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

TESco Associates

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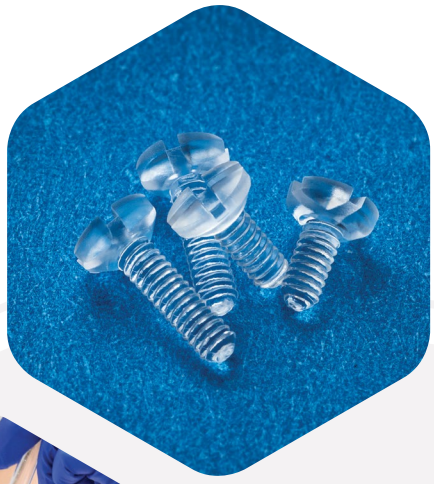
DELIVERING CLINICAL UTILITY

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.



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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.

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- 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.

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

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OPTICS life

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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. 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!

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
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Jeana Hoffman

PROGRAM CO-CHAIRS

Guillermo Ameer, ScD
Kris Kieswetter, PhD, MBA

PROGRAM COMMITTEE MEMBERS

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Robert Hastings
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Lakshmi S. Nair
Shelly Sakiyama-Elbert
Carl G Simon, Jr.
Ankur Singh
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,

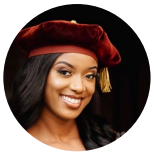
2021 Award Winners (CONTINUED)

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:

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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

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 *BTI*
- 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**

Thursday, April 22, 2021

9:00 am – 11:00 am	**Plenary Session I**
11:00 am - 12:30 pm	**CONCURRENT SESSION V**
	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
12:30 pm - 1:30 pm	**Student Luncheon: Tips for Writing Successful Fellowship Applications**
1:30 pm - 1:45 pm	**Break**
1:45 pm - 3:15 pm	**CONCURRENT SESSION VI**
	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*
3:15 pm - 4:15 pm	**National Student Chapter Meeting**
3:15 pm - 4:15 pm	**Annual Business Meeting**
3:15 pm - 4:15 pm	**Exhibits and Rapid Fire Presentations 1**
4:15 pm - 5:15 pm	**Exhibits and Rapid Fire Presentations 2**
5:30 pm - 6:15 pm	**Underrepresented Minority Mixer**
6:15 pm - 7:00 pm	**LGBTQIA Mixer**

Friday, April 23, 2021

9:00 am – 11:00 am	**Plenary Session II**
11:00 am – 12:30 pm	**CONCURRENT SESSION VII**
	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
12:30 pm - 1:30 pm	**Lunch Panel: Building Equitable Policies in STEM to Increase Representation, Inclusion and Diversity in the SFB Community**
1:30 pm - 1:45 pm	**Break**
1:45 pm – 3:15 pm	**CONCURRENT SESSION VIII**
	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
3:15 pm – 4:15 pm	**Exhibits and Rapid Fire Presentations**
4:30 pm - 5:15 pm	**Students & Young Scientist Group Mixer**
5:30 pm - 6:30 pm	**Young Scientist Group Business Meeting**

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 βcell death," Meghana Hosahalli Shivananda Murthy

14. "Gene Expression Analysis in Tissue-Microelectrode Interface of Cd14-/- 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 Micronenvironments

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+ 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 Pseudo-capsule 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 TiO2 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 Miar

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 Miar

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
No Moderator	**Moderator: Stephanie Florczyk, PhD**	**Moderator: Amber Jennings, PhD**	**Moderators: Kelvin Yeung, PhD. David Mills, PhD. Bingyun Li, PhD.**	**Moderators: Brian Aguado, PhD Edward Botchwey, PhD Ana Maria Porras, PhD**	**Moderator: Ashish Kulkarni, PhD**	**Moderators: Nureddin Ashammakhi, MD, PhD Scott Taylor**
See STARS LISTING Page 10	9. Improved Biocompatibility of Polymer Biomaterials by Surface Texturing and Nitric Oxide Release, Christopher Siedlecki, PhD, Lichong Xu Xu, PhDPenn State University College of Medicine, Hershey, PA, USA	15. Teaching Standardization of Bioprinting, Liisa Kuhn, PhD1, Sangya Varma, PhD21University of Connecticut, Storrs, CT, USA, 2Rutgers, The State University of New Jersey, New Brunswick, NJ, USA	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, Philip Tsao1,21Stanford University, Palo Alto, CA, USA, 2Veterans Affairs Palo Alto Health Care System, Palo Alto, CA, USA		35. Engineering Injectable Artificial T-Cell Stimulation Microparticles, Natalie Livingston, B.S., John Hickey, PhD, Sebastian Salathe, B.S., Hai-Quan Mao, PhD, Jonathan Schneck, MD, PhDJohns Hopkins University, Baltimore, MD, USA	Invited Speaker: 45. The NIH Tissue Chips Program: Novel tools for translational science, Lucie Low NCATS/NIH
	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, PhD11Virginia 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	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 Petrova11Faculty of Dental medicine, Medical University "Prof. Dr. Paraskev Stoyanov", Varna, Bulgaria, 2Medical University "Prof. Dr. Paraskev Stoyanov", Varna, Bulgaria	22. Machine learning guided biomaterials development, Ying Mei, PhD1, Sophia Silver1, Jianjun Hu, PhD21Clemson University, Charleston, SC, USA, 2University of South Carolina, Columbia, SC, USA	28. Controlling Multi-Peptide Organization in 3D-Printed Scaffolds to Drive Osteochondral Tissue Formation, Paula Camacho, Matthew Fainor, Anne Behre, Hannah Dailey, Lesley ChowLehigh University, Bethlehem, PA, USA	36. Stimuli-Responsive Nanoreporter for Early Monitoring of Immunotherapy Response, Anujan Ramesh Ramesh1, Sahana Kumar2, Dipika Nandi3, Anthony Brouillard2, Alexandria Wells3, Leonid Pobezinsky, Ph.D.3,4, Barbara Osborne, Ph.D.3,4, Ashish Kulkarni, Ph.D.1,2,3,4, Anh Nguyen21University of Massachusetts in Amherst, Amherst, MA, USA, 2University of Massachusetts Amherst, Amherst, MA, USA, 3University of Massachusetts, Amherst, Amherst, MA, USA, 4University of Massachusetts - Amherst, Amherst, MA, USA	
	11. Dynamic Microgels for Expansion of Mesenchymal Stem Cells, Han Nguyen, MS1, Zhongliang Jiang, PhD2, Chun-Yi Chang, MS1, Chien-Chi Lin, PhD1,21Purdue University, West Lafayette, IN, USA, 2Indiana University-Purdue University Indianapolis, Indianapolis, IN, USA	17. Customer Discovery Processes to Realize Commercially Ready Biomaterials Technologies, Karen Burg, Timothy BurgUniversity of Georgia, Athens, GA, USA	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, BS11Seoul National University, Seoul, Republic of Korea, 2Chosun University, GWANGJU, Republic of Korea	29. Nail Matrix Regenerative Engineering: In Vitro Evaluation of Poly(lactide-co-glycolide)/Gelatin Fibrous Substrates, Aundrya Montgomery, MS, Aneesah McClinton, MD, Lakshmi Nair, PhD, Cato Laurencin, MD, PhD, UConn Health, Farmington, CT, USA	37. Harnessing Sustained Release to Produce Robust, Durable, and High-Quality Influenza Immunity, Gillie Roth, PhD1, Olivia Saouaf2, Eric Appel, PhD1,21Stanford University School of Medicine, Stanford, CA, USA, 2Stanford University, Stanford, CA, USA	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 Bunnell3, Hang Lin2, Rocky Tuan2, Stuart Goodman11Stanford University, Palo Alto, CA, USA, 2University of Pittsburgh, Pittsburgh, PA, USA, 3University of North Texas, Fort Worth, TX, USA

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, Kailei Xu, PhD, Dana Rowley, BS, Minh-chau Le, PhD, Annette Khaled, PhD, Stephanie Florczyk, PhDUniversity 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 Berger1, D. Joshua Cohen, MB1, Kyla Bosh1, Michael Levit1, 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	Invited Speaker: Maria Coronel	38. Plasticity of primary human macrophages in crosstalk with scaffolds and tissue-engineered blood vessels, Beatriz Hernaez-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,
	13. Design Build and Validate Strategy to 3D Print Biomimetic Bioglass Gradient Matrices for ACL Reconstruction, Nilabh Kajave, Trevor Schmitt, Vipuil 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	Invited Speaker: Lola Eniola-Adefeso	39. Take-Out or Dine-in: Immunogenicity of Peptide Nanofibers Presenting Exogenous or Endogenous Forms of the Same Antigen, Paresh Shrimali, PhD, Jeremy Buck, BS, Darren Kim, BA, Jai Rudra, PhDWashington University in Saint Louis, Saint Louis, MO, USA	43. Engineered human tissues for assessing cosmic radiation damage, Daniel Tavakol1, Trevor Nash1, Manuel Tamargo1, Youngbin Kim1, Sharon Fleischer, PhD1, Martin Liberman1, Guy Garty, PhD2, Joriene 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
	14. Gene Expression Analysis in Tissue-Microelectrode Interface of Cd14-/- and WT Mice Reveals Potential Secondary Molecular Target in Neuroinflammatory Pathway, Sydney Song1, Hillary Bedell1, Evon Ereifej2, 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 GenoveseWashington University School of Medicine in St. Louis, St. Louis, MO, USA	Invited Speaker: Kolade Adebowale	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 Pardoll, 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 Glioblastoma-on-Chip Platform to Assess In Vitro Potency of CAR T Cell Therapy, Chaitanya Tondepu, Meghan Logun, Yang Liu, Leidong Mao, PhD, Lohitash KarumbaiahUniversity of Georgia, Athens, GA, USA
				Invited 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**
Moderators: Deanna Bousalis Jason Guo	**Moderator: Alexandra Rutz**	**Moderator: Gulden Camci-Unal, PhD Cato Laurencin, MD, PhD**	**Moderator: Ngan F. Huang, PhD and Chris Bashur, PhD**	**Moderators: Ashley Brown, PhD Chris Highley, PhD Scott Wood, PhD**	**Moderators: Tolou Shokufar, PhD Kelvin Yeung, PhD**	**Moderator: Danielle Benoit, PhD**
Invited Speaker: Larry Thatcher, TESco Associates	Invited Speaker: 52 Biomaterial Innovations through Understanding Brain-Technology Interfaces Takashi Daniel Yoshida Kozai, University of Pittsburgh	Invited Speaker: Cato Laurencin, MD, PhD, University of Connecticut	61. Antagonistic Effect of Magnesium Hydroxide Nanoparticle on Vascular Endothelial Activation Induced by Acidic PLGA Degradation Product, Kyoung-Won Ko, Dong Keun HanCHA University, Seongnam-si, Republic of Korea	65. Hydrogel Cultures Reveal Sex Differences in Valvular Myofibroblasts with Links to Genes that Escape X-Chromosome Inactivation, Brian Aguado, PhD, Cierra Walker, Joseph Grim, Megan Schroeder, Dilara Batan, Brandon Vogt, Andrea Gonzales-Rodriguez, Donald Heistad, Leslie Leinwand, Kristi AnsethUniversity of Colorado Boulder, Boulder, CO, USA	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, PhDUniversity of Central Florida, Orlando, FL, USA	223. Injectable Acylhydrazone Hydrogels for Sustained Protein Release, Fang-Yi Lin, PhD, Nathan Dimmitt, Chien-Chi Lin, PhDIndiana University-Purdue University Indianapolis, Indianapolis, IN, USA
Invited Speaker: Michaela McCrary, Ph.D.		54. Water-in-Oil Emulsion Bioink for 3D Bioprinting of Living Rigid Scaffolds, Yonghui Ding, PhD, Cheng Sun, PhD, Guillermo Ameer, DScNorthwestern University, Evanston, IL, USA	62. Deceasing tissue stiffness improves extracellular matrix hydrogel therapeutic efficacy for myocardial infarction, Xinming Wang, MS, Samuel Senyo, PhD, Paul Park, PhDCase Western Reserve University, Cleveland, OH, USA	66. Laminin interactions with the islet in a 3d reverse thermal gel scaffold protect against cytokine-mediated ?-cell death, Meghana Shivananda Murthy, MS1,2, Nikki Farnsworth, PhD1,21Colorado School of Mines, Golden, CO, USA, 2University of Colorado Anschutz Medical Campus, Aurora, CO, USA	72. Repair of Rat Calvaria Defect with Injectable Strontium (Sr2+)-Doped Polymeric Brushite Ceramics, David Markel1,2, Therese Bou-Akl1, Paula Dietz1, Bin Wu1, Tong Shi2, Paul Begeman2, Weiping Ren, PhD1,21Ascension Providence Hospital, Southfield, MI, USA, 2Wayne State University, Detroit, MI, USA	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
Invited Speaker: Dr. Jordan Miller		55. Nucleic Acid-Collagen Complexes (NACCs) Stabilization via Physiological Ions, Paxton James, Bryan James, Josephine AllenUniversity of Florida, Gainesville, FL, USA	63. Model-directed Design of Kink Resistant Vascular Grafts with High Compliance, Andrew Robinson1, David Jiang2, Lucas Timmins, PhD2, Elizabeth Cosgriff-Hernandez, PhD11The University of Texas at Austin, Austin, TX, USA, 2The University of Utah, Salt Lake City, UT, USA	67. Investigating Overload in Triggering Hypertrophic Cardiomyopathy Pathogenesis using iPSC Cardiomyocytes, Jignxuan Guo, MS, Huanzhu Jiang, Kasoorelope Oguntuyo, Brandon Rios, Anand Boodram, Nathaniel Huebsch, PhDWashington University in St. Louis, St. Louis, MO, USA	73. Temporally Controlled Release of Periosteal 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	225. Hydrolytically degradable hydrogels for therapeutic delivery, Maria Coronel, PhD, Karen Martin, Rahul Shah, Andres Garcia, PhDGeorgia Institute of Technology, Atlanta, GA, USA
Invited Speaker: Johnny Lam	49. Conducting Polymer Nanofibers for Biorobotics, Mohammadjavad Eslamian, Fereshtehsadat Mirab, Vijaykrishna Raghunathan, PhD, Sheereen Majd, PhD, Mohammad Reza Abidian, PhDUniversity of Houston, Houston, TX, USA	56. Nucleic Acid Elastin Collagen Complex (NAECC) Fibers and Gels Working Towards an ECM Mimic, Sophia Saenz, Bryan James, Josephine AllenUniversity of Florida, Gainesville, FL, USA	64. Revelation of Vasculature Tree Structure Inside Sesamoid Bone and Its Impact on Bone Mechanical Integrity, Guigen Zhang, PhD1, Erik Davis, BS1University of Kentucky, Lexington, KY, USA	68. Myofibroblast persistence promotes inflammation via IL-8 secretion in valvular interstitial cells, Cierra Walker, Megan Schroeder, PhD, Leslie Leinwand, PhD, Kristi Anseth, PhDUniversity of Colorado Boulder, Boulder, CO, USA	74. Comparison of Two Nerve Ablation Models and their Impact on Titanium Implant Osseointegration, Jingyao Deng, IV1, David Cohen, MD1, Barbara Boyan, PhD1,2, Zvi Schwartz, PhD, DMD1,31Virginia Commonwealth University, Richmond, VA, USA, 2Georgia Institute of Technology, Richmond, VA, USA, 3University of Texas Health Science Center at San Antonio, Richmond, VA, USA	226. Modular Oxygen-Generating Biomaterials for in situ Support of Cell-based Therapies, Robert Accolla1, Jia-Pu Liang1, Cherie Stabler, PhD1,21University of Florida, Gainesville, FL, USA, 2UF Diabetes Institute, Gainsville, FL, USA

