Society For Biomaterials

50TH ANNIVERSARY

Half a Century of Progress

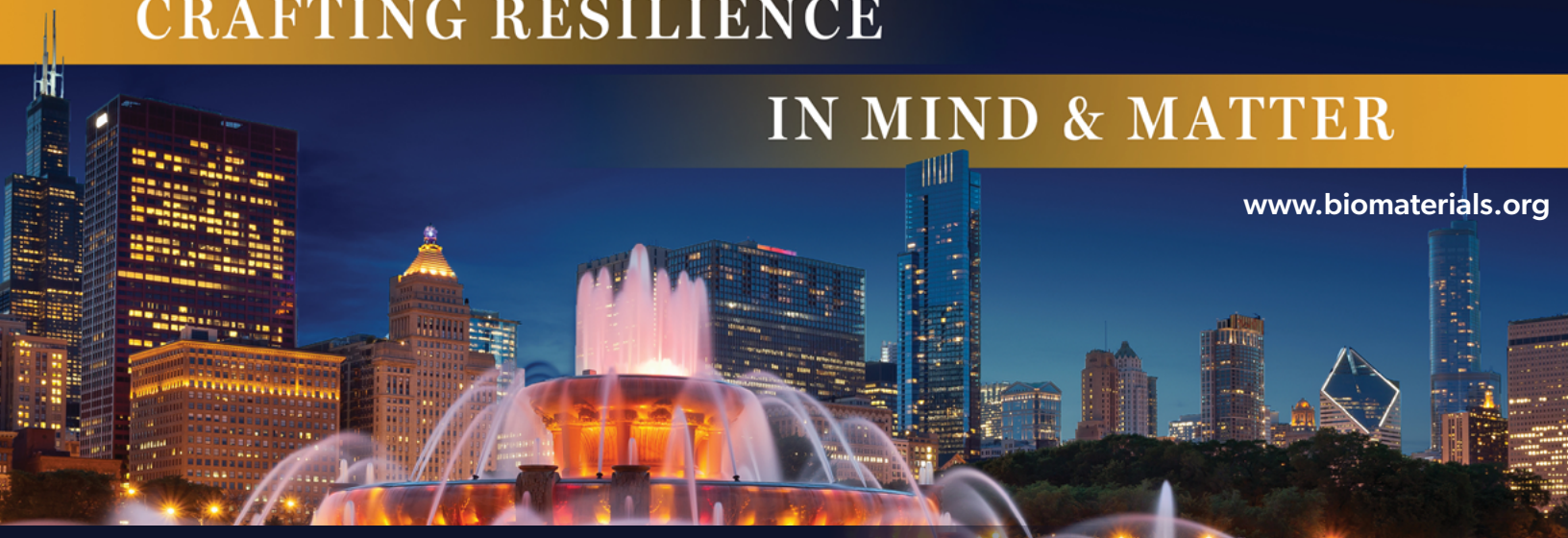
ANNUAL MEETING & EXPOSITION

APRIL 9-12, 2025 • HILTON CHICAGO

CRAFTING RESILIENCE

IN MIND & MATTER

www.biomaterials.org



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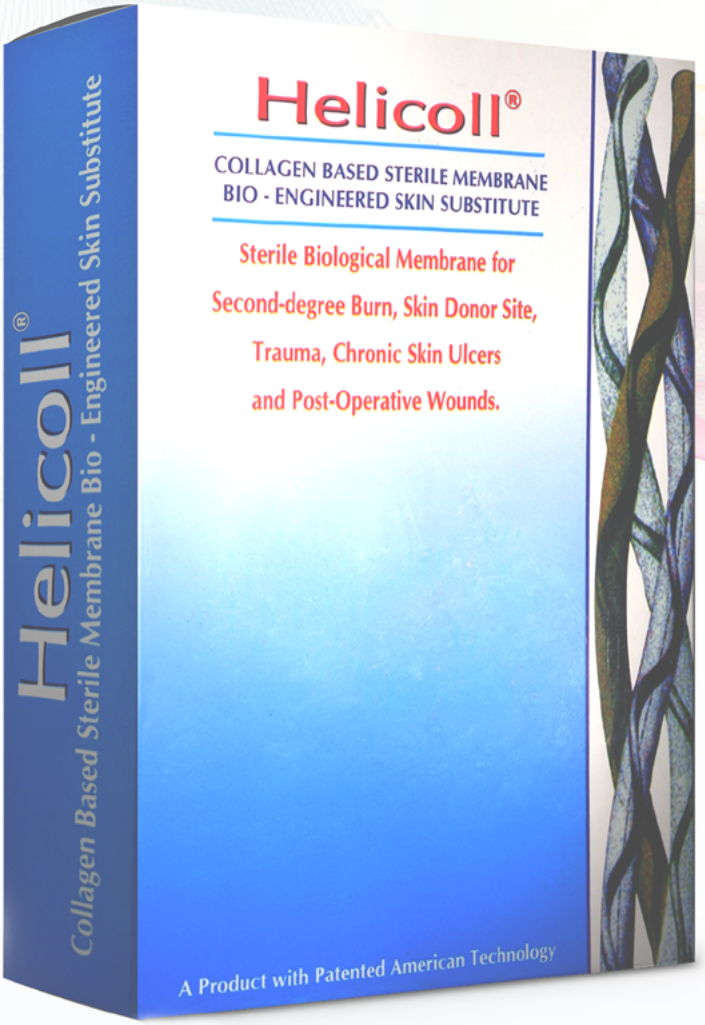

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WELCOME

TO THE SOCIETY FOR BIOMATERIALS 2025 ANNUAL MEETING & EXPOSITION

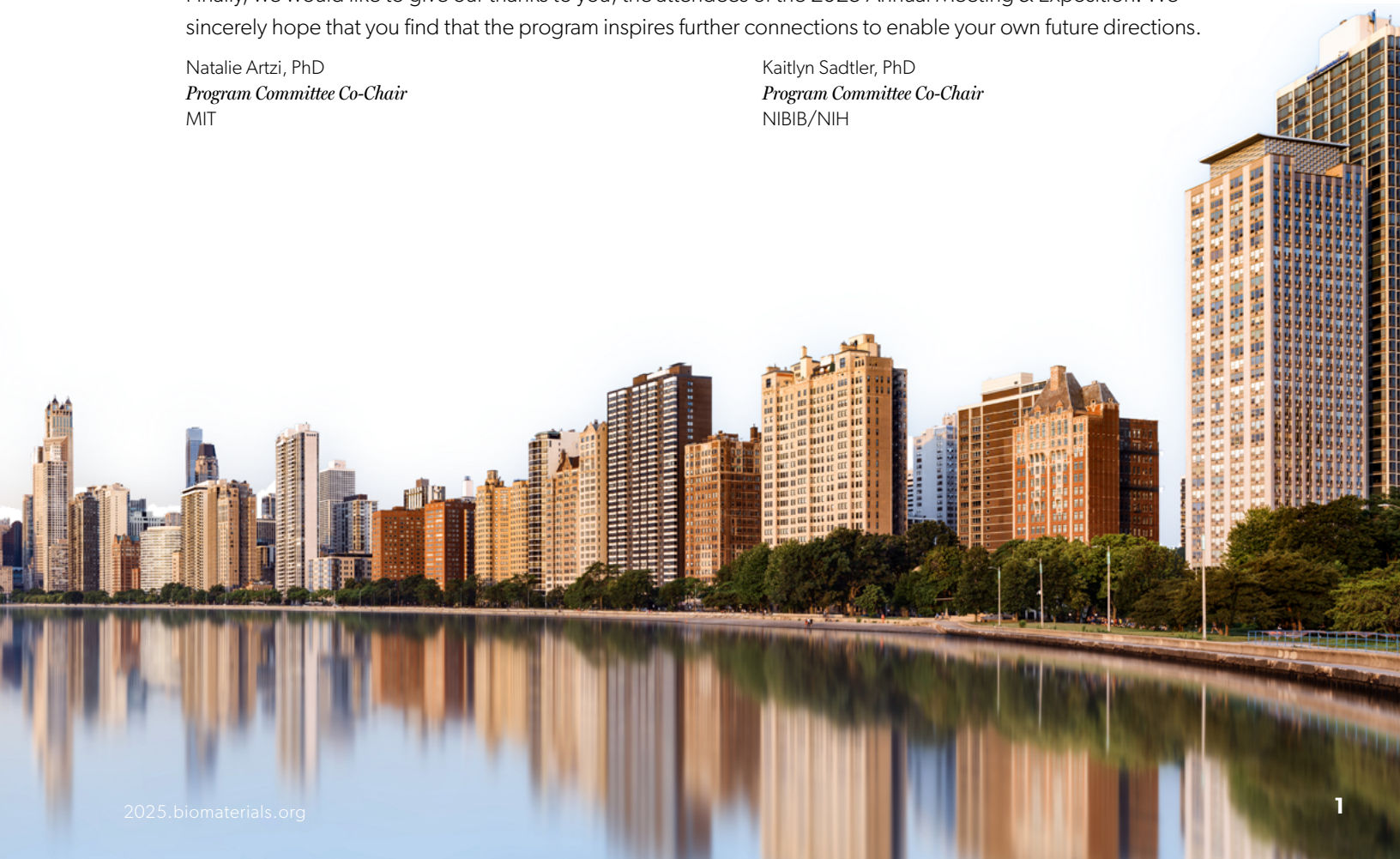
We would like to extend a warm welcome to everyone attending the Society For Biomaterials 2025 Annual Meeting & Exposition: Half a Century of Progress: Crafting Resilience in Mind & Matter! SFB's Annual Meeting & Exposition provides a welcome haven for the many different, unique individuals in the biomaterials field!

