup>3</sup> Houston Methodist Hospital, Houston, TX, USA, <sup>4</sup> Swansea University, Medical School, Swansea, United Kingdom, <sup>5</sup> Politecnico di Milano, Milan, Italy, <sup>6</sup> Rice University, Houston, TX, USA	165. FRESH 3D Bioprinting Full-Scale Collagen Constructs for Surgical Training Models, Andrew Lee, PhD <sup>1</sup> , Riley Patten <sup>1,2</sup> , Thomas Hinton, PhD <sup>1</sup> . Fluidform, Inc., Acton, MA, USA, <sup>2</sup> Tufts University, Medford, MA, USA

# CONCURRENT SESSION 5

APRIL 22, 2021, 11:00 AM - 12:30 PM CDT

Panel: Say What? I Should...	Biomaterials for Regulating...	Drug Delivery SIG 1	Engineered Biomaterials...	Engineering Cells and Their...	Orthopaedic Biomaterials...	Tissue Engineering SIG 1
Invited Speaker: John Duguid	134. Immunoengineered CCL21 and Beta-Cell Antigen Hydrogel Platform to Induce Tolerance in Type 1 Diabetes. Flavia Zisi Tegou, MS1, 2, Diana Velluto, PhD2, Freddy Gonzalez Badillo, MS1, 2, Allison Bayer, PhD2, 3, Silvya Zusiak, PhD4, Alice Tomei, PhD1, 21University of Miami, Miami, FL, USA, 2Diabetes Research Institute University of Miami, Miami, FL, USA, 3University of Miami Miller School of Medicine, Miami, FL, USA, 4Saint Louis University, Saint Louis, MO, USA	142. A Potent Branched Tail Lipid Nanoparticle Enables Multiplexed mRNA Delivery and Gene Editing in vivo. Jilani Melamed, Khalid Haji, Kathryn WhiteheadCarnegie Mellon University, Pittsburgh, PA, USA	148. Guiding Oligodendrocyte Precursor Cell Fate via Urokinase Plasminogen Activator-degradable Hydrogels. Edi Meco, PhD, W. Sharon Zheng, Anahita Sharma, Kyle Lampe, PhDUniversity of Virginia, Charlottesville, VA, USA	154. Protease-Activatable Conjugates for Cell-Specific Targeting, Eugene Paschuck, PhD1, Samuel Rozans, Kayleigh Atanasoff, Abdul-Nafea Syed, Jake Toshi, Amanda Ferrante1Lehigh University, Bethlehem, PA, USA	161. Are Lymphocyte-Dominated Adverse Local Tissue Reactions Associated with a Chemical Attack on Preferential Corrosion Sites of CoCrMo Heads in MoP THA? Deborah Hall, Stephanie McCarthy, Jennifer Wright, Mable Je, Joshua Jacobs, MD, Robin Pourzal, PhDRush University Medical Center, Chicago, IL, USA	166. Tri-layered Hydrogel Scaffold for Vocal Fold Tissue Engineering. Kevin Tindell1, Michael McPhail, PhD2, Cheryl Myers, PhD2, Juergen Naubauer, PhD2, Justin Hintz, M.D2, David Lot, M.D2, 3, Julianne Holloway, PhD11Arizona State University, Tempe, AZ, USA, 2Mayo Clinic Arizona, Scottsdale, AZ, USA, 3Mayo Clinic Arizona - Phoenix Campus, Phoenix, AZ, USA
Invited Speaker: Anup Paul	135. Succinate based Adjuvant-less Cancer Vaccine Modifies Immuno-metabolism and Prevent Melanoma Growth in Mice. Sahil Inamdar1, Joslyn Mangal1, Xiaojin Shi1, Mariron Curtis2, Haiwei Guri1, Abhinav Acharya11Arizona State University, Tempe, AZ, USA, 2Mayo Clinic, Phoenix, AZ, USA	143. In Vitro Evaluation of a Drug-Loaded Self-Assembling Peptide Hydrogel for Treating Glioblastoma Multiforme. Alexandra Nukovic, Megan Pitz, Margaret Elpers, Sarah Wilde, Arica Gregory, Angela Alexander-Bryant, PhDClemson University, Clemson, SC, USA	149. Combination Therapeutics for Neural Injury Using Natural-based Hydrogels and Chondroitinase ABC-Galectin-3. Nora Hlavac, PhD, Dillon Seroski, PhD, Nik Joo L Ong1, Rena Bizios1, Teja Guada11The University of Texas at San Antonio, San Antonio, TX, USA, 2US Army Institute of Surgical Research, San Antonio, TX, USA	155. Development of an In-vitro Microphysiological Model of the Tracheal Epithelium. Solaleh Mir1, Yamuna Pillai1, Zina Helal1, Gregory R Dion2, Joo L Ong1, Rena Bizios1, Teja Guada11The University of Texas at San Antonio, San Antonio, TX, USA, 2US Army Institute of Surgical Research, San Antonio, TX, USA	162. Would Ultrafine Grained Metallic Biomaterials Enhance Mechanical Properties of Orthopedic Implants? Bahram Saleh, PhD1, Shaunak Kelkar2, Fumie Yusa, PhD1, 3, Yohei Suzuki3, Takafumi Komatsu, PhD1, 3, Katayoon Kalantari, PhD2, Hassan Serhan, PhD1, Thomas Webster, PhD21Roosies Base, Inc., Cambridge, MA, USA, 2Northeastern University, Boston, MA, USA, 3Komatsu seiki kosakusho co. ltd, Suwa-City, Japan	167. 3D Printing of Click Functionalized, Peptide Patterned Scaffolds for Osteochondral Tissue Engineering. Jason Guo, PhD, Luis Diaz-Gomez, PhD, Virginia Xie, Sean Bittner, Emily Jiang, Bonnie Wang, Antonios Mikos, PhD1Rice University, Houston, TX, USA
Invited Speaker: Dr. Nilesh Billade	136. Chemically-induced Cross-linking of Peptidic Fibrils for Scaffolded Polymeric Particles and Macrophages. Jennifer Armen, BS1, Nathan Schueler2, Nevil Abraham, BS2, Kerri Velankar, MS2, Rachelle Patchesko, PhD3, 4, Yong Fan, PhD5, 6, Wilson Meng, PhD2, 7, Ellen Gwalt, PhD1, 71Duchesne University, Chemistry and Biochemistry, Pittsburgh, PA, USA, 2Duchesne University, Pharmaceutical Sciences, Pittsburgh, PA, USA, 3Carnegie Mellon University, Biomedical Engineering, Pittsburgh, PA, USA, 4University of Pittsburgh, Louis J. Fox Center for Vision Restoration, Pittsburgh, PA, USA, 5Allegheny-Singer Research Institute, Allegheny Health Network, Pittsburgh, PA, USA, 6Carnegie Mellon University, Biological Sciences, Pittsburgh, PA, USA, 7McGowan Institute for Regenerative Medicine, Pittsburgh, PA, USA	144. Scalable Production of pDNA/IPEI Nanoparticles via Kinetically Controlled Assembly for Gene Delivery with Enhanced Efficiency and Biocompatibility. Yizong Hu1, IlMinn, PhD1, Marlin Pomper, MD, PhD1, Hai-Quan Mao, PhD21Johns Hopkins University School of Medicine, Baltimore, MD, USA, 2Johns Hopkins University, Baltimore, MD, USA	149. Assessing the Potential of a Decellularized Peripheral Nerve-based Hydrogel as a Spinal Cord Injury Therapeutic Delivery Vehicle. Deanna Bousalis1, Michaela McCrary1, Nora Hlavac1, Ashley Evering1, Natalie Vaughn1, Christine E. Schmidt1, 1 J. Clayton Pruitt Family Department of Biomedical Engineering, University of Florida	156. SARS-CoV-2 Spike Protein-Induced Toxicity in 3D Engineered Vascular Networks. Brett Stern, B.S., Janet Zoldan, PhDUniversity of Texas at Austin, Austin, TX, USA	176. Surface Functionalized Stem Cell-Derived Extracellular Vesicles for Augmented Regenerative Repair of Vascular Elastic Matrix. SAJESH SANKARANARAYANAN THAMPI, PhD, ANAND RAMAMURTHI, PhDLehigh University, Bethlehem, PA, USA	

# CONCURRENT SESSION 6

## APRIL 22, 2021, 1:45 PM - 3:15 PM CDT

Panel Discussion: Identifying the Commercial Value of Tissue Regenerative Biomaterials	Biomaterials for Regenerative Engineering – 2	Cardiovascular Biomaterials SIG 2	Drug Delivery SIG 2	Engineering Tissues with Immune Cells	Translational Orthopedic Biomaterials – Progress and Challenges *BT1*	3-minute Thesis Competition
<p><b>Moderators: Dr. Subramanian Gunasekaran, PhD</b></p> <p>169. Multiphase, Vascularized Bone Constructs Comprised of Modular Vascular and Osteogenic Microtissues, Nicholas Schott, Jan Stegemann, The University of Michigan, Ann Arbor, MI, USA</p>	<p><b>Moderator: Gulden Camci-Unal, PhD</b></p> <p>169. Multiphase, Vascularized Bone Constructs Comprised of Modular Vascular and Osteogenic Microtissues, Nicholas Schott, Jan Stegemann, The University of Michigan, Ann Arbor, MI, USA</p>	<p><b>Moderators: Yi Hong, PhD and C. LaShan Simpson, PhD</b></p> <p>175. Heparin Coating Improves Thromboresistance in Glutaraldehyde Processed Bovine Pericardium: A Possible Application For Bioprosthetic Heart Valve, Devika S. L. M.S.C, Maneesha Gurudas, M.Sc, Jesna PV, M.Sc, M. Phil, Anugya Bhatt, Ph.D, Umashankar P.R, PhD, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, India</p>	<p><b>Moderators: Michael Mitchell, PhD and Omid Veisesh, PhD</b></p> <p>181. Development of Antimicrobial Biochanin A Poly(beta amino ester) Polymers; Kelley Wiegman<sup>1</sup>, Michael Flythe<sup>2</sup>, Zach Hiltl<sup>1</sup>, Thomas Dziubla<sup>1</sup>, University of Kentucky, Lexington, KY, USA, <sup>2</sup>U. S. Department of Agriculture, Lexington, KY, USA</p>	<p><b>Moderators: Rebecca Pompano, PhD and Kara Spiller, PhD</b></p> <p>187. Mesenchymal Stem Cell Modulation of the Synthetic Biomaterial Immune Microenvironment, Karen Martin, Rebecca Schneider, Andres Garcia, PhD, Georgia Institute of Technology, Atlanta, GA, USA</p>	<p><b>Moderators: Bingyun Li, PhD and Malcom Xing, PhD</b></p> <p>Invited Speaker: 197. Things You Never Learned About Corrosion and Tribocorrosion of Metallic Biomaterials, Jeremy L. Gilbert Department of Bioengineering, Clemson University, Clemson - MUSC Bioengineering Program, Medical University of South Carolina, Charleston, SC 29425</p>	<p><b>Moderators: Deanna Bousalis and Nicholas Fischer</b></p> <p>Building Heart Tissue Using Conductive Scaffolds, Suh Hee (Taylor) Cook</p> <p>Modification of Mineralized Collagen Scaffolds to Overcome Challenges of Craniomaxillofacial Bone Repair, Marley Dewey</p> <p>Controlled Drug Delivery from Hydrogels to Treat Spinal Cord Injury, Pablo Ramos Ferrer</p>
<p>Invited Speaker: Dr. J. Peter Rubin, MD, MBA, FACS</p> <p>170. Vascularization of Degradable PEG-Norbornene Hydrogels via Coculture of Endothelial and Stromal Cells, Nicole Friend, MSE, Jan Stegemann, PhD, Andrew Putnam, PhD, University of Michigan, Ann Arbor, MI, USA</p>	<p>168. Mechanical Performance of a Hydrogel-Fiber Mesh Composite as a Synthetic Heart Valve Material, Shruti Motiwale<sup>1,2</sup>, Madeleine Russel<sup>3</sup>, Megan Wancura<sup>3</sup>, Andrew Robinson<sup>3</sup>, Elizabeth Cosgriff-Hernandez<sup>3</sup>, Michael Sacks<sup>1,3</sup>, James T. Willerson Center for Cardiovascular Modeling and Stimulation, Oden Institute, Austin, TX, USA, <sup>2</sup>Department of Mechanical Engineering, University of Texas at Austin, Austin, TX, USA, <sup>3</sup>Department of Biomedical Engineering, University of Texas at Austin, Austin, TX, USA</p>	<p>182. Bio-responsive Hydrogels for On-Demand Delivery of Anti-Cancer Therapeutics, Fei Fan, Grace Petrosini, Sharon Stack, Donny Hanjaya, Putra University of Notre Dame, Notre Dame, IN, USA</p>	<p>188. Dynamic 3D Tracking of Pancreatic Islet and Immune Cell Interactions In Vitro, Magdalena Samojlik, M.S.T, Smit Patel<sup>1</sup>, Ying Li, PhD<sup>1,2</sup>, Scott Stimpson, PhD<sup>2</sup>, Leeana Peters<sup>2</sup>, Clayton Mathews, PhD<sup>2</sup>, Todd Brusko, PhD<sup>2</sup>, Edward Phelps, PhD<sup>1</sup>, Cherie Stabler, PhD<sup>1</sup>, University of Florida, College of Engineering, Gainesville, FL, USA, <sup>2</sup>University of Florida, College of Medicine, Gainesville, FL, USA</p>	<p>189. Engineering a Synthetic Hydrogel Platform to Support Tolerogenic Trophoblast Organoids, Emily Slaby, Caitlin O'Brien, Jessica Weaver, PhD, Arizona State University, Tempe, AZ, USA</p>	<p>193. Reliability of Fused Filament Fabrication for 3D Printing Multifunctional Ag-doped Bioactive Glass-Ceramic Scaffolds towards Bone Tissue Regeneration, Adam Marsh, BS, Yaozhong Zhang, PhD, Aljoscha Roth, PhD, Xanthippi Chatzistavrou, PhD, Michigan State University, East Lansing, MI, USA</p>	<p>New Backbones Grow on Trees: An Injectable, Cellulosic Hydrogel for Intervertebral Disc Repair, Nada Haq-Siddiqi</p> <p>3D Printing of Tissue Scaffolds with Plant Wall Cellulose, Marzieh Monifard</p> <p>Building New Life, One Click at a Time, Eva Mueller</p> <p>Dual Functionalized Nanoparticles for Drug Delivery in Acute and Subacute Traumatic Brain Injury, David Eduardo Flores Prieto</p> <p>Heparin Microislands in Microporous Annealed Particle (MAP) Hydrogels for Accelerated Tissue Integration, Lauren Pruet</p> <p>Imminent Need for a Shift from Chemotherapeutics to Cancer Therapies, Using 2020 as an Example of Why, Timothy Samec</p> <p>A Novel in vitro Tool to Cure Osteoarthritis, Ram Saraswat</p>
<p>Invited Speaker: Mr. James Bailey</p> <p>171. Nucleic Acid-Collagen Complexes (NACC): Engineering Tunable Hard and Soft ECM Mimics, Bryan James, Sophia Saenz, Paxton James, Josephine Allen, University of Florida, Gainesville, FL, USA</p>	<p>177. New Fluorinated Alkoxiphosphate Biomaterials with Improved Biocompatibility, Lichong Xu, Xu, PhD<sup>1</sup>, Chen Chen, PhD<sup>2</sup>, Harry Allcock, PhD<sup>2</sup>, Christopher Siedlecki, PhD<sup>1</sup>, Penn State University College of Medicine, Hershey, PA, USA, <sup>2</sup>The Pennsylvania State University, University Park, PA, USA</p>	<p>183. Effects of Spatial Organization and Histidine Tag on Efficacy of Intracellular Protein Delivery System, Wei Lv, PhD, Anshul Dhankher, Talmage Studstill, Julie Champion, PhD, Georgia Institute of Technology, Atlanta, GA, USA</p>	<p>183. Effects of Spatial Organization and Histidine Tag on Efficacy of Intracellular Protein Delivery System, Wei Lv, PhD, Anshul Dhankher, Talmage Studstill, Julie Champion, PhD, Georgia Institute of Technology, Atlanta, GA, USA</p>			



# CONCURRENT SESSION 6

APRIL 22, 2021, 1:45 PM - 3:15 PM CDT

Panel Discussion:...	Biomaterials for...	Cardiovascular Biomaterials...	Drug Delivery SIG 2	Engineering Tissues with...	Translational Orthopedic...	3-minute Thesis Competition
Invited Speaker: Mr. Adam Sallinger	172. Unconventional Biomaterials for Regenerative Engineering. Gulden Camci-Unal, University of Massachusetts Lowell, Lowell, MA, USA	178. Injectable hydrogel electrodes for treatment of ventricular arrhythmias. Gabriel Rodriguez-Rivera <sup>1</sup> , Malgorzata Chwatko, PhD <sup>2</sup> , Allison Post, PhD <sup>3</sup> , Mathews John <sup>3</sup> , Skylar Buchan <sup>3</sup> , Christina Waldron <sup>2</sup> , Mehdi Razavi, PhD <sup>3</sup> , Elizabeth Cosgriff-Hernandez <sup>2</sup> . <sup>1</sup> The University of Texas at Austin, Austin, TX, USA, <sup>2</sup> The University of Texas at Austin, Austin, TX, USA, <sup>3</sup> Texas Heart Institute, Houston, TX, USA	184. Drug Release from Ace-DEX Particles: An Experimental and Mathematical Model. Rebecca Siepel <sup>1</sup> , Erik Pena <sup>2</sup> , Matthew Gallovic, PhD <sup>3</sup> , Christopher Genito <sup>4</sup> , Eric Bacheider, PhD <sup>1</sup> , Kristy Ainslie, PhD <sup>1,2</sup> , 4 <sup>1</sup> Eschelman School of Pharmacy, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA, <sup>2</sup> University of North Carolina at Chapel Hill and North Carolina State University, Chapel Hill, NC, USA, <sup>3</sup> IMMvention Therapeutics, Durham, NC, USA, <sup>4</sup> University of North Carolina at Chapel Hill, Chapel Hill, NC, USA	190. Injectable T cell-loaded Hydrogel as a Localised Immunotherapy Reduces Tumour Growth in Mice. Nicholas Cunningham <sup>1,2</sup> , Tommy Malaret <sup>1,2</sup> , John Staggs <sup>3,4</sup> , Pam A@la Th@baul <sup>3,4</sup> , Dominique Trudel <sup>3,4</sup> , R@jean Lapointe <sup>3,4</sup> , Sophie Lerouge <sup>1,2</sup> , 4 <sup>1</sup> Centre de recherche du CHUM (CRCHUM), Montr@al, QC, Canada, <sup>2</sup> R@cole de technologie sup@rieure (ETS), Montr@al, QC, Canada, <sup>3</sup> Institut du Cancer de Montr@al, Montr@al, QC, Canada, <sup>4</sup> Universit@ de Montr@al, Montr@al, QC, Canada	194. Biomimetic Scaffolds Composed of Degradable Polymers to Enhance Bone Regeneration, Ben Zhang, Yingchao Su, Juncen Zhou, Donghui Zhu. The State University of New York at Stony Brook, Stony Brook, NY, USA	Multiphase, Vascularized Bone Constructs Comprised of Modular Vascular and Osteogenic Microtissues, Nick Schott  Using Native MicroRNA Regulation to Prevent Osteoarthritis, Kayla Scott  Engineering Hydrogel Tissue Models to Study Cellular Memory, Jenna Sumej  Educating our Immune System: Hydrogel Platforms to Prevent Autoimmune Diabetes, Flavia Zisi Tegou  Engineering the Ovarian Micro-environment and Deciphering Folliculogenesis in a Biomimetic Matrix, Claire Tomaszewski  Clogged Blood Vessel: How Can We Engineer a Blood Vessel to Fix It, Fan Zhang
Invited Speaker: Dr. Amir Dastgah, DPM	173. Designer, Injectable Gels to Prevent Transplanted Schwann Cell Loss During Spinal Cord Injury Therapy. Vanessa Doulames, PhD <sup>1</sup> , Laura Marquardt, PhD <sup>1,2</sup> , Alice Wang <sup>2</sup> , Karen Dubbin, PhD <sup>2</sup> , Riley Suha <sup>2</sup> , Michael Kratochvil, PhD <sup>2,3</sup> , Zachary Medress, MD <sup>1</sup> , Giles Plant, PhD <sup>1</sup> , Sarah Heilshorn, PhD <sup>2</sup> . <sup>1</sup> Stanford University School of Medicine, Stanford, CA, USA, <sup>2</sup> Stanford University, Stanford, CA, USA, <sup>3</sup> Stanford University SoM, Stanford, CA, USA	179. Bioresorbable delivery of connexin 43 improves synchronous beating of hiPSC derived Cardiomyocytes, Nima Momtahan, PhD, Cody Crosby, PhD. University of Texas at Austin, Austin, TX, USA	185. Using a miR-451 Inhibitor May Mitigate OA Development and Progression in Vivo Following Anterior Cruciate Ligament Injury, Kayla Scott, B.S. <sup>1</sup> , D. Joshua Cohen, M.D. <sup>1</sup> , Dane Nielson <sup>1</sup> , Gloria Kim <sup>1</sup> , Mark Grimstaf, Ph.D. <sup>2</sup> , Anisha Joenathan, B.S. <sup>2</sup> , Brian Snyder, M.D., Ph.D. <sup>3</sup> , Zvi Schwartz, D.M.D., Ph.D. <sup>1,4</sup> , Barbara Boyan, Ph.D. <sup>1,5</sup> . <sup>1</sup> Virginia Commonwealth University, Richmond, VA, USA, <sup>2</sup> Boston University, Boston, MA, USA, <sup>3</sup> Harvard Medical School, Boston, MA, USA, <sup>4</sup> University of Texas Health Science Center at San Antonio, San Antonio, TX, USA, <sup>5</sup> Georgia Institute of Technology, Georgia, GA, USA	191. In vitro Generation of Antibody Class-Switched Primary B cells using Liposome-Based Presentation of Antigen, Liana Kramer, ScM <sup>1</sup> , Hannah Song, PhD <sup>1</sup> , Ankur Singh, PhD <sup>1,2</sup> , Kishendu Roy, PhD. <sup>1</sup> Georgia Institute of Technology and Emory University, Atlanta, GA, USA, <sup>2</sup> Georgia Institute of Technology, Atlanta, GA, USA	195. UVA-activated, injectable bioadhesive composites with controlled mechanical properties, Ivan Djordjevic <sup>1</sup> , Terry Steele <sup>1</sup> , Gautama Wikaksono <sup>1</sup> , Francesco Baino <sup>2</sup> . <sup>1</sup> Nanyang Technological University, Singapore, Singapore, <sup>2</sup> Politecnico di Torino, Torino, Italy	
	174. Development of a Hyaluronan Polymer-Protein Conjugate for Peripheral Nerve Applications, Mary Kasper, Madison Cydis, Abdullah Afridi, Christine Schmidt, Ph.D. University of Florida, Gainesville, FL, USA	180. Peritoneal Pre-conditioning Impacts Vascular Graft Long-term Patency and Remodeling, Mahyar Sameti, PhD, Mozghan Shojaaee, PhD, Bayan Saleh, Chris Bashir, Ph.D. Florida Institute of Technology, Melbourne, FL, USA	186. Simple Biodegradable Polyester for Stent-Based Drug Delivery, Kathleen Young, Audrey Lord, Susan Kozawa, PhD, Horst von Recum, PhD. Case Western Reserve University, Cleveland, OH, USA			