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 Mayers	50. Identifying Fabrication Parameters for Tuning Material Properties of Electrochemically Aligned Collagen Threads with Deep Neural Networks, Wenhuan Sun1, Victoria Webster-Wood, PhD1,21Dept. Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA, USA, 2Dept. 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, MS1, Champa Jayasuriya, Ph.D21University of Toledo, Toledo, OH, USA, 2University 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 Ayushman, Fan YangStanford University, Stanford, CA, USA	75. Microribbon-based macroporous matrices enhance cartilage repair in rat osteochondral defect model, Xinming Tong, Masahiro Maruyama, Danial Barati, Stuart Goodman, Fan YangStanford 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 Jin1,2, Carole Quesada1, Mitra Aliabouzar1, Oliver Kripfgans1, J. Brian Fowlkes1, Renny Franceschi1, Jianhua Liu2, Andrew Putnam1, Mario Fabiilli11University of Michigan, Ann Arbor, MI, USA, 2South 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, ProfessorPohang 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, PhD, 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, PhDTexas 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 Liu1,2, Deborah Hall1, Stephanie McCarthy1, Joshua Jacobs, MD1, Robin Pourzal, PhD11Rush University Medical Center, Chicago, IL, USA, 2University 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, Leidan Huang1,2, Carole Quesada1, Mitra Aliabouzar1, Oliver Kripfgans1, Renny Franceschi1, Zheng Liu2, Andrew Putnam1, Mario Fabiilli11University of Michigan, Ann Arbor, MI, USA, 2Second 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 Patil1, Katherine Russo1, Joshua McCune1, Alonda Pollins2, Nancy Cardwell2, Jeffery Davidson2, Scott Guelcher1, Craig Duvall11Vanderbilt University, Nashville, TN, USA, 2Vanderbilt 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 Loebel, MD, PhD**
See STARS LISTING Page 10	Invited Speaker: J. Kent Leach, PhD, University of California, Davis	83. Artificial meninges reduce fibroblastic and astroglial responses in a rabbit cord transection, Barbie Varghese1, Duke Shereen2, Alan Seifert3, Lauren Bright1, Antonio Merolli11Rutgers 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 Kwiatkowski1, Joshua Stewart, PhD1, Eric Helm2, Theodore Drashansky, PhD2, Dorina Avram, PhD2,3, Benjamin Keselowsky, PhD11University 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 Bojadzic, Teresa De Toni, Peter Buchwald, PhD, Alice Tomei, PhDUniversity of Miami, Miami, FL, USA	. A Potent Branched-tail Lipid Nanoparticle Enables Muliplexed mRNA Delivery and Gene Editing in vivo, Jilian Melamed, PhD
	77. Sulfated Hydrogels to Prolong Localized Availability of the Stromal Cell Secretome, Marissa Gionet-Gonzales1, Daphne Diloretto1, Clara Ginnell1, J. Kent Leach1,2, 1University 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, PhDFlorida 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, PhDTemple University, Philadelphia, PA, USA	96. Lipid Nanoparticle-Mediated mRNA Delivery for CAR T Cell Engineering, Margaret Billingsley, Michael Mitchell, PhDUniversity of Pennsylvania, Philadelphia, PA, USA	104. Application of Magnetic Particle Imaging Technology to Understand Nanoparticle Biodistribution in Osteoarthritic Joints, Tolulope AjayiUniversity of Florida, Gainesville, FL, USA	. Functional Heterogeneity of IFN-γ Licensed Mesenchymal Stromal Cell Immunosuppressive Capacity on Biomaterials, Brian Kwee, PhD
	78. Modifying Mineralized Collagen Scaffolds to Modulate the Inflammatory Response in Craniomaxillofacial Defects and Enhance Bone Regeneration, Vasiliki Kolliopoulos, 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, PhDQueen'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, Abdulrahman Balhaddad1,2, Isadora Garcia3, Lamia Mokeem1, Maria Ibrahim1,2, FabrÃcio Collares3, Michael Weir1, Huakun Xu1, Mary Anne Melo11University 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 Keselowsky, PhDUniversity of Florida, Gainesville, FL, USA	105. Dual-Nanoparticle System for Enhanced Drug Accumulation and Prolonged Retention in Metastatic Cancers, Michaela Prado1,2,3, Pere Dosta, PhD1,2, Pau Hurtado, MSc1,2, Natalie Artzi, PhD1,21Brigham and Womenâ€™s Hospital, Harvard Medical School, Boston, MA, USA, 2Massachusetts Institute of Technology, Cambridge, MA, USA, 3TecnolÃ³gico 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, Hafiz Busari, Hannah Dailey, Lesley Chow	86. Generation of Mesenchymal Meta-Tissues Using Multi-Photon Lithography, Chenyan Wang1, Zacharias Vangelatos2, Tackla Winston1, Costas Grigoropoulos, PhD2, Zhen Ma, PhD11Syracuse University, Syracuse, NY, USA, 2University of California, Berkeley, Berkeley, CA, USA	92. Translation of 3D-Painted Hyperelastic BoneÂ® Advanced Biomaterial Products for Off-the-Shelf and Patient-Matched Dental and Maxillofacial Repair and Regeneration, Adam Jakus, PhDDimension 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'Melia1,2, Nathan Rohner1, Margaret Manspeaker1, David Francis1, Haydn Kissick2, Susan Thomas1,21Georgia 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 MaoJohns Hopkins University, Baltimore, MD, USA	. Macrophage Depletion Increases Target Specificity of Bone-targeted Nanoparticle, Marian Ackun-Farmmer, 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.PEGylation of Indoleamine 2,3-Dioxygenase for Addressing Systemic Immune Regulation, Jennifer Simonovich1, Arun Wanchoo1, Alexander Kwiatkowski1, Dorina Avram2, Gregory Hudalla1, Benjamin Keselowsky11University 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 Baradhwaj Conjeevaram, Ryan BlanchardTexas A&M University, College Station, TX, USA	. Injectable Granular Hydrogels with Tunable Porosity to Promote Cell and Vessel Invasion, Taimoor H. Qazi, PhD
		88. Glycosaminoglycans and Dexamethasone Influence Trabecular Meshwork Cell Behavior on 3D Scaffolds, Bikram Adhikari1, Melissa Krebs1, Mina Pantcheva, MD21Colorado 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 Balhaddad1,2, Lamia Mokeem1, Michael Weir1, Huakun Xu1, Mary Anne Melo11University 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, PhD1, Kym Brunggell, PhD2, Michal Raczy2, Rachel Wallace2, Andrew Tremain2, Jeffrey Hubbell, PhD21Johns 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-Galectin-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**
Moderators: **Cheryl Gomillion, PhD** **Jessica Amber Jennings, PhD**	**Moderators:** **Christaina Bailey-Hytholt, PhD** **David Martin, PhD**	**Moderator: Hongli Sun, PhD**	**Moderators: Eunji Chun, PhD** **Bret Ulery, PhD**	**Moderator: Guigen Zhang, PhD** **Bingyun Li, PhD**	**Moderator: Bob Hastings, PhD**
Invited Speaker: Karin Jensen, Ph.D.	109. A Gelatin Hydrogel Model of the Endometrium and Trophoblast Invasion, Samantha Zambuto, ScM1, Ishita Jain1, Shemona Rattila2, Kathryn Clancy, PhD1, Gabriela Dveksler, PhD2, Gregory Underhill, PhD1, Brendan Harley, PhD11University of Illinois Urbana-Champaign, Urbana, IL, USA, 2Uniformed Services University of the Health Sciences, Bethesda, MD, USA	115. Controlling Osteogenesis by Grafting Peptide Mimetics via Orthogonal Click Chemistries to Alginate Hydrogels, Sydney Neal1, Era Jain, PhD1, Xiaohong Tan1, Hannah Graf2, Rama Balasubramaniam1, Nathaniel Huebsch, PhD11Washington University in St. Louis, St. Louis, MO, USA, 2Eberhard-Karls University, TÃ¼bingen, Germany	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	Invited Speaker: Buddy Ratner, PhD, University of Washington	276. Bioresorbable stents for congenital heart disease, Tre Raymond Welch, PhD, Jamie Wright, PhD, UT Southwestern Medical Center
Invited Speaker: Elizabeth Cosgriff-Hernandez, PhD	110. Engineering Lipid Nanoparticles for In Utero mRNA Delivery, Margaret Billingsley, Michael Mitchell, PhDUniversity of Pennsylvania, Philadelphia, PA, USA	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 McClureVirginia Commonwealth University, Richmond, VA, USA	122. Synthetic Self-Assembled Nanorod Vaccine Confers Protection Against Influenza A Virus, Mélanie Côté-Cyr1,2, Ximena Zottig1,2, Soultan Al-Halifa1,2, Denis Archambault1, Steve Bourgault1,21Université du Québec à Montréal, Montréal, QC, Canada, 2Quebec Network for Research on Protein Function, Engineering and Applications (PROTEO), Québec, QC, Canada	128. Controlling Microbial Infection by Submicron Textured Surfaces, Lichong Xu Xu, PhD, Christopher Siedlecki, PhDPenn State University College of Medicine, Hershey, PA, USA	277. Modular cell culture platform for preclinical testing, Ram Saraswat South Dakota School of Mines & Technology
Invited Speaker: Tom Dziubla, PhD	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	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	123. Methacrylate-Modified Gold Nanoparticles Enable Non-Invasive Monitoring of Photopolymerized Hydrogel Scaffolds, Lan Li1, Carmen Gil2, Vahid Serpooshan, PhD2, Ryan Roeder, PhD11University of Notre Dame, South Bend, IN, USA, 2Emory University and Georgia Institute of Technology, Atlanta, GA, USA	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	278. 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.
Invited Speaker: Jason L. Guo, PhD	112. Design and Prototyping of Dynamic Midurethral Sling for The Treatment of Stress Urinary Incontinence, Seelay Tasmim1, Philippe Zimmern2, Taylor Ware11Texas A&M University, College Station, TX, USA, 2The University of Texas Southwestern Medical Center, Dallas, TX, USA	118. Enhanced satellite cell differentiation and muscle regeneration by semi-synthetic Hyaluronic acid hydrogel-mediated delivery of Fibro-Adipogenic Progenitors in Volumetric Muscle Loss, Shane Browne, PhD1, Anouk Killaars, PhD1, Mengyao Liu, BA2, 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	124. Development of needle free transdermal microparticulate vaccine for Coronavirus Disease, Sharon Vijayanand, B.Pharm, Smital Patil, B.Pharm, Devyani Joshi, B.Pharm, Keegan Braz Gomes, B.S, Ipshita Menon, M.Pharm, Martin D'Souza, PhD, Mohammad Uddin, PhDMercer University College of Pharmacy, Atlanta, GA, USA	130. Tannin/glycosaminoglycan-based Polyelectrolyte Multilayers Improve the Endothelialization of TiO2 Nanotubes, Roberta Maia Sabino, BS, Matt Kipper, PhD, Alessandro Martins, PhD, Ketul Popat, PhDColorado State University, Fort Collins, CO, USA	279. MetastaticPrecision – Rapid Diagnostic Test for Canine Lymphoma Kelsey Collins1, Scott Taylor2, Karen J.L. Burg1 Department of Small Animal Medicine & Surgery, University of Georgia and 2Poly-Med, Inc.