We would like to thank the members of the Program Committee for their efforts and guidance in creating an engaging conference program this year. 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 2025 Annual Meeting & Exposition! We sincerely hope that you find that the program inspires further connections to enable your own future directions.

Natalie Artzi, PhD
Program Committee Co-Chair
MIT

Kaitlyn Sadtler, PhD
Program Committee Co-Chair
NIBIB/NIH



About THE SOCIETY

The Society For Biomaterials is a multidisciplinary society of academic, healthcare, governmental and business professionals dedicated to promoting advancements in all aspects of biomaterial science, education and professional standards to enhance human health and quality of life. The vision of the Society For Biomaterials is to serve as the world's preeminent interactive global community committed to advancing excellence in all aspects of biomaterial science, engineering and technology for promoting human health and well-being.

Program OVERVIEW

HALF A CENTURY OF PROGRESS: CRAFTING RESILIENCE IN MIND & MATTER

The Society For Biomaterials welcomes you to Chicago, Illinois! A Half a Century of Progress requires an extraordinary combination of people from a variety of disciplines. Clinicians, researchers, regulatory agencies, and students from academic research labs, medical device manufacturers, and operating rooms across the country and around the world will convene in Chicago to discuss their latest research, form new collaborations, and be inspired by the work of their peers. This interdisciplinary gathering is a critical pathway to identifying issues with current technologies, and for translating academic research to clinical practice. We look forward to once again being able to educate, learn from, and collaborate across various scientific disciplines including materials science, biology, engineering and medicine for improving human health to educate, learn from, and collaborate across various scientific disciplines including materials science, biology, engineering and medicine for improving human health.

Innovation hub for biomaterials to create a life beyond limits

Evonik offers global medical technology companies **the industry's most comprehensive portfolio** of customized biomaterials and services for the manufacture of medical devices that open up new possibilities for **patient-specific treatment**.

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GENERAL INFORMATION

All conference events will take place at the Hilton Chicago. Photographs and/or videos of any slide or poster presentation are strictly prohibited.

REGISTRATION

All attendees must register for the meeting. Registration fees include: admittance to all scientific sessions, panel discussions, exhibits, opening reception, poster and exhibition receptions and the BASH. Additional fees apply to participate in workshops and luncheons.

SFB supports Diversity, Equity and Inclusion and, in our ongoing efforts to lead by example, pronoun stickers for your name badges will once again be available at registration

Registration is located in the Normandie Lounge.

Onsite Registration Hours

- Wednesday, April 9 | 7:00 AM–7:00 PM
- Thursday, April 10 | 7:00 AM–6:00 PM
- Friday, April 11 | 7:00 AM–5:00 PM
- Saturday, April 12 | 7:00 AM–11:00 AM

We recognize that some attendees may require caregiver assistance with certain daily tasks and activities. If you are a qualifying caregiver or recipient of these services, please stop by the SFB Registration Desk for assistance.

EXHIBIT HOURS

Wednesday, April 9

- **12:00 PM–5:00 PM** Exhibitor Set-up
- **6:30 PM–8:00 PM** Opening Reception in Exhibit Hall & Poster Session I

Thursday, April 10

- **8:00 AM–8:00 PM** Exhibit Hall Open
- **10:00 AM–10:30 AM** Networking Break with Exhibitors
- **6:00 PM–7:30 PM** Exhibit & Poster Session II

Friday, April 11

- **8:00 AM–6:00 PM** Exhibit Hall Open
- **4:30 PM–6:00 PM** Exhibit & Poster Session III
- **6:00 PM–7:00 PM** Exhibitor Tear Down

COMPLIMENTARY HEADSHOTS

Booth #106

Sponsored by the SFB National Student Section

Wednesday, April 9

- **6:30 PM–8:00 PM** Poster Session I

Thursday, April 10

- **10:00 AM–10:30 AM** Break in Exhibit Hall
- **3:30 PM–4:00 PM** Break in Exhibit Hall
- **6:00 PM–7:30 PM** Poster Session II

Friday, April 11

- **10:00 AM–10:30 AM** Break in Exhibit Hall

POSTER SESSIONS

The Poster Sessions are an integral piece of the conference's educational opportunities. We encourage all meeting participants to support and engage with the poster presenters to learn more about their scientific findings. This year's conference features more than 600 unique scientific posters. Poster presentations will be held in the Exhibit Hall. Additional details, including the poster schedule, are available in the mobile app.

Wednesday, April 9

- **12:00 PM–5:00 PM** Exhibitor Setup
- **6:30 PM–8:00 PM** Opening Reception in Exhibit Hall & Poster Session I
- **8:00 PM–8:30 PM** Poster Session I Tear Down

Thursday, April 10

- **10:00 AM–10:30 AM** Poster Session II Setup
- **6:00 PM–7:30 PM** Exhibit & Poster Session II
- **7:30 PM–8:00 PM** Poster Session II Tear Down

Friday, April 11

- **10:00 AM–10:30 AM** Poster Session III Setup
- **4:30 PM–6:00 PM** Exhibit & Poster Session III
- **6:00 PM–6:30 PM** Poster Session III Tear Down

All poster presenters are required to hang their posters, during the designated time frame, at the location that corresponds to their poster number. Supplies will be provided. Posters not removed by the end of the designated time will be discarded. For safety reasons, poster presenters may not leave poster tubes or any other items under the poster boards.