# CONCURRENT SESSION 7

## APRIL 23, 2021, 11:00 AM – 12:30 PM CDT

Panel Discussion: Emerging Biomaterials and Nanotoxicity	Biomaterials and Medical Products Commercialization SIG *BTI*	Biomaterials Systems and Devices for Hemostasis, Resuscitation and Wound Care	Engineered Biomaterials for Neural Applications 2	Immunomodulatory Biomaterials 2	Targeted and stimuli-responsive biomaterials for drug delivery - 2	Tissue Engineering SIG - 2
<p><b>Moderators: Bingyun Li, PhD</b> <b>Jessica Amber Jennings, PhD</b></p> <p><b>Moderator: Stephanie Steichen, PhD</b></p>	<p><b>Moderators: Ashley Brown, PhD</b> <b>Shaunak Pandya, PhD</b></p>	<p><b>Moderators: Sarah Stabenfeldt, PhD</b> <b>Shelly Sakiyama-Elbert, PhD</b> <b>Kyle Lampe, PhD</b></p>	<p><b>Moderator: Ashish Kulkarni, PhD</b></p>	<p><b>Moderator: Anita Shukla, PhD</b></p>	<p><b>Moderators: Jeff Jacot, PhD</b> <b>Ngan Huang, PhD</b></p>	
<p>Invited Speaker: Thomas Webster, PhD</p> <p>199. Comparison of Silicone Adhesives in Skin Contact Applications: How Material Properties Influence Adhesive Performance and Wear. Stephanie Stephanie, PhD, Roger Gibas, Stacey Benemann, Sweden Yocom, MBADuPont, Midland, MI, USA</p>	<p>205. Engineering a highly elastic bioadhesive hydrogel for sealing soft and dynamic tissues. Mahsa Ghowati, Sevana Baghdasarian, Avijit Baidya, Jharana Dhal, Nasim Annabi. University of California, Los Angeles, Los Angeles, CA, USA</p>	<p>211. Effect of Hyaluronic Acid Molecular Weight on Visceroelastic Properties and Glioblastoma Invasion. Emily Carvalho, Sanjay Kumar, PhD, MD. University of California, Berkeley, Berkeley, CA, USA</p>	<p>218. Nanometer-Scale Assembly and High-Throughput Screening of Bispecific T Cell Engaging Cytokine (BITE) Cytokine Immunotherapies. Priscilla Do, PhD1, Jacey Perdue1, Curtis Henry, PhD2,3, Christopher Porter, MD2,3, Erik Dredan, PhD1,2,3. Georgia Institute of Technology, Atlanta, GA, USA, 2Emory School of Medicine, Atlanta, GA, USA, 3Winship Cancer Institute of Emory University, Atlanta, GA, USA</p>	<p>229. Targeted Delivery of a TGF-<math>\beta</math> Receptor II Inhibitor Using Multifunctional Nanogels to Control Cardiac Fibrosis after Heart Failure. Yu Dang1, Hong Niu, PhD1, Zhao Bo Fan, PhD2, Ya Guan1, Ning Gao1, Jianjun Guan, PhD1. Washington University in St. Louis, St. Louis, MO, USA, 2The Ohio State University, Columbus, OH, USA</p>	<p>234. Fabrication of Nanofiber Microspheres with Tunable Morphology via Gas Bubble-Mediated Co-axial Electrospinning. Johnson, John, PhD, Jingwei Xie, PhD. University of Nebraska Medical Center, Omaha, NE, USA</p>	
<p>Invited Speaker: Prof. Ke Cheng</p> <p>200. Polyurethane Shape Memory Polymer Foams with Off-the-Shelf Physical Blowing Agents. Natalie Petyk, Anand Vakil, Mary Beth Monroe, PhD. Syracuse University, Syracuse, NY, USA</p>	<p>206. Role of Nitric Oxide-Releasing Glycosaminoglycans on In Vitro Wound Healing. Sara Maloney, Mark Schoenfish, PhD. University of North Carolina at Chapel Hill, Chapel Hill, NC, USA</p>	<p>212. Stabilization of Chondroitinase ABC using Single Enzyme Nanoparticles for Spinal Cord Injury Repair. Shashank Kosuri1, Heloise Mugnier1, Matthew Iamas1, Zachary Finkel1, Isabel Perez1, Li Cai, PhD1, Rene Schloss, PhD1, Martin Yarmush, PhD1, Adam Gormley, PhD1. Rutgers University, Piscataway, NJ, USA</p>	<p>219. Comparison of Immunostimulation Platforms for Pancreatic Islet Transplantation: Polyethylene Glycol Conformal Coating, Alginate Single and Double Capsules, Teresa De Toni1,2, Aaron Stock1,2, Floriane Deraux1, Susan Saifee3, Collin Weber3, Oscar Alcazar2, Noel Ziebarth1, Peter Buchwald2,4, Alice Tomei1,2. 1Department of Biomedical Engineering, University of Miami, Coral Gables, FL, USA, 2Diabetes Research Institute, University of Miami, Miami, FL, USA, 3Department of Surgery, Emory University, Atlanta, GA, USA, 4Department of Molecular and Cellular Pharmacology, University of Miami, Miami, FL, USA</p>	<p>230. Ternary Complex Nanoparticles Enable Sustained Release of Bortezomib for Local Chemotherapy of Hepatocellular Carcinoma. Yicheng Zhang, Hai-quan Mao, Yizong Hu, Ling Li, Florin Selaru. Johns Hopkins University, Baltimore, MD, USA</p>	<p>235. Mechanistic study of synthesizing tunable gelatin methacrylate (GelMA) bioinks for rapid and high-resolution stereolithography bioprinting. Hitendra Kumar1,2, Kabilan Sakthivel, PhD1, Mohamed Mohammed, PhD1, Emile Boras3, Su Ryon Shin, PhD4, Keeyoung Kim, PhD1,2. 1The University of British Columbia Okanagan, Kelowna, BC, Canada, 2University of Calgary, Calgary, AB, Canada, 3The University of British Columbia, Vancouver, BC, Canada, 4Harvard Medical School, Cambridge, MA, USA</p>	
<p>Invited Speaker: Joel Collier</p> <p>201. 3D printing with silicone elastomer for biomedical applications. Ke Du, Timothy Hughes, Group Leader. CSIRO, Clayton, Australia</p>	<p>207. Controlled Oxygen Release to Accelerate Diabetic Wound Healing by Simultaneously Promoting Epithelialization and Angiogenesis, and Decreasing Tissue Inflammation. Ya Guan, Hong Niu, PhD, Jianjun Guan, PhD. Washington University in St. Louis, St. Louis, MO, USA</p>	<p>213. Human Schwann Cell Stimulation Through HA-CNT Nanofibers, Judy Senanayake, B.Tech, Harini Sundararaghavan, PhD. Wayne State University, Detroit, MI, USA</p>	<p>220. Real-time Imaging of Macrophage Immunotherapy Using a Novel Nitric Oxide Nanoreporter. Anujan Ramesh1,2, Sahana Kumar2, Anthonny Bouillard2, Dipika Nand3, Ashish Kulkarni1,2,3,4. 1University of Massachusetts, Amherst, MA, USA, 2University of Massachusetts Amherst, Amherst, MA, USA, 3UMass Amherst, Amherst, MA, USA, 4UMass, Amherst, MA, USA</p>	<p>231. CD4 Targeted Nano particle Delivery of Eggmatone for T Cell Modulation in Autoimmunity. Christopher Haycock, MS1, Joseph Balsamo2, Evan Glass, MS1, Charles Williams, PhD3, Charles Hong, PhD3, Amy Major, PhD2, Todd Giorgio, PhD1. Vanderbilt University, Nashville, TN, USA, 2Vanderbilt University Medical Center, Nashville, TN, USA, 3University of Maryland School of Medicine, Baltimore, MD, USA</p>	<p>236. Characterization of Degradation and Bioactive Growth Factor Release for 3D Printed Poly(Propylene Fumarate)-Based Constructs. Gerry Koons, Panayiotis Kontoyannis, Mani Diba, PhD, Letitia Chim, David Scott, PhD, Antonios Mikos, PhD. Rice University, Houston, TX, USA</p>	

# CONCURRENT SESSION 7

APRIL 23, 2021, 11:00 AM – 12:30 PM CDT

Panel Discussion: Emerging...	Biomaterials and Medical...	Biomaterials Systems and...	Engineered Biomaterials...	Immunomodulatory...	Targeted and stimuli-...	Tissue Engineering SIG - 2
Invited Speaker: Kaiming Ye	202. Absorbance Imaging and Artificial Intelligence for Assessing Quality of Manufactured Retinal Pigment Epithelium, Carl Simon, Jr., PhD1, Nicholas Schaub, PhD1, Peter Bajcsy1, Kapil Bharti2, Nathan Hotelling2National Institute of Standards & Technology, Gaithersburg, MD, USA, 2National Institutes of Health, Bethesda, MD, USA	208. Rupture of Fibrin Clois: Structural and Thermodynamic Mechanisms, Valerie Iutwiler1,2, Farhad Maksudov3, Rustem Litvinov1,4, John Weisel1, Valeri Barsegov31University of Pennsylvania, Philadelphia PA, PA, USA, 2Rutgers - The State University of New Jersey, Piscataway, NJ, USA, 3University of Massachusetts, Lowell, Lowell, MA, USA, 4Kazan Federal University, Kazan, Russian Federation	214. Investigating Olfactory Mucosa derived Mesenchymal Stem Cells (OM-MSCs) for Peripheral Nerve Repair, Katelyn Neuman, Aidan Kenny, Ryan Koppes, PhDNorth-eastern University, Boston, MA, USA	221. Dual Inhibition of CSF1R and MAPK Pathways Using Supramolecular Nanoparticles Enhances Macrophage Immunotherapy, Anthony Brouillard, Anujan Ramesh, Sahana Kumar, Dipika Nandi, Ashish Kulkarni, PhDUniversity of Massachusetts, Amherst, Amherst, MA, USA	202. Oxidation-responsive Magnetic Nanostructure-loaded Bicontinuous Nanospheres for Drug Delivery, Malika Modak, Sharon Bobbala, Chamille Lesscott, Yungang Liu, Vikas Nandwana, Vinayak Dravid, Evan ScottNorthwestern University, Evanston, IL, USA	237. Aptamers Assisted Controlled Growth Factor Delivery Enables Self-Organizing Microvasculature within 3D Microenvironment, Deepthi Rana, Vasileios Trikalitis, Vincent R. Rangej, Jeroen Rouwke-ma, PhDUniversity of Twente, Enschede, Netherlands
203. Incompatibility of Biocompatibility Standards for Biologically-Sourced Biomaterials, Rae Ritchie, PhD, Tami Zeigler, Joanne Kuske, Martha Spreer, Michael Hiles, PhD, Claus Soendergaard, PhDCook Biotech Inc., West Lafayette, IN, USA	209. Thrombin-triggered Shape Changing Nanogels for Development of Synthetic Platelets, Eunice Chee1,2, Emily Mihalko1,2, Ashley Brown, PhD1,21North Carolina State University and University of North Carolina - Chapel Hill, Raleigh, NC, USA, 2Comparative Medicine Institute, Raleigh, NC, USA	215. Controlling Stromal Cell-Derived Factor-1? Delivery through Norbormene Hyaluronic Acid Microgels, Kassondra Hickey, Shannon Grassi, Jameson Veidhuizen, Fallon Fumasi, Medhi Nikkhat, Julianne Holloway, Sarah Stabenfeldt, PhDArizona State University, Tempe, AZ, USA	222. Thy-1 negative fibroblasts are an immuno-responsive subpopulation critical for biomaterial-mediated fibrosis, Daniel Abeyayehu, PhD, Grace Bingham, Andrew Miller, Donald Griffin, PhD, Thomas Barker, PhDUniversity of Virginia, Charlottesville, VA, USA	223. Nanomedicine Targeting to Activated Neutrophil Platelet Complexes as a Novel Treatment for DVT, Anirban Sen Gupta1, Michelle Cruz1, Jurgis Alvikas2, Nicole Masters3, Kara Bane, Maria de la Fuente1, Marvin Nieman1, Keith Neeves3, Matthew Neal2, Evi Stavrou11Case Western Reserve University, Cleveland, OH, USA, 2University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 3University of Colorado Denver, Anschutz Campus, Aurora, CO, USA	238. 3D Printed Micronized Fat-Laden Collagen Constructs for Treatment of Chronic Wounds, Trevor Schmitt1, Nathan Katz2, Vipul Kishore11Florida Institute of Technology, Melbourne, FL, USA, 2Jointechlabs, Wheeling, IL, USA	239. Zinc in Composite Scaffolds Promotes Cell Growth and Mineralized Matrix Production, Jennifer Moy, Irene Arinze, PhDNew Jersey Institute of Technology, Newark, NJ, USA
204. Mechanical Evaluation of Medical Grade Bioresorbable Materials for Additive Manufacturing Scaffolds, Clayton Culbreath1,2, Brian Gaerke1, Scott Taylor1,2, Seth McCullen1,2, Thompson Melford21Poly-Med, Inc., Anderson, SC, USA, 2Clemson University, Clemson, SC, USA	210. Injury-targeted Enzyme-responsive Direct Delivery of Thrombin for Hemostatic Treatment of Coagulopathy, Aditya Girish, Ketan Jolly, Ujjal Didar Singh Sekhon, Anirban Sen GuptaCase Western Reserve University, Cleveland, OH, USA	211. Injury-targeted Enzyme-responsive Direct Delivery of Thrombin for Hemostatic Treatment of Coagulopathy, Aditya Girish, Ketan Jolly, Ujjal Didar Singh Sekhon, Anirban Sen GuptaCase Western Reserve University, Cleveland, OH, USA	212. Response Nanocarriers for Thrombus Therapy Yi Zhao1,2, Ruosen Xie1,2, Nisakorn Yodsanit1,2, Mingzhou Ye1,2, Yuyuan Wang, Shaoqin Gong1,2*	213. Biomimetic Fibrin-Targeted and H2O2-Responsive Nanocarriers for Thrombus Therapy Yi Zhao1,2, Ruosen Xie1,2, Nisakorn Yodsanit1,2, Mingzhou Ye1,2, Yuyuan Wang, Shaoqin Gong1,2*	214. Biomimetic Fibrin-Targeted and H2O2-Responsive Nanocarriers for Thrombus Therapy Yi Zhao1,2, Ruosen Xie1,2, Nisakorn Yodsanit1,2, Mingzhou Ye1,2, Yuyuan Wang, Shaoqin Gong1,2*	215. Biomimetic Fibrin-Targeted and H2O2-Responsive Nanocarriers for Thrombus Therapy Yi Zhao1,2, Ruosen Xie1,2, Nisakorn Yodsanit1,2, Mingzhou Ye1,2, Yuyuan Wang, Shaoqin Gong1,2*