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
	113. Evaluation of Immunomodulatory Mesh for Pelvic Floor Reconstruction in a Rabbit Colpopexy Model, Bryan Brown, PhD1,2, Aimon Iftikhar, PhD1,2, Alexis Nolfi1,2, Clint Skillen1,2, Branimir Popovic, DVM1,2, Pamela Moalli, MD, PhD1,21University of Pittsburgh, Pittsburgh, PA, USA, 2McGowan Institute for Regenerative Medicine, Pittsburgh, PA, USA		125. A polymeric particulate vaccine for Zika for transdermal immunization using microneedle patch, Akanksha Kale, Martin D'Souza, PhDMercer University College of Pharmacy, Atlanta, GA, USA	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, PE11Drexel University, Philadelphia, PA, USA, 2Exponent, Inc., Philadelphia, PA, USA	280. Biodegradable Piezoelectric Surgical Mask, Vinayak Mishra Molecular & Cell Biology | University of Connecticut
	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 RizkTepha, Inc., Lexington, MA, USA		126. Fighting the Flu: Pain-free administration of a cross-protective subunit Influenza vaccine, Sharon Vijayanand, B.Pharm, Keegan Braz Gomes, B.S. in Biology, Kimberly Braz Gomes, PhD, Martin D'Souza, PhD, Sang Moo Kang, PhD	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	Q&A and Judging

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 Veiseh, 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-Farmmer, Baixue Xiao, Danielle BenoitUniversity of Rochester, Rochester, NY, USA	145. Bioengineered Tissue Mimetic Hydrogels to Study Brain Tumor Biology, Sara Pedron, PhD, Brendan HarleyUniversity of Illinois at Urbana-Champaign, Urbana, IL, USA	151. Synthetic Hydrogels to Study ECM Dynamics of Intestinal Organoids, Michael Blatchley1, Arda Gunay1, Max Yavitt1, Peter Dempsey2, Kristi Anseth11University of Colorado Boulder, Boulder, CO, USA, 2University of Colorado School of Medicine, Aurora, CO, USA	157. Magnesium cationic niche in bone tissue microenvironment facilitates intramembranous ossification, Jie Shen, PhD1,2, Kenneth Cheung, MD1,2, Kelvin Yeung, PhD1,21The University of Hong Kong, Hong Kong, Hong Kong, 2The University of Hong Kong Shenzhen Hospital, Shenzhen, China	163. Multifunctional Nanoparticles Containing SDF1-ELP and vRAGE-ELP Accelerate Diabetic Wound Healing, Hwan June Kang1, Suneel Kumar, PhD1, Biraja Dash, PhD2, Henry Hsia, MD2, Martin Yarmush, MD, PhD1, Francois Berthiaume, PhD11Rutgers University, Piscataway, NJ, USA, 2Yale 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, PhDUniversity of Pennsylvania, Philadelphia, PA, USA	146. Neurotrophin-3 Loaded Hyaluronic Acid Hydrogels Promote Axonal Growth In Vitro, Pablo Ramos Ferrer, Shelly Sakiyama-ElbertThe 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, PhDUniversity 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, PhDUniversity of Central Florida, Orlando, FL, USA	164. Development of Zonated Artificial Liver Tissue via Spatial Gene Patterning, Daniel Corbett1,2, Wesley Fabyan1,2, Bagrat Grigoryan3, Colleen O'Connor1,2, Fredrik Johansson1,2, Ivan Batalov1,2, Mary Regier1,2, Cole DeForest1,2, Jordan Miller3, Kelly Stevens1,21University of Washington, Seattle, WA, USA, 2Institute for Stem Cell and Regenerative Medicine, Seattle, WA, USA, 3Rice University, Houston, TX, USA
Invited Speaker: Alyce Linthurst Jones, Ph.D.	133. Delivery of STING Agonist Using pBAEs Nanoparticles Inhibits Tumor Growth in Different Tumor Models, Pere Dosta Pons, PhD1,2, Alexander Cryer, PhD1,2, Santhosh Kalash, PhD1,2, Michelle Dion1,2, Shiran Ferber, PhD1,2, Natalie Artzi, PhD1,21Brigham and Women's Hospital (Harvard Medical School), cambridge, MA, USA, 2Massachusetts Institute of Technology, Cambridge, MA, USA	141. Uricase Functionalized Hydrogel for the Localized Treatment of Gout, Madeline Fuchs, Gregory Hudalla, PhD, Benjamin Keselowsky, PhDUniversity of Florida, Gainesville, FL, USA	147. Understanding the role of subcutaneous priming for improving tissue engineered scaffolds for spinal cord injury treatment, Mohammad Hamrangsekachaee, Hannah Baumann, PhD, Dipak Pukale, Leah Shriver, PhD, Nic Leipzig, PhDThe University of Akron, Akron, OH, USA|	153. Biasing Hematopoietic Response In Single-Cell Microenvironments, Aidan Gilchrist1, Julio Serrano1, Michael Hunckler2, Andres Garcia2, Brendan Harley11University of Illinois at Urbana-Champaign, Champaign, IL, USA, 2Georgia 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, MPH1,2,3, Stefania Lenna, PhD2,3, Francesca Paradiso2,3,4, Stefano Serpelloni2,3,5, Patrick Mcculloch, MD3, Antonios Mikos, PhD6, Bradley Weiner, MD2,3, Francesca Taraballi, PhD2,31Texas A&M, Bryan, TX, USA, 2Houston Methodist Research Institute, Houston, TX, USA, 3Houston Methodist Hospital, Houston, TX, USA, 4Swansea University Medical School, Swansea, United Kingdom, 5Politecnico di Milano, Milan, Italy, 6Rice University, Houston, TX, USA	165. FRESH 3D Bioprinting Full-Scale Collagen Constructs for Surgical Training Models, Andrew Lee, PhD1, Riley Patten1,2, Thomas Hinton, PhD11Fluidform, Inc., Acton, MA, USA, 2Tufts Universeity, 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, Silviya Zustiak, 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, Jilian Melamed, Khalid Hajj, 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 Targetting, Eugene Pashuck, PhD1, Samuel Rozans, Kayleigh Atanasoff, Abdul-Nafea Syed, Jake Tosh, 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, Juergan Naubauer, PhD2, Justin Hintz, M.D2, David Lott, M.D2,3, Julianne Holloway, PhD11Arizona State Universiy, 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 Immunometabolism and Prevent Melanoma Growth in Mice, Sahil Inamdar1, Joslyn Mangal1, Xiaojin Shi1, Marion Curtis2, Haiwei Gu1, 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 Agrawal, PhD, Leilani Astrab, Gregory Hudalla, PhD, Christine Schmidt, PhDUniversity of Florida, Gainesville, FL, USA	155. Development of an In-vitro Microphysiological Model of the Tracheal Epithelium, Solaleh Miar1, Yamuna Pillai1, Zina Helal1, Gregory R Dion2, Joo L Ong1, Rena Bizios1, Teja Guda11The 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, PhD21Rosies 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, PhDRice University, Houston, TX, USA
Invited Speaker: Dr. Nilesh Billade	136. Chemically-Induced Cross-linking of Peptidic Fibrils for Scaffolding Polymeric Particles and Macrophages, Jennifer Armen, BS1, Nathan Schueller2, Nevil Abraham, BS2, Ketki Velankar, MS2, Rachelle Palchesko, PhD3,4, Yong Fan, PhD5,6, Wilson Meng, PhD2,7, Ellen Gawalt, PhD1,71Duquesne University, Chemistry and Biochemistry, Pittsburgh, PA, USA, 2Duquesne 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, Il Minn, PhD1, Martin Pomper, MD, PhD1, Hai-Quan Mao, PhD21Johns Hopkins University School of Medicine, Baltimore, MD, USA, 2Johns Hopkins University, Baltimore, MD, USA|	. Assessing the Potential of a Decel-lularized 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. Crayton 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, SAJEESH 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 *BTI*	3-minute Thesis Competition
Moderators: Dr. Subramanian Gunasekaran, PhD	**Moderator: Gulden Camci-Unal, PhD**	**Moderators: Yi Hong, PhD and C. LaShan Simpson, PhD**	**Moderators: Michael Mitchell, PhD Omid Veiseh, PhD**	**Moderators: Rebecca Pompano, PhD Kara Spiller, PhD**	**Moderators: Bingyun Li, PhD Malcom Xing, PhD**	**Moderators: Deanna Bousalis Nicholas Fischer**
Invited Speaker: Dr. Subramanian Gunasekaran, PhD	169. Multiphase, Vascularized Bone Constructs Comprised of Modular Vascular and Osteogenic Microtissues, Nicholas Schott, Jan StegemannThe University of Michigan, Ann Arbor, MI, USA	175. Heparin Coating Improves Thromboresistance In Glutaraldehyde Processed Bovine Pericardium: A Possible Application For Bioprosthetic Heart Valve, Devika S L, M.Sc, Maneesha Gurudas, M.Sc, Jesna P.V, M.Sc, M.Phil, Anugya Bhatt, Ph.D, Umashankar P.R, PhDSree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, India	181. Development of Antimicrobial Biochanin A Poly(beta amino ester) Polymers, Kelley Wiegman1, Michael Flythe2, Zach Hilt1, Thomas Dziubla11University of Kentucky, Lexington, KY, USA, 2U. S. Department of Agriculture, Lexington, KY, USA	187. Mesenchymal Stem Cell Modulation of the Synthetic Biomaterial Immune Microenvironment, Karen Martin, Rebecca Schneider, Andres Garcia, PhDGeorgia Institute of Technology, Atlanta, GA, USA	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 20425	Building Heart Tissue Using Conductive Scaffolds, Suh Hee (Taylor) Cook Modification of Mineralized Collagen Scaffolds to Overcome Challenges of Craniomaxillofacial Bone Repair, Marley Dewey Controlled Drug Delivery from Hydrogels to Treat Spinal Cord Injury, Pablo Ramos Ferrer New Backbones Grow on Trees: An Injectable, Cellulosic Hydrogel for Intervertebral Disc Repair, Nada Haq-Siddiqi 3D Printing of Tissue Scaffolds with Plant Wall Cellulose, Marzieh Monfared Building New Life, One Click at a Time, Eva Mueller Dual Functionalized Nanoparticles for Drug Delivery in Acute and Subacute Traumatic Brain Injury, David Eduardo Flores Prieto Heparin Microislands in Microporous Annealed Particle (MAP) Hydrogels for Accelerated Tissue Integration, Lauren Pruett Imminent Need for a Shift from Chemotherapeutics as Cancer Therapies, Using 2020 as an Example of Why, Timothy Samec A Novel in vitro Tool to Cure Osteoarthritis, Ram Saraswat
Invited Speaker: Dr. J. Peter Rubin, MD, MBA, FACS	170. Vascularization of Degradable PEG-Norbornene Hydrogels via Coculture of Endothelial and Stromal Cells, Nicole Friend, MSE, Jan Stegemann, PhD, Andrew Putnam, PhDUniversity of Michigan, Ann Arbor, MI, USA	168. Mechanical Performance of a Hydrogel-Fiber Mesh Composite as a Synthetic Heart Valve Material, Shruti Motiwale1,2, Madeleine Russell3, Megan Wancura3, Andrew Robinson3, Elizabeth Cosgriff-Hernandez3, Michael Sacks1,31James T. Willerson Center for Cardiovascular Modeling and Simulation, Oden Institute, Austin, TX, USA, 2Department of Mechanical Engineering, University of Texas at Austin, Austin, TX, USA, 3Department of Biomedical Engineering, University of Texas at Austin, Austin, TX, USA	182. Bio-responsive Hydrogels for On-Demand Delivery of Anti-Cancer Therapeutics, Fei Fan, Grace Petrosini, Sharon Stack, Donny Hanjaya-PutraUniversity of Notre Dame, Notre Dame, IN, USA	188. Dynamic 3D Tracking of Pancreatic Islet and Immune Cell Interactions In Vitro, Magdalena Samojlik, MS1, Smit Patel1, Ying Li, PhD1,2, Scott Stimpson, PhD2, Leeana Peters2, Clayton Mathews, PhD2, Todd Brusko, PhD2, Edward Phelps, PhD1, Cherie Stabler, PhD11University of Florida, College of Engineering, Gainesville, FL, USA, 2University of Florida, College of Medicine, Gainesville, FL, USA	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 Roch, PhD, Xanthippi Chatzistavrou, PhDMichigan State University, East Lansing, MI, USA	
Invited Speaker: Mr. James Bailey	171. Nucleic Acid-Collagen Complexes (NACC): Engineering Tunable Hard and Soft ECM Mimics, Bryan James, Sophia Saenz, Paxton James, Josephine AllenUniversity of Florida, Gainesville, FL, USA	177. New Fluorinated Alkoxyphosphazene Biomaterials with Improved Biocompatibility, Lichong Xu Xu, PhD1, Chen Chen, PhD2, Harry Allcock, PhD2, Christopher Siedlecki, PhD11Penn State University College of Medicine, Hershey, PA, USA, 2The Pennsylvania State University, University Park, PA, USA	183. Effects of Spatial Organization and Histidine Tag on Efficacy of Intracellular Protein Delivery System, Wei Lv, PhD, Anshul Dhankher, Talmage Studstill, Julie Champion, PhDGeorgia Institute of Technology, Atlanta, GA, USA	189. Engineering a Synthetic Hydrogel Platform to Support Tolerogenic Trophoblast Organoids, Emily Slaby, Caitlin O'Brien, Jessica Weaver, PhDArizona State University, Tempe, AZ, USA		