SPEAKER READY ROOM

The Speaker Ready Room is located in PDR#6 on the 3rd floor. The Speaker Ready Room is provided for presenters to prepare for and upload their presentations prior to their scheduled session. **All speakers must check into the Speaker Ready Room at least four (4) hours prior to their presentation.**

Speaker Ready Room Hours

- Wednesday, April 9 | 7:00 AM–5:00 PM
- Thursday, April 10 | 7:00 AM–6:00 PM
- Friday, April 11 | 7:00 AM–4:00 PM
- Saturday, April 12 | 7:00 AM–12:00 PM

PERSONAL CARE LOUNGE

Need space at the SFB 2025 Annual Meeting to feed an infant, express milk, have quiet prayer time or another personal care need requiring peace and privacy? The Personal Care Lounge is available for SFB attendees only and is open on a first-come, first-served basis. The Personal Care Lounge is located in room 4R. Please visit the conference mobile app for additional details.

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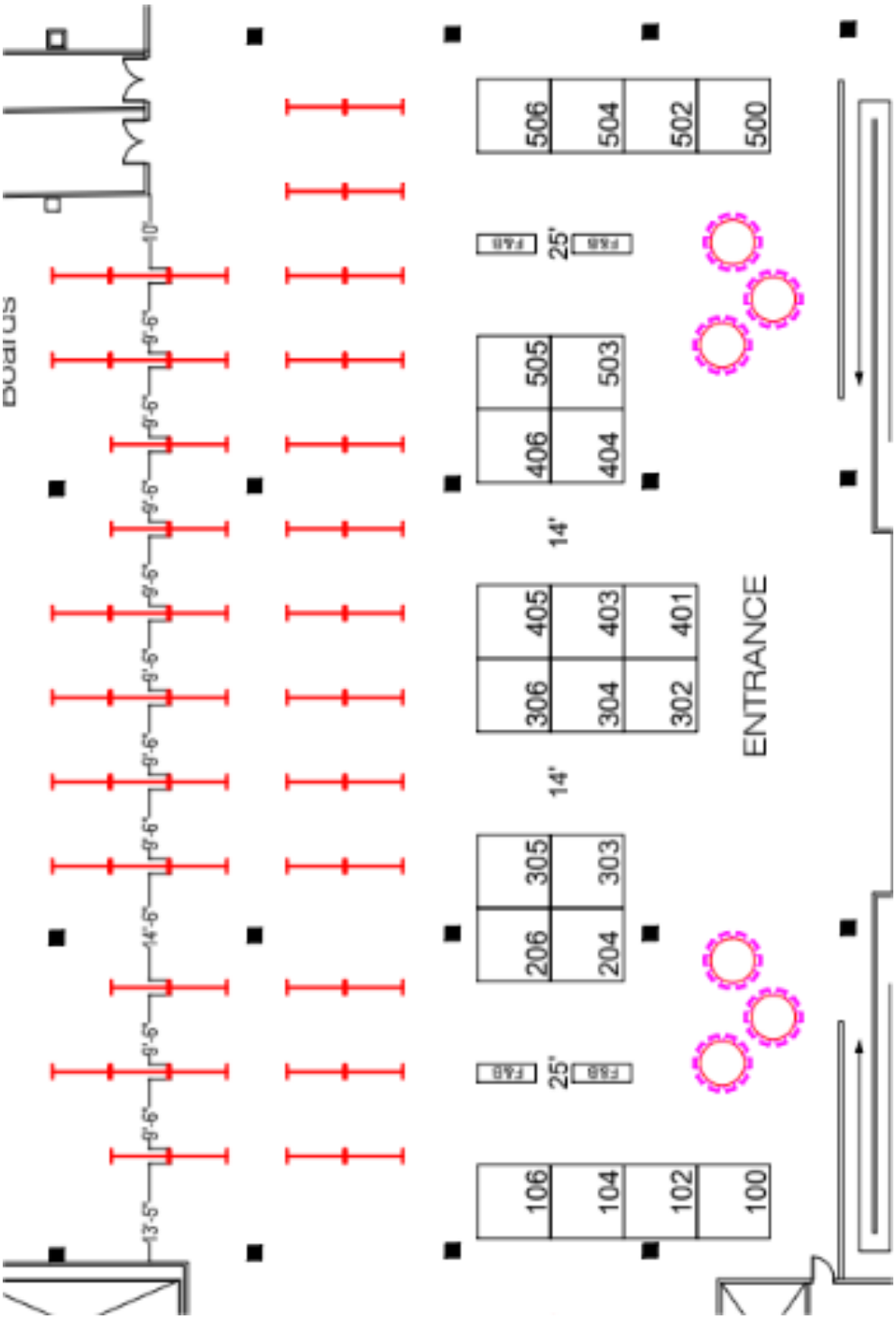
Exhibit Floor Plan



EXHIBITORS

COMPANY	BOOTH #	COMPANY WEBSITE
Biomaterials Research, a Science Partner Journal	104	www.spj.science.org/journal/bmr
Biomomentum Inc.	502	www.biomomentum.com/
CELLINK.	306	www.cellink.com
CellScale Biomaterials Testing	506	www.cellscale.com
Encoll Corp.	204/303	www.helicoll.com
Evonik Corporation	503	www.healthcare.evonik.com
Humabiologics	206	www.humabiologics.com
MilliporeSigma	505	www.sigmaaldrich.com
Nippi, Inc	406	www.nippi-inc.co.jp
Optics 11 Life	305	www.optics11life.com
Polbionica S.A.	405	www.polbionica.com/
Rheolution Inc.	404	www.rheolution.com
SFB National Student Chapter & Young Scientist Group	106	www.biomaterials.org/national-student-chapter
Sustainable Swine Resources.	102	www.ssr-solutions.com
TESco Associates, Inc.	302/401	www.tescoassociates.com
TissueLabs.	403	www.tissuelabs.com
Viscofan BioEngineering	304	www.viscofan-bioengineering.com
Zedira GmbH	504	www.zedira.com

TABLE OF CONTENTS

Welcome from the Program Chairs 1
General Information 4
Sponsors 5
Exhibit Floorplan 6
Exhibitor Listing 7
Program Committee 9
Highlights and Awards 9
Wednesday, April 9 11
Program at a Glance 11
Concurrent Session Grids 12
Thursday, April 10 16
Program at a Glance 16
Concurrent Session Grids 18
Friday, April 11 25
Program at a Glance 25
Concurrent Session Grids 26
Saturday, April 12 33
Program at a Glance 33
Concurrent Session Grids 34
Hotel Floor Plan 36

Annual Meeting Highlights

PROGRAM CO-CHAIRS
Natalie Artzi, PhD, MIT
Kaitlyn Sadtler, PhD, NIBIB/NIH

PROGRAM COMMITTEE MEMBERS
Program Committee Members | Angela Throm, PhD | Ashley Brown, PhD | Brad Wood, MD | Claire Witherel, PhD | Michelle Teplensky, PhD | Mykel Green, PhD | Ngan Huang, PhD | Ritu Raman, PhD | Shreya Raghavan, PhD | Steven Zong, PhD | Susan Thomas, PhD

SFB Staff
Dan Lemyre, CAE, IOM | Shena Seppanen, CAE | Jessica Goodone | Tara Locantore | Dana Groves

2025 KEYNOTE SPEAKER
Michal Preminger, PhD, MBA

Michal is Regional Head of Johnson & Johnson Innovation, she leads the team to curate and cultivate the most promising, early-stage healthcare innovations in the region, spanning across pharmaceutical, consumer health and medical devices. Prior to joining Johnson & Johnson Innovation, Michal served as the Executive Director of Harvard University's Office of Technology Development (OTD) Harvard Medical School site, where she was responsible for development and commercialization of technologies emerging from research at HMS laboratories and for the strategy and execution of all industry collaborations. She negotiated agreements with major biopharma, life sciences, food and cosmetics companies to advance the translation of discoveries into products and create a revenue-generating product pipeline and worked with scientific founders and investors to create new startup companies. Michal serves on the Board of Directors for MassBio, the Kendall Square Association (KSA), and the Massachusetts Business Roundtable. She is also a member of the Advisory Board for the Binah Initiative at the Weizmann Institute of Science.