# CONCURRENT SESSION 8

## APRIL 23, 2021, 1:45 PM – 3:15 PM CDT

Panel Discussion: Dental Biomaterials in Translation: Considerations in Regulatory Approval and Clinical Adoption (Joint Inter-Society SFB-IADR)	Biomaterials for Detection, Drug Delivery and Treatment of Microbial Infections	Biomaterials for Organoids	Biomaterials for Regenerative Engineering - 3	Biosensor/ Nanotechnology	Drug Delivery 3	Surface Modification of Biomaterials 2
<p><b>Moderator:</b> Daniel Harrington, PhD, Carmem S. Pfeifer, DDS, PhD</p> <p>Invited Speaker: Oriando Lopez</p>	<p><b>Moderator:</b> Shijie Cao, PhD</p> <p>240. Evaluating the Bacterial Biofilm Inhibition of a Novel Silorane-based Biomaterial for Orthopedic Applications, Graham Funk, BS, BS1, Elizabeth Menuey, PhD2, Michael Doid, BS1, Alexander Brown, BS1, Wyatt Osterhage, BS1, Kathleen Kilway, PhD2, Terence Mdlf, PhD, MBA11 University of Kansas Medical Center, Kansas City, KS, USA 2 University of Missouri-Kansas City, Kansas City, MO, USA</p>	<p><b>Moderators:</b> Qun Wang, PhD Kaitlin Brattlie, PhD</p> <p>246. Gut organoids as a platform for evaluating delivery of nanoparticles to treat inflammatory bowel disease, Zehra Davoudi, Nathan Peroutka-Bifus, Bryan Bellaire, Albert Jergens, Michael Wannemuehler, Qun Wanglowa State University, Ames, IA, USA</p>	<p><b>Moderator:</b> Gulden Camci-Unal, PhD</p> <p>252. Self-healing, injectable Photo-Zwitterionic Hydrogels for Chronic Diabetic Wounds, Michael Sager1, Matthew Osmond1, James Bardill2, Carlos Zhehe2, Sudjipa Seat3, Kenneth Liechty, MD2, Melissa Krebs11 Colorado School of Mines, Golden, CO, USA, 2 University of Colorado Anschutz Medical Campus, Aurora, CO, USA, 3 University of Central Florida, Orlando, FL, USA</p>	<p><b>Moderators:</b> Fatemeh Ostadhossein, PhD Ming Su, PhD</p> <p>258. Investigating Oxidative Susceptibility of Peptid-Based Materials for Selective Biosensing Applications, Hattie Schunk, Adrienne Rosales, PhD, Laura Suggs, PhD The University of Texas at Austin, Austin, TX, USA</p>	<p><b>Moderators:</b> Michael Mitchell, PhD Omid Veisesh, PhD</p> <p>264. Intravitreal injectable hydrogel incorporating microgel for prolonged protein delivery, Si Min Lee1, Joo Young Son1, Hye Kyung Hong2, Min Hee Ham2, Se Joon Woo, PhD2, Ki Dong Park, PhD11 AJOU UNIVERSITY, Suwon, Republic of Korea, 2 Seoul National University Bundang Hospital, Seongnam, Republic of Korea</p>	<p><b>Moderator:</b> Guigen Zhang, PhD Bingyun Li, PhD</p> <p>270. Aclation of electrospun chitosan membranes with medium chain fatty acids, Landon Cho1, Jessica Jennings, PhD1, Joel Bumgardner, PhD1, Tomoko Fujiwara, PhD2, Zoe Harrison1, Carlos Wells11 University of Memphis, Memphis, TN, USA, 2 University of Memphis, Memphis, TN, USA</p>
<p>Invited Speaker: Dianne Rekow</p> <p>240. Evaluating the Bacterial Biofilm Inhibition of a Novel Silorane-based Biomaterial for Orthopedic Applications, Graham Funk, BS, BS1, Elizabeth Menuey, PhD2, Michael Doid, BS1, Alexander Brown, BS1, Wyatt Osterhage, BS1, Kathleen Kilway, PhD2, Terence Mdlf, PhD, MBA11 University of Kansas Medical Center, Kansas City, KS, USA 2 University of Missouri-Kansas City, Kansas City, MO, USA</p>	<p>247. Photoinduced hydrogel network reorganization facilitates in situ modulation of intestinal organoid epithelial shape, Max Yavitt1, 2, Michael Blatchley1, 2, Peter Dempsey3, Kristi Anseth1, 21 University of Colorado Boulder, Boulder, CO, USA 2 BioFrontiers Institute, Boulder, CO, USA, 3 University of Colorado Anschutz Medical Campus, Aurora, CO, USA</p>	<p>253. A Nanofiber-Hydrogel Composite to Treat Fistula in Crohn's Disease in a Porcine Model, Zhicheng Yao1, 2, 3, Jing Li4, Susan Gearhart5, Calvin Chang2, 3, 6, Jayuan Kong2, 3, 6, Jeffrey Chao2, 3, 7, Alyssa Parana4, Florin Seabra4, Hai-Quan Mao1, 2, 3, 61 The Johns Hopkins University, Whiting School of Engineering, Department of Materials Science and Engineering, Baltimore, MD, USA, 2 The Johns Hopkins University School of Medicine, Translational Tissue Engineering Center, Baltimore, MD, USA, 3 The Johns Hopkins University, Institute for NanoBiotechnology, Baltimore, MD, USA 4 The Johns Hopkins University School of Medicine, Division of Gastroenterology and Hepatology, Baltimore, MD, USA 5 The Johns Hopkins University School of Medicine, Department of Surgery, Baltimore, MD, USA, 6 The Johns Hopkins University, Whiting School of Engineering, Department of Biomedical Engineering, Baltimore, MD, USA, 7 The Johns Hopkins University, Krieger School of Arts and Sciences, Department of Public Health Study, Baltimore, MD, USA</p>	<p>259. Stable Thermally Modulated Nanodroplet Ultrasound Contrast Agents, Anastasia Vasukhina, Jawad Esnraghi, Adib Almadzadegan, Craig Goergen, PhD, Pavlos Vlachos, PhD, Luis Solorio, PhD Purdue University, West Lafayette, IN, USA</p>	<p>265. Targeting Peptide-Mediated Delivery of siRNAs in to Ovarian Cancer Cells, Serena Gilmore, Timothy Samec, M. S., Anthony Hazelton, Angela Alexander-Bryant, PhD Clemson University, Clemson, SC, USA</p>	<p>271. Effects of Zwitterionic Polymer Brush Density and Chain Length on Resisting Protein Adsorption, Julia King, Prabhleen Kaur, Buddy Ratner, PhD University of Washington, Seattle, WA, USA</p>	

# CONCURRENT SESSION 8

APRIL 23, 2021, 1:45 PM – 3:15 PM CDT

Panel Discussion: Dental...	Biomaterials for Detection...	Biomaterials for Organoids	Biomaterials for...	Biosensor/ Nanotechnology	Drug Delivery 3	Surface Modification of...
Invited Speaker: Mehdi Kazemzadeh Narbat	241. Bacteria-Responsive Shape Memory Polymer Wound Dressing, Maryam Ramezani, PhD student <sup>1</sup> , Mary Beth Monroe, PhD <sup>1</sup> Syracuse University, Syracuse, NY, USA	248. Engineered Organotypic Breast Tumor Model Elucidates the Role of Tumor-Stromal Interactions on Dynamic Remodeling of Tumor Microenvironment, Sunil Singh, PhD <sup>1</sup> , Gary Luker, MD <sup>2</sup> , Hossein Tavana, PhD <sup>1</sup> The University of Akron, Akron, OH, USA, <sup>2</sup> University of Michigan, Ann Arbor, MI, USA	254. Computerized tomography (CT) analysis of 3D-printed porous bone ingrowth materials, Robert Kane, PhD, Weidong Tong, PhD, Brett English, Joshua Auger, Rakshak Nemiraj <sup>1</sup> PerMy Synthes, Warsaw, IN, USA	260. Non-Viral Nano-carriers for CRISPR Based Genome Editing Tool Delivery, Yuyuan Wang, PhD, Shaolin Gong, PhD <sup>1</sup> University of Wisconsin-Madison, Madison, WI, USA	266. Using vesicle lipid domains to enhance liposomal TRAIL, Timothy Vu, Justin Peruzzi, Sravya Sridhar, Milan Miksic, PhD, Neha Kamat, PhD <sup>1</sup> Northwestern University, Evanston, IL, USA	272. Sub-Nano to Nanoscale Wear of Titanium Oxide-Metal Surfaces Using Atomic Force Microscopy, Yangping Liu, Jeremy Gilbert <sup>1</sup> Clemson University, Charleston, SC, USA
Invited Speaker: Spiro Megremis, MS, PhD	242. Bacteria Responsive Biopolymer-Coated Gelatin Nanoparticles to Combat Bacterial Biofilms, Yingying Wang, Anita Shukla, PhD <sup>1</sup> Brown University, Providence, RI, USA	249. A Hyaluronic Acid-Based Hydrogel Culture Platform for iPSC-derived Midbrain Neuronal Culture, Ze Zhong Wang, PhD <sup>1</sup> , Jesse Liang, MS <sup>1</sup> , Zhan Shu, PhD <sup>1</sup> , Samuel Sances, PhD <sup>2</sup> , Clive Svendsen, PhD <sup>2</sup> , Nigel Maidment, PhD <sup>1</sup> , Stephanie Seidlits, PhD <sup>1</sup> University of California, Los Angeles, Los Angeles, CA, USA, <sup>2</sup> Cedars Sinai Board of Governors Regenerative Medicine Institute, Los Angeles, CA, USA	255. Interlinked PEG-4MAL Microgels for Rapid Immune Cell Migration, Adrienne Widener, Edward Phelps <sup>1</sup> University of Florida, Gainesville, FL, USA	261. Effect of physicochemical properties of polymeric nanoparticles on in vitro and in vivo toxicity, Binapani Mahaling, PhD <sup>1,2,3</sup> , Dairi A Srinivasa Rao, MPH <sup>1</sup> , Namraa Banuh, MS <sup>1</sup> , Nadin Ahmad, PhD <sup>1</sup> , Sri Sivakumar, PhD <sup>2</sup> , Eim Lavik, DSc <sup>3</sup> , Dhirendra SK Katti, PhD <sup>1</sup> Indian Institute of Technology Kanpur, Department of Biological Sciences and Bioengineering, Kanpur, India, <sup>2</sup> Indian Institute of Technology Kanpur, Department of Chemical Engineering, Kanpur, India, <sup>3</sup> University of Maryland Baltimore County, Baltimore, MD, USA	268. The Development of Lubricated Drug-Eluting Composite Coatings for Endotracheal Tubes, Solaleh Miari <sup>1</sup> , Flavia Fernandes <sup>1</sup> , Yamuna Pillari <sup>1</sup> , Gregory R Dion <sup>2</sup> , Joo I Ong <sup>1</sup> , Rena Bizios <sup>1</sup> , Ieja Guda <sup>1</sup> The University of Texas at San Antonio, San Antonio, TX, USA, <sup>2</sup> U.S. Army Institute of Surgical Research, San Antonio, TX, USA	273. Tunable Membrane Modification of Milk Exosomes for Mucus Penetration, Chenzhen Zhang, Bachelor, Armin Vedaadghavami, Bachelor, Matthew Warren, High school, Ambika Bejpayee, PhD <sup>1</sup> Northwestern University, Boston, MA, USA
243. Engineered Fibrin Nanoparticles for Efficient Drug Delivery to Biofilms, Grant Scull, B.S <sup>1,2</sup> , Ashley Brown, PhD <sup>1,2</sup> , Lauren Schnabel, DVM, PhD <sup>2</sup> , Jessica Gilbertie, MS, DVM, PhD <sup>2</sup> University of North Carolina at Chapel Hill, Chapel Hill, NC, USA, <sup>2</sup> North Carolina State University, Raleigh, NC, USA	250. Micro-pattern-Guided Cardiac Organoid Production for Developmental Toxicity Screening, Plinsky Hoang, PhD <sup>1,2</sup> , Andrew Kowalczewski <sup>1,2</sup> , Shiyang Sun <sup>1,2</sup> , Jeffrey Arack, PhD <sup>2</sup> , Zhen Ma, PhD <sup>1</sup> , 21 Syracuse University, Syracuse, NY, USA, <sup>2</sup> Biolnspired Syracuse Institute for Material and Living Systems, Syracuse, NY, USA, <sup>3</sup> State University of New York Upstate Medical University, Syracuse, NY, USA	256. Electrospun chitosan-elastic for improved wound healing, Alex Bryan, BS BME, Joel Bumgardner, PhD <sup>1</sup> The University of Memphis, Memphis, TN, USA	262. Fabrication of Hydrogel-Coated Gold Nanoshells as a Biosensor for Protein Biomarker Quantification, Andrew Murphy <sup>1,2</sup> , Marissa Wechsler <sup>2,3</sup> , Kiana Behrami <sup>3</sup> , Catherine Ludolph <sup>1</sup> , Ayushi Sahu <sup>3</sup> , H.K.H. Jocelyn Dang <sup>3</sup> , Nicholas Peppas <sup>1,2,3,4,5,1</sup> Department of Chemical Engineering, Austin TX, USA, <sup>2</sup> Institute for Biomaterials, Drug Delivery and Regenerative Medicine, Austin TX, USA, <sup>3</sup> Department of Biomedical Engineering, Austin TX, USA, <sup>4</sup> College of Pharmacy, Austin TX, USA, <sup>5</sup> Department of Surgery and Perioperative Care, Austin, TX, USA	263. In Situ Magnetic Relaxation Localization and Hydrogel Coating of a Nanomaterial Biosensor Device for Continuous Biochemical Surveillance, Richard Murdock, BSME <sup>1,2</sup> , Michael Cima, PhD <sup>1</sup> , 21 Massachusetts Institute of Technology, Cambridge, MA, USA, <sup>2</sup> Koch Institute for Integrative Cancer Research, Cambridge, MA, USA	274. Evaluation of Electrospayed Chitosan Coatings with Incorporated Calcium Phosphate Nanoshells, Andrew Watson, Joel Bumgardner, PhD, Ranganathan Gopalakrishnan, PhD, Tomoko Fujiwara, PhD, Sanjay Mishra, PhD <sup>1</sup> University of Memphis, Memphis, TN, USA	275. Quantifying Crosslinking Density of Photopolymerized Hydrogels with NMR, Jonathan Zatorski, Emma Parker, Jeff Ellena, PhD, Rebecca Pompano, PhD <sup>1</sup> University of Virginia, Charlottesville, VA, USA
251. Microstructured hydrogels to guide self-assembly and scalable growth of lung alveolar epithelial organoids, Claudia Loebel, MD PhD <sup>1</sup> , Leonardo Cardenas, PhD <sup>2</sup> , Aaron Weiner <sup>3</sup> , Andrew Vaughn, PhD <sup>3</sup> , Edward Morrisey <sup>2</sup> , Jason Budrick, PhD <sup>1</sup> Penn Center for Pulmonary Biology, University of Pennsylvania, Philadelphia, PA, USA, <sup>2</sup> School of Veterinary Medicine, University of Pennsylvania, Philadelphia, PA, USA, <sup>3</sup> University of Pennsylvania, Philadelphia, PA, USA	257. Starch-Based Shape Memory Polymers for Crohn's Fistula Healing, Henry Beaman, Priya Ganesh, Mary Monroe, PhD	276. Quantifying Crosslinking Density of Photopolymerized Hydrogels with NMR, Jonathan Zatorski, Emma Parker, Jeff Ellena, PhD, Rebecca Pompano, PhD <sup>1</sup> University of Virginia, Charlottesville, VA, USA				

## RAPID-FIRE PRESENTATIONS

### ANTIMICROBIAL DRUG DELIVERY IN INFECTIOUS DISEASES

- 300 In vitro Comparison of Harvesting Site Effects on Cardiac Extracellular Matrix Hydrogels, Emily Mulvany<sup>1</sup>, Sara McMahan<sup>2</sup>, Jiazhu Xu, MS<sup>2</sup>, Narges Yazdani<sup>1</sup>, Rebecca Willits, PhD<sup>1</sup>, Jun Liao, PhD<sup>2</sup>, Ge Zhang, MD/PhD<sup>1</sup>, Yi Hong, PhD<sup>2</sup> <sup>1</sup>The University of Akron, Akron, OH, USA, <sup>2</sup>University of Texas at Arlington, Arlington, TX, USA
- 301 Effective Delivery of Peptides by Janus-type Dressings for Combating Biofilms in Chronic Wounds, Jingwei Xie, PhD, Yajuan Su, PhD, Hongjun Wang, Guangshun Wang, PhD University of Nebraska Medical Center, Omaha, NE, USA
- 302 Addition of Manuka Honey to Mineralized Collagen Scaffolds for Bone Repair and Preventing Bacterial Adhesion, Marley Dewey<sup>1</sup>, Alan Collins, PhD<sup>2</sup>, Vasiliki Kollipoulos<sup>1</sup>, Aleczandria Tiffany<sup>1</sup>, Rachel Whitaker, PhD<sup>2</sup>, Brendan Harley, Sc.D<sup>1,2</sup> <sup>1</sup>University of Illinois at Urbana-Champaign, Urbana, IL, USA, <sup>2</sup>Institute of Genomic Biology, Urbana, IL, USA
- 303 Absorption of a Novel Antimicrobial Peptide into Orthopedic Bone Cement, Grahmm Funk, BS, BS<sup>1</sup>, Kyle Boone, PhD<sup>2</sup>, Candan Tamerler, PhD<sup>2</sup>, Terence McIff, PhD, MBA<sup>1</sup> <sup>1</sup>University of Kansas Medical Center, Kansas City, KS, USA, <sup>2</sup>University of Kansas, Lawrence, KS, USA
- 304 Novel Polypeptide Coatings with Controlled Dual Drug Delivery, Bingyun Li, PhD, Shichao Zhang, West Virginia University, Morgantown, WV, USA
- 305 In vitro evaluation of anesthetic-loaded chitosan membranes for infection prevention, Zoe Harrison, MS<sup>1</sup>, Joel Bumgardner, PhD<sup>1</sup>, Tomoko Fujiwara, PhD<sup>2</sup>, Daniel Baker, PhD<sup>2</sup>, Jessica Jennings, PhD<sup>1</sup> <sup>1</sup>The University of Memphis, Memphis, TN, USA, <sup>2</sup>University of Memphis, Memphis, TN, USA
- 306 A Clear(ly) Promising Solution: Glutathione-conjugated Hydrogels for the Treatment of Bacterial Infections, Karol Sokolowski, Catherine Dial, Zackery Bulman, PharmD, Eric Wenzler, PharmD, Richard Gemeinhart, PhD, University of Illinois at Chicago, Chicago, IL, USA
- 307 Drug-eluting Endotracheal Tubes for Preventing Bacterial Induced Subglottic Stenosis, Matthew Aronson<sup>1</sup>, Riccardo Gottardi, PhD<sup>1,2,3,4</sup>, <sup>1</sup>University of Pennsylvania, Philadelphia, PA, USA, <sup>2</sup>Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA, USA, <sup>3</sup>Children's Hospital of Philadelphia, Philadelphia, PA, USA, <sup>4</sup>Ri.MED Foundation, Palermo, Italy
- 308 Augmentation of Oral Immunotherapy with Tolerance-induce Nanoparticles, Rian Harriman, Hamilton Kakwere, Kenneth Alvarez, Svetlana Miakicheva, Bahieh Noorafkan, Jamal Lewis, University of California, Davis, Davis, CA, USA
- 309 Highly Adhesive Coatings on Orthopedic Pins to Prevent Infection, Mikhail Bredikhin<sup>1</sup>, Christopher Gross<sup>2</sup>, Igor Luzinov<sup>1</sup>, Alexey Vertegel<sup>1</sup>, <sup>1</sup>Clemson University, Clemson, SC, USA, <sup>2</sup>Medical University of South Carolina, Charleston, SC, USA
- 310 A Dual-Responsive Nanoparticle for Treating Antimicrobial Resistant Infections, Mingzhou Ye<sup>1</sup>, Yi Zhao<sup>1</sup>, Yuyuan Wang<sup>1</sup>, Miao Zhao<sup>2</sup>, Nisakorn Yodsanit<sup>1</sup>, Ruosen Xie<sup>1</sup>, David Andes<sup>2</sup>, Shaoqin Gong<sup>1</sup>, <sup>1</sup>University of Wisconsin-Madison, Madison, WI, USA, <sup>2</sup>University of Wisconsin School of Medicine and Public Health, Madison, WI, USA
- 311 Microparticle-based delivery of bacteriophage to treat Staphylococcus aureus and Pseudomonas aeruginosa co-infections "Pranav Kalelkar, PhD<sup>1</sup>, Milan Riddick<sup>1</sup>, Dina Moustafa, PhD<sup>2</sup>, Joanna Goldberg, PhD<sup>2</sup>, Nael McCarty, PhD<sup>2</sup>, Andres Garcia, PhD<sup>1</sup>, <sup>1</sup>Georgia Institute of Technology, Atlanta, GA, USA, <sup>2</sup>Emory University, Atlanta, GA, USA

### DRUG DELIVERY SIG

- 312 Repurposing Biodegradable Tissue Engineering Scaffolds For Localized Chemotherapeutic Delivery, Erika Cyphert<sup>1,2</sup>, Monika Bil, PhD<sup>2</sup>, Horst von Recum, PhD<sup>1</sup>, Wojciech Świążkowski, PhD<sup>2</sup>, <sup>1</sup>Case Western Reserve University, Cleveland, OH, USA, <sup>2</sup>Warsaw University of Technology, Warsaw, Poland
- 313 Combinatorial Drug Formulation with Random Heteropolymers Prepared by Polymer Automation, Rahul Upadhyay<sup>1</sup>, Ashish Punia, PhD<sup>2</sup>, Mythili Kanagala<sup>1</sup>, Lina Liu, PhD<sup>2</sup>, Timothy Rhodes, PhD<sup>2</sup>, Matthew Lamm, PhD<sup>2</sup>, Adam Gormley, PhD<sup>1</sup>, <sup>1</sup>Rutgers, the State University of New Jersey, Piscataway, NJ, USA, <sup>2</sup>Merck & Co., Inc., Rahway, NJ, USA
- 314 Effects of Particle Size and Surface Functionalization on the Association of Nanoparticles with Human Colon Cancer Cells, Feipeng Yang, PhD<sup>1,2</sup>, Maleen Cabe, MS<sup>1,2</sup>, Hope Nowak<sup>2,3</sup>, Kelly Langert, PhD<sup>1,2</sup>, <sup>1</sup>Loyola University Chicago, Maywood, IL, USA, <sup>2</sup>Edward Hines, Jr., VA Hospital, Hines, IL, USA, <sup>3</sup>Grinnell College, Grinnell, IA, USA
- 315 Polymeric Nanoparticle Depots for Controlled and Sustained Gene Delivery, Xiaoyang Xu, PhD, Zhongyu Li, New Jersey Institute of Technology, Newark, NJ, USA
- 316 Crystallization of the Multi-receptor Tyrosine Kinase inhibitor Sorafenib for Controlled Long-term Drug Delivery following a Single Injection, Joshua Doloff, PhD<sup>1,2</sup>, Victoria Lai, M.S.<sup>1</sup>, Sarah Neshat<sup>1</sup>, Jimmy Pitingolo<sup>1</sup>, <sup>1</sup>Johns Hopkins University School of Medicine, Baltimore, MD, USA, <sup>2</sup>Johns Hopkins University, Baltimore, MD, USA