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 Salinger	172. Unconventional Biomaterials for Regenerative Engineering, Gulden Camci-UnalUniversity of Massachusetts Lowell, Lowell, MA, USA	178. Injectable hydrogel electrodes for treatment of ventricular arrhythmias, Gabriel Rodriguez-Rivera1, Malgorzata Chwatko, PhD2, Allison Post, PhD3, Mathews John3, Skylar Buchan3, Christina Waldron2, Mehdi Razavi, PhD3, Elizabeth Cosgriff-Hernandez-21The University of Texas at Austin, Austin, TX, USA, 2The University of Texas at Austin', Austin, TX, USA, 3Texas Heart Institute, Houston, TX, USA	184. Drug Release from Ace-DEX Particles: An Experimental and Mathematical Model, Rebeca Stiepel1, Erik Pena2, Matthew Gallovic, PhD3, Christopher Genito4, Eric Bachelder, PhD1, Kristy Ainslie, PhD1,2,41Eshelman School of Pharmacy, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA, 2University of North Carolina at Chapel Hill and North Carolina State University, Chapel Hill, NC, USA, 3IMMvention Therapeutix, Durham, NC, USA, 4University 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 Cunningham1,2, Tommy Malaret1,2, John Stagg3,4, PamÃ©la ThÃ©bault3,4, Dominique Trudel3,4, RÃ©jean Lapointe3,4, Sophie Lerouge1,2,41Centre de recherche du CHUM (CRCHUM), MontrÃ©al, QC, Canada, 2Ã‰cole de technologie supÃ©rieure (ETS), MontrÃ©al, QC, Canada, 3Institut du Cancer de MontrÃ©al, MontrÃ©al, QC, Canada, 4UniversitÃ© de MontrÃ©al, MontrÃ©al, QC, Canada	194. Biomimetic Scaffolds Composed of Degradable Polymers to Enhance Bone Regeneration, Ben Zhang, Yingchao Su, Juncen Zhou, Donghui ZhuThe 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 Sumey Educating our Immune System: Hydrogel Platforms to Prevent Autoimmune Diabetes, Flavia Zisi Tegou Engineering the Ovarian Microenvironment 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, PhD1, Laura Marquardt, PhD1,2, Alice Wang2, Karen Dubbin, PhD2, Riley Suhar2, Michael Kratochvil, PhD2,3, Zachary Medress, MD1, Giles Plant, PhD1, Sarah Heilshorn, PhD21Stanford University School of Medicine, Stanford, CA, USA, 2Stanford University, Stanford, CA, USA, 3Stanford University SoM, Stanford, CA, USA	179. Biovesicle delivery of connexin 43 improves synchronous beating of hiPSC derived Cardiomyocytes, Nima Momtahan, PhD, Cody Crosby, PhDUniversity 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.1, D. Joshua Cohen, M.D.1, Dane Nielson1, Gloria Kim1, Mark Grinstaff, Ph.D.2, Anisha Joenathan, B.S.2, Brian Snyder, M.D., Ph.D.3, Zvi Schwartz, D.M.D., Ph.D.1,4, Barbara Boyan, Ph.D.1,51Virigina Commonwealth University, Richmond, VA, USA, 2Boston University, Boston, MA, USA, 3Harvard Medical School, Boston, MA, USA, 4University of Texas Health Science Center at San Antonio, San Antonio, TX, USA, 5Georgia 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, ScM1, Hannah Song, PhD1, Ankur Singh, PhD1,2, Krishendu Roy, PhD-11Georgia Institute of Technology and Emory University, Atlanta, GA, USA, 2Georgia Institute of Technology, Atlanta, GA, USA	195. UVA-activated, injectable bioadhesive composites with controlled mechanical properties, Ivan Djordjevic1, Terry Steele1, Gautama Wicaksono1, Francesco Baino21Nanyang Technological University, Singapore, Singapore, 2Politecnico 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, Mozhgan Shojaee, PhD, Bayan Saleh, Chris Bashur, PhDFlorida 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, PhDCase Western Reserve University, Cleveland, OH, USA			

CONCURRENT SESSION 7

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

Panel Discussion: 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
Moderators: Bingyun Li, PhD Jessica Amber Jennings, PhD	**Moderator: Stephanie Steichen, PhD**	**Moderators: Ashley Brown, PhD Shaunak Pandya, PhD**	**Moderators: Sarah Stabenfeldt, PhD Shelly Sakiyama-Elbert, PhD Kyle Lampe, PhD**	**Moderator: Ashish Kulkarni, PhD**	**Moderator: Anita Shukla, PhD**	**Moderators: Jeff Jacot, PhD Ngan Huang, PhD**
Invited Speaker: Thomas Webster, PhD	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	205. Engineering a highly elastic bioadhesive hydrogel for sealing soft and dynamic tissues, Mahsa Ghovvati, Sevana Baghdasarian, Avijit Baidya, Jharana Dhal, Nasim AnnabiUniversity of California, Los Angeles, Los Angeles, CA, USA	211. Effect of Hyaluronic Acid Molecular Weight on Viscoelastic Properties and Glioblastoma Invasion, Emily Carvalho, Sanjay Kumar, PhD, MDUniversity of California, Berkeley, Berkeley, CA, USA	218. Nanometer-Scale Assembly and High-Throughput Screening of Bispecific T Cell Engaging Cytokine (BiTEokine) Immunotherapies, Priscilla Do, PhD1, Lacey Perdue1, Curtis Henry, PhD2,3, Christopher Porter, MD2,3, Erik Dreaden, PhD1,2,31Georgia Institute of Technology, Atlanta, GA, USA, 2Emory School of Medicine, Atlanta, GA, USA, 3Winship Cancer Institute of Emory University, Atlanta, GA, USA	229. Targeted Delivery of a TGF-? Receptor II Inhibitor Using Multifunctional Nanogels to Control Cardiac Fibrosis after Heart Failure, Yu Dang1, Hong Niu, PhD1, Zhaobo Fan, PhD2, Ya Guan1, Ning Gao1, Jianjun Guan, PhD11Washington University in St. Louis, St. Louis, MO, USA, 2The Ohio State University, Columbus, OH, USA	234. Fabrication of Nanofiber Microspheres with Tunable Morphology via Gas Bubble-Mediated Co-axial Electrospray, Johnson John, PhD, Jingwei Xie, PhDUniversity of Nebraska Medical Center, Omaha, NE, USA
Invited Speaker: Prof. Ke Cheng	200. Polyurethane Shape Memory Polymer Foams with Off-the-Shelf Physical Blowing Agents, Natalie Petryk, Anand Vakil, Mary Beth Monroe, PhDSyracuse University, Syracuse, NY, USA	206. Role of Nitric Oxide-Releasing Glycosaminoglycans on In Vitro Wound Healing, Sara Maloney, Mark Schoenfisch, PhDUniversity of North Carolina at Chapel Hill, Chapel Hill, NC, USA	212. Stabilization of Chondroitinase ABC using Single Enzyme Nanoparticles for Spinal Cord Injury Repair, Shashank Kosuri1, Heloise Mugnier1, Matthew Tamasi1, Zachary Finkel1, Isabel Perez1, Li Cai, PhD1, Rene Schloss, PhD1, Martin Yarmush, PhD1, Adam Gormley, PhD1Rutgers University, Piscataway, NJ, USA	219. Comparison of Immunoisolation Platforms for Pancreatic Islet Transplantation: Polyethylene Glycol Conformal Coating, Alginate Single and Double Capsules, Teresa De Toni1,2, Aaron Stock1,2, Floriane Devaux1, Susan Safley3, Collin Weber3, Oscar Alcazar2, Noel Ziebarth1, Peter Buchwald2,4, Alice Tomei1,21Department 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	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 SelaruJohns Hopkins University, Baltimore, MD, USA	235. Mechanistic study of synthesizing tunable gelatin methacrylate (GelMA) bioinks for rapid and high-resolution stereolithography bioprinting, Hitendra Kumar1,2, Kabilan Sakthivel, PhD1, Mohamed Mohamed, PhD1, Emilie Boras3, Su Ryon Shin, PhD4, Keekyoung Kim, PhD1,21The 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
Invited Speaker: Joel Collier	201. 3D printing with silicone elastomer for biomedical applications, Ke Du, Timothy Hughes, Group LeaderCSIRO, Clayton, Australia	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, PhDWashington University in St. Louis, St. Louis, MO, USA	213. Human Schwann Cell Stimulation Through HA-CNT Nanofibers, Judy Senanayake, B.Tech, Harini Sundararaghavan, PhDWayne State University, Detroit, MI, USA	220. Real-time Imaging of Macrophage Immunotherapy Using a Novel Nitric Oxide Nanoreporter, Anujan Ramesh1,2, Sahana Kumar2, Anthony Brouillard2, Dipika Nandi3, Ashish Kulkarni1,2,3,41University of Massachusetts, Amherst, MA, USA, 2University of Massachusetts Amherst, Amherst, MA, USA, 3UMass Amherst, Amherst, MA, USA, 4Umass, Amherst, MA, USA	231. CD4 Targeted Nanoparticle Delivery of Eggmanone for T Cell Modulation in Autoimmunity, Christopher Haycook, MS1, Joseph Balsamo2, Evan Glass, MS1, Charles Williams, PhD3, Charles Hong, PhD3, Amy Major, PhD2, Todd Giorgio, PhD11Vanderbilt University, Nashville, TN, USA, 2Vanderbilt University Medical Center, Nashville, TN, USA, 3University of Maryland School of Medicine, Baltimore, MD, USA	236. Characterization of Degradation and Bioactive Growth Factor Release for 3D Printed Poly(Propylene Fumarate)-Based Constructs, Gerry Koons, Panayiotis Kontoyiannis, Mani Diba, PhD, Letitia Chim, David Scott, PhD, Antonios Mikos, PhDRice University, Houston, TX, USA