Michal holds M.Sc. and Ph.D. degrees in Biological Sciences from the Weizmann Institute of Science, an MBA from INSEAD, Fontainebleau, France, and a BA in Medicine from Hadassah Medical School, Hebrew University, Jerusalem.

2025 Award Recipients

Founders Award
Nicholas P. Ziats, PhD, Case Western Reserve University
Awardee Address: Friday, April 11, 2025 | Plenary Session III | 10:30 AM -12:30 PM CT

Technology, Innovation and Development Award
Ashutosh Chilkoti, PhD, Duke University
Awardee Address: Thursday, April 10, 2025 | Plenary Session I | 10:30 AM -12:30 PM CT

Diversity, Equity, & Inclusion Award
BME UNITE Future Faculty Program
Awardee Address: Thursday, April 10, 2025 | Plenary Session I | 10:30 AM -12:30 PM CT

Mid-Career Award
Cole A. DeForest, PhD, University of Washington
Awardee Address: Thursday, April 10, 2025 | Plenary Session I | 10:30 AM -12:30 PM CT

Young Investigator Award
Brian Aguado, PhD, University of California San Diego
Awardee Address: Thursday, April 10, 2025 | Plenary Session I | 10:30 AM -12:30 PM CT

Clemson Award for Applied Research
Ke Cheng, PhD, Columbia University
Awardee Address: Friday, April 11, 2025 | Plenary Session III | 10:30 AM -12:30 PM CT

Clemson Award for Basic Research
Kara Spiller, PhD, Drexel University
Awardee Address: Friday, April 11, 2025 | Plenary Session III | 10:30 AM -12:30 PM CT

Clemson Award for Contributions to Literature
Jeremy L. Gilbert, PhD, Clemson University
Awardee Address: Friday, April 11, 2025 | Plenary Session III | 10:30 AM -12:30 PM CT

2025 KEYNOTE SPEAKER
Chad Mirkin, PhD

Chad A. Mirkin, PhD is the Director of the International Institute for Nanotechnology and the George B. Rathmann Professor of Chemistry at Northwestern University. He is known for his invention and development of spherical nucleic acids, a foundation of the field of structural nanomedicine; his invention and development of Dip-Pen Nanolithography and related cantilever-free nanopatterning and materials discovery methodologies; the delineation of the concept of the nanoparticle "atom" and the nucleic acid "bond" that underpins colloidal crystal engineering with DNA; and contributions to nanoparticle synthesis and supramolecular chemistry. He has authored >900 papers and >1,200 patents and applications worldwide (>430 issued) and founded 11 companies. Prof. Mirkin has been recognized with over 250 national and international awards, including the Wilhelm Exner Medal, the Dan David Prize, the National Academy of Sciences Sackler Prize in Convergence Research, the Kavli Prize in Nanoscience, and the King Faisal Prize from the Kingdom of Saudi Arabia. He served for eight years on the President's Council of Advisors on Science & Technology, and he is one of very few scientists to be elected to all three US National Academies. Mirkin has served on the Editorial Advisory Boards of over 30 scholarly journals, is the founding editor of the journal Small, was a Proc. Natl. Acad. Sci. USA Editorial Board Member, and was an Associate Editor of Journal of the American Chemical Society. He has given >930 invited lectures worldwide and educated >340 graduate students and postdocs and thousands of undergraduate students. Founded in 2000 as an umbrella organization to coalesce and foster nanotechnology efforts, the International Institute for Nanotechnology represents and unites more than $2.7 billion in nanotechnology research, educational programs, and supporting infrastructure.

2025 Award Winners

CONTINUED

Society For Biomaterials Award for Service
Shelly E. Sakiyama-Elbert, PhD, University of Washington
Award Recognition: Friday, April 11, 2025 | Annual Business Meeting | 3:30 PM - 4:30 PM CT

C. William Hall Award
Jennifer E. Woodell-May, PhD, Zimmer Biomet
Award Recognition: Friday, April 11, 2025 | Annual Business Meeting | 3:30 PM - 4:30 PM CT

Student Award for Outstanding Research
PhD Candidate Category

Nghia Le Ba Thai, Syracuse University
Thursday, April 10, 2025 | 2:30 PM - 2:45 PM | Tissue Engineering SIG 2 | "Rapid Fabrication of Polyvinyl Alcohol Hydrogel Foams with Encapsulated Mesenchymal Stem Cells for Chronic Wound Treatment"

C. William Hall - Undergraduate Travel Scholarship
Benjamin Nachod, University of Pennsylvania
Thursday, April 10, 2025 | 6:00-7:30pm | POSTER #2P546 | "Steroid-Incorporated Lipid Nanoparticles for Anti-Inflammatory Delivery of mRNA"

Cato T. Laurencin, MD, PhD - Undergraduate Travel Fellowship
Milani Needam, North Carolina A&T State University
Wednesday, April 9, 2025 | 6:30-8:00pm | POSTER #1P627 | "Evaluation of Controlled Release Curcumin from Electrospun Nanofibrous Mesh for Accelerating Infected Wound Healing"

Acta Biomaterialia Gold Medal
Frederick J. Schoen, MD, PhD, Brigham and Women's Hospital, Harvard Medical School
Awardee Address: Thursday, April 10, 2025 | Plenary Session II | 4:00 PM - 6:00 PM CT

Acta Biomaterialia Silver Medal
Karen Christman, PhD, University of California, San Diego
Awardee Address: Thursday, April 10, 2025 | Plenary Session II | 4:00 PM - 6:00 PM CT

Acta Materialia Mary Fortune Global Diversity Medal
Elizabeth Cosgriff-Hernandez, PhD, The University of Texas at Austin
Awardee Address: Thursday, April 10, 2025 | Plenary Session II | 4:00 PM - 6:00 PM CT

WEDNESDAY, APRIL 9, 2025

7:00 AM - 7:00 PM | Registration | Normandie Lounge

7:00 AM - 5:00 PM | Speaker Ready Room | PDR#6

8:00 AM - 5:00 PM | Personal Care Lounge | 4R

WORKSHOPS

8:00 AM - 11:00 AM | Workshop 1: Photonic & Metallic-Based Nanomaterials & Devices | 4D

8:00 AM - 11:00 AM | Workshop 2: Recent Advances in 3D Printing of Biomaterials | 4C

8:00 AM - 10:00 AM | Workshop 4: On Chip Approaches in Immune Engineering for Commercialization and Translation | Joliet

8:00 AM - 11:00 AM | Workshop 5: Medical Device Under Design Control | BLVD C

8:00 AM - 12:00 PM | Workshop 6: Future Biomaterials Faculty Workshop | BLVD A

8:00 AM - 11:00 AM | Workshop 7: Biomaterials Science Excellence and Technology Translation Workshop | Marquette

8:00 AM - 11:00 AM | Workshop 8:The Doctor is In: Clinician Scientist Tracks in Biomaterials | BLVD B

9:00 AM - 12:00 PM | SFB Council Meeting: 4A

12:00 PM - 1:00 PM | Lunch On Own

1:00 PM–2:30 PM | CONCURRENT SESSION 1

1A: PANEL: New Investigators Anonymous: Navigating the Academic Path Together | Grand Ballroom

1B: Biomaterials for Functional Vasculature | BLVD B

1C: Dental/Craniofacial Biomaterials SIG 1 | BLVD C

1D: Fibrous Biomaterials in Tissue Engineering | BLVD A

1E: Immune Biomechanics & Mechanobiology | 4C

1F: Microfluidics and Biomaterials for Engineering 3D inVitro Models | Marquette

1G: Nanomaterials for Immune Engineering | Joliet

1H: Innovative Biomaterials for Advanced Ophthalmic Solutions: Bridging Research and Clinical Practice and Ophthalmic Biomaterials SIG | 4D