## RAPID-FIRE PRESENTATIONS (CONTINUED)

- 317 Ultra-High Viscous Alginate and the Development of Future Cochlear Implants, Verena Scheper, PhD<sup>1,2</sup>, Jana Schwieger, PhD<sup>1,2</sup>, Thomas Rau, PhD<sup>1,2</sup>, Thomas Lenarz, PhD<sup>1,2</sup>, <sup>1</sup>Hannover Medical School, Hannover, Germany, <sup>2</sup>German Research Foundation, Hannover, Germany
- 318 A Novel Fusogenic Peptide Delivery System targeting CSNK2A1 in Ovarian Cancer Cells, Timothy Samec, Jr., MS, Jessica Boulos, Serena Gilmore, Anthony Hazelton, Angela Anexander-Bryant, PhD, Clemson University, Clemson, SC, USA
- 319 Multifunctional microparticles incorporating gold compound inhibit lung cancer xenograft, John Kao, PhD, Puiyan Le, PhD, CN Lok, PhD, Chi-Ming Che, PhD, University of Hong Kong, Hong Kong, Hong Kong
- 320 Towards the oral delivery of high isoelectric point therapeutic proteins using poly(acrylamide-co-itaconic acid) nanoparticle carriers, Heidi Oldenkamp<sup>1,2</sup>, Divya Gupta<sup>2,3</sup>, Isabel De La Fuente<sup>1,2</sup>, Avha Mohanty<sup>1,2</sup>, Nicholas Peppas<sup>1,2,3,4,5</sup>, <sup>1</sup>University of Texas at Austin, McKetta Department of Chemical Engineering, Austin, TX, USA, <sup>2</sup>University of Texas at Austin, Institute for Biomaterials, Drug Delivery, and Regenerative Medicine, Austin, TX, USA, <sup>3</sup>University of Texas at Austin, Department of Biomedical Engineering, Austin, TX, USA, <sup>4</sup>University of Texas at Austin, Department of Surgery and Perioperative Care, Dell Medical School, Austin, TX, USA, <sup>5</sup>University of Texas at Austin, Division of Molecular Pharmaceutics and Drug Delivery, College of Pharmacy, Austin, TX, USA
- 321 A Platform for Macrophage-mediated Delivery of Polymeric Prodrugs to Solid Tumors, Ciana Lopez, BS<sup>1,2</sup>, Katherine Brempeis, PhD<sup>2</sup>, James Matthaei, PhD<sup>2</sup>, Kate Montgomery, PhD<sup>1</sup>, Selvi Srinivasan, PhD<sup>1</sup>, Debashish Roy, PhD<sup>1</sup>, Shannon Kreuser, BS<sup>2</sup>, John Chiefari, PhD<sup>3</sup>, Courtney Crane, PhD<sup>2</sup>, Patrick Stayton, PhD<sup>1</sup>, <sup>1</sup>University of Washington, Seattle, WA, USA, <sup>2</sup>Seattle Children's Research Institute, Seattle, WA, USA, <sup>3</sup>CSIRO Manufacturing, Clayton South MDC, Australia
- 322 RhMG53 delivered by a ROS-scavenging hydrogel promotes diabetic wound healing by regulating STAT3 signaling, HONG NIU, PhD<sup>1</sup>, Haichang Li, PhD<sup>2</sup>, Ya Guan, MS<sup>1</sup>, Jianjie Ma, PhD<sup>2</sup>, Jianjun Guan, PhD<sup>1</sup>, <sup>1</sup>Washington University in St. Louis, St Louis, MO, USA, <sup>2</sup>The Ohio State University, Columbus, OH, USA
- 323 Temperature-controlled multi-drug releasing with core-shell structured phase change nanoparticles, Qingxuan Li, Ming Su, Northeastern University, Boston, MA, USA
- 324 Extended Statin-Drug Release from Bioprinted Triple-Networked Hydrogels Composed of Modified Chitosan and PLA-PEG Micelles "Tamanna Ferdous, BS, Naisha Chowdhury, Emily Coleman, Karla Cisneros, Jessica Jennings, PhD, Joel Bumgardner, PhD, Tomoko Fujiwara, PhD, University of Memphis, Memphis, TN, USA

## ENGINEERING CELLS AND THEIR MICROENVIRONMENTS SIG

- 325 Phototunable Interpenetrating Polymer Network Hydrogels Stimulate iPSC-EP Vasculogenesis, Cody Crosby, PhD<sup>1,2</sup>, Alex Hillsley, BS<sup>3</sup>, Sachin Kumar, PhD<sup>2</sup>, Sapun Parekh, PhD<sup>2</sup>, Adrienne Rosales, PhD<sup>3</sup>, Janet Zoldan, PhD<sup>2</sup>, <sup>1</sup>Southwestern University, Georgetown, TX, USA, <sup>2</sup>The University of Texas at Austin, Biomedical Engineering, Austin, TX, USA, <sup>3</sup>The University of Texas at Austin, Chemical Engineering, Austin, TX, USA
- 326 Development of an in vitro dual hydrogel system for studying angiogenesis and vascularization, Sungwoo Kim, PhD, Sien Lin, PhD, MD, Yunzhi Yang, PhD, Stanford University, Palo Alto, CA, USA
- 327 Modulating Wound Healing Parameters via Tri-layered, Multiphase Dressing for Diabetic Foot Ulcers, Elizabeth Gianino, Jordan Gilmore, PhD, Clemson University, Clemson, SC, USA
- 329 Dermal Full Thickness Wound Healing: Equine Amniotic Membrane Versus Commercially Available Xenografts, Rynne Early, MS<sup>1</sup>, Rachel Depa<sup>1</sup>, Harold Aberman, DVM, MSE<sup>1,2</sup>, <sup>1</sup>Seed Biotech, Inc., Dallas, TX, USA, <sup>2</sup>Purdue University, Sewalls Point, FL, USA
- 330 Engineering a Synthetic Macroencapsulation Device for the Treatment of Type One Diabetes, Michelle Quizon, BS<sup>1</sup>, Graham Barber, BS<sup>1</sup>, Cherie Stabler, PhD<sup>2</sup>, Andrés García, PhD<sup>1</sup>, <sup>1</sup>Georgia Institute of Technology, Atlanta, GA, USA, <sup>2</sup>University of Florida, Gainesville, FL, FL, USA
- 331 Functionalized PLGA Scaffolds Embedded with Mesenchymal Stem Cell-encapsulated Alginate Hydrogel Microspheres for Tissue Regeneration, Min Wang, PhD, Huihua Li, Li-wu Zheng, PhD, The University of Hong Kong, Hong Kong, Hong Kong
- 332 Control of Fibroblast Differentiation in Acoustically-Responsive Scaffolds using Ultrasound-Induced Matrix Stiffening, Easton Farrell, Mitra Aliabouzar, Carole Quesada, Brendon Baker, Andrew Putnam, Renny Franceschi, Mario Fabiilli, University of Michigan, Ann Arbor, MI, USA
- 333 Novel Longer Lasting Crosslinked Hyaluronic Acid-Based Gel for Use As A Dermal Filler, David Gravett, PhD, Bethany Acampora, PhD, David Evans, Joel Corbett, PhD, Hafiz Busari, Poly-Med, Inc., Anderson, SC, USA

## RAPID-FIRE PRESENTATIONS (CONTINUED)

- 334 A dual crosslinkable bioink for 3D printing of scaffolds towards wound healing, Marzieh Monfared, PhD, Damia Mawad, Jelena Rnjak-Kovacina, Martina Stenzel, University of New South Wales (UNSW), Sydney, Australia
- 335 Silk fibroin nanofibers containing chondroitin sulfate and silver sulfadiazine for wound healing treatment, Edvani Muniz, PhD<sup>1,2</sup>, Marilia Cestari PhD, PhD<sup>1</sup>, Bárbara Caldas, PhD<sup>1</sup>, Dyenefer Fonseca<sup>1</sup>, Rodolfo Balbinot<sup>1</sup>, Danielle Lazarin-Bidóia<sup>1</sup>, Issei Otsuka, PhD<sup>3</sup>, Celso Nakamura<sup>1</sup>, Redouane Borsali, PhD<sup>3</sup>, <sup>1</sup>Maringa State University, Maringa, Brazil, <sup>2</sup>Federal University of Piauí, Teresina, Brazil, <sup>3</sup>University of Grenoble Alpes, Grenoble, France
- 336 Mechanical Properties of Chitosan/Starch/Jatropha dioca Composites for Skin Engineering, Diego Olivares-Ochoa, BS<sup>1</sup>, Amanda Carrillo-Castillo<sup>1</sup>, Monica-Elvira Mendoza-Duarte<sup>1</sup>, Santos-Adriana Martel-Estrada<sup>2</sup>, <sup>1</sup>Universidad Autónoma de Ciudad Juárez/IIT, Ciudad Juarez, Mexico, <sup>2</sup>Universidad Autónoma de Ciudad Juárez/IADA, Ciudad Juarez, Mexico
- 337 Microscopic local stiffening in supramolecular hydrogel network expedites stem cell mechanosensing in 3D, Weihao Yuan<sup>1</sup>, Haixing Wang<sup>2</sup>, Chao Fang, PhD<sup>3</sup>, Yongkang Yang<sup>2</sup>, Xingyu Xia<sup>3</sup>, Yuan Lin, PhD<sup>3</sup>, Gang Li, PhD<sup>2</sup>, Liming Bian, PhD<sup>1</sup>, <sup>1</sup>The Chinese University of Hong Kong, Hong Kong, Hong Kong, <sup>2</sup>Prince of Wales Hospital, The Chinese University of Hong Kong, Hong Kong, Hong Kong, <sup>3</sup>The University of Hong Kong, Hong Kong, Hong Kong
- 338 One-step Harvest and Delivery of Honeycomb-shaped Microtissues Using Temperature-responsive Hydrogel, Se-jeong Kim<sup>1,2</sup>, Heungsoo Shin, PhD<sup>1,2</sup>, <sup>1</sup>Hanyang University, Seoul, Republic of Korea, <sup>2</sup>BK21 FOUR, Education and Research Group for Biopharmaceutical Innovation Leader, Seoul, Republic of Korea
- 339 Bacterial Derived Cellulose with Tunable Optical Clarity for Wound Dressing Applications “Elizabeth van Zyl, Jeannine Coburn, PhD, Worcester Polytechnic Institute, Worcester, MA, USA
- 340 Synergistic Effect of Placental Membrane Extract and Hypoxia on Human Adipocyte Differentiation, Alejandro Magana, B.S<sup>1</sup>, Regina Giovanni<sup>1</sup>, Mathew Mathew, PhD<sup>1</sup>, Sarah Hagarty, MD<sup>2</sup>, Divya Bijukumar, PhD<sup>1</sup>, Mrignayani Kotecha<sup>3</sup>, <sup>1</sup>University of Illinois at Chicago, Rockford, IL, USA, <sup>2</sup>OSF Medical Center, Rockford, IL, USA, <sup>3</sup>302M Technologies, LCC, Chicago, IL, USA
- 341 Investigation of UV Curing of Diazirine-grafted Bioadhesives at Elevated Temperature, Elwin Ang, Bachelor of Engineering (Materials Engineering), Terry Steele, PhD, Nanyang Technological University, Singapore, Singapore

## ORTHOPAEDIC BIOMATERIALS SIG

- 342 Single Micro-Asperity Fretting Corrosion of CoCrMo, Ti6Al4V, and 316 Stainless Steel, Annsley Mace, Jeremy Gilbert, PhD, Clemson University, Clemson, SC, USA
- 344 Does microstructure influence the corrosion behavior of Ti-6Al-4V orthopedic implants?, Mozart Neto, PhD<sup>1</sup>, Simona Radice, PhD<sup>1</sup>, Deborah Hall, Bsc<sup>1</sup>, Joshua Jacobs, Md<sup>1</sup>, Mathew Mathew, PhD<sup>2</sup>, Robin Pourzal, PhD<sup>1</sup>, <sup>1</sup>Rush University Medical Center, Chicago, IL, USA, <sup>2</sup>University of Illinois Medical College, Rockford, IL, USA
- 345 Impacts of Conditioned Medium on Tenocyte and Fibroblast Growth Within Porous Titanium Scaffolds, Paula Dietz<sup>1</sup>, Therese Bou-Akl, PhD<sup>1,2</sup>, Rishi Chatterji<sup>1</sup>, Joseph Seta<sup>1</sup>, Weiping Ren, PhD<sup>1,2</sup>, David Markel<sup>1,2</sup>, <sup>1</sup>Ascension Providence Hospital, Southfield, MI, USA, <sup>2</sup>Wayne State University, Detroit, MI, USA
- 346 Systematic Analysis of Corrosion, Wear Debris, Compositional Changes, and Physical Properties of Explanted Magnetically Controlled Growing Rods “Basel Khader, PhD, Karl Jepsen, PhD, Ying Li, PhD, University of Michigan, Ann Arbor, MI, USA
- 347 Drug-Free antibacterial activity of Silver-Releasing Bioactive Glass Nanoparticles for Bone Regeneration, Natalia Pajares-Chamorro<sup>1</sup>, Sandra Hernández-Escobar<sup>1</sup>, Yadav Wagley, PhD<sup>2</sup>, Neal Hammer, PhD<sup>1</sup>, Parker Acevedo<sup>2</sup>, Kurt Hankenson, DVM, PhD<sup>2</sup>, Xanthippi Chatzistavrou, PhD<sup>1</sup>, <sup>1</sup>Michigan State University, Lansing, MI, USA, <sup>2</sup>University of Michigan, Ann Arbor, MI, USA
- 348 CoCrMo Alloy Features Affecting Material Loss in Severely Damaged THA Femoral Head Tapers, Stephanie McCarthy, Mozart Queiroz Neto, PhD, Mable Je, Deborah Hall, Joshua Jacobs, MD, Robin Pourzal, PhD, Rush University Medical Center, Chicago, IL, USA
- 349 Substituted Apatites as Regenerative Bone Scaffolding “Clark Nielson<sup>1,2</sup>, Sujee Jeyapalina, PhD<sup>1,2</sup>, Jill Shea, PhD<sup>1,2</sup>, James Beck, PhD<sup>1,2</sup>, <sup>1</sup>University of Utah, Salt Lake City, UT, USA, <sup>2</sup>Department of Veterans Affairs, Salt Lake City, UT, USA
- 350 Abrasion properties of Ti6Al4V additively manufactured porous structure and the impact of blasting, Mahdieh Aghazadeh, PhD, Yuwei Zhai, PhD, Timothy Gunther, Weidong Tong, PhD, DePuy Synthes, Warsaw, IN, USA
- 351 Effect of Build Orientation on Strut-to-Substrate Weld Areas in Additively Manufactured Porous Coatings, Yuwei Zhai, PhD, Brett English, Rakshak Nemiraj, Weidong Tong, PhD, DePuy Synthes, Warsaw, IN, USA





## RAPID-FIRE PRESENTATIONS (CONTINUED)

- 352 Bioactive Alterations to Mineralized Collagen Scaffolds to Enhance Craniofacial Bone Repair, Aleczandria Tiffany<sup>1</sup>, Marley Dewey<sup>1</sup>, Danielle Gray, PhD<sup>1</sup>, Toby Woods, PhD<sup>1</sup>, Kiran Subedi, PhD<sup>2</sup>, Brendan Harley, PhD<sup>1</sup>, <sup>1</sup>University of Illinois at Urbana-Champaign, Champaign, IL, USA, <sup>2</sup>North Carolina A&T, Greensboro, NC, USA"
- 353 A Comparative Study to Assess the Osteogenic Potential of Different Bioceramics for Bone Tissue Engineering, Nashaita Patrawalla, Nilabh Kajave, Vipuil Kishore, Florida Institute of Technology, Melbourne, FL, USA
- 354 Multifunctional Fullerene Biocatalyst for Regenerative Application, Gülcihan Gülsüren, Faculty of Agriculture and Natural Sciences, Konya, Turkey
- 355 Variations in Dental Implant Electrochemical Behavior in the Presence of Ti-ions and Ti-particles: A Pilot Study, Mostafa Alhamad, BDS, MS<sup>1,2</sup>, Valentim Barao<sup>3</sup>, Cortino Sukotjo<sup>1</sup>, Lyndon Cooper<sup>1</sup>, Mathew Mathew, PhD<sup>1</sup>, <sup>1</sup>University of Illinois-Chicago, Chicago, IL, USA, <sup>2</sup>Mam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia, <sup>3</sup>University of Campinas, Piracicaba, Brazil
- 356 A Novel Synthesis Method of Carbide Derived Carbon (CDC) Surface Modification for Hip Implants, Yani Sun<sup>1</sup>, Kai-yuan Cheng, PhD<sup>2</sup>, Mathew Mathew, PhD<sup>1,2</sup>, Michael McNallan, PhD<sup>1</sup>, <sup>1</sup>University of Illinois at Chicago, Chicago, IL, USA, <sup>2</sup>University of Illinois College of Medicine at Rockford, Rockford, IL, USA
- 357 Machine learning guided biomaterials development, Ying Mei, PhD<sup>1</sup>, Sophia Silver<sup>1</sup>, Jianjun Hu, PhD<sup>2</sup>, <sup>1</sup>Clemson University, Charleston, SC, USA, <sup>2</sup>University of South Carolina, Columbia, SC, USA
- 358 Metformin improves chondrogenic potential of infrapatellar fat pad derived mesenchymal stem cells in an inflammatory microenvironment, SUGATA HAZRA, PhD, KASHISH JAIN, DHIRENDRA KATTI, PhD, Indian Institute of Technology-Kanpur, Kanpur, India
- 361 Estimation of Dual Simvastatin and Rasperry ketone Effect on Macrophage Phenotype and Evaluation of its Potential Localized Anti-inflammatory Activity from Hexanoic anhydride Treated Chitosan Guided Bone Regeneration (GBR) membranes, Mallesh Kurakula, PhD<sup>1</sup>, Richard Smith, PhD<sup>2</sup>, Joel Bumgardner, PhD<sup>1</sup>, <sup>1</sup>University of Memphis, Memphis, TN, USA, <sup>2</sup>University of Tennessee Health Science Center, Memphis, TN, USA
- 362 Incorporation of Peptide-Modified Chondroitin Sulfate to a Collagen I/II Blend Hydrogel for Cartilage Engineering, Carly Battistoni<sup>1</sup>, Claire Kilmer, PhD<sup>1</sup>, Tanaya Walimbe, PhD<sup>2</sup>, Alyssa Panitch, PhD<sup>1,2</sup>, Julie Liu, PhD<sup>1</sup>, <sup>1</sup>Purdue University, West Lafayette, IN, USA, <sup>2</sup>UC Davis, Davis, CA, USA
- 363 Development of PolyHIPE Autograft Extenders for Improved Bone Regeneration, Dana Jenkins, MSE<sup>1</sup>, Elizabeth Cosgriff-Hernandez, PhD<sup>1</sup>, Dave Laverty<sup>2</sup>, Brian Saunders<sup>3</sup>, <sup>1</sup>The University of Texas at Austin, Austin, TX, USA, <sup>2</sup>University of Texas at Austin, Austin, TX, USA, <sup>3</sup>Texas A&M University, College Station, TX, USA
- 364 Osteoinductive Oxygen Carrying Nanoparticle for Bone Repair, Chung-Sung Lee, PhD, Jiabing Fan, MD, PhD, Tara Aghaloo, DDS, MD, PhD, Min Lee, PhD, University of California Los Angeles, Los Angeles, CA, USA
- 366 Safety and efficacy studies on silk fibroin-based bone void filler: Serioss® "Rucha Deshpande<sup>1</sup>, Raeesa Sayyad<sup>1</sup>, Swati Shukla<sup>1</sup>, Anuya Nisal<sup>2</sup>, Premnath Venugopalan<sup>2</sup>, <sup>1</sup>Serigen Mediproducts Pvt. Ltd., Pune, India, <sup>2</sup>CSIR-National Chemical Laboratory, Pune, India
- 367 Plant-derived Zein Protein as a Scaffold Material for Cell Growth and Osteogenesis, Apurva Limaye, Treena Livingston Arinzeh, PhD, New Jersey Institute of Technology, Newark, NJ, USA
- 368 Bilayered, Click Biofunctionalized Hydrogels for Osteochondral Repair, Jason Guo, PhD<sup>1</sup>, Yu Seon Kim, PhD<sup>1</sup>, Gerry Koons<sup>1</sup>, Johnny Lam, PhD<sup>2</sup>, Sergio Barrios<sup>1</sup>, Adam Navara<sup>1</sup>, Virginia Xie<sup>1</sup>, Emma Watson, PhD<sup>1</sup>, Brandon Smith, PhD<sup>1</sup>, Hannah Pearce<sup>1</sup>, Elysse Orchard, DVM, Jeroen van den Beucken, PhD, John Jansen, DDS, PhD, Antonios Mikos, PhD<sup>1</sup>, <sup>1</sup>Rice University, Houston, TX, USA, <sup>2</sup>Food and Drug Administration, Silver Spring, MD, USA
- 369 Multicellular spheroids incorporating osteoinductive and ROS scavenging synthetic fibers with biomineral coating "Hayeon Byun<sup>1,2</sup>, Heungsoo Shin<sup>1,2</sup>, <sup>1</sup>Hanyang university, Seoul, Republic of Korea, <sup>2</sup>Hanyang university, Seoul, Republic of Korea
- 359 Biodegradable piezoelectric scaffold for cartilage regeneration, Yang Liu, PhD, Thanh Nguyen, PhD, University of Connecticut, Storrs, CT, USA
- 360 Resorbable Composite Polymer Ceramic Scaffolds Support Bone Growth and Bonding In Vivo, Gerardo Figueroa, David Gonzales, Efen Barron Villalobos, Luis Arciniaga, Douglas Loy, PhD, Krishna Muralidharan, PhD, Barrett Potter, PhD, John Szivek, PhD, David Margolis, PhD, MD, The University of Arizona, Tucson, AZ, USA