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 Hotaling21National Institute of Standards & Technology, Gaithersburg, MD, USA, 2National Institutes of Health, Bethesda, MD, USA	208. Rupture of Fibrin Clots: Structural and Thermodynamic Mechanisms, Valerie Tutwiler1,2, Farkhad 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, PhDNortheastern 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	232. Oxidation-responsive Magnetic Nanostructure-loaded Bicontinuous Nanospheres for Drug Delivery, Mallika Modak, Sharan Bobbala, Chamille Lescott, Yu-Gang 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, Deepti Rana, Vasileios Trikalitis, Vincent R. Rangel, Jeroen Rouwkema, PhDUniversity of Twente, Enschede, Netherlands
	203. Incompatibility of Biocompatibility Standards for Biologically-Sourced Biomaterials, Rae Ritchie, PhD, Tami Zeigler, Joanne Kuske, Martha Spicer, 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 Norbornene Hyaluronic Acid Microgels, Kassondra Hickey, Shannon Grassi, Jaimeson Veldhuizen, Fallon Fumasi, Medhi Nikkhah, 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 Abebayehu, PhD, Grace Bingham, Andrew Miller, Donald Griffin, PhD, Thomas Barker, PhDUniversity of Virginia, Charlottesville, VA, USA	233. 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, Vipuil Kishore11Florida Institute of Technology, Melbourne, FL, USA, 2Jointechlabs, Wheeling, IL, 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 Mefford21Poly-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			. Biomimetic Fibrin-Targeted and H2O2-Responsive Nanocarriers for Thrombus Therapy Yi Zhao 1, 2 , Ruosen Xie 1, 2 , Nisakorn Yodsanit1, 2 , Mingzhou Ye 1, 2 , Yuyuan Wang, Shaoqin Gong 1, 2*	239. Zinc in Composite Scaffolds Promotes Cell Growth and Mineralized Matrix Production, Jennifer Moy, Treena Arinzeh, PhDNew Jersey Institute of Technology, Newark, NJ, USA

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**
Moderator: **Daniel Harrington, PhD,** **Carmem S. Pfeifer, DDS, PhD**	**Moderator: Shijie Cao, PhD**	**Moderators: Qun Wang, PhD** **Kaitlin Bratlie, PhD**	**Moderator:** **Gulden Camci-Unal, PhD**	**Moderators:** **Fatemeh Ostadhossein, PhD** **Ming Su, PhD**	**Moderators:** **Michael Mitchell, PhD** **Omid Veiseh, PhD**	**Moderator:** **Guigen Zhang, PhD** **Bingyun Li, PhD**
Invited Speaker: Orlando Lopez	Invited Speaker: Rodney Ho, PhD	246. Gut organoids as a platform for evaluating delivery of nanoparticles to treat inflammatory bowel disease, Zahra Davoudi, Nathan Peroutka-Bigus, Bryan Bellaire, Albert Jergens, Michael Wannemuehler, Qun Wanglowa State University, Ames, IA, USA	252. Self-healing, Injectable Photo-Zwitterionic Hydrogels for Chronic Diabetic Wounds, Michael Stager1, Matthew Osmond1, James Bardill2, Carlos Zgheib2, Sudipta Seal3, Kenneth Liechty, MD2, Melissa Krebs11Colorado School of Mines, Golden, CO, USA, 2University of Colorado Anschutz Medical Campus, Aurora, CO, USA, 3University of Central Florida, Orlando, FL, USA	258. Investigating Oxidative Susceptibility of Peptoid-Based Materials for Selective Biosensing Applications, Hattie Schunk, Adrianne Rosales, PhD, Laura Suggs, PhDThe University of Texas at Austin, Austin, TX, USA	264. Intravitreal injectable hydrogel incorporating microgel for prolonged protein delivery, Si Min Lee1, Joo Young Son1, Hye Kyoung Hong2, Min Hee Ham2, Se Joon Woo, PhD2, Ki Dong Park, PhD11AJOU UNIVERSUTY, Suwon, Republic of Korea, 2Seoul National University Bundang Hospital, Seongnam, Republic of Korea	270. Acylation of electrospun chitosan membranes with medium chain fatty acids, Landon Choi1, Jessica Jennings, PhD1, Joel Bumgardner, PhD1, Tomoko Fujiwara, PhD2, Zoe Harrison1, Carlos Wells11University of Memphis, Memphis, TN, USA, 2(University of Memphis), Memphis, TN, USA
Invited Speaker: Dianne Rekow	240. Evaluating the Bacterial Biofilm Inhibition of a Novel Silorane-based Biomaterial for Orthopedic Applications, Grahmm Funk, BS, BS1, Elizabeth Menuey, PhD2, Michael Dold, BS1, Alexander Brown, BS1, Wyatt Osterhage, BS1, Kathleen Kilway, PhD2, Terence Mdff, PhD, MBA11University of Kansas Medical Center, Kansas City, KS, USA, 2University of Missouri-Kansas City, Kansas City, MO, USA	247. Photoinduced hydrogel network reorganization facilitates in situ modulation of intestinal organoid epithelial shape, Max Yavitt1,2, Michael Blatchley1,2, Peter Dempsey3, Kristi Anseth1,21University of Colorado Boulder, Boulder, CO, USA, 2BioFrontiers Institute, Boulder, CO, USA, 3University of Colorado Anschutz Medical Campus, Aurora, CO, USA	253. A Nanofiber-Hydrogel Composite to Treat Fistula in Crohn's Disease in a Porcine Model, Zhicheng Yao1,2,3, Ling Li4, Susan Gearhart5, Calvin Chang2,3,6, Jiayuan Kong2,3,6, Jeffrey Chao2,3,7, Alyssa Parian4, Florin Selaru4, Hai-Quan Mao1,2,3,61The Johns Hopkins University, Whiting School of Engineering, Department of Materials Science and Engineering, Baltimore, MD, USA, 2The Johns Hopkins University School of Medicine, Translational Tissue Engineering Center, Baltimore, MD, USA, 3The Johns Hopkins University, Institute for NanoBioTechnology, Baltimore, MD, USA, 4The Johns Hopkins University School of Medicine, Division of Gastroenterology and Hepatology, Baltimore, MD, USA, 5The Johns Hopkins University School of Medicine, Department of Surgery, Baltimore, MD, USA, 6The Johns Hopkins University, Whiting School of Engineering, Department of Biomedical Engineering, Baltimore, MD, USA, 7The Johns Hopkins University, Krieger School of Arts and Sciences, Department of Public Health Study, Baltimore, MD, USA	259. Stable Thermally Modulated Nanodroplet Ultrasound Contrast Agents, Anastasiia Vasiukhina, Javad Eshraghi, Adib Ahmadzadegan, Craig Goergen, PhD, Pavlos Vlachos, PhD, Luis Solorio, PhDPurdue University, West Lafayette, IN, USA	265. Targeting Peptide-Mediated Delivery of siRNAs into Ovarian Cancer Cells, Serena Gilmore, Timothy Samec, M.S., Anthony Hazelton, Angela Alexander-Bryant, PhDClemson University, Clemson, SC, USA	271. Effects of Zwitterionic Polymer Brush Density and Chain Length on Resisting Protein Adsorption, Julia King, Prabhleen Kaur, Buddy Ratner, PhDUniversity of Washington, Seattle, WA, USA