2:45 PM–4:15 PM | CONCURRENT SESSION 2

2A: PANEL: Freedom-To-Fail Culture Drives Innovation in Biomaterials Research | Grand Ballroom

2B: Biomaterial Medicated Immune Modulation for Autoimmunity Treatment | 4D

2C: Cardiovascular Biomaterials SIG | BLVD A

2D: Dental/Craniofacial Biomaterials SIG 2 | BLVD C

2E: Engineering Heart & Lung Models to Study Disease Progression and Therapeutic Development | BLVD B

2F: High Performance Biomaterials for Tissue Engineering and Regenerative Medicine | Joliet

2G: Immune Engineering SIG 1 | Marquette

2H: 3-Minute Thesis (3MT) Competition | 4C | Sponsored by Royal Society of Chemistry

4:15 PM - 4:30 PM | Networking Break with Exhibitors |Salon A- Exhibit Hall | Sponsored by: TESco, Encoll Corp., Chinese Association for Biomaterials (CAB), UC San Diego Shu Chien-Gene Lay Department of Bioengineering Sanford Stem Cell Institute

4:30 PM - 6:30 PM | Opening Ceremony | Grand Ballroom

Keynote Address: Michal Preminger, PhD, Johnson & Johnson Innovation, East North America

Keynote Address: Chad Mirkin, PhD, Northwestern University

6:30 PM - 8:00 PM | Networking with Exhibitors, Poster Session I | Salon A | Sponsored by TESco

8:30 PM - 9:30 PM | Student & YSG Mixer | Offsite Venue

8:30 PM - 9:30 PM | LGBTQIA+ Mixer | Offsite Venue

9:30 PM - 10:30 PM | Industry Mixer | Offsite Venue

CONCURRENT SESSION 1

WEDNESDAY, APRIL 9, 2025 • 1:00 PM – 2:30PM

Session Title	1A. PANEL: New Investigators Anonymous: Navigating the Academic Path Together	1B. Biomaterials for Functional Vasculature	1C. Dental/Craniofacial Biomaterials SIG 1	1D. Fibrous Biomaterials in Tissue Engineering	1E. Immune Biomechanics & Mechanobiology	1F. Microfluidics and Biomaterials for Engineering 3D In Vitro Models	1G. Nanomaterials for Immune Modulation	1H. Ophthalmic Biomaterials SIG (Innovative Biomaterials for Advanced Ophthalmic Solutions: Bridging Research and Clinical Practice)
Moderators	**Mykel Green, Teresa Rapp**	**Monica Moya, Chris Bashur, Bin Jiang**	**Daniel Harrington, Santiago Orrego, Masoumah Qaw**	**Jessica Gluck, Fan Zhang, Yihan Huang**	**Bethany Almeida**	**Carlos Ferreira Guimaraes**	**Adam Gormley, Lisa Volpatti, Emily Henrich**	**Katelyn Swindle-Reilly, Nasif Mahmood**
Room	**Grand Ballroom**	**BLVD B**	**BLVD C**	**BLVD A**	**4C**	**Marquette**	**Joliet**	**4D**
1:00-1:15	Mykel Green, The University of Texas at Austin, Teresa Rapp, University of Oregon	1. Modulating Sympathetic Nerve Regeneration for Vascular Remodeling in Peripheral Vascular Grafts, **Taylor Brown1**, Jessica Li1, Evi Liu1, Ananya Shivakumar1, Caitlyn Dang1, Calvin Chao, M.D.2, Bin Jiang, Ph.D.1 1Northwestern University, 2Feinberg School of Medicine, Northwestern University	7. Effect of pore size and dose of BMP-functionalized β-tricalcium phosphate scaffolds on osteogenesis and bone regeneration of critical-size femoral defects in rabbits, Natalie neissen1, Christian Müller-Mai2, Herbert Jennissen3, Markus Laub3, Kirsten Zurlinden3, Horst Fischer4, **Christine Knabe1** 1Philipps University Marburg, 2Hospital for Special Surgery Luenen, 3University of Duisburg Essen, 4RWTH Aachen	13. Aligned Hyaluronic Acid-Coated Polycaprolactone Composite Scaffolds for Muscle Tissue Repair, **Alycia Galindo, B.S.1**, Alyssa Chi2, Ruchi Sharma, Ph.D.1, Ievgenii Liashenko, Ph.D.2, Kelly O'Neill, M.S.1, Jenna Khachatourian, B.S.2, Paul Dalton2, Marian Hettiaratchi, PhD2 1University of Oregon Knight Campus, 2University of Oregon	19. Engineering Immunomodulatory Biomaterials for Modulating Macrophage-Mediated Fibrosis in Fracture Nonunion, Matthew Patrick, BS1, **Ramkumar Annamalai1** 1University at Buffalo	25. INVITED SPEAKER Zhen Ma, Syracuse University	30. Engineered immunomodulatory nanocarriers for localized tolerance induction in allogeneic islet transplantation, **John-Paul Pham1**, Layla Summers1, María Coronel1 1University of Michigan	37. Killing Two Birds with One Stone: A Dual-Functional Nanoparticle Formulation for Glaucoma Therapy, **Lei Xu1**, Lin Qi1, Dong Liu2, Mu Li2, Yang Hu2, Hu Yang1, Vimalin Jeyalatha Mani1, Tzu-Chen Wang1, Da Huang3, Honglan Shi1 1Missouri University of Science and Technology, 2Stanford University School of Medicine, 3Fuzhou University:
1:15-1:30		2. Engineering Mesenchymal Stem Cell-Only Small Artery Scale Vascular Grafts and Branched Vasculature of Varying Geometries through 3D Bioprinting, **Katherine Knowles1**, Andre Figueroa-Milla, Ph.D.2, Derrick Wells1, Andrew Putnam, Ph.D.3, Marsha Rolle, Ph.D.4, Eben Alsberg1 1University of Illinois at Chicago, 2Worcester Polytechnic Institute, 3University of Michigan, 4The Roux Institute at Northeastern University	8. Conditional Knockout of Agrin in Osteocytes Compromises Bone Homeostasis and Titanium Osseointegration, Maria Gomes1, Leticia Adolpho1, Alann Souza1, Rayana Bighetti-Trevisan1, Robson Calixto1, Fabiola Oliveira1, Adriana Almeida1, Ana Ramos1, Gustavo Garlet1, Adalberto Rosa1, **Marcio Beloti1** 1University of São Paulo	14. Fiber-reinforced Extracellular Matrix Mimicking Scaffolds for Tissue Engineering and Regenerative Medicine, **Mengnan Dennis**, Doctorate Degree1, Martin King2, Jessica Gluck2 1North Carolina State University, 2NC state university	20. Piezo1 Mediates Shear-Stress-Induced Signal Two in NLRP3 Inflammasome Activation, **Adam Fish1**, James Forster1, Vaishali Malik1, Ashish Kulkarni1 1University of Massachusetts Amherst		31. Systemic Trafficking of mRNA Lipid Nanoparticle Vaccine Following Intramuscular Injection Leads to Generation of Tissue-specific T Cell Responses, **Christine Wei, B.S.1**, Yining Zhu, M.S.E.1, Xiaoya Lu, M.S.E.1, Kailei Ding1, Hai-Quan Mao, Ph.D.1 1Johns Hopkins University	38. Anti-fouling and Antibacterial Hydrogels for Stimulating Orbital Tissue Expansion in Microphthalmia Patients, **Stephanie Fung, PhD1**, Matthew Aronson, Mr.2, William Katowitz, MD1, James Katowitz, MD1, Riccardo Gottardi, Dovtort2 1Children's Hospital of Philadelphia, 2University of Pennsylvania
1:30-1:45		3. Sacrificial Alginate Microfibers for Enhancing Vasculogenic Assembly in Dense Hydrogels, **Firaol Midekssa, MS1**, Maggie Jewett1, Elizabeth Stanley1, Megan Wieger1, Kaylin Hanna1, Brendon Baker, Ph.D.1 1University of Michigan	9. Comparison of Fatty Acid-Modified Electrospun Chitosan Membrane for Guided Bone Regeneration as Compared to a Collagen Membrane in a Porcine Mandibular Defect Model, **Joel D Bumgardner1**, Samarth VeDante2, James Pledger, DDS3, Brett Wilson, DDS3, Anastastios Karydis, DDS3, Franklin Garcia-Godoy, DDS3, K Mark Anderson, DDS3, Joseph Egbodo, none2, Edmara TP Bergamo, DDS4, Lukasz Witek, PhD4 1University of Memphis, 2The University of Memphis, 3UTHSC, 4NYU Dentistry	15. Locale of Calcium Carbonate Nucleation Among Nonwoven Hemp Organic-Inorganic Composites for Bone Scaffolding, **HAJARA BABAYO**, Ph.D. Candidate in Fiber and Polymer Science1, Ericka Ford1 1North Carolina state university	21. Mechanical forces at Immune Synapse Regulate Therapeutic Response in Diffuse Large B Cell Lymphoma, **Deepali Balasubramani1**, Stefano Travaglino1, Hyun-Kyu Choi, PhD1, Cheng Zhu, PhD1, Ankur Singh, PhD1 1Georgia Institute of Technology	26. High-throughput buoyancy-driven microgel production for simple user interfacing, **Durante Pioche-Lee1**, Xiaoqian Wang1, Yoke Qi Ho1, Wahidur Rahman1, Armen Vartanian1, Sasha Cai Lesher-Pérez2 1University of Michigan, 2Univeristy of Michigan	32. Lipid nanoparticle-mediated metabolic reprogramming of dendritic cells for mRNA vaccines, **Dongyoon Kim, Ph.D.1**, Emily Han, BS1, Michael Mitchell, Ph.D.1 1University of Pennsylvania	39. FRESH 3D Bioprinting of Aligned Human Corneal Stromal Tissue Constructs, Shubhangi Sathyakumar, M.S.1, Yiqin Du, M.D., Ph.D.2, Adam Feinberg, Ph.D.1 1Carnegie Mellon University, 2University of South Florida