## RAPID-FIRE PRESENTATIONS (CONTINUED)

- 370 Biofabrication of spheroids positioned micro-chamber with dual growth factors delivery for bone tissue regeneration, Jinkyu Lee, PhD.1,2, Seung Jae Huh, BS.1,2, Heungsoo Shin, PhD.1,2, 1Hanyang University, Seoul, Republic of Korea, 2BK21 FOUR, Education and Research Group for Biopharmaceutical Innovation Leader, Seoul, Republic of Korea
- 371 LDH NANOPARTICLE-INTEGRATED SCAFFOLDS FOR BONE TISSUE ENGINEERING APPLICATIONS, Zeynep Akguner, MSc1, Emine Alarcin, PhD2, Erdal Karaoz, PhD3, Ayca Bal Ozturk, PhD4, 1Institute of Health Sciences, Istinye University, Istanbul, Turkey, 2Faculty of Pharmacy, Marmara University, Istanbul, Turkey, 3School of Medicine, Istinye University, Istanbul, Turkey, 4Faculty of Pharmacy, Istinye University, Istanbul, Turkey
- 372 Improving the Porosity of the Subchondral Bone Phase of a Multi-Layered Osteochondral Biomaterial, Andrea Vera Martinez, Jeremy Mercuri, PhD, Clemson University, Clemson, SC, USA
- 373 The Mechanical Modification of a Novel Scaffold to Treat Focal Cartilage Defects "Vishal Thomas, MS1, Alan Marionneaux2, Jeremy Mercuri, PhD1, 1Clemson University, Clemson, SC, USA, 2GE Power, Greenville, SC, USA
- 374 Effect of Topological Structure on Physico-Mechanical and Biological Properties of Surface-modified Magnesium Hydroxides "Dong Keun Han1, Eun Young Kang1, Seung-Woon Baek1, Yun Heo1, Chun Gwon Park2, 1CHA University, Seongnam-si, Republic of Korea, 2Sungkyunkwan University, Suwon-si, Republic of Korea
- 375 Optimization of Decellularization Methods in Blood Vessel Tissue Engineering, Bethany Lefeber, Dan Simionescu, Agneta Simionescu, Clemson University, Clemson, SC, USA
- 376 Mitral Valve Tissue Engineering for Mitral Valve Prolapse Prevention, Collin Owens, Agneta Simionescu, PhD, Clemson University, Clemson, SC, USA
- 377 Validation of a High-Throughput Bioreactor for Cardiac Tissue Modeling, Howard Herbert, IV, Agneta Simionescu, PhD, Clemson University, Clemson, SC, USA
- 378 Immobilization of a Collagen-mimicking Peptide to the Surface of Poly(vinyl alcohol) Hydrogels Promotes Endothelialization While Minimizing Thrombosis, Heather Heidenreich1, Novella Bates1, Meghan Fallon1, Yuan Yao2, Evelyn Yim, PhD2, Monica Hinds, PhD1, Deirdre Anderson, PhD1, 1Oregon Health & Science University, Portland, OR, USA, 2University of Waterloo, Waterloo, ON, Canada
- 379 Wnt and BMP Signaling in Vascular Calcification, Kaylee Bundy, LaShan Simpson Mississippi State University, Mississippi State, MS, USA
- 380 In vitro Fibrotic Cardiac Tissue through Bioartificial Scaffolds, Alice Zoso, PhD1,2, Gerardina Ruocco1,2, Mattia Spedicati1,2, Irene Carmagnola, PhD1,2, Valeria Chiono1,2, 1Politecnico di Torino, Turin, Italy, 2Interuniversity Center for the Promotion of 3Rs Principles in Didactics and Research - Centro 3R, Pisa, Italy
- 381 Sirolimus Delivery from an Electrospun Vascular Access Graft Material Jayashree Chakravarty, 1Rayan Kassab, 1Nathaniel Long, 2Nikhil Agrawal, 2Yael Vin, 2Mauricio Contreras, 1Lisa Fitzgerald, 1Matthew Phaneuf, 1 Patrick Hayden 1BioSurfaces, Inc., Ashland, MA; 2B.I. Deaconess Medical Center, Boston, MA
- 382 Using Design of Experiment (DOE) to Establish Repeatable In Vitro Accelerated Use Model for Thrombogenicity, James Freasier, BD Medical, Salt Lake City, UT, USA
- 383 Optical Coherence Tomography for Assessing the Blood Flow Patterns in Coronary Artery Bypass Grafts, Reece Fratus, Junkai Yang, Siyu Ma, PhD, Lucas Schmidt, PhD, Thomas Fair, Bruce Gao, PhD, Clemson University, Clemson, SC, USA
- 384 Reduced Thrombogenicity of Syndecan-4 Functionalized Engineered Vascular Biomaterial, Yidi Wu1,2, William Wagner1,2, 1Wake Forest University School of Medicine, Winston-Salem, NC, USA, 2Virginia Tech - Wake Forest University, Winston-Salem, NC, USA
- 385 Dosage and Biodistribution of Drug Loaded Nanogels in Disseminated Intravascular Coagulation, Emily Mihalko1,2, Nina Moiseiwitsch1,2, Ashley Brown1,2, 1North Carolina State University and the University of North Carolina at Chapel-Hill, Raleigh, NC, USA, 2North Carolina State University, Raleigh, NC, USA
- 386 Electrospun Scaffolds with Electroconductive Carbon Nanotubes for Cardiac Tissue Engineering Applications, Taylor Suh, Jessica Gluck, PhD, North Carolina State University, Raleigh, NC, USA
- 387 Does a Conductive Scaffold with Polyaniline Improves Ventricular Remodeling When Incorporated to a Dense Lamellar Collagen Cardiac Patch?, Fernanda Leite, MS1, Juliana Marana2, Luiza de Sá2, Daniela Carvalho, PhD2, Denise Grotto, PhD1,2, Marcus Chaud, PhD1, Lindemberg Silveira-Filho, MD, PhD2, 1University of Sorocaba, Sorocaba, Brazil, 2University of Campinas, Campinas, Brazil
- 388 Design of Hydrogel Coatings of Electrospun Vascular Grafts via Diffusion-Mediated Redox Polymerization, Megan Wancura1, Andrew Robinson2, Elizabeth Cosgriff-Hernandez, PhD2, 1University of Texas at Austin, Austin, TX, USA, 2The University of Texas at Austin, Austin, TX, USA

## CARDIOVASCULAR BIOMATERIALS SIG



## RAPID-FIRE PRESENTATIONS (CONTINUED)

### IMMUNE ENGINEERING SIG

- 389 Textile/Hydrogel Composite Vascular Graft Attenuates Inflammatory Macrophage Response while Ameliorating Mechanical Performance "Fan Zhang<sup>1</sup>, Ozan Akkus, PhD<sup>2</sup>, Mani Daneshmand<sup>3</sup>, Martin King<sup>1,4</sup>, <sup>1</sup>North Carolina State University, Raleigh, NC, USA, <sup>2</sup>Case Western Reserve University, Cleveland, OH, USA, <sup>3</sup>Emory University, Atlanta, GA, USA, <sup>4</sup>Donghua University, Shanghai, China
- 390 Physiological polyanions, interacting with the SARS-CoV-2 virus-cell-docking machinery, Werner Müller, Dr., Xiaohong Wang, Dr. University Medical Center of the Johannes Gutenberg University Mainz, Mainz, Germany
- 391 Inhibition of Glycolysis in the Presence of Self-Antigen Generates Suppressive Antigen-Specific Responses and Restrains Autoimmunity, Joslyn Mangal<sup>1</sup>, Sahil Inamdar<sup>1</sup>, Xiaojin Shi<sup>1</sup>, Marion Curtis, PhD<sup>2</sup>, Haiwei Gu, PhD<sup>1</sup>, Abhinav Acharya, PhD<sup>1</sup>, <sup>1</sup>Arizona State University, Tempe, AZ, USA, <sup>2</sup>Mayo Clinic, Scottsdale, AZ, USA
- 392 Supramolecular Nanomolecules Abrogate Inflammation In A Mouse Model Of Ulcerative Colitis, Matthew Bury, MS, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL, USA
- 393 Tunable Lipid-Polymer Nanoparticles for Anti-Inflammatory Polarization of Macrophages, Elizabeth Bender, Laura Suggs, PhD, The University of Texas at Austin, Austin, TX, USA
- 394 Alginate Instigates Adjuvant Effects on Indirect Antigen Recognition and T Cell Activation for Encapsulated Cell Therapies, Ying Li<sup>1</sup>, Anthony Frei, PhD<sup>1</sup>, Allison Bayer, PhD<sup>2</sup>, Cherie Stabler, PhD<sup>1</sup>, <sup>1</sup>University of Florida, Gainesville, FL, USA, <sup>2</sup>University of Miami, Miami, FL, USA
- 395 Co-assembled peptide nanoparticles for enzyme delivery, Renjie Liu, PhD, Gregory Hudalla, PhD, University of Florida J. Crayton Pruitt Family, Gainesville, FL, USA
- 396 Synthesis and immune-compatibility evaluation of degradable polystyrene analogue, HONG ANH TRUONG, PhD<sup>1</sup>, Srinivasa Reddy Mothe, PhD<sup>2</sup>, Alexander William Jackson, Ph.D<sup>2</sup>, Parijat Kanaujia, PhD<sup>2</sup>, Jaclyn Lee Min, BEng<sup>1</sup>, Hui Min Tan, BEng<sup>1</sup>, Dang Tri Nguyen, MEng<sup>1</sup>, Danson Kwong Jia Ye, BEng<sup>1</sup>, Praveen Thoniyot, PhD<sup>2</sup>, TRAM THUY DANG, PhD<sup>1</sup>, <sup>1</sup>Nanyang Technological University, Singapore, Singapore, <sup>2</sup>Agency for Science, Technology and Research (A\*STAR), Singapore, Singapore
- 397 Secretome-loaded Plasma-alginate Composite Gels Modulate the Inflammatory Response In vitro, Marc Thompson, PhD, Shanmugasundaram Natesan, PhD, Robert Christy, PhD, US Army Institute of Surgical Research, San Antonio, TX, USA
- 398 Engineered exosomes for immunomodulatory therapy in type 1 diabetes, Matthew Becker<sup>1</sup>, Leena Peters<sup>2</sup>, Todd Brusko, PhD<sup>2</sup>, Edward Phelps, PhD<sup>1</sup>, <sup>1</sup>University of Florida, Gainesville, FL, USA, <sup>2</sup>University of Florida Diabetes Institute, Gainesville, FL, USA
- 399 Intravascular Infusible Extracellular Matrix for the Mitigation of Severe Systemic Inflammation Relevant to COVID-19 Pathology, Raymond Wang, PhD<sup>1</sup>, Anne Lyons<sup>1</sup>, Ryan Middleton, PhD<sup>1</sup>, Mark Hepokoski, MD<sup>2</sup>, Karen Christman, PhD<sup>1</sup>, <sup>1</sup>University of California San Diego, La Jolla, CA, USA, <sup>2</sup>University of California San Diego Vc-Health Sciences, La Jolla, CA, USA
- 400 3D Printed Barrier Construct for Bone Engineering In Systemic Inflammatory Conditions, Zeena Qiryaqoz<sup>1</sup>, Robert Swenson<sup>2</sup>, Liu Hong<sup>2</sup>, Kim Brogden<sup>2</sup>, Adil Akkouch<sup>1</sup>, <sup>1</sup>Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI, USA, <sup>2</sup>Iowa Institute for Oral Health Research, Iowa City,, IA, USA

### DRUG DELIVERY SIG

- 401 Ultrasound-Mediated Drug Release from Pegylated and Targeted Liposomes, Nahid Awad, OHD<sup>1</sup>, Vinod Paul<sup>1</sup>, Mohammad Mahmoud, MS- CHE<sup>1</sup>, Nour AlSawafah, MS- CHE<sup>1</sup>, Paul Kawak, MS-CHE<sup>1</sup>, Mohammad AlSayah, PhD<sup>2</sup>, Ghaleb Hussein, PhD<sup>1</sup>, <sup>1</sup>American University of Sharjah, Sharjah, United Arab Emirates, <sup>2</sup>AUS, Sharjah, United Arab Emirates
- 402 Ultrasound-Mediated Drug Release from Transferrin-PEG Liposomes, Ghaleb Hussein<sup>1</sup>, Nour AlSawafah<sup>1</sup>, Nahid Awad<sup>1</sup>, Vinod Paul<sup>1</sup>, Paul Kawak<sup>1</sup>, Mohammad AlSayah<sup>2</sup>, <sup>1</sup>American University of Sharjah, Sharjah, United Arab Emirates, <sup>2</sup>AUS, Sharjah, United Arab Emirates
- 403 Drug Release from Pegylated and Targeted Liposomes Using High-frequency Ultrasound, Ghaleb Hussein, Nour AlSwafah, Vinod Paul, American University of Sharjah, Sharjah, United Arab Emirates
- 404 Ultrasound mediated release from hyaluronic acid targeted liposomes, Ghaleb Hussein<sup>1</sup>, Safa Ben Daya<sup>1</sup>, Nahid Awad<sup>1</sup>, Vinod Paul<sup>1</sup>, Mohammad Alsayah<sup>2</sup>, <sup>1</sup>American University of Sharjah, Sharjah, United Arab Emirates, <sup>2</sup>American University of Sharjah, Sharjah, United Arab Emirates
- 405 In Vitro Cell Work of Two Types of Targeted Nanoparticles with Ultrasound Triggering, Ghaleb Hussein, Waad Abu Watfa, Debasmita Mukhopadhyay, Nour Alsawafah, American University of Sharjah, Sharjah, United Arab Emirates
- 406 Magnetically-Responsive Shape Memory Polymers for Drug Delivery, Anand Vakil, Mary Beth Monroe, PhD, Syracuse University, Syracuse, NY, USA

## RAPID-FIRE PRESENTATIONS (CONTINUED)

- 407 Light-Triggered Immune Activation by Photolabile PEG-Modified Cytokines, Lacey Perdue<sup>1</sup>, Priscilla Do, PhD<sup>1</sup>, Khalid Salaita, PhD<sup>1</sup>, Gregory Lesinski, PhD, MPH<sup>2</sup>, Christopher Porter, MD<sup>2,3</sup>, Erik Dreaden, PhD<sup>1,2,3</sup>, <sup>1</sup>Georgia Institute of Technology and Emory University, Atlanta, GA, USA, <sup>2</sup>Winship Cancer Institute of Emory University, Atlanta, GA, USA, <sup>3</sup>Emory School of Medicine, Atlanta, GA, USA
- 408 Ultrasound Sensitive Microbubbles with Carbon Monoxide for Delivery to Blood Brain Barrier, Jennifer VanSant, Shirin Changizi, Isabel Marquette, Osamah Alghazwat, Mahyar Sameti, PhD, Yi Liao, PhD, Chris Bashur, PhD, Florida Institute of Technology, Melbourne, FL, USA
- 409 Using Shape to Modulate Biophysical Interactions between Polymersomes and the Blood-Brain Barrier, Christopher Pierce, Jessica Larsen, PhD, Clemson University, Clemson, SC, USA
- 410 Charge-based targeting of the inflamed colon mucosa in inflammatory bowel disease (IBD) using polymer-drug complexes, Chaitanya Valiveti, M.S<sup>1</sup>, Rizwan Ahmad, PhD<sup>2</sup>, Balawant Kumar<sup>2</sup>, Amar Singh, PhD<sup>2</sup>, Hemachand Tummala, PhD<sup>1</sup>, <sup>1</sup>South Dakota State University, Brookings, SD, USA, <sup>2</sup>University of Nebraska Medical Center, Omaha, NE, USA
- 411 Curcumin and Silver Nanoparticles incorporated in Polyelectrolyte Complexes aiming Metal Enhanced Singlet Oxygen Generation Effect to Photodynamic Therapy, Edvani Muniz, PhD<sup>1,2</sup>, Camila de Freitas<sup>1</sup>, Adley Rubira, PhD<sup>1</sup>, Elza Kimura, PhD<sup>1</sup>, <sup>1</sup>Maringa State University, Maringa, Brazil, <sup>2</sup>Federal University of Piaui, Teresina, Brazil
- 412 Thermo-reversible Hydrogels as Injectable Localized Protein Delivery System for Applications in Central Nervous System, Tuan Nguyen, PhD<sup>1</sup>, Chao Pan, PhD<sup>1,2</sup>, Leon Teo<sup>3</sup>, Mischa Mueller<sup>1</sup>, James Bourne<sup>3</sup>, Timothy Hughes<sup>1</sup>, Johan Basuki<sup>1</sup>, <sup>1</sup>The Commonwealth Scientific and Industrial Research Organisation (CSIRO), Clayton South, Australia, <sup>2</sup>University of Science and Technology of China, Hefei, China, <sup>3</sup>Australian Regenerative Medicine Institute, Clayton, Australia
- 413 A De novo Fibrin-specific Binding Peptide for Bioimaging and Drug Delivery Applications "Yoon Sung Nam, PhD, Moon Young Yang, PhD, Jeong Heon Yu, PhD, Korea Advanced Institute of Science and Engineering, Daejeon, Republic of Korea
- 414 A Mineral-Coated Microparticle Delivery System for Interleukin-15, Hannah Martin, Joshua Choe, William Murphy, PhD, University of Wisconsin-Madison, Madison, WI, USA