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 student1, Mary Beth Monroe, PhD1Syracuse 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, PhD1, Gary Luker, MD2, Hossein Tavana, PhD11The University of Akron, Akron, OH, USA, 2University 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 NemirajDePuy Synthes, Warsaw, IN, USA	260.Non-Viral Nanocarriers for CRISPR-Based Genome Editing Tool Delivery, Yuyuan Wang, PhD, Shaoqin Gong, PhDUniversity of Wisconsin-Madison, Madison, WI, USA	266.Using vesicle lipid domains to enhance liposomal TRAIL, Timothy Vu, Justin Peruzzi, Sraeyes Sridhar, Milan Mrksich, PhD, Neha Kamat, PhDNorthwestern University, Evanston, IL, USA	272.Sub-Nano to Nanoscale Wear of Titanium Oxide-Metal Surfaces Using Atomic Force Microscopy, Yangping Liu, Jeremy GilbertClemson 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, PhDBrown University, Providence, RI, USA	249.A Hyaluronic Acid-Based Hydrogel Culture Platform for iPSC-derived Midbrain Neuronal Culture, Ze Zhong Wang, PhD1, Jesse Liang, MS1, Zhan Shu, PhD1, Samuel Sances, PhD2, Clive Svendsen, PhD2, Nigel Maidment, PhD1, Stephanie Seidlits, PhD11University of California, Los Angeles, Los Angeles, CA, USA, 2Cedars-Sinai Board of Governors Regenerative Medicine Institute, Los Angeles, CA, USA	255.Interlinked PEG-4MAL Microgels for Rapid Immune Cell Migration, Adrienne Widener, Edward PhelpsUniversity of Florida, Gainesville, FL, USA	261. Effect of physicochemical properties of polymeric nanoparticles on in vitro and in vivo toxicity, Binapani Mahaling, PhD1,2,3, Dadi A Srinivasa Rao, MPharm1, Namrata Baruah, MS1, Nadim Ahamad, PhD1, Sri Sivakumar, PhD2, Erin Lavik, DSc3, Dhirendra S Katti, PhD11Indian Institute of Technology Kanpur, Department of Biological Sciences and Bioengineering, Kanpur, India, 2Indian Institute of Technology Kanpur, Department of Chemical Engineering, Kanpur, India, 3University of Maryland Baltimore County, Baltimore, MD, USA	268.The Development of Lubricated Drug-Eluting Composite Coatings for Endotracheal Tubes, Solaleh Miar1, Flavia Fernandes1, Yamuna Pillai1, Gregory R Dion2, Joo L Ong1, Rena Bizios1, Teja Guda11The University of Texas at San Antonio, San Antonio, TX, USA, 2U.S. Army Institute of Surgical Research, San Antonio, TX, USA	273.Tunable Membrane Modification of Milk Exosomes for Mucus Penetration, Chenzhen Zhang, Bachelor, Armin Vedadghavami, Bachelor, Matthew Warren, High scool, Ambika Bajpayee, PhDNortheastern University, Boston, MA, USA
	243.Engineered Fibrin Nanoparticles for Efficient Drug Delivery to Biofilms, Grant Scull, B.S.1,2, Ashley Brown, PhD1,2, Lauren Schnabel, DVM, PhD2, Jessica Gilbertie, MS, DVM, PhD21University of North Carolina at Chapel Hill, Chapel Hill, NC, USA, 2North Carolina State University, Raleigh, NC, USA	250.Micropattern-Guided Cardiac Organoid Production for Developmental Toxicity Screening, Plansky Hoang, PhD1,2, Andrew Kowalczewski1,2, Shiyang Sun1,2, Jeffrey Amack, PhD2,3, Zhen Ma, PhD1,21Syracuse University, Syracuse, NY, USA, 2BioInspired Syracuse Institute for Material and Living Systems, Syracuse, NY, USA, 3State University of New York Upstate Medical University, Syracuse, NY, USA	256.Electrospun chitosan-elastin for improved wound healing, Alex Bryan, BS BME, Joel Bumgardner, PhD11The University of Memphis, Memphis, TN, USA	262. Fabrication of Hydrogel-Coated Gold Nanoshells as a Biosensor for Protein Biomarker Quantification, Andrew Murphy1,2, Marissa Wechsler2,3, Kiana Bahrami3, Catherine Ludolph1, Ayushi Sahu3, H.K.H Jocelyn Dang3, Nicholas Peppas1,2,3,4,51Department of Chemical Engineering, Austin, TX, USA, 2Institute for Biomaterials, Drug Delivery, and Regenerative Medicine, Austin, TX, USA, 3Department of Biomedical Engineering, Austin, TX, USA, 4College of Pharmacy, Austin, TX, USA, 5Department of Surgery and Perioperative Care, Austin, TX, USA		274.Evaluation of Electrosprayed Chitosan Coatings with Incorporated Calcium Phosphate Nanoshells, Andrew Watson, Joel Bumgardner, PhD, Ranganathan Gopalakrishnan, PhD, Tomoko Fujiwara, PhD, Sanjay Mishra, PhDUniversity of Memphis, Memphis, TN, USA
		251. Microstructured hydrogels to guide self-assembly and scalable growth of lung alveolar epithelial organoids, Claudia Loebel, MD PhD1, Leonardo Cardenas, PhD2, Aaron Weiner3, Andrew Vaughan, PhD3, Edward Morrisey2, Jason Burdick, PhD11Penn Center for Pulmonary Biology, University of Pennsylvania, Phildelphia, PA, USA, 2School of Veterinary Medicine, University of Pennsylvania, Philadelphia, PA, USA, 3University of Pennsylvania, Philadelphia, PA, USA	27. Starch-Based Shape Memory Polymers for Crohn's Fistula Healing, Henry Beaman, Priya Ganesh, Mary Monroe, PhD	263.In Situ Magnetic Relaxation Localization and Hydrogel Coating of a Nanomaterial Biosensor Device for Continuous Biochemical Surveillance, Richard Murdock, BSME1,2, Michael Cima, PhD1,21Massachusetts Institute of Technology, Cambridge, MA, USA, 2Koch Institute for Integrative Cancer Research, Cambridge, MA, USA		275.Quantifying Crosslinking Density of Photopolymerized Hydrogels with NMR, Jonathan Zatorski, Emma Parker, Jeff Ellena, PhD, Rebecca Pompano, PhDUniversity 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 Mulvany1, Sara McMahan2, Jiazhu Xu, MS2, Narges Yazdani1, Rebecca Willits, PhD1, Jun Liao, PhD2, Ge Zhang, MD/PhD1, Yi Hong, PhD2 1 The University of Aktron, Akron, OH, USA, 2University 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 Dewey1, Alan Collins, PhD2, Vasiliki Kollipoulos1, Aleczandria Tiffany1, Rachel Whitaker, PhD2, Brendan Harley, Sc.D1,21University of Illinois at Urbana-Champaign, Urbana, IL, USA, 2Institute of Genomic Biology, Urbana, IL, USA

303 Absorption of a Novel Antimicrobial Peptide into Orthopedic Bone Cement, Grahmm Funk, BS, BS1, Kyle Boone, PhD2, Candan Tamerler, PhD2, Terence McIff, PhD, MBA11University of Kansas Medical Center, Kansas City, KS, USA, 2University 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, MS1, Joel Bumgardner, PhD1, Tomoko Fujiwara, PhD2, Daniel Baker, PhD2, Jessica Jennings, PhD11The University of Memphis, Memphis, TN, USA, 2University 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 Aronson1, Riccardo Gottardi, PhD1,2,3,4,1University of Pennsylvania, Philadelphia, PA, USA, 2Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA, USA, 3Children's Hospital of Philadelphia, Philadelphia, PA, USA, 4Ri.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 Bredikhin1, Christopher Gross2, Igor Luzinov1, Alexey Vertegel1, 1Clemson University, Clemson, SC, USA, 2Medical University of South Carolina, Charleston, SC, USA

310 A Dual-Responsive Nanoparticle for Treating Antimicrobial Resistant Infections, Mingzhou Ye1, Yi Zhao1, Yuyuan Wang1, Miao Zhao2, Nisakorn Yodsanit1, Ruosen Xie1, David Andes2, Shaoqin Gong1, 1University of Wisconsin-Madison, Madison, WI, USA, 2University 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, PhD1, Milan Riddick1, Dina Moustafa, PhD2, Joanna Goldberg, PhD2, Nael McCarty, PhD2, Andres Garcia, PhD1, 1Georgia Institute of Technology, Atlanta, GA, USA, 2Emory University, Atlanta, GA, USA

DRUG DELIVERY SIG

312 Repurposing Biodegradable Tissue Engineering Scaffolds For Localized Chemotherapeutic Delivery, Erika Cyphert1,2, Monika Bil, PhD2, Horst von Recum, PhD1, Wojciech Święszkowski, PhD2, 1Case Western Reserve University, Cleveland, OH, USA, 2Warsaw University of Technology, Warsaw, Poland

313 Combinatorial Drug Formulation with Random Heteropolymers Prepared by Polymer Automation, Rahul Upadhya1, Ashish Punia, PhD2, Mythili Kanagala1, Lina Liu, PhD2, Timothy Rhodes, PhD2, Matthew Lamm, PhD2, Adam Gormley, PhD1, 1Rutgers, the State University of New Jersey, Piscataway, NJ, USA, 2Merck & 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, PhD1,2, Maleen Cabe, MS1,2, Hope Nowak2,3, Kelly Langert, PhD1,2, 1Loyola University Chicago, Maywood, IL, USA, 2Edward Hines, Jr., VA Hospital, Hines, IL, USA, 3Grinnell 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, PhD1,2, Victoria Lai, M.S.1, Sarah Neshat1, Jimmy Pitingolo1, 1Johns Hopkins University School of Medicine, Baltimore, MD, USA, 2Johns Hopkins University, Baltimore, MD, USA

RAPID-FIRE PRESENTATIONS (CONTINUED)

317 Ultra-High Viscous Alginate and the Development of Future Cochlear Implants, Verena Scheper, PhD1,2, Jana Schwieger, PhD1,2, Thomas Rau, PhD1,2, Thomas Lenarz, PhD1,2, 1Hannover Medical School, Hannover, Germany, 2German 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 Oldenkamp1,2, Divya Gupta2,3, Isabel De La Fuente1,2, Avha Mohanty1,2, Nicholas Peppas1,2,3,4,5, 1University of Texas at Austin, McKetta Department of Chemical Engineering, Austin, TX, USA, 2University of Texas at Austin, Institute for Biomaterials, Drug Delivery, and Regenerative Medicine, Austin, TX, USA, 3University of Texas at Austin, Department of Biomedical Engineering, Austin, TX, USA, 4University of Texas at Austin, Department of Surgery and Perioperative Care, Dell Medical School, Austin, TX, USA, 5University 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, BS1,2, Katherine Brempelis, PhD2, James Matthaei, PhD2, Kate Montgomery, PhD1, Selvi Srinivasan, PhD1, Debashish Roy, PhD1, Shannon Kreuser, BS2, John Chiefari, PhD3, Courtney Crane, PhD2, Patrick Stayton, PhD1, 1University of Washington, Seattle, WA, USA, 2Seattle Children's Research Institute, Seattle, WA, USA, 3CSIRO Manufacturing, Clayton South MDC, Australia

322 RhMG53 delivered by a ROS-scavenging hydrogel promotes diabetic wound healing by regulating STAT3 signaling, HONG NIU, PhD1, Haichang Li, PhD2, Ya Guan, MS1, Jianjie Ma, PhD2, Jianjun Guan, PhD1, 1Washington University in St. Louis, St Louis, MO, USA, 2The 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, PhD1,2, Alex Hillsley, BS3, Sachin Kumar, PhD2, Sapun Parekh, PhD2, Adrianne Rosales, PhD3, Janet Zoldan, PhD2, 1Southwestern University, Georgetown, TX, USA, 2The University of Texas at Austin, Biomedical Engineering, Austin, TX, USA, 3The 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, Multiphasic Dressing for Diabetic Foot Ulcers, Elizabeth Gianino, Jordon Gilmore, PhD, Clemson University, Clemson, SC, USA

329 Dermal Full Thickness Wound Healing: Equine Amniotic Membrane Versus Commercially Available Xenografts, Ryanne Early, MS1, Rachel Depa1, Harold Aberman, DVM, MSE1,2, 1Seed Biotech, Inc., Dallas, TX, USA, 2Purdue University, Sewalls Point, FL, USA

330 Engineering a Synthetic Macroencapsulation Device for the Treatment of Type One Diabetes, Michelle Quizon, BS1, Graham Barber, BS1, Cherie Stabler, PhD2, Andrés García, PhD1, 1Georgia Institute of Technology, Atlanta, GA, USA, 2University 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, PhD1,2, Marilia CestariPhD, PhD1, Bárbara Caldas, PhD1, Dyenefer Fonseca1, Rodolfo Balbinot1, Danielle Lazarin-Bidóia1, Issei Otsuka, PhD3, Celso Nakamura1, Redouane Borsali, PhD3, 1Maringa State University, Maringa, Brazil, 2Federal University of Piaui, Teresina, Brazil, 3University of Grenoble Alpes, Grenoble, France

336 Mechanical Properties of Chitosan/Starch/Jatropha dioca Composites for Skin Engineering, Diego Olivares-Ochoa, BS1, Amanda Carrillo-Castillo1, Monica-Elvira Mendoza-Duarte1, Santos-Adriana Martel-Estrada2, 1Universidad Autónoma de Ciudad Juárez/IIT, Ciudad Juarez, Mexico, 2Universidad Autónoma de Ciudad Juárez/IADA, Ciudad Juarez, Mexico

337 Microscopic local stiffening in supramolecular hydrogel network expedites stem cell mechanosensing in 3D, Weihao Yuan1, Haixing Wang2, Chao Fang, PhD3, Yongkang Yang2, Xingyu Xia3, Yuan Lin, PhD3, Gang Li, PhD2, Liming Bian, PhD1, 1The Chinese University of Hong Kong, Hong Kong, Hong Kong, 2Prince of Wales Hospital, The Chinese University of Hong Kong, Hong Kong, Hong Kong, 3The University of Hong Kong, Hong Kong, Hong Kong