CONCURRENT SESSION 1 • WEDNESDAY, APRIL 9, 2025 • 1:00 PM – 2:30PM

Session Title	1A. PANEL: New Investigators Anonymous: Navigating the Academic Path Together	1B. Biomaterials for Functional Vasculature	1C. Dental/Craniofacial Biomaterials SIG 1	1D. Fibrous Biomaterials in Tissue Engineering	1E. Immune Biomechanics & Mechanobiology	1F. Microfluidics and Biomaterials for Engineering 3D In Vitro Models	1G. Nanomaterials for Immune Modulation	1H. Ophthalmic Biomaterials SIG (Innovative Biomaterials for Advanced Ophthalmic Solutions: Bridging Research and Clinical Practice)
Room	**Grand Ballroom**	**BLVD B**	**BLVD C**	**BLVD A**	**4C**	**Marquette**	**Joliet**	**4D**
1:45-2:00		4. PEG-Collagen Interpenetrating Networks Support Enhanced Vasculogenesis, **Atticus McCoy1**, Jordyn Novick1, Darcy Jew1, Andrew Putnam, Ph.D.1 1University of Michigan	10. Engineering Alpha-Ketoglutarate for Craniofacial Bone Regeneration, **Hongli Sun1** 1University of Iowa	16. Nanoscale Porosity-Controlled Release from Sintered Electrospun Polycaprolactone and Polyethylene Terephthalate, **Francisco Chaparro1**, Kayla Presley2, Marco Coutinho da Silva2, Nayan Mandan2, Matthew Colachis2, Christa Moraes2, Hannah Lacy1, John Lannutti2 1Nanoscience Instruments, 2The Ohio State University	22. Studying and Targeting Macrophage Mechanics on Earth and in Space, Meenal Datta, PhD1, **Alice Burchett, B.S.1** 1University of Notre Dame	27. Microfluidic Hydrogel Biofabrication of Miniaturized 3D Cellular Architectures for Cancer Modeling, **Carlos Guimarães1**, Luca Gasperini1, Ramón Silva1, Rui Reis1 1University of Minho	33. 2D Nanosilicates Loaded with Protein Antigens Enhance Immune Responses, **Chih-Yun Liu1**, Mark Gibson1, Anirban Das1, Jai Rudra, PhD2, Akhilesh Gaharwar3 1Washington University in St. Louis, 2Washington University in Saint Louis, 3Texas A&M University	40. Multi-functional Ionic Liquid: A Novel Approach to Glaucoma Therapy, Hu Yang1, **Ashish Trital1**, Vimalin Jeyalatha Mani1, Tzu-Chen Wang1, Lin Qi1, Lei Xu1 1Missouri University of Science and Technology
2:00-2:15		5. Peptide-PEG DSPE Coatings for Targeted Mitochondria Delivery to the Vascular Endothelium, **Brandon Applewhite, Ph.D.1**, kaijie Zhang, M.D.2, Aurea del Carmen, B.S.2, Bowen Wang, Ph.D.2, Bin Jiang, Ph.D.1, Natalia matiuto, B.S.2 1Northwestern University, 2Northwestern University Feinberg School of Medicine	11. Shape Memory Polymer (SMP) Bioglass Composite Scaffolds Designed to Heal Complex Bone Defects, **Brandon Nitschke1**, Elizabeth Butchko1, MaryGrace Wahby1, Kaylee Breining1, Alexander Konz1, Melissa Grunlan, Ph.D.1 1Texas A&M University	17. Sodium hydroxide surface treatment of electrospun poly(ε-caprolactone) scaffolds to drive chondrogenesis, **Elisa Bissacco**, MSc in Biomedical Engineering1, Apoorv Singh, B.Sc. (Materials Science & Engineering)1, Stephen Ferguson, Prof. Dr.1 1Institute for Biomechanics, ETH Zürich	23. Extracellular matrix damage modulates inflammatory response in fibroblasts through mechanotransductive pathways, **Alisa Isaac, PhD1**, Teja Guda2, Ope Sanyaolu1, Victoria Garza1 1UTSA, 2The University of Texas at San Antonio	28. Engineered curvature directs matrix deposition during jamming and unjamming transitions, **Avinava Roy, M.S.E1**, Katherine Wei, B.S1, Max Shtein, Ph.D1, Claudia Loebel, M.D., Ph.D.1 1University of Michigan	34. REGvac 2.0: A Microparticle Strategy for Rheumatoid Arthritis Immunotherapy, Jamal Lewis, Ph.D.1, **Allen Tu, PhD1** 1University of Florida	41. In Vivo Assessment of an Antioxidant Hydrogel Vitreous Substitute, **Katelyn Swindle-Reilly, PhD1**, Megan Allyn, MS1, Annie Ryan, MS1, Grace Rivera1, Esther Mamo, BS1, Joshua Bopp, BS1, Sebastian Martinez Hernandez1, Julie Racine, PhD1, Eric Miller, DVM, MS1, Heather Chandler, PhD1 1The Ohio State University
2:15-2:30		6. Deciphering Neutrophil Dynamics: Enhanced Phagocytosis of Elastic Particles and Impact on Vascular Targeted Carrier Performance, **Oluwaseun Akanbi1**, Jonathan Lee1, Valentina Guevara1, Lola Eniola-Adefeso2, Daniel Kupor1, Emma Brannon1, Damon Hoff1 1University of Michigan, 2University of Chicago, Illinois	12. Manganese Dioxide Nanoparticles Enhance the Osteogenesis of Porous β-tricalcium Phosphate Scaffolds, **Yunqing Kang, Ph.D1** 1Florida Atlantic University	18. Synthetic Matrix Fibers Promote 3D Microvascular Assembly, and Host Integration of Endothelial Monocultures in Absentia of Direct Integrin-Mediated Adhesion, **Firaol Midekssa, MS1**, Christopher Davidson, Ph.D.1, Megan Wieger1, Jordan Kamen1, Andrew Putnam, Ph.D.1, Ariella Shikanov, Ph.D.1, Brendon Baker, Ph.D.1 1University of Michigan	24. Sliding hydrogels reveal that modulation of mechanosensing attenuates the inflammatory phenotype of osteoarthritic chondrocytes in 3D, Manish Ayushman1, Hung-Pang Lee, Ph.D.2, Pranay Agarwal, Ph.D.2, Georgios Mikos2, Xinming Tong, Ph.D.1, Sarah Jones1, Sauradeep Sinha, Ph.D.1, Stuart Goodman, MD/PhD1, Nidhi Bhutani, Ph.D.1, **Fan Yang, Ph.D.1** 1Stanford University, 2Stanford	29. Myofibroblast De-differentiation and Fibrotic Tissue Reversion in a Synthetic 3D Interstitial Matrix, **Jingyi Xia1**, arjun Gupta1, Ethan poupard1, Vincent Fiore, PhD2, Brendon Baker, Ph.D.1, Daniel Matera3 1University of michigan, 2Boehringer Ingelheim, 3Draper	35. Tissue-, cell-, and organelle-specific drug delivery by poly-glucose nanoparticles for cancer immunotherapy, **Biplab Sarkar, PhD1**, Christopher Rodell, Ph.D.1 1Drexel University	42. Surface Functionalized Electrospun Synthetic Scaffold as Carrier for Limbal Stem Cells Derived from Induced Pluripotent Stem Cells for Ocular Surface Regeneration, **Nasif Mahmood1**, Mohamed R Eletmany1, Ummay Mowshome Jahan1, Sarah Gullion1, Ahmed El-Shafei1, Brian C. Gilger1, Jessica Gluck1 1NC State University