## TRANSLATING BIOMATERIALS RESEARCH: ACCELERATING BENCH TO BEDSIDE \*BTI\*

- 415 Tissue-Engineered Vascular Graft of Small Diameter Using Human Amnion Membrane, Bo Wang, Professor, Medical college of Wisconsin, Wauwatosa, WI, USA
- 416 Cardiac Function Restoration by Co-Delivery of 5-Azacytidine in Protein Nanoparticles for Effective Stem Cell Differentiation in Rat Myocardial Infarction, Vineeta Sharma, M.Sc<sup>1</sup>, Sanat Dash, M. Tech<sup>1</sup>, Amit Manhas, PhD<sup>2</sup>, Janani Radhakrishnan, PhD<sup>1</sup>, Kumaravelu Jagavelu, PhD<sup>2</sup>, Rama Verma, PhD<sup>1</sup>, <sup>1</sup>Indian Institute Of Technology, Chennai, India, <sup>2</sup>CSIR- Central Drug Research Institute, Lucknow, India
- 417 Human-Derived 3D Microvessels to Study Pulmonary Vascular Barrier Function, Crescentia Cho<sup>1,2</sup>, Elizabeth Doherty<sup>1,2</sup>, Leigh-Ann Antczak<sup>3</sup>, Rebecca Heise, PhD<sup>3</sup>, William Polacheck, PhD<sup>1,2</sup>, <sup>1</sup>University of North Carolina Chapel Hill, Chapel Hill, NC, USA, <sup>2</sup>North Carolina State University, Raleigh, NC, USA, <sup>3</sup>Virginia Commonwealth University, Richmond, VA, USA
- 418 Conductive Aerogel for Skeletal Muscle Repair, Malcolm Xing, University of Manitoba, Winnipeg, MB, Canada
- 419 Micropatterned Human Pluripotent Stem Cells Enable Modeling of the Earliest Developmental Stages of Cardiac Vasculization "Oscar Abilez, MD, PhD<sup>1</sup>, Huaxiao Yang, PhD<sup>1,2</sup>, Kitchener Wilson, MD, PhD<sup>1</sup>, Lei Tian, PhD<sup>1</sup>, Yan Zhuge, PhD<sup>1</sup>, Fangjun Jia, PhD<sup>1</sup>, Hung-Ta Wo, MD<sup>1</sup>, Bryan Aldana, BS<sup>1</sup>, Christopher Zarins, MD<sup>1</sup>, Joseph Wu, MD, PhD<sup>1</sup>, <sup>1</sup>Stanford University, Stanford, CA, USA, <sup>2</sup>University of North Texas, Denton, TX, USA
- 420 Aortic Adventitia-Derived Extracellular Matrix Hydrogel Enhances Contractility of Pericytes, Kaitlyn Wintruba<sup>1</sup>, Jennifer Hill<sup>1</sup>, Tara Richards<sup>1</sup>, Marie Billaud<sup>2</sup>, Thomas Gleason<sup>2</sup>, Julie Phillippi<sup>1</sup>, <sup>1</sup>University of Pittsburgh, Pittsburgh, PA, USA, <sup>2</sup>Brigham and Women's Hospital, Boston, MA, USA
- 421 Engineered Human induced pluripotent stem cell Derived Four-lineage Cardiac Muscle Patch For Myocardial Repair, Xi Lou, Danielle Pretorius, Asher Kahn-Krell, Vladimir Fast, Ph.D., Jianyi Zhang, M.D., Ph.D., University of Alabama at Birmingham, Birmingham, AL, USA
- 422 Translating Biomedical Technologies from Bench to Bedside: Asia Perspective and Opportunity, John Kao, PhD, Hong Kong Science and Technology Park, Hong Kong, Hong Kong
- 423 Translating Porous and Bioactive PEEK to Interbody Spinal Fusions Implants: Patience is a Virtue in the Journey from Bench to Bedside "Ryan Roeder<sup>1,2</sup>, James Nagle<sup>1</sup>, Doug Snell<sup>2</sup>, <sup>1</sup>University of Notre Dame, Notre Dame, IN, USA, <sup>2</sup>HAPPE Spine, LLC, Grand Rapids, MI, USA



## RAPID-FIRE PRESENTATIONS (CONTINUED)

- 424 Three-dimensional, label-free cell viability measurements in tissue engineering scaffolds using optical coherence tomography, Greta Babakhanova, PhD1, Deepika Arora, PhD1, Allison Horenberg1, Jagat Budhathoki, PhD2, Joy Dunkers1, Joe Chalfoun, PhD1, Peter Bajcsy, PhD1, Anant Agrawal, PhD3, Carl Simon, Jr., PhD1, 1National Institute of Standards and Technology, Gaithersburg, MD, USA, 2National Institutes of Health, Bethesda, MD, USA, 3Food and Drug Administration, Silver Spring, MD, USA
- 425 Modified Polylactide with Increased Toughness for Orthopedic Implants \*M Scott Taylor, PhD, Brian Gaerke, Parimal Patel, Sydney Nuckles, Seth McCullen, PhD, Poly-Med, Inc., Anderson, SC, USA
- 426 An Engineered Dry Powder Dispersion Device for In Situ Tissue Sealant Application, Rachael Oldinski-Floeani, PhD, Patrick Charron, MS, James Reilly, MS, University of Vermont, Burlington, VT, USA
- 427 Anisotropic Nanofibrillar Scaffolds Enhance the Survival of Induced Pluripotent Stem Cell-Derived Endothelial Cells for Treatment of Peripheral Arterial Disease, Guang Yang, PhD1, Cynthia Alcazar, BS2, Caroline Hu, BS2, Tatiana Zaitseva, PhD3, Michael Paukshto, PhD3, Ngan Huang, PhD1,2, 1Stanford University, Stanford, CA, USA, 2Veterans Affairs Palo Alto Health Care System, Palo Alto, CA, USA, 3Fibralign Corporation, Union City, CA, USA
- 432 Biopolymeric Hydrogel Delivered Recombinant BMP-9 versus BMP-2 Mediated Rat Calvarial Bone Defect Healing, Angshuman Bharadwaz, MS1, Bipin Gaihre, PhD2, Janitha Unagolla, MSc.1, Ambalangodage Jayasuriya, PhD3, 1The University of Toledo-Main Campus, Toledo, OH, USA, 2Mayo Clinic, Rochester, MN, USA, 3The University of Toledo - Health Science Campus, Toledo, OH, USA
- 433 Ultra-Stiff and Strong Electrostatic, Poly(N-isopropylacrylamide) Triple Network Hydrogels for Orthopedic Tissue Replacement, Connor Demott, McKenzie Jones, Melissa Grunlan, PhD, Texas A&M University, College Station, TX, USA
- 434 Biodegradable Shape Memory Polymer (SMP) Bone Scaffolds with Improved Self-Fitting Properties, Michaela Pfau, Kelly McKinzey, Abigail Roth, Lance Graul, Duncan Maitland, PhD, Melissa Grunlan, PhD, Texas A&M, College Station, TX, USA
- 435 A Flipped Ester group design based methacrylate macromer for improved stability under hydrolytic and enzymatic conditions, Dhiraj Kumar, PhD1, Debarati Ghose, PhD1, Robert Bolskar, PhD2, Isha Mutreja, PhD1, Conrado Aparicio, PhD1, Robert Jones, PhD DDS1, 1University of Minnesota, Minneapolis, MN, USA, 2TDA Research, Inc., Wheat Ridge, CO, USA
- 436 Biodegradable Polyurethane/Reduced Graphene Oxide Fibers for C2C12 Growth \*Alan Taylor, Jiazhu Xu, Huikang Fu, Sara McMahan, PhD, Jun Liao, PhD, Yi Hong, PhD, University of Texas at Arlington, Arlington, TX, USA
- 437 Micro-CT and Histological Evaluation of a Tissue Engineered Enthesis in a Rat Model: Comparison to Native Tissue, Carla Mayer1, Sebastian Müller2, Michael Coenen2, Antonella Motta3, Claudio Migliaresi3, Christopher Evans2, Martijn van Griensven1,2,4, Elizabeth Balmayor1,2,4, 1Klinikum rechts der Isar, Technical University of Munich, Munich, Germany, 2Mayo Clinic, Rochester, MN, USA, 3BIOTech Research Center and European Institute of Excellence on Tissue Engineering and Regenerative Medicine, University of Trento, Mattarello, Italy, 4MERLN Institute, Maastricht University, Maastricht, Netherlands
- 438 Evaluating the Validity of an Elastic Modulus Measurement Method for Polymeric Materials, Megha Satpathy, B.Tech.1, John Mecholsky, Jr., PhD, FACerS2, Nader Abdulhameed, BDS, MS, PhD3, Jason Griggs, PhD, FADM1, 1The University of Mississippi Medical Center, Jackson, MS, USA, 2University of Florida, Gainesville, FL, USA, 3Lake Erie College of Osteopathic Medicine, Bradenton, FL, USA

## ORTHOPAEDIC BIOMATERIALS SIG

- 428 Biodegradable nanofiber bone-tissue scaffold as remotely-controlled and self-powered electrical stimulator, Ritopa Das, Thanh Nguyen, University of Connecticut, Storrs, CT, USA
- 429 Engineering porous assembled microgel scaffolds to increase rat mesenchymal stromal cell secretome for bone regeneration applications \*Varsha Rao1,2, Samantha Wojda, PhD3, Cole Ferreira3, Alexander Caldwell, PhD1,2, Seth Donahue, PhD3, Kristi Anseth, PhD1,2, 1University of Colorado Boulder, Boulder, CO, USA, 2BioFrontiers Institute, Boulder, CO, USA, 3University of Massachusetts Amherst, Amherst, MA, USA
- 430 Surface features of 3D-printed bone ingrowth lattices to tailor coefficient of friction, Robert Kane, PhD, Steve Leisinger, Weidong Tong, PhD, DePuy Synthes, Warsaw, IN, USA
- 431 Evaluation of Raspberry Ketone, a Natural Antioxidant, on Bone Cell Differentiation, Matthew Atwill, Joel Bumgardner, PhD, The University of Memphis, Memphis, TN, USA

## RAPID-FIRE PRESENTATIONS (CONTINUED)

- 439 Biological and Biomechanical Investigation of Recombinant Human Insulin-like Growth Factor-1 and its Biotherapeutic Delivery in Rotator Cuff Repair, Anupama Prabhath<sup>1,2</sup>, Caldon Esdaille<sup>1</sup>, Varadraj Vernekar, Ph.D.<sup>1</sup>, Amir Lebaschi, M.D.<sup>1</sup>, Tannin Schmidt, Ph.D.<sup>2</sup>, Stavros Thomopoulos, Ph.D.<sup>3</sup>, Nathaniel Dymant, Ph.D.<sup>4</sup>, Alix Deymier, Ph.D.<sup>2</sup>, Eckhard Weber, Ph.D.<sup>5</sup>, Cato Laurencin, M.D., Ph.D.<sup>1,2</sup>, 1UConn Health, Farmington, CT, USA, 2University of Connecticut, Farmington, CT, USA, 3Columbia University, New York, NY, USA, 4University of Pennsylvania, Philadelphia, PA, USA, 5Novartis Institute for BioMedical Research, Basel, Switzerland
- 440 Biomineral Coating Enhances Performance of PEEK Implants, Leena Jongpaiboonkit, PhD, Medtronic, Sterling, MA, USA
- 441 Sericin-based gadolinium nanoparticles as synergistically enhancing contrast agents for pH-responsive and tumor targeting magnetic resonance imaging, Zixuan Huang, B.S.Med<sup>1</sup>, Yejing Wang, PhD<sup>1</sup>, Jun Wu<sup>2</sup>, Huawei He<sup>1</sup>, Qingyou Xia<sup>1</sup>, 1Southwest University, Chongqing, China, 2North Sichuan Medical College, Chengdu, China
- 442 Orthopedic Cements as Carriers of Doxorubicin for Local Chemotherapy Treatment, Grahmm Funk, BS, BS<sup>1</sup>, Elizabeth Menuet, PhD<sup>2</sup>, Zachary Denton, BS<sup>1</sup>, Dalan Pittz, BS<sup>1</sup>, Kathleen Kilway, PhD<sup>2</sup>, Terence McIlff, PhD, MBA<sup>1</sup>, 1University of Kansas Medical Center, Kansas City, KS, USA, 2University of Missouri-Kansas City, Kansas City, MO, USA
- 443 Mimicking Pancreatic Tumor Microenvironment via Sequential Click Reactions, Chun-Yi Chang<sup>1</sup>, Chien-Chi Lin, PhD<sup>1,2,3</sup>, 1Purdue University, West Lafayette, IN, USA, 2Indiana University Melvin and Bren Simon Comprehensive Cancer Center, Indianapolis, IN, USA, 3Indiana University-Purdue University Indianapolis, Indianapolis, IN, USA
- 444 Dendritic Cells Perform Vomocytosis of Cryptococcus neoformans, Noah Pacifici, Melissa Cruz-Acuña, PhD, Neeraj Senthil, Jamal Lewis, PhD, University of California, Davis, Davis, CA, USA
- 445 Anisotropic-Morphology Nitrodopamine PEGylated Iron Oxide Nanoparticles as Magnetic Actuators for Breast Cancer Treatment, Mahboubeh Nabavinia, PhD, Juan Beltran-Huarac, PhD, East Carolina University, Greenville, NC, USA
- 446 Evaluating Mechanical Force in the Tumor Microenvironment through Actuating Biomimetic Lung Platform, Sarah Libring<sup>1</sup>, Angel Enriquez<sup>1</sup>, Tyler Field<sup>2</sup>, Julian Jimenez<sup>1</sup>, Taeksang Lee<sup>3</sup>, Michael Wendt, PhD<sup>4</sup>, Sarah Calve, PhD<sup>1</sup>, Adrian Buganza Tepole, PhD<sup>3</sup>, Hyowon Lee, PhD<sup>1</sup>, Luis Solorio, PhD<sup>1</sup>, 1Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN, USA, 2Agricultural and Biological Engineering, Purdue University, West Lafayette, IN, USA, 3Mechanical Engineering, Purdue University, West Lafayette, IN, USA, 4Medicinal Chemistry and Molecular Pharmacology, Purdue University, West Lafayette, IN, USA
- 447 Reversing Tumor Microenvironment Hypoxia with Novel Manganese Dioxide Nanoparticles Improves Natural Killer Cell Response in 3-D Tumor Cell Spheroids, David Murphy, Isaac Adjei, PhD, Heyong Cheng, Xin Yan, PhD, Texas A&M University, College Station, TX, USA
- 448 Regulatory T Cell Induction in Chronic Lymphocytic Leukemia Patients Manifest Altered Response to Substrate Stiffness Compared to Healthy Individuals, Jee Yoon Lim, Lingting Shi, Lance Kam, PhD, Columbia University, New York, NY, USA
- 449 The Anti-Tumor Effect of M1 Macrophages on Hepatocellular Carcinoma (HCC), John Kao, PhD<sup>1</sup>, Alberto Guerra, PhD MD<sup>2</sup>, Oscar Yeung, PhD<sup>1</sup>, Kwan Man, PhD<sup>1</sup>, 1University of Hong Kong, Hong Kong, Hong Kong, 2University of Wisconsin Madison, Madison, WI, USA
- 450 Altering Macrophage Phenotype to Promote Angiogenesis in Murine Hindlimb Ischemia Model, Gregory Risser<sup>1</sup>, Dong Li<sup>2</sup>, Samuel Sung<sup>1</sup>, Kara Spiller<sup>1</sup>, 1Drexel University, Philadelphia, PA, USA, 2Shanghai Jiao Tong University School of Medicine, Shanghai, China
- 451 Characterization of a Self-Assembling Peptide Hydrogel for Delivery of Active Temozolomide in Glioblastoma Treatment, Megan Pitz, Margaret Elpers, Alexandra Nukovic, Sarah Wilde, Angela Alexander-Bryant, Clemson University, Clemson, SC, USA
- 452 Enabling Complex 3D Cancer-Stroma Co-Cultures with Modular Hydrogels in a High-Throughput Microfluidic Plate, Andrei Bonteanu<sup>1</sup>, Divya Iyer, PhD<sup>2</sup>, Peter Shepherd, MSc<sup>3</sup>, Rick Kittles, PhD<sup>4</sup>, Nora Navone, MD, PhD<sup>3</sup>, Dwayne Dexter, PhD<sup>2</sup>, Kristin Bircsak, PhD<sup>2</sup>, Daniel Harrington, PhD<sup>5</sup>, 1Rice University, Houston, TX, USA, 2MIMETAS US Inc, Gaithersburg, MD, USA, 3The University of Texas MD Anderson Cancer Center, Houston, TX, USA, 4City of Hope, Duarte, CA, USA, 5University of Texas Health Science Center at Houston, Houston, TX, USA
- 453 Hydrogel matrix presence and composition influences drug responses of encapsulated glioblastoma spheroids, Joseph Bruns, Lindsay Hill, PhD, Silviya Zustiak, PhD, Saint Louis University, St. Louis, MO, USA



## RAPID-FIRE PRESENTATIONS (CONTINUED)

- 454 pH-responsive magnesium nanoparticles for targeted gene therapy against mammary carcinoma cells, Veronica Mok, Giselle Chan, Shin Yi Chew, Athirah Bakhtiar, Monash University Malaysia, Bandar Sunway, Malaysia
- 456 Using the large-scale mining of publicly available immunohistochemical data to uncover the distribution of extracellular matrix proteins in normal and cancerous human tissues, Yun Lam, PhD, Po Lam, Sze Tang, PhD, City University of Hong Kong, Hong Kong, Hong Kong
- 464 Evaluation of the anti-oxidative and ROS scavenging properties of biomaterials coated with epigallocatechin gallate for tissue engineering, Sangmin Lee, Heungsoo Shin, PhD, Hanyang University, Seoul, Republic of Korea
- 465 Engineering Protein-based Materials for Scaffold Neovascularization, Gabriela Geraldo Mendes<sup>1</sup>, David Howell<sup>1</sup>, Colette Abbey<sup>1</sup>, Malea Murphy<sup>2</sup>, Holly Gibbs<sup>3</sup>, Alvin Yeh<sup>3</sup>, Kayla Bayless<sup>1</sup>, Sarah Bondos<sup>1</sup>, <sup>1</sup>Texas A&M Health Science Center, Bryan, TX, USA, <sup>2</sup>Texas A&M HSC, Bryan, TX, USA, <sup>3</sup>Texas A&M University, College Station, TX, USA

## TISSUE ENGINEERING SIG

- 457 Decoupling the Biophysical Influences of Stiffness and Diffusivity in 3D Encapsulation Hydrogel Scaffolds, Nathan Richbourg, Nicholas Peppas, Sc.D., University of Texas, Austin, TX, USA
- 458 Facile Synthesis of Rapidly Degrading Poly(ethylene glycol)-based Thiol-Norbornene Hydrogels, Fang-Yi Lin, PhD<sup>1</sup>, Matthew Arkenberg<sup>2</sup>, Chien-Chi Lin, PhD<sup>1,2</sup>, <sup>1</sup>Indiana University-Purdue University Indianapolis, Indianapolis, IN, USA, <sup>2</sup>Purdue University, West Lafayette, IN, USA
- 459 7-Nitroindoline-Based Photocleavable Crosslinkers, Patricio Del Castillo, Philip Baily, Katja Michael, PhD, University of Texas at El Paso, El Paso, TX, USA
- 460 PEG-HA Dual Networks that Modulate the Secretory Profile of Mesenchymal Stem Cells, Alexandra Borelli, BS, Mark Young, BS, Michael Blatchley, PhD, Varsha Rao, BS, Marissa Wechsler, PhD, Kristi Anseth, PhD, University of Colorado Boulder, Boulder, CO, USA
- 461 Injectable Alginate Hydrogels loaded with Pleiotrophin enhance Angiogenesis in vivo, Isobel Rountree, Collin Polucha, Kareen Coulombe, Fabiola Munarin, Brown University, Providence, RI, USA
- 462 A Phase Inversion-based Technique for Fabricating Bicontinuous Porous Scaffolds, Min Wang, PhD, Junzhi Li, MEng, Haoran Sun, The University of Hong Kong, Hong Kong, Hong Kong
- 463 Modeling Sympathetic Hyperactivity in Alzheimer's Related Osteopenia, Robert Culibrk, BSE, Ahmad Arabiyat, BSE, Carisa DeKalb, BS, Mariah Hahn, PhD, Rensselaer Polytechnic Institute, Troy, NY, USA
- 466 Enhanced Granular Hydrogel Properties through Dynamic Covalent Interparticle Crosslinking, Victoria Muir, Jason Burdick, University of Pennsylvania, Philadelphia, PA, USA
- 467 Leveraging the Chemomechanical Tunability of Silk Fibroin in a Functionally Modular Scaffold Design, Melissa Wojnowski, Jeannine Coburn, PhD, Worcester Polytechnic Institute, Worcester, MA, USA