338 One-step Harvest and Delivery of Honeycomb-shaped Microtissues Using Temperature-responsive Hydrogel, Se-jeong Kim1,2, Heungsoo Shin, PhD1,2, 1Hanyang University, Seoul, Republic of Korea, 2BK21 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.S1, Regina Giovanni1, Mathew Mathew, PhD1, Sarah Hagarty, MD2, Divya Bijukumar, PhD1, Mrignayani Kotecha3, 1University of Illinois at Chicago, Rockford, IL, USA, 2OSF Medical Center, Rockford, IL, USA, 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, PhD1, Simona Radice, PhD1, Deborah Hall, Bsc1, Joshua Jacobs, Md1, Mathew Mathew, PhD2, Robin Pourzal, PhD1, 1Rush University Medical Center, Chicago, IL, USA, 2University of Illinois Medical College, Rockford, IL, USA

345 Impacts of Conditioned Medium on Tenocyte and Fibroblast Growth Within Porous Titanium Scaffolds, Paula Dietz1, Therese Bou-Akl, PhD1,2, Rishi Chatterji1, Joseph Seta1, Weiping Ren, PhD1,2, David Markel1,2, 1Ascension Providence Hospital, Southfield, MI, USA, 2Wayne 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-Chamorro1, Sandra Hernández-Escobar1, Yadav Wagley, PhD2, Neal Hammer, PhD1, Parker Acevedo2, Kurt Hankenson, DVM, PhD2, Xanthippi Chatzistavrou, PhD1, 1Michigan State University, Lansing, MI, USA, 2University 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 Nielson1,2, Sujee Jeyapalina, PhD1,2, Jill Shea, PhD1,2, James Beck, PhD1,2, 1University of Utah, Salt Lake City, UT, USA, 2Department 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 Tiffany1, Marley Dewey1, Danielle Gray, PhD1, Toby Woods, PhD1, Kiran Subedi, PhD2, Brendan Harley, PhD1, 1University of Illinois at Urbana-Champaign, Champaign, IL, USA, 2North 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 Gülseren, 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, MS1,2, Valentim Barao3, Cortino Sukotjo1, Lyndon Cooper1, Mathew Mathew, PhD1, 1University of Illinois-Chicago, Chicago, IL, USA, 2Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia, 3University of Campinas, Piracicaba, Brazil

356 A Novel Synthesis Method of Carbide Derived Carbon (CDC) Surface Modification for Hip Implants, Yani Sun1, Kai-yuan Cheng, PhD2, Mathew Mathew, PhD1,2, Michael McNallan, PhD1, 1University of Illinois at Chicago, Chicago, IL, USA, 2Univerisity of Illinois College of Medicine at Rockford, Rockford, IL, USA

357 Machine learning guided biomaterials development, Ying Mei, PhD1, Sophia Silver1, Jianjun Hu, PhD2, 1Clemson University, Charleston, SC, USA, 2University 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

BIOMATERIALS FOR REGENERATIVE ENGINEERING

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, Efren 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

361 Estimation of Dual Simvastatin and Raspberry 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, PhD1, Richard Smith, PhD2, Joel Bumgardner, PhD1, 1University of Memphis, Memphis, TN, USA, 2University 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 Battistoni1, Claire Kilmer, PhD1, Tanaya Walimbe, PhD2, Alyssa Panitch, PhD1,2, Julie Liu, PhD1, 1Purdue University, West Lafayette, IN, USA, 2UC Davis, Davis, CA, USA

363 Development of PolyHIPE Autograft Extenders for Improved Bone Regeneration, Dana Jenkins, MSE1, Elizabeth Cosgriff-Hernandez, PhD1, Dave Laverty2, Brian Saunders3, 1The University of Texas at Austin, Austin, TX, USA, 2University of Texas at Austin, Austin, TX, USA, 3Texas 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 Deshpande1, Raeesa Sayyad1, Swati Shukla1, Anuya Nisal2, Premnath Venugopalan2, 1Serigen Mediproducts Pvt. Ltd., Pune, India, 2CSIR-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, PhD1, Yu Seon Kim, PhD1, Gerry Koons1, Johnny Lam, PhD2, Sergio Barrios1, Adam Navara1, Virginia Xie1, Emma Watson, PhD1, Brandon Smith, PhD1, Hannah Pearce1, Elysse Orchard, DVM, Jeroen van den Beucken, PhD, John Jansen, DDS, PhD, Antonios Mikos, PhD1, 1Rice University, Houston, TX, USA, 2Food and Drug Administration, Silver Spring, MD, USA

369 Multicellular spheroids incorporating osteoinductive and ROS scavenging synthetic fibers with biomineral coating "Hayeon Byun1,2, Heungsoo Shin1,2, 1Hanyang university, Seoul, Republic of Korea, 2Hanynag university, Seoul, Republic of Korea

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

CARDIOVASCULAR BIOMATERIALS SIG

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 Univerisity, 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

RAPID-FIRE PRESENTATIONS (CONTINUED)

IMMUNE ENGINEERING SIG

389 Textile/Hydrogel Composite Vascular Graft Attenuates Inflammatory Macrophage Response while Ameliorating Mechanical Performance "Fan Zhang1, Ozan Akkus, PhD2, Mani Daneshmand3, Martin King1,4, 1North Carolina State University, Raleigh, NC, USA, 2Case Western Reserve University, Cleveland, OH, USA, 3Emory University, Atlanta, GA, USA, 4Donghua 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 Mangal1, Sahil Inamdar1, Xiaojin Shi1, Marion Curtis, PhD2, Haiwei Gu, PhD1, Abhinav Acharya, PhD1, 1Arizona State University, Tempe, AZ, USA, 2Mayo 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 Li1, Anthony Frei, PhD1, Allison Bayer, PhD2, Cherie Stabler, PhD1, 1University of Florida, Gainesville, FL, USA, 2University 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, PhD1, Srinivasa Reddy Mothe, PhD2, Alexander William Jackson, Ph.D2, Parijat Kanaujia, PhD2, Jaclyn Lee Min, BEng1, Hui Min Tan, BEng1, Dang Tri Nguyen, MEng1, Danson Kwong Jia Ye, BEng1, Praveen Thoniyot, PhD2, TRAM THUY DANG, PhD1, 1Nanyang Technological University, Singapore, Singapore, 2Agency 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 Becker1, Leeana Peters2, Todd Brusko, PhD2, Edward Phelps, PhD1, 1University of Florida, Gainesville, FL, USA, 2University 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, PhD1, Anne Lyons1, Ryan Middleton, PhD1, Mark Hepokoski, MD2, Karen Christman, PhD1, 1University of California San Diego, La Jolla, CA, USA, 2University of California San Diego Vc-Health Sciences, La Jolla, CA, USA

400 3D Printed Barrier Construct for Bone Engineering In Systemic Inflammatory Conditions, Zeena Qiryaqoz1, Robert Swenson2, Liu Hong2, Kim Brogden2, Adil Akkouch1, 1Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI, USA, 2Iowa Institute for Oral Health Research, Iowa City,, IA, USA

DRUG DELIVERY SIG

401 Ultrasound-Mediated Drug Release from Pegylated and Targeted Liposomes, Nahid Awad, OHD1, VInod Paul1, Mohammad Mahmound, MS- CHE1, Nour AlSawaftah, MS-CHE1, Paul Kawak, MS-CHE1, Mohammad AlSayah, PhD2, Ghaleb Husseini, PhD1, 1American University of Sharjah, Sharjah, United Arab Emirates, 2AUS, Sharjah, United Arab Emirates

402 Ultrasound-Mediated Drug Release from Transferrin-PEG Liposomes, Ghaleb Husseini1, Nour AlSawaftah1, Nahid Awad1, Vinod Paul1, Paul Kawak1, Mohammad AlSayah2, 1American University of Sharjah, Sharjah, United Arab Emirates, 2AUS, Sharjah, United Arab Emirates

403 Drug Release from Pegylated and Targeted Liposomes Using High-frequency Ultrasound, Ghaleb Husseini, Nour AlSwaftah, Vinod Paul, American University of Sharjah, Sharjah, United Arab Emirates

404 Ultrasound mediated release from hyaluronic acid targeted liposomes, Ghaleb Husseini1, Safa Ben Daya1, Nahid Awad1, Vinod Paul1, Mohammad Alsayah2, 1American University of Sharjah, Sharjah, United Arab Emirates, 2American Univeristy of Sharjah, Sharjah, United Arab Emirates

405 In Vitro Cell Work of Two Types of Targeted Nanoparticles with Ultrasound Triggering, Ghaleb Husseini, Waad Abu Watfa, Debasmita Mukhopadhyay, Nour Alsawaftah, 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, Syracsue, NY, USA

RAPID-FIRE PRESENTATIONS (CONTINUED)

407 Light-Triggered Immune Activation by Photolabile PEG-Modified Cytokines, Lacey Perdue1, Priscilla Do, PhD1, Khalid Salaita, PhD1, Gregory Lesinski, PhD, MPH2, Christopher Porter, MD2,3, Erik Dreaden, PhD1,2,3, 1Georgia Institute of Technology and Emory University, Atlanta, GA, USA, 2Winship Cancer Institute of Emory University, Atlanta, GA, USA, 3Emory 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.S1, Rizwan Ahmad, PhD2, Balawant Kumar2, Amar Singh, PhD2, Hemachand Tummala, PhD1, 1South Dakota State University, Brookings, SD, USA, 2University 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, PhD1,2, Camila de Freitas1, Adley Rubira, PhD1, Elza Kimura, PhD1, 1Maringa State University, Maringa, Brazil, 2Federal University of Piaui, Teresina, Brazil

412 Thermo-reversible Hydrogels as Injectable Localized Protein Delivery System for Applications in Central Nervous System, Tuan Nguyen, PhD1, Chao Pan, PhD1,2, Leon Teo3, Mischa Mueller1, James Bourne3, Timothy Hughes1, Johan Basuki1, 1The Commonwealth Scientific and Industrial Research Organisation (CSIRO), Clayton South, Australia, 2University of Science and Technology of China, Hefei, China, 3Australian 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.Sc1, Sanat Dash, M. Tech1, Amit Manhas, PhD2, Janani Radhakrishnan, PhD1, Kumaravelu Jagavelu, PhD2, Rama Verma, PhD1, 1Indian Institute Of Technology, Chennai, India, 2CSIR- Central Drug Research Institute, Lucknow, India

417 Human-Derived 3D Microvessels to Study Pulmonary Vascular Barrier Function, Crescentia Cho1,2, Elizabeth Doherty1,2, Leigh-Ann Antczak3, Rebecca Heise, PhD3, William Polacheck, PhD1,2, 1University of North Carolina Chapel Hill, Chapel Hill, NC, USA, 2North Carolina State University, Raleigh, NC, USA, 3Virginia 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 Vascularization "Oscar Abilez, MD, PhD1, Huaxiao Yang, PhD1,2, Kitchener Wilson, MD, PhD1, Lei Tian, PhD1, Yan Zhuge, PhD1, Fangjun Jia, PhD1, Hung-Ta Wo, MD1, Bryan Aldana, BS1, Christopher Zarins, MD1, Joseph Wu, MD, PhD1, 1Stanford University, Stanford, CA, USA, 2University of North Texas, Denton, TX, USA

420 Aortic Adventitia-Derived Extracellular Matrix Hydrogel Enhances Contractility of Pericytes, Kaitlyn Wintruba1, Jennifer Hill1, Tara Richards1, Marie Billaud2, Thomas Gleason2, Julie Phillippi1, 1University of Pittsburgh, Pittsburgh, PA, USA, 2Brigham 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 Roeder1,2, James Nagle1, Doug Snell2, 1University of Notre Dame, Notre Dame, IN, USA, 2HAPPE 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-Floreani, 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

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

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

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 Prabhath1,2, Caldon Esdaille1, Varadraj Vernekar, Ph.D.1, Amir Lebaschi, M.D.1, Tannin Schmidt, Ph.D.2, Stavros Thomopoulos, Ph.D.3, Nathaniel Dyment, Ph.D.4, Alix Deymier, Ph.D.2, Eckhard Weber, Ph.D.5, Cato Laurencin, M.D., Ph.D.1,2, 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

ENGINEERING CELLS AND THEIR MICROENVIRONMENTS SIG

441 Sericin-based gadolinium nanoparticles as synergistically enhancing contrast agents for pH-responsive and tumor targeting magnetic resonance imaging, Zixuan Huang, B.S.Med1, Yejing Wang, PhD1, Jun Wu2, Huawei He1, Qingyou Xia1, 1Southwest University, Chongqing, China, 2North Sichuan Medical College, Chengdu, China