CONCURRENT SESSION 2

WEDNESDAY, APRIL 9, 2023 • 2:45 PM – 4:15 PM

Session Title	2A: PANEL: Freedom-to-Fail Culture Drives Innovation in Biomaterial Research	2B: Biomaterial-Mediated Immune Modulation for Autoimmunity Treatment	2C: Cardiovascular Biomaterials SIG	2D: Dental/Craniofacial Biomaterials SIG 2	2E: Engineering Heart and Lung Models to Study Disease Progression and Therapeutic Development	2F: High Performance Biomaterials for Tissue Engineering and Regenerative Medicine	2G: Immune Engineering SIG 1	2H: 3-Minute Thesis (3MT) Competition
Moderators	**Elizabeth Cosgriff-Hernandez**	**Yaoying Wu, Era Jain**	**Jessica Gluck, Chris Bashur**	**Christine Knabe, Brandon Nitschke, Daniel Harrington**	**Claudia Loebel**	**Nuno Neves**	**Xiao Huang**	**Gopal Agarwal, Scott Wood, Binata Joddar, Amir K. Miri**
Room	**Grand Ballroom**	**4D**	**BLVD A**	**BLVD C**	**BLVD B**	**Joliet**	**Marquette**	**4C**
2:45-3:00	Andrés J. García, Georgia Institute of Technology, Molly Shoichet, University of Toronto, Tony Mikos, Rice University, Joyce Wong, Boston University	43. Injectable hydrogels for localized induction of regulatory T cells, **Kenneth Kim, MS1**, Lindsay Hager2, Arielle D'Elia, MS2, Christopher Rodell, Ph.D.2 1Drexel University College of Medicine, 2Drexel University	49. Hydrogel-Mediated Ablation to Improve Safety and Efficacy of Arrhythmia Treatment, **Derek Bashe1**, Archita Duvvada1, Mathews John2, Drew Bernard2, Lukas Jaworski2, Allison Post2, Mehdi Razavi2, Elizabeth Cosgriff-Hernandez, PhD1 1University of Texas at Austin, 2Texas Heart Institute	55. Characterization of 3D Printed Titanium Alloy with Channels (Ti-6Al-4V) for Craniofacial Applications, **Ashley Cahoon, B.S.1** 1Illinois Institute of Technology	61. Development of an engineered heart tissue platform to study the progressive tissue stiffness change in hypertrophic cardiomyopathy, **Ganesh Malayath1**, Huanzhu Jiang1, Ghiska Ramahdita1, Yasaman Kargar Gaz Kooh1, Nathaniel Huebsch, PhD1 1Washington University in St. Louis	70. INVITED SPEAKER: Rui Reis, University of Minho - I3Bs	75. Implantable biomaterial microporous scaffolds predict food allergy severity as a surrogate of immune dynamics in the gastrointestinal tract, **Laila Rad, MSE1**, Russell Urie, PhD1, Michael Saunders, BS1, Jessica O'Konek, PhD1, Lonnie Shea1 1University of Michigan	Allison Campbell Ana Cunha Emily Han Maithili Joshi Magdalena Górecka Clinton Smith Samuel Sung Natalie Petryk Derek Bashe Anna Melnyk Shashwat Maharjan Mohammad Jabed Perves Bappy Nidhi Sharma Hanieh Shokrani Kaelyn Gasvoda Jinyoung Park Kasoorelope Oguntuyo Mohammad Asadi Tokmedash
3:00-3:15		44. Localized versus Systemically Delivered Immunomodulation for Treatment of Psoriasis, **Jennifer Simonovich, MS1**, Sabrina Macias, PhD1, Arun Wanchoo, PhD1, Dorina Avram, PhD2, Gregory Hudalla, PhD1, Benjamin Keselowsky, PhD1 1University of Florida, 2Moffitt Cancer Center	50. Microfabricated Anisotropic Cardiac Microbundles for the Modular Assembly of Cardiac Tissue Grafts, **Maggie Jewett1**, Siddhi Bhirud1, Susan Xi1, Amanda Bluem1, Samuel DePalma, PhD2, Brendon Baker, Ph.D.1 1University of Michigan, 2Broad Institute	56. Cyclic Loading of Biomaterials Enhances Virulence of Oral Pathogens, Carolina Montoya, PhD1, Julia Kurylec1, **Santiago Orrego1** 1Temple University	62. Modeling Cardiomyocyte-fibroblast Crosstalk in Hypertrophic Cardiomyopathy Pathogenesis using iPSC-derived Micro Heart Tissue, **Huanzhu Jiang1**, Ganesh Malayath1, Ghiska Ramahdita1, Yasaman Kargar Gaz Kooh1, Sharon Cresci1, Nathaniel Huebsch, PhD1 1Washington University in St. Louis		76. Targetless Immunotherapy Rescues Mice From LPS-Induced Septic Shock, **Helena Freire Haddad1**, Pablo Cordero Alvarado1, Maria Kulapurathazhe1, Emily Roe1, Vinicius Xie Fu1, Joel Collier, PhD1 1Duke University	
3:15-3:30		45. Antigen-Conjugated Scaffolds for Enrichment of Disease-Specific T-cells, **Sydney Wheeler, MSE1**, Mary Dickenson, MSE1, Samantha Lukpat, BSE1, Leon Wagner, MSE1, Aaron Morris, PhD1 1University of Michigan	51. Induced Pluripotent Stem Cell-Derived Microtissues Modulate Inflammation to Improve Cardiomyocyte Engraftment and Cardiac Function in a Rat Myocardial Infarction Model, **Ramak Khosravi, MD PhD1**, Yimu Zhao, PhD2, Krisco Cheung, BSc3, Gordana Vunjak-Novakovic, PhD4, Milica Radisic, PhD2 1University Health Network, 2University of Toronto, 3UC Berkeley-UCSF, 4Columbia University	57. Designing Antibacterial and Antifungal Dental Resins for 3D-Printed Dentures Using Imidazolium-based Ionic Liquids, Isadora Garcia, DDS, MSc, PhD1, Tasneem Allu-haidan, BDS, GAGS1, Mary Anne Melo, DDS, M.Sc, PhD, FADM, FACD1, **Masoumah Qaw, BDS, MSD1** 1School of Dentistry, University of Maryland Baltimore	63. High Throughput Fabrication of Human Engineered Heart Tissues for Modeling of Pathological Cardiac Hypertrophy, **Abhishek Dhand1**, Miranda Juarros2, Thomas Martin2, Leslie Leinwand2, Jason Burdick2 1University of Pennsylvania, 2University of Colorado, Boulder	71. Porous Semisynthetic Hyaluronic Acid Cryogel Scaffolds Promote Muscle Regeneration, **Kavita Parekh1**, Sydney Shriver2, Kiersten Russ3, Luke Langford1, Aboubacar Wague4, Sankalp Sharma4, Xuhui Liu, MD4, Brian Feeley, MD4, Ahmad Omar, PhD1, George Christ, PhD2, Kevin Healy, PhD1 1University of California, Berkeley, 2University of Virginia, 3University of California, Los Angeles, 4University of California, San Francisco	77. Immunomodulatory cytokine factories prevent foreign body response against encapsulated islets and delay the onset of diabetes., Boram Kim1, Amanda Nash2, Yuen San Chan3, Samantha Fleury4, Shravani Deo5, Danna Murungi4, Courtney Hodges3, Omid Veiseh4, **Dilrasbonu Vohidova4** 1MIT, 2MaKinsey, 3Baylor College of Medicine, 4Rice University, 5N/A	