## BIOELECTRONIC DEVICES & CONDUCTING BIOMATERIALS

- 468 Interrogating the Relationship Between Hydrogel Electrical and Physical Properties Using a Custom Benchtop Conductivity Setup, Alena Casella<sup>1</sup>, Alyssa Panitch, PhD<sup>1,2</sup>, J. Kent Leach, PhD<sup>1,2</sup>, <sup>1</sup>University of California, Davis, Davis, CA, USA, <sup>2</sup>UC Davis Health, Sacramento, CA, USA
- 469 Development and Characterization of an Automated Hydrogel Bioink Preparation Device, Jiannan Li, PhD, Tara Shelby, Hannah Shelby, Yunzhi Peter Yang, Stanford University, Stanford, CA, USA
- 470 Hybrid Bioprinting via Integrated Additive Manufacturing High-Throughput Acoustic Patterning (IMHAP), Jiannan Li, PhD, Carolyn Kim, Seyed sina Moeinzadeh, PhD, Chi-Chun Pan, PhD, Yunzhi Peter Yang, PhD, Stanford University, Stanford, CA, USA\*
- 471 Norbornene-functionalized methylcellulose as a thermal and photo-responsive bioink, Min Hee Kim, PhD, Chien-Chi Lin, PhD, Indiana University-Purdue University Indianapolis, Indianapolis, IN, USA
- 472 Solvent-Cast 3D Printing with Biodegradable Polymers for Tunable Scaffold Properties, John Tolbert<sup>1</sup>, Diana Hammerstone<sup>1</sup>, Nathaniel Yuchimiuk<sup>2</sup>, Lesley Chow<sup>1,2</sup>, <sup>1</sup>Lehigh University, Bethlehem, PA, USA, <sup>2</sup>Lehigh Engineering, Bethlehem, PA, USA
- 473 3D Electrowriting of GO/PEDOT-DMSO Electroactive Nanocomposite for Bone Engineering Application, Mitchell Kenter, Zeena Qiryaqoz, Adil Akkouch, Western Michigan University Homer Stryker MD School of Medicine, Kalamazoo, MI, USA

## RAPID-FIRE PRESENTATIONS (CONTINUED)

- 474 Bioink Optimization and Effects of Microgravity on 3D Printed Cell Laden Constructs, Likitha Somasekhar<sup>1</sup>, Nicholas Huynh<sup>1</sup>, Ye Zhang, PhD<sup>2</sup>, Kenia Nunes, PhD<sup>1</sup>, Kunal Mitra, PhD<sup>1</sup>, Vipul Kishore, PhD<sup>1</sup>, Chris Bashur, PhD<sup>1</sup>, <sup>1</sup>Florida Institute of Technology, Melbourne, FL, USA, <sup>2</sup>NASA, KSC, Cape Canaveral, FL, USA
- 475 Double Network Hydrogels with Comb Architecture to Achieve Reduced Mesh Sizes, Ping Dong<sup>1</sup>, Anna Means, PhD<sup>2</sup>, Bradley Schott<sup>1</sup>, Gerard Coté, PhD<sup>1,3</sup>, Melissa Grunlan, PhD<sup>1,2,3,4</sup>, <sup>1</sup>Biomedical Engineering, Texas A&M University, College Station, TX, USA, <sup>2</sup>Material Science and Engineering, Texas A&M University, College Station, TX, USA, <sup>3</sup>Center for Remote Health Technologies and Systems, Texas A&M University, College Station, TX, USA, <sup>4</sup>Chemistry, Texas A&M University, College Station, TX, USA
- 476 Microfluidic 3D Bioprinting of Cell-Laden Hollow and Core-Shell Fibres, Erin Bedford, Zhensong Xu, Sebastian Steiner, Yoshiaki Tsubota, Rishima Agarwal, Kyle Grode, Spiro Getsios, Simon Beyer, Tamer Mohamed, Sam Wadsworth, Aspect Biosystems, Vancouver, BC, Canada
- 477 Immobilizing Split GFP Biosensors in Protein Materials: Salt Tunes Analyte Binding and Release, Amanda Jons<sup>1</sup>, Rebecca Booth, PhD<sup>1</sup>, Lauren Kustigan, PhD<sup>1</sup>, Xue Gong<sup>1</sup>, Hays Rye, PhD<sup>1</sup>, Shounak Banerjee<sup>2</sup>, Kacey Kilpatrick<sup>2</sup>, Chris Bystrhoff, PhD<sup>2</sup>, Sarah Bondos, PhD<sup>1</sup>, <sup>1</sup>Texas A&M University, College Station, TX, USA, <sup>2</sup>Rensselaer Polytechnic Institute, Troy, NY, USA
- 478 Shape-morphing Materials for Deployable Intracortical Probes, Rashed Rihani, PhD<sup>1</sup>, Joseph Pancrazio, PhD<sup>1</sup>, Taylor Ware, PhD<sup>2</sup>, Mahjabeen Javed<sup>2</sup>, <sup>1</sup>University of Texas at Dallas, Richardson, TX, USA, <sup>2</sup>Texas A&M University, Bryan, TX, USA
- 479 Immobilization of Antibodies on Solution Blow Spun Mats for Biosensing Applications, Shreya Thammana, Craig Miller, Mark Livingstone, Jordan Gilmore, Clemson University, Clemson, SC, USA
- 482 Designing a synthetic scaffold to support human folliculogenesis in vivo \*Monica Wall, BS, Hadrian Kinnear, BA, Ariella Shikanov, PhD, University of Michigan, Ann Arbor, MI, USA
- 483 A 3D Breast Tumor Model to Study the Role of Extracellular Matrix Components on Cancer Cell Invasion, Jacob Heiss, Hossein Tavara, PhD, The University of Akron, Akron, OH, USA
- 484 Gender-related host factors modulate human craniofacial bone regeneration with bioactive tricalcium phosphate grafts, Christine Knabe, DMD, PhD, Aynur Mele, Peter Kann, MD, PhD, Doaa Adel-Khattab, DDS, PhD, Harald Renz, MD, PhD, Alexander Reuss, MSc, Michael Stiller, MD, DDS, PhD, Philipps University Marburg, Marburg, Germany
- 485 Extracellular Matrix-Sequestering and Adhesion Peptide Localization Promotes Primordial Follicle Development In Vitro for Fertility Preservation, Claire Tomaszewski<sup>1</sup>, Daniel Matera<sup>2</sup>, Brendon Baker, PhD<sup>1</sup>, Ariella Shikanov, PhD<sup>1,3,4</sup>, <sup>1</sup>University of Michigan, Ann Arbor, MI, USA, <sup>2</sup>U of Michigan, Ann Arbor, MI, USA, <sup>3</sup>Univ of Michigan, Ann Arbor, MI, USA, <sup>4</sup>U Michigan, Ann Arbor, MI, USA
- 486 Thermosensitive Polyisocyanopeptide Hydrogel for Tissue Regeneration in the Pelvic Floor: An in vitro Study with Vaginal Fibroblasts, Aksel Gudde, PhD<sup>1</sup>, Melissa van Velthoven, PhD<sup>2</sup>, Paul Kouwer, Asst Prof<sup>2</sup>, Jan-Paul Roovers, Prof<sup>1</sup>, Zeliha Güler Gokce, Post-Doc<sup>1</sup>, <sup>1</sup>Amsterdam University Medical Center, Amsterdam, Netherlands, <sup>2</sup>Radboud University, Nijmegen, Netherlands
- 487 Implantation of human ovarian cortex tissue encapsulated in immune-isolating poly-ethylene glycol-based capsules, Margaret Brunette<sup>1</sup>, James Day, PhD<sup>1</sup>, Hadrian Kinnear<sup>2,3</sup>, Prianka Hashim<sup>4</sup>, Marilia Cascalho, PhD<sup>5,6</sup>, Ariella Shikanov, PhD<sup>1,2,4</sup>, <sup>1</sup>University of Michigan, Ann Arbor, MI, USA, <sup>2</sup>U Michigan, Ann Arbor, MI, USA, <sup>3</sup>U of Michigan, Ann Arbor, MI, USA, <sup>4</sup>University of Mich., Ann Arbor, MI, USA, <sup>5</sup>U of Mich., Ann Arbor, MI, USA, <sup>6</sup>University\_of\_Michigan, Ann Arbor, MI, USA
- 488 Engineered Synthetic Matrix-Induced Dormancy in Organotropic Breast Cancer, Cindy Farino, Shantanu Pradhan, PhD, John Slater, PhD, University of Delaware, Newark, DE, USA

## BIOMATERIALS FOR WOMEN >S HEALTH \*BTI\*

- 480 3D-patient derived ovarian tumour model to elucidate biophysical stromal response during high-grade serous ovarian cancer progression, francesca paradiso<sup>1,2</sup>, stefania lenna<sup>1</sup>, stefano serpelloni<sup>1</sup>, francis lewis<sup>2</sup>, francesca taraballi<sup>1</sup>, <sup>1</sup>Houston Methodist Research Institute, houston, TX, USA, <sup>2</sup>Swansea University Medical School, swansea, United Kingdom
- 481 Synthetic Hydrogels Reveal the Role of the Matrix Environment on Sex-Specific Aortic Valve Calcification and Osteopontin Activity, Megan Schroeder, PhD<sup>1</sup>, Andrea Gonzalez Rodriguez, PhD<sup>1</sup>, Kelly Speckl<sup>1</sup>, Douglas Peters, PhD<sup>1</sup>, Cierra Walker, MS<sup>1</sup>, Brian Aguado, PhD<sup>1</sup>, Joseph Grim, PhD<sup>1</sup>, Robert Weiss, MD<sup>2</sup>, Kristi Anseth, PhD<sup>1</sup>, <sup>1</sup>University of Colorado Boulder, Boulder, CO, USA, <sup>2</sup>University of Iowa, Iowa City, IA, USA

## BIOINTERFACES SIG

- 489 Treatment of Oral Mucositis through Curcumin Poly(beta amino ester) Microparticles, Kelley Wiegman<sup>1</sup>, Carolyn Jordan<sup>2</sup>, Brock Howerton<sup>2</sup>, Zach Hilt<sup>1,2</sup>, Thomas Dziubla<sup>1,2</sup>, <sup>1</sup>University of Kentucky, Lexington, KY, USA, <sup>2</sup>Bluegrass Advanced Materials, Lexington, KY, USA
- 490 Nanonet-nano fiber electrospun mesh of PCL-chitosan for controlled release of hydrophilic drug \*Sheikh Saudi, Jagannathan Sankar, Shyam Aravamudhan, Narayan Bhattarai, North Carolina Agricultural and Technical State University, Greensboro, NC, USA





## RAPID-FIRE PRESENTATIONS (CONTINUED)

- 491 Multifunctional Biomaterial with Antimicrobial and Remineralization Capabilities, Carolina Montoya, Postdoctoral Fellow<sup>1</sup>, Julia Kurylec<sup>1</sup>, Santiago Orrego, Assistant Professor<sup>1,2</sup>, <sup>1</sup>Kornberg School of Dentistry, Temple University, Philadelphia, PA, USA, <sup>2</sup>College of Engineering, Temple University, Philadelphia, PA, USA
- 492 Enhanced antibacterial property of Titanium by Nanoscale Modification using Hydrothermal Treatment and surface coating, Vignesh Manivasagam, MS, Ketul Popat, PhD, Colorado State University, Fort Collins, CO, USA
- 493 Solid Lipid Nanoparticles for Therapeutic Stabilization and Delivery, Melissa Wright<sup>1</sup>, Victoria Stagnaro<sup>1</sup>, Kate Johnson<sup>1</sup>, Jianren Mao, MD, PhD<sup>2</sup>, Zerong You, PhD<sup>2</sup>, Christopher Tison, PhD<sup>1</sup>, Lauren Costella, ME<sup>1</sup>, <sup>1</sup>Luna Innovations Incorporated, Roanoke, VA, USA, <sup>2</sup>Massachusetts General Hospital, Boston, MA, USA
- 494 Examining Intracellular Trafficking of Nucleic Acid Containing Lipid Nanoparticles for Non-Viral Gene Delivery, Christina Bailey-Hytholt, PhD, Gregory Ulinski, Julia Dugas, Peter Piepenhagen, Isidro Zarraga, Amey Bandekar, Sanofi, Framingham, MA, USA
- 495 Nano-scale Liposomes with Controllable Mechanics for Drug Delivery Applications, Fereshtehsadat Mirab, Dang Dang, Vijay Krishna Raghunathan, Sheereen Majd, University of Houston, Houston, TX, USA
- 496 Towards Improved Keratitis Treatment: Attachment of Gold Nanoparticles to Bacteria and Nanoparticle Penetration in Corneas, Brooke Bednarke<sup>1</sup>, Kyle Reeser, PhD<sup>2</sup>, Daniel Eversole, PhD<sup>3</sup>, Seth Pantanelli, MD<sup>4</sup>, Amber Doiron, PhD<sup>5</sup>, <sup>1</sup>University of Vermont, Burlington, VT, USA, <sup>2</sup>Binghamton University, Binghamton, NY, USA, <sup>3</sup>Everspectra, Boston, MA, USA, <sup>4</sup>Penn State Milton S. Hershey Medical Center, Hershey, PA, USA, <sup>5</sup>the University of Vermont, Burlington, VT, USA
- 497 Magnetic drug screening nanoplatfrom based on immobilized transmembrane kinase receptor proteins, Yuping Bao, Ph.D., The University of Alabama, Tuscaloosa, AL, USA
- 498 Ultra-absorptive Nanofiber Swabs for Improved Collection and Test Sensitivity of SARS-CoV-2, Alec McCarthy<sup>1</sup>, Lorenzo Saldana<sup>1</sup>, Daniel Ackerman<sup>2</sup>, Joshua Santarpi, PhD, Jingwei Xie, PhD<sup>1</sup>, <sup>1</sup>University of Nebraska Medical Center, Omaha, NE, USA, <sup>2</sup>National Strategic Research Institute, Omaha, NE, USA
- 499 Mitigating Cardiac Fibrosis Phenotype In Vitro with Drug Loaded Nanogels Treating Acute and Chronic Complications of Myocardial Infarction, Aryssa Simpson<sup>1,2</sup>, Emily Mihalko<sup>1,2</sup>, Ashley C. Brown, PhD<sup>1,2</sup>, <sup>1</sup>University of North Carolina at Chapel Hill, North Carolina State University, Raleigh, NC, USA, <sup>2</sup>North Carolina State University, Raleigh, NC, USA
- 500 Comparative efficacy of resorbable fiber wraps loaded with gentamicin sulfate or gallium maltolate in the treatment of osteomyelitis
- 501 CaproGlu Bioadhesives for Bacterial Infection Detection, Elizabeth Ellis, Ivan Djordjevic, Terry Steele, Nanyang Technological University, Singapore, Singapore

## ENGINEERING CELLS AND THEIR MICROENVIRONMENTS SIG

- 502 Single Cell Analysis of the Effect of Cardiovascular Device Topography on Endothelial Immunogenicity, Meghan Fallon, Monica Hinds, PhD, Oregon Health & Science University, Portland, OR, USA
- 503 A Phase Inversion-based Technique for Fabricating Bicontinuous Porous Scaffolds, Junzhi Li, Haoran Sun, Min Wang \* Department of Mechanical Engineering, The University of Hong Kong, Pokfulam Road, Hong Kong
- 504 Optimizing Extracellular Matrix Cues for Multipotent Stromal Cells Expansion and Differentiation, Alex Ho Pang Chan, PhD<sup>1,2</sup>, Kyung Sung, PhD<sup>3</sup>, Ngan Huang, PhD, FAHA<sup>1,2</sup>, <sup>1</sup>Stanford University, Palo Alto, CA, USA, <sup>2</sup>Veterans Affairs Palo Alto Health Care System, Palo Alto, CA, USA, <sup>3</sup>Food and Drug Administration, Silver Spring, MD, USA
- 505 Profiling the Responsiveness of Focal Adhesions of Human Cardiomyocytes to Extracellular Dynamic Nano-Topography, Huaiyu Shi<sup>1,2</sup>, Shiyang Sun<sup>1,2</sup>, Chenyan Wang<sup>1,2</sup>, James Henderson, PhD<sup>1,2</sup>, Zhen Ma, PhD<sup>1,2</sup>, <sup>1</sup>Department of Biomedical & Chemical Engineering, Syracuse, NY, USA, <sup>2</sup>BioInspired Syracuse Institute for Materials and Living Systems, Syracuse, NY, USA
- 506 Microcontact Printing on Shape Memory Polymers for Altering Cell Morphology, Fred Donelson, MSEI, Jakub Kochanowski<sup>1</sup>, Christopher Turner, PhD<sup>2</sup>, James Henderson, PhD<sup>1</sup>, <sup>1</sup>Syracuse University, Syracuse, NY, USA, <sup>2</sup>SUNY Upstate Medical University, Syracuse, NY, USA
- 507 Thermo-responsive poly(oligoethylene glycol methacrylate) (POEGMA)-based nanofibrous hydrogels for fast cell delamination and cell adhesion, Fei Xu, PhD, Angus Lam, Zhicheng Pan, Gurpreet Randhawa, Makenzie Lamb, Heather Sheardown, Todd Hoare, McMaster University, Hamilton, ON, Canada
- 508 In Situ Crosslinking Chitosan-Genipin Hydrogel as an Injectable Cell Matrix, Tyler Priddy-Arrington<sup>1</sup>, Hao Zhang, PhD<sup>2</sup>, Yufeng Dong, Phd, MD<sup>2</sup>, Mary Calderera-Moore, PhD<sup>1</sup>, <sup>1</sup>Louisiana Tech University, Ruston, LA, USA, <sup>2</sup>Louisiana State University Health Sciences Center, Shreveport, LA, USA
- 509 Engineering Injectable Synthetic ECM-Based Hydrogels as Vehicles for Retinal Progenitor Cells Transplantation, Peng Zhao<sup>1</sup>, Joydip Kundu<sup>1</sup>, Ashav Desai<sup>1</sup>, Sidi Bencherif<sup>1</sup>, Michael

## RAPID-FIRE PRESENTATIONS (CONTINUED)

- Young<sup>2</sup>, Rebecca Carrier<sup>1</sup>, <sup>1</sup>Northeastern University, Boston, MA, USA, <sup>2</sup>Schepens Eye Research Institute, Boston, MA, USA
- 510 Assessing Bundling of Wicking Fibers for Cellular Diagnostic Systems, Anahit Mehranian, Timothy Burg, Karen Burg, University of Georgia, Athens, GA, USA
- 511 Controlling cell-material interactions to tune therapeutic extracellular vesicle production, Stephen Lenzini, Sing Wan Wong, Angela Song, Raymond Bargi, Dolly Mehta, Jae-Won Shin, University of Illinois at Chicago, Chicago, IL, USA
- 512 Endotoxin and Cellular Activity, Jos Olijve, Rousselot-Biomedical, Gent, Belgium
- 513 Natural Selection Imposed by Mechanical Properties of a Biomaterial Results in Novel Cellular Phenotypes, Purboja Purkayastha<sup>1</sup>, Kavya Pendyala<sup>2</sup>, Ayush Saxena<sup>3</sup>, Hesamedin Hakimjavadi<sup>4</sup>, Srikar Chamala<sup>4</sup>, Purushottam Dixit<sup>4,5</sup>, Charles Baer<sup>3,4</sup>, Tanmay Lele<sup>1,2</sup>, <sup>1</sup>Department of Chemical Engineering, Texas A&M University, College Station, TX, USA, <sup>2</sup>Department of Biomedical Engineering, Texas A&M University, College Station, TX, USA, <sup>3</sup>Department of Biology, University of Florida, Gainesville, FL, USA, <sup>4</sup>University of Florida Genetics Institute, Gainesville, FL, USA, <sup>5</sup>Department of Physics, University of Florida, Gainesville, FL, USA
- 520 Electrospun Hydrogel Nanofiber Scaffolds for The Differentiation of Mesenchymal Stem Cells into Vascular Cells, Alex Rickel<sup>1</sup>, Junli Hu<sup>2</sup>, Zhongkui Hong<sup>1</sup>, <sup>1</sup>University of South Dakota, Sioux Falls, SD, USA, <sup>2</sup>Northeast Normal University, Changchun, China
- 521 Biocompatibility of Collagen Fiber-Derived Scaffolds for Tissue Engineering Applications \*Kiran Ali, BS, MS, Alaowei Amanah, BS, MS, Jessica Gluck, BS, MS, PhD, North Carolina State University, Raleigh, NC, USA
- 522 In-vivo evaluation of macrophage polarization in response to raspberry ketone-loaded electrospun chitosan membrane, Melika Esmaeili Rad<sup>1</sup>, Fernanda Guerra, PhD<sup>1</sup>, Kenneth Anderson, DDS, MS<sup>2</sup>, Omar Skalli, PhD<sup>3</sup>, Joel Bumgardner, PhD<sup>1</sup>, <sup>1</sup>University of Memphis-University of Tennessee Health Science Center, Memphis, TN, USA, <sup>2</sup>University of Tennessee Health Science center, Memphis, TN, USA, <sup>3</sup>University of Memphis, Memphis, TN, USA
- 523 Collagen I and Modified Hyaluronic Acid Hydrogels for Tissue Engineering, Jessica Torres<sup>1</sup>, Fanfei Meng<sup>2</sup>, Kevin Buno<sup>3</sup>, Yoon Yeo<sup>2</sup>, Luis Solorio<sup>3</sup>, Julie Liu<sup>1</sup>, <sup>1</sup>Purdue University Davidson School of Chemical Engineering, West Lafayette, IN, USA, <sup>2</sup>Purdue University College of Pharmacy, West Lafayette, IN, USA, <sup>3</sup>Purdue University Weldon School of Biomedical Engineering, West Lafayette, IN, USA