442 Orthopedic Cements as Carriers of Doxorubicin for Local Chemotherapy Treatment, Grahmm Funk, BS, BS1, Elizabeth Menuey, PhD2, Zachary Denton, BS1, Dalan Pittz, BS1, Kathleen Kilway, PhD2, Terence McIff, PhD, MBA1, 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 Chang1, Chien-Chi Lin, PhD1,2,3, 1Purdue University, West Lafayette, IN, USA, 2Indiana University Melvin and Bren Simon Comprehensive Cancer Center, Indianapolis, IN, USA, 3Indiana University-Purdue University Indianapolis, Indianapoils, 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 Libring1, Angel Enriquez1, Tyler Field2, Julian Jimenez1, Taeksang Lee3, Michael Wendt, PhD4, Sarah Calve, PhD1, Adrian Buganza Tepole, PhD3, Hyowon Lee, PhD1, Luis Solorio, PhD1, 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, PhD1, Alberto Guerra, PhD MD2, Oscar Yeung, PhD1, Kwan Man, PhD1, 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 Risser1, Dong Li2, Samuel Sung1, Kara Spiller1, 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 Bonteanu1, Divya Iyer, PhD2, Peter Shepherd, MSc3, Rick Kittles, PhD4, Nora Navone, MD, PhD3, Dwayne Dexter, PhD2, Kristin Bircsak, PhD2, Daniel Harrington, PhD5, 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

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, PhD1, Matthew Arkenberg2, Chien-Chi Lin, PhD1,2, 1Indiana University-Purdue University Indianapolis, Indianapolis, IN, USA, 2Purdue 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

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 Mendes1, David Howell1, Colette Abbey1, Malea Murphy2, Holly Gibbs3, Alvin Yeh3, Kayla Bayless1, Sarah Bondos1, 1Texas A&M Health Science Center, Bryan, TX, USA, 2Texas A&M HSC, Bryan, TX, USA, 3Texas A&M University, College Station, TX, 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 Casella1, Alyssa Panitch, PhD1,2, J. Kent Leach, PhD1,2, 1University of California, Davis, Davis, CA, USA, 2UC 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, Seyedsina 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 Tolbert1, Diana Hammerstone1, Nathaniel Yuchimiuk2, Lesley Chow1,2, 1Lehigh University, Bethlehem, PA, USA, 2Lehigh 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 Somasekhar1, Nicholas Huynh1, Ye Zhang, PhD2, Kenia Nunes, PhD1, Kunal Mitra, PhD1, Vipuil Kishore, PhD1, Chris Bashur, PhD1, 1Florida Institute of Technology, Melbourne, FL, USA, 2NASA, KSC, Cape Canaveral, FL, USA

475 Double Network Hydrogels with Comb Architecture to Achieve Reduced Mesh Sizes, Ping Dong1, Anna Means, PhD2, Bradley Schott1, Gerard Coté, PhD1,3, Melissa Grunlan, PhD1,2,3,4, 1Biomedical Engineering, Texas A&M University, College Station, TX, USA, 2Material Science and Engineering, Texas A&M University, College Station, TX, USA, 3Center for Remote Health Technologies and Systems, Texas A&M University, College Station, TX, USA, 4Chemistry, 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 Jons1, Rebecca Booth, PhD1, Lauren Kustigan, PhD1, Xue Gong1, Hays Rye, PhD1, Shounak Banerjee2, Kacey Kilpatrick2, Chris Bystroff, PhD2, Sarah Bondos, PhD1, 1Texas A&M University, College Station, TX, USA, 2Rensselaer Polytechnic Institute, Troy, NY, USA

478 Shape-morphing Materials for Deployable Intracortical Probes, Rashed Rihani, PhD1, Joseph Pancrazio, PhD1, Taylor Ware, PhD2, Mahjabeen Javed2, 1University of Texas at Dallas, Richardson, TX, USA, 2Texas A&M University, Bryan, TX, USA

479 Immobilization of Antibodies on Solution Blow Spun Mats for Biosensing Applications, Shreya Thammana, Craig Miller, Mark Livingstone, Jordon Gilmore, Clemson University, Clemson, SC, 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 paradiso1,2, stefania lenna1, stefano serpelloni1, francis lewis2, francesca taraballi1,1Houston Methodist Research Institute, houston, TX, USA, 2Swansea 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, PhD1, Andrea Gonzalez Rodriguez, PhD1, Kelly Speckl1, Douglas Peters, PhD1, Cierra Walker, MS1, Brian Aguado, PhD1, Joseph Grim, PhD1, Robert Weiss, MD2, Kristi Anseth, PhD1,1University of Colorado Boulder, Boulder, CO, USA, 2University of Iowa, Iowa City, IA, 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 Tavana, 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 Tomaszewski1, Daniel Matera2, Brendon Baker, PhD1, Ariella Shikanov, PhD1,3,4, 1University of Michigan, Ann Arbor, MI, USA, 2U of Michigan, Ann Arbor, MI, USA, 3Univ of Michigan, Ann Arbor, MI, USA, 4U 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, PhD1, Melissa van Velthoven, PhD2, Paul Kouwer, Asst Prof2, Jan-Paul Roovers, Prof1, Zeliha Güler Gokce, Post-Doc1, 1Amsterdam University Medical Center, Amsterdam, Netherlands, 2Radboud University, Nijmegen, Netherlands

487 Implantation of human ovarian cortex tissue encapsulated in immune-isolating poly-ethylene glycol-based capsules, Margaret Brunette1, James Day, PhD1, Hadrian Kinnear2,3, Prianka Hashim4, Marilia Cascalho, PhD5,6, Ariella Shikanov, PhD1,2,4, 1University of Michigan, Ann Arbor, MI, USA, 2UMichigan, Ann Arbor, MI, USA, 3U of Michigan, Ann Arbor, MI, USA, 4University of Mich., Ann Arbor, MI, USA, 5U of Mich., Ann Arbor, MI, USA, 6University_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

BIOINTERFACES SIG

489 Treatment of Oral Mucositis through Curcumin Poly(beta amino ester) Microparticles, Kelley Wiegman1, Carolyn Jordan2, Brock Howerton2, Zach Hilt1,2, Thomas Dziubla1,2, 1University of Kentucky, Lexington, KY, USA, 2Bluegrass 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 Fellow1, Julia Kurylec1, Santiago Orrego, Assistant Professor1,2, 1Kornberg School of Dentistry, Temple University, Philadelphia, PA, USA, 2College 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 Wright1, Victoria Stagnaro1, Kate Johnson1, Jianren Mao, MD, PhD2, Zerong You, PhD2, Christopher Tison, PhD1, Lauren Costella, ME1, 1Luna Innovations Incorporated, Roanoke, VA, USA, 2Massachusetts 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 Bednarke1, Kyle Reeser, PhD2, Daniel Eversole, PhD3, Seth Pantanelli, MD4, Amber Doiron, PhD5, 1University of Vermont, Burlington, VT, USA, 2Binghamton University, Binghampton, NY, USA, 3Everspectra, Boston, MA, USA, 4Penn State Milton S. Hershey Medical Center, Hershey, PA, USA, 5the University of Vermont, Burlington, VT, USA

497 Magnetic drug screening nanoplatform 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 McCarthy1, Lorenzo Saldana1, Daniel Ackerman2, Joshua Santarpia, PhD, Jingwei Xie, PhD1, 1University of Nebraska Medical Center, Omaha, NE, USA, 2National 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 Simpson1,2, Emily Mihalko1,2, Ashley C. Brown, PhD1,2, 1University of North Carolina at Chapel Hill, North Carolina State University, Raleigh, NC, USA, 2North 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, PhD1,2, Kyung Sung, PhD3, Ngan Huang, PhD, FAHA1,2, 1Stanford University, Palo Alto, CA, USA, 2Veterans Affairs Palo Alto Health Care System, Palo Alto, CA, USA, 3Food and Drug Administration, Silver Spring, MD, USA

505 Profiling the Responsiveness of Focal Adhesions of Human Cardiomyocytes to Extracellular Dynamic Nano-Topography, Huaiyu Shi1,2, Shiyang Sun1,2, Chenyan Wang1,2, James Henderson, PhD1,2, Zhen Ma, PhD1,2, 1Department of Biomedical & Chemical Engineering, Syracuse, NY, USA, 2BioInspired Syracuse Institute for Materials and Living Systems, Syracuse, NY, USA

506 Microcontact Printing on Shape Memory Polymers for Altering Cell Morphology, Fred Donelson, MSE1, Jakub Kochanowski1, Christopher Turner, PhD2, James Henderson, PhD1, 1Syracuse University, Syracuse, NY, USA, 2SUNY 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-Arrington1, Hao Zhang, PhD2, Yufeng Dong, Phd, MD2, Mary Caldorera-Moore, PhD1, 1Louisiana Tech University, Ruston, LA, USA, 2Louisiana State University Health Sciences Center, Shreveport, LA, USA

509 Engineering Injectable Synthetic ECM-Based Hydrogels as Vehicles for Retinal Progenitor Cells Transplantation, Peng Zhao1, Joydip Kundu1, Ashav Desai1, Sidi Bencherif1, Michael

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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 Purkayastha1, Kavya Pendyala2, Ayush Saxena3, Hesamedin Hakimjavadi4, Srikar Chamala4, Purushottam Dixit4,5, Charles Baer3,4, Tanmay Lele1,2, 1Department of Chemical Engineering, Texas A&M University, College Station, TX, USA, 2Department of Biomedical Engineering,Texas A&M University, College Station, TX, USA, 3Department of Biology, University of Florida, Gainesville, FL, USA, 4University of Florida Genetics Institue, Gainesville, FL, USA, 5Department of Physics, University of Florida, Gainesville, FL, USA

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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

520 Electrospun Hydrogel Nanofiber Scaffolds for The Differentiation of Mesenchymal Stem Cells into Vascular Cells, Alex Rickel1, Junli Hu2, Zhongkui Hong1, 1University of South Dakota, Sioux Falls, SD, USA, 2Northeast 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 Rad1, Fernanda Guerra, PhD1, Kenneth Anderson, DDS. MS2, Omar Skalli, PhD3, Joel Bumgardner, PhD1, 1University of Memphis-University of Tennessee Health Science Center, Memphis, TN, USA, 2University of Tennessee Health Science center, Memphis, TN, USA, 3University of Memphis, Memphis, TN, USA

523 Collagen I and Modified Hyaluronic Acid Hydrogels for Tissue Engineering, Jessica Torres1, Fanfei Meng2, Kevin Buno3, Yoon Yeo2, Luis Solorio3, Julie Liu1, 1Purdue University Davidson School of Chemical Engineering, West Lafayette, IN, USA, 2Purdue University College of Pharmacy, West Lafayette, IN, USA, 3Purdue University Weldon School of Biomedical Engineering, West Lafayette, IN, 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 Wang1, Matthew Bury1, Yvonne Chan1, Xinlong Wang2, Guillermo Ameer, PhD2,3, Arun Sharma, PhD1,2,3,4,5, 1Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL, USA, 2Northwestern University, Evanston, IL, USA, 3Simpson Querrey Institute, Chicago, IL, USA, 4Northwestern University Feinberg School of Medicine, Chicago, IL, USA, 5Stanley Manne Children's Research Institute, Chicago, IL, USA

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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(βglutamic 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

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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 Dieffenthaller, 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 Ansaripour1, 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, Jahnavi 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, Karenna 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

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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 Ziolowska, 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

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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

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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 Colorad 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 pO2 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

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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-Floreani, 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-Floreani, PhD, Irfan Tahir, Patrick Charron, Luis Garcia, The University of Vermont, Burlington, VT, USA

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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

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573 Fluorescent Nanodiamond –Hyaluronate Conjugates for Molecular Imaging, Hyehyeon Han, MS, Seikwang Hahn, PhD, POSTECH, Pohang, Republic of Korea

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 Polyproline 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

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