CONCURRENT SESSION 2 • WEDNESDAY, APRIL 9, 2025 • 2:45 PM – 4:15 PM

Session Title	2A: PANEL: Freedom-to-Fail Culture Drives Innovation in Biomaterial Research	2B: Biomaterial-Mediated Immune Modulation for Autoimmunity Treatment	2C: Cardiovascular Biomaterials SIG	2D: Dental/Craniofacial Biomaterials SIG 2	2E: Engineering Heart and Lung Models to Study Disease Progression and Therapeutic Development	2F: High Performance Biomaterials for Tissue Engineering and Regenerative Medicine	2G: Immune Engineering SIG 1	2H: Evaluation of Controlled Release Curcumin from Electrospun Nanofibrous Mesh for Accelerating Infected Wound Healing
Room	**Grand Ballroom**	**4D**	**BLVD A**	**BLVD C**	**BLVD B**	**Joliet**	**Marquette**	**4C**
3:30-3:45		46. Iron-Dexamethasone Nanoparticles Prevent Neutrophil Activation in Acute Lung Injury, **Michael Felder1,** Valentina Guevara1, Daniel Kupor1, Lola Eniola-Adefeso2 1University of Michigan, 2University of Chicago, Illinois	52. Short and long term of hiPSC-CM culture on cardiac ECM microspheres, **Jiazhu Xu1**, Nick Rogozinski2, Joel Aboagye2, Sarah Velez2, Yufeng Wen1, Angello Gomez2, Zui Pan1, Ge Zhang3, Huaxiao Yang2, Yi Hong1 1The University of Texas at Arlington, 2University of North Texas, 3University of Akron	58. Resveratrol modulates Hedgehog signaling pathway and increases the osteogenic commitment of periodontal ligament mesenchymal cells., **Denise Andia1**, Rahyza de Assis2, Francesca Racca3, Rodrigo da Silva1, Malgorzata Wiench4, Rogério Ferreira1 1Paulista University, 2Federal University of Espírito Santo., 3The Ohio State University College of Dentistry., 4University of Birmingham.	64. Multilayered Cardiac Microtissues for Dissecting Homeostatic vs. Fibrotic Intercellular Communication, **Emmanouil Agrafiotis, PhD1**, Samuel DePalma, PhD2, Darcy D. Huang3, Anya G. Coffeen Vandeven1, Austin E. Stis4, Jingyi Xia1, Brendon Baker, Ph.D.1 1University of Michigan, 2Broad Institute, 3University of P, 4University of Florida	72. Bioprinted Porous Collagen I Scaffold to Enhance Proximal Tubule Maturation Under Physiologic Shear, **Brian Coffin, Ph.D.1**, Joshua Tashman, MD, PhD1, Cary Boyd-Shiwarski, MD, PhD1, Daniel Shiwarski, Ph.D.1 1University of Pittsburgh	78. Placental Mimicry Cell Therapy Delays Bystander Cell Rejection in Xenotransplant Model, **Shivani Hiremath, MS1**, Chishiba Chilimba, MS1, JESSICA WEAVER, PhD1 1Arizona State University	
3:45-4:00		47. Macroporous Gelatin Scaffolds Enable Lymph Node Stromal Cell Delivery for T-cell Immunomodulation and Recirculation in Type 1 Diabetes Mouse Models, **Leonor Teles, BS1**, Zachary Wilkes, BS1, Ana Hernandez, BS1, Logan Beatty, BS1, Camillo Bechi Genzano, MD2, Remi Creusot, PhD2, Alice Tomei, PhD1 1University of Miami, 2Columbia University	53. The influence of hyperlipidemia on magnesium biocorrosion in vitro and in vivo, **Carolyn Czerniak1**, Mitchell Connon1, Erico Freitas, PhD2, Henry Summers2, Roger Guillory, PhD1 1Medical College of Wisconsin, 2Michigan Technological University	59. Structure and Morphology of Calcium Phosphates Obtained from a Flowable Dental Composite Stored in Simulated Body Fluid and Artificial Saliva. **Piotr Psuja1,** Erick Yu1, Byoung I Suh1 1BISCO	65. Epithelial Cell-Specific Nascent Matrix Deposition Directs Cell Differentiation within the Lung, **Donia Ahmed1**, Matthew Tan, Ph.D.1, Jingyi Xia1, Brendon Baker, Ph.D.1, Claudia Loebel, M.D., Ph.D.1 1University of Michigan	73. Design and Fabrication of Channelized Nerve Guidance Conduits for Peripheral Nerve Regeneration, Lohitha Hegde1, Jeremy Perrelle2, Andrew Boreland3, Timothee Baudequin4, Fahmi Bedoui4, Zhiping Pang3, **Sanjeeva Murthy3** 1University of Compiegne, 2Robert Wood Johnson Medical School, 3Rutgers University, 4Universite de Technologie Compiegne	79. Localized Delivery of Indoleamine-2,3-Dioxygenase (IDO) - Galectin 3 Fused Enzyme Using Decellularized Sciatic Nerve for Injured Spinal Cord Immune Modulation and Regeneration, **Allison Campbell, B.S.1**, Gopal Agarwal, PhD1, Arun Wanchoo, PhD1, Prodip Bose, PhD1, Gregory Hudalla, PhD1, Benjamin Keselowsky, PhD1, Christine Schmidt, PhD1 1University of Florida	
4:00-4:15		48. Microneedle Targeting of the Immunological Niche in Skin to Induce Antigen-Specific Immune Tolerance and Counter Autoimmunity, **Robert Oakes, PhD1**, Shrey Shah, MS2, Camilla Edwards2, Senta Kapnick, PhD2, Christopher Jewell, PhD2 1University of Delaware, 2University of Maryland	54. Impact of Elemental Compositions of Magnesium