## BIOMATERIALS FOR REGENERATIVE ENGINEERING

- 514 Electrospinning Live Cells Using Gelatin and Pullulan, Nasim Nosoudi, PhD, Marshall university, Huntington, WV, USA
- 515 Hydrogels with tunable glycan content to probe extracellular matrix-lectin interactions, Juanpablo Olguin, Matthew Molinaro, Liu Renjie, PhD, Eric Hill, Antonietta Restuccia, PhD, Gregory Hudalla, PhD, University of Florida, Gainesville, FL, USA
- 516 Development of Phosphatidylserine Presenting Particles for Targeting Macrophages in Tissue Regeneration, Kidochukwu Atube, Michael Gower, Ph.D., University of South Carolina, Columbia, SC, USA
- 517 ATRA-loaded PLG microparticles to direct macrophage regenerative function, Candice Cheung, MEng, Griffin Carter, Michael Gower, PhD, University of South Carolina, Columbia, SC, USA
- 518 Strontium – based nanocomposite hydrogels for Improved Anti-infective and Osteogenic Differentiation Activity, Isha Mutreja, PhD, Dhiraj Kumar, PhD, Tristen Nies, Kim Mansky, PhD, Conrado Aparicio, PhD, University of Minnesota, Minneapolis, MN, USA
- 519 Formation of a Primary Murine Perivascular Model to Study Hematopoietic Stem Cells In Vitro, Victoria Barnhouse, Brendan Harley, University of Illinois at Urbana-Champaign, Urbana, IL, USA
- 524 Mechanical Approximation of Ex Vivo Myocardium for Collagen Matrix Printing, Adam Baker, MS, Bruce Gao, PhD, Clemson University, Clemson, SC, USA
- 525 Tuning Granular Hydrogel Porosity to Modulate 3D Endothelial Cell Sprouting, Taimoor Qazi, PhD, Jason Burdick, PhD, University of Pennsylvania, Philadelphia, PA, USA
- 526 Characterization of a Tubular Synthetic Elastomeric Scaffold for the Potential Use in Urethral Substitution, Larry Wang<sup>1</sup>, Matthew Bury<sup>1</sup>, Yvonne Chan<sup>1</sup>, Xinlong Wang<sup>2</sup>, Guillermo Ameer, PhD<sup>2,3</sup>, Arun Sharma, PhD<sup>1,2,3,4,5</sup>, <sup>1</sup>Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL, USA, <sup>2</sup>Northwestern University, Evanston, IL, USA, <sup>3</sup>Simpson Querrey Institute, Chicago, IL, USA, <sup>4</sup>Northwestern University Feinberg School of Medicine, Chicago, IL, USA, <sup>5</sup>Stanley Manne Children's Research Institute, Chicago, IL, USA

## BIOMATERIALS FOR ORGANOID

- 527 Microfluidic-assisted fabrication of macroporous hydrogel allows tunable spheroids assembly, Zhongliang Jiang, PhD, Fang-Yi Lin, PhD, Kun Jiang, MS, Chien-Chi Lin, PhD, Indiana University-Purdue University Indianapolis, Indianapolis, IN, USA
- 528 Norbornene-modified poly( -glutamic acid) for orthogonal hydrogel crosslinking and 3D cell culture, Min Hee Kim, PhD, Chien-Chi Lin, PhD, Indiana University-Purdue University Indianapolis, Indianapolis, IN, USA



## RAPID-FIRE PRESENTATIONS (CONTINUED)

- 529 Enabling Tunable Mucoadhesion through Thiolation of Thermoresponsive Hydrogel Scaffolds, Ninad Kanetkar, Adam Ekenseair, PhD, Northeastern University, Boston, MA, USA
- 530 Chemically-defined hydrogels for generation of pancreatic organoids, Matthew Arkenberg, MS1, Chien-Chi Lin, PhD1,2, 1Purdue University, West Lafayette, IN, USA, 2Indiana University Purdue University-Indianapolis, Indianapolis, IN, USA
- 531 Frozen Films: Porous Thin Films For In Vitro Culture, Kailei Xu, Thomas Dieffenthaler, Zi Wang, Alicja Copik, Stephanie Florczyk, University of Central Florida, Orlando, FL, USA
- 532 Controlling Extracellular Matrix Environment in Guiding 3D Retinal Organoid Formation, Ronak Ansari-pour1, Joydip Kundu1, Petr Baranov2, Julia Oswald2, Rebecca Carrier1, 1Northeastern University, Boston, MA, USA, 2Harvard Medical School, Boston, MA, USA
- 533 High-Throughput Analysis Reveals Microenvironmental Regulation of Primary Human Liver Sinusoidal Endothelial Cell Phenotype, Aidan Brougham-Cook1, Chase Monckton2, Daniel Owen1, Salman Khetani2, Gregory Underhill1, University of Illinois Urbana-Champaign, Urbana, IL, USA, 2University of Illinois Chicago, Chicago, IL, USA
- 534 3D-printed living composites with programmable shape transformations, Laura Rivera-Tarazona1, Tarjani Shukla, PhD2, Zachary Campbell, PhD2, Taylor Ware, PhD1, 1Texas A&M University, College Station, TX, USA, 2The University of Texas at Dallas, Richardson, TX, USA
- 535 HYDROGEL-BASED MICROFLUIDIC DEVICE AS A 3D IN VITRO DRUG SCREENING PLATFORM, Joseph Bruns1, Allison Clancy1, Dayi Chen, PhD2, Jahnvi Nadella1, Aaron Timpermann, PhD2, Silviya Zustiak, PhD1, 1Saint Louis University, St. Louis, MO, USA, 2University of Illinois at Urbana-Champaign, Urbana, IL, USA
- 536 Degradable, Nanofiber-Reinforced Hydrogel Membranes for Guided Eardrum Repair, Kelsey Broderick1, Mallory Gasbarre1, Kelsi Smith1, Brie Janet1, Lauren Costella1, Bradley Kesser, MD2, Christopher Tison, PhD1, Lindsay Woodard, PhD1, 1Luna Innovations, Inc, Charlottesville, VA, USA, 2University of Virginia, Charlottesville, VA, USA
- 537 Improving Brain Organoid Models with a Biofunctionalized Hydrogel, Kylie Balotin, BS, Lauren Drake, BSE, Neelansh Bute, Brian O'Grady, PhD, Ethan Lippmann, PhD, Vanderbilt University, Nashville, TN, USA
- 538 Photopatterning of spatially organized 3D cultures in microfluidic devices, Tochukwu Ozulumba, PhD, Jennifer Ortiz-Cárdenas, Jonathan Zatorski, Amirus Salaheen, PhD, Rebecca Pompano, PhD, University of Virginia, Charlottesville, VA, USA
- 539 Incorporation of Extracellular Matrix-Derived Biomaterials into an Intervertebral Disc Organoid Model, Karenn Smith, Jeremy Mercuri, PhD, Clemson University, Clemson, SC, USA
- 540 Engineering single cell polarity in three-dimensional matrices, Ik Sung Cho, Ph.D., Sing Wan Wong, Ph.D., Stephen Lenzini, M.S., Jae-Won Shin, Ph.D., University of Illinois at Chicago, Chicago, IL, USA
- 541 Effect of Mechanical Strain on Myokine Secretion and its Role in Diabetic Bone Disease, Edwina Barnett, B.S. Biology, Evangelia Kalaitzoglou, MD, John Fowlkes, MD, Ramkumar T. Annamalai, PhD, University of Kentucky, Lexington, KY, USA
- 542 Development of a Physiomimetic Microsystem for the Study of Metabolic Activity Zonation of the Liver, Madeline Helm, Dennis McDuffie, Ashutosh Agarwal, PhD, Biomaterials for Neural and Ophthalmic Applications, University of Miami, Miami, FL, USA

## BIOMATERIALS FOR NEURAL AND OPHTHALMIC APPLICATIONS

- 543 Novel Biomaterials for Corneal Repair, Nasim Annabi, PhD1, Islam Khalil, PhD2,3, Bahram Saleh, PhD2, Dina Mohsen2, 1University of California, Los Angeles, Los Angeles, CA, USA, 2Northeastern University, Boston, MA, USA, 3Misr University of Science and Technology, Giza, Egypt
- 544 Prediction of Long Term Biostability of Polymeric Medical Device Using an In Vitro Model, James Wu, PhD, Rebecca Rice, DVM, PhD, Xingfeng Shi, PhD, Alcon, Fort Worth, TX, USA
- 545 Mucoadhesion and mucopenetration of self-assembled poly(lactic acid)-block-poly(oligoethylene glycol methacrylate) block copolymer nanoparticles with different ethylene oxide side-chain lengths, Ridhdhi Dave, Heather Sheardown, PhD, Todd Hoare, PhD, Andrew Singh, Maya Ziolkowska, McMaster University, Hamilton, ON, Canada
- 546 Engineering Synthetic ECM using Peptide Modified Alginate Hydrogel to Study Human Nucleus Pulposus Cell Fate, Xiaohong Tan1, Era Jain, PhD1, Marcos Barcellona1, Sydney Neal1, Munish Gupta2, Jacob Buchowski2, Michael Kelly2, Lori Setton, PhD1, Nathaniel Huebsch, PhD1, 1Washington University in St. Louis, Saint Louis, MO, USA, 2Washington University School of Medicine, Saint Louis, MO, USA
- 547 Characterizing the effect of Cerebral Amyloid Angiopathy-induced vessel stiffening on the blood-brain barrier, Allison Bosworth1, Hyosung Kim, PhD2, Kristin O'Grady, PhD3, John Snider, PhD1, Isabella Richter1, Lynn Lee2, Matthew Schrag, MD, PhD4, David Merryman, PhD1, Ethan Lippmann, PhD1,2,4, 1Vanderbilt University Biomedical Engineering, Nashville, TN, USA, 2Vanderbilt University Chemical Engineering, Nashville, TN, USA, 3Vanderbilt University Institute of Imaging Science, Nashville, TN, USA, 4Vanderbilt University Department of Neurology, Nashville, TN, USA

## RAPID-FIRE PRESENTATIONS (CONTINUED)

- 548 Thermogelling polymer molecular weight effect on suitability as a vitreous replacement, Kun Xue, PhD1, Zengping Liu2, Qianyu Lin2, Xinyi Su, MBBS/PhD2, Xian Jun Loh, PhD1,2, 1Institute of Materials Research and Engineering, A\*STAR, Singapore, Singapore, 2National University of Singapore, Singapore, Singapore
- 549 Therapeutic Delivery by Polydopamine Nanoparticles for Treatment of Ocular Inflammation and Angiogenesis, Megan Allyn, Andrew Choi, Andre Palmer, PhD, Katelyn Swindle-Reilly, PhD, The Ohio State University, Columbus, OH, USA
- 550 Evaluation of Polymethyl methacrylate changes as glaucoma drainage device in the rabbit, Virna Asrory, PhD, Faculty of Medicine University of Indonesia/ Cipto Mangunkusumo Hospital, Jakarta, Indonesia
- 551 Human-Derived Collagen: An Allogenic Approach for Tissue Engineering in Neurosurgery and Otologic Applications, Grecia Cardoso-Hernández1, Brenda Aguillon-Estrada1, Fabian Rho-Mas2, Beni Camacho-Perez, PhD1, Juan Pablo Aguilar Alemán, PhD1,2, 1Top Health S.A.P.I. de C.V., Zapopan, Mexico, 2Tecnologico de Monterrey, Zapopan, Mexico
- 552 Can poly-ethylene glycol be a trigger for a “side-by-side” axonal fusion mechanism ?, Antonio Merolli, MD1, Cemile Bektas, PhD1, Yong Mao1, Robert Shultz2, 1Rutgers University, Piscataway, NJ, USA, 2University of Pennsylvania, Philadelphia, PA, USA
- 553 The Influence of Laminin 511 hydrogels on Neural Stem Cell Fate, Diana Philip, MSc.1, Ivana Shah1, Rebecca Willits, PhD1,2, 1The University of Akron, Akron, OH, USA, 2Northeastern University, Boston, MA, USA
- 554 Development of a Bovine Intervertebral Disc Herniation Organ Culture Model to Evaluate Regenerative Biomaterials, Christopher Theos, Mario Krussig, Joshua Walters, PhD, Jeremy Mercuri, PhD, Clemson University, Clemson, SC, USA
- 555 Progress in the study of axonal fusion: single-axon hand-cut with a standard surgical blade in a 3D-printed scaffold, Cemile Bektas, PhD, Joseph Molde, PhD, Yong Mao, PhD, Antonio Merolli, MD, Rutgers University, Piscataway, NJ, USA

## BIOMATERIALS FOR PULMONARY APPLICATIONS

- 556 Integrating clickable, decellularized extracellular matrix into photoaddressable hybrid-hydrogels, Rukshika Hewawasam, PhD1, Predrag Serbedzija, PhD1, Kamiel Saleh1, Chelsea Magin, PhD1,2,3, 1University of Colorado Denver | Anschutz Medical Campus, Aurora, CO, USA, 2University of Colorado Anschutz Medical Campus, Aurora, CO, USA, 3University of Colorado Anschutz Medical Campus, Aurora, CO, USA
- 557 Antimicrobial and Antioxidant Shape Memory Polymer Foams, Changling Du, Jingyi Liu, David Fikhman, Mary Monroe, Syracuse Biomaterials Institute, Syracuse University, Syracuse, NY, USA
- 558 In Vitro pO<sub>2</sub> Measurement of Islet Encapsulation Devices in Oxygen Measurement Core, Mrignayani Kotecha, PhD1, Zhengshan Zhao, PhD1, Darwin Bodero1, Longhai Wang2, Alexander Ernst2, Minglin Ma2, Corinne Hoesli3, Cherie Stabler4, Klearchos Papas5, Boris Epel, PhD6, 1O2M Technologies, LLC, Chicago, IL, USA, 2Cornell University, Ithaca, NY, USA, 3McGill University, Montreal, QC, Canada, 4University of Florida, Gainesville, FL, USA, 5University of Arizona, Tucson, AZ, USA, 6The University of Chicago, Chicago, IL, USA
- 559 Trityl Radical OX071, an EPR Oxygen Imaging Spin Probe, Is Non-Toxic to Cells, Zhengshan Zhao1, Darwin Bodero1, Boris Epel2, Mrignayani Kotecha1, 1O2M Technologies, LLC, Chicago, IL, USA, 2The University of Chicago, Chicago, IL, USA
- 560 Methodology for Biomaterial Oxygen Imaging Using Trityl Based Pulse Electron Paramagnetic Resonance, Boris Epel1, Mrignayani Kotecha2, 1The University of Chicago, Chicago, IL, USA, 2O2M Technologies, LLC, Chicago, IL, USA
- 562 Oxygen Modeling-Aided Design of Hydrogel Macroencapsulation Device Geometry for Improved Long-Term Islet Survival, Amy Emerson, Alec McCall, Sarah Brady, Jessica Weaver, Arizona State University, Tempe, AZ, USA
- 563 Magnetically Aggregated 3D Hydrogel Microsphere Models of Pulmonary Fibrosis, Thomas Caracena, BS1, Rukshika Hewawasam, PhD1, Chelsea Magin, PhD1,2, 1University of Colorado, Denver | Anschutz, Aurora, CO, USA, 2University of Colorado, Anschutz Medical Campus, Aurora, CO, USA
- 564 Bioinspired Elastin-Based DOPA-Modified Protein Lung Sealants, Jessica Torres, Julie Liu, Purdue University Davidson School of Chemical Engineering, West Lafayette, IN, USA



## RAPID-FIRE PRESENTATIONS (CONTINUED)

- 565 Utilizing a closed bath imaging chamber for oxygen sensing in ex vivo tissue models, Parris Anbaei, Drake Dixon, Rebecca Pompano, PhD, University of Virginia, Charlottesville, VA, USA
- 566 Engineered gel coating enables mesenchymal stromal cells to resolve pulmonary fibrosis, Sing Wan Wong, Ph.D.1, Chandra Tamatam, Ph.D.1, Ik Sung Cho, Ph.D., Peter Toth, Ph.D.1, Raymond Bargi1, Patrick Belvitch, M.D.1, James Lee, Ph.D.1, Jalees Rehman, M.D.1, Sekhar Reddy, Ph.D.1, Jae-Won Shin, Ph.D.1, 1University of Illinois at Chicago, Chicago, IL, USA
- 567 Naturally Derived Powder-Based Lung Tissue Sealant for Pleural Defects Utilizing a Murine Model, Rachael Oldinski-Floeani, PhD1, Patrick Charron1, Spencer Fenn, PhD1, Minara Aliyeva2, Nirav Daphtary, PhD2, Lennart Lundblad, PhD2, 1University of Vermont, Burlington, VT, USA, 2UVM Larner College of Medicine, Burlington, VT, USA
- 568 HUVEC Tubular Formation on Bio-Inspired Substrate for Promoting Angiogenesis, Rachael Oldinski-Floeani, PhD, Irfan Tahir, Patrick Charron, Luis Garcia, The University of Vermont, Burlington, VT, USA
- 574 Low temperature Plasma processing for fabricating metal nanoparticles coated antimicrobial surfaces for potential biomedical applications, Vineeth Vijayan, Yogesh Vohra, Vinoy Thomas, University of Alabama at Birmingham, Birmingham, AL, USA
- 575 Mechanical Tension in Syndecan-1 is Regulated by Extracellular Mechanical Cues, Lei Mei, Victoria Le, Peter Voyvodic, Chi Zhao, David Busch, Jeanne Stachowiak, Aaron Baker, The University of Texas at Austin, Austin, TX, USA
- 576 Preparation of Polypropylene Materials via Transition-Metal Catalysis of N-Carboxyanhydrides, Rachel Detwiler, Austin Schlirf, MS, Jessica Kramer, PhD, University of Utah, Salt Lake City, UT, USA
- 577 Assessment of regenerative benefits of MSC-derived smooth muscle cells to in vivo elastic tissue repair, Shataakshi Dahal and Anand Ramamurthi Cleveland Clinic, Cleveland, OH, Lehigh University, Bethlehem, PA

## NANOMATERIALS SIG

- 106 Multi-step Compositional Screening of pDNA Lipid Nanoparticles to Optimize Transfection Efficiency for Oral Gene Delivery, Yizong Hu, Yining Zhu, Hai-Quan Mao Johns Hopkins University, Baltimore, MD, USA
- 569 Active Learning Driven Design of Enzyme Stabilizing Polymers, Matthew Tamasi, Shashank Kosuri, Sabarish Selvarajan, Adam Gormley, PhD, Rutgers University, Piscataway, NJ, USA
- 570 Preparation and characterization of biodegradable metal particle incorporated polycaprolactone nanofibers, Dekonti Davies, Sheikh Saudi, Jagannathan Sankar, Narayan Bhattarai, North Carolina Agricultural and Technical State University, Greensboro, NC, USA
- 571 Probing the topography and mechanical properties of biomaterials with atomic force microscopy, André Koernig, Torsten Mueller, Tanja Neumann, Bruker Nano GmbH, JPK BioAFM, Berlin, Germany
- 572 Understanding Nanotoxicity: Gold Nanoparticles Impact Calcium Influx, Jaspreet Singh Nagi Nagi, MS, Amber Doiron, PhD, University of Vermont, Burlington, VT, USA
- 573 Fluorescent Nanodiamond-Hyaluronate Conjugates for Molecular Imaging, Hyehyeon Han, MS, Seikwang Hahn, PhD, POSTECH, Pohang, Republic of Korea

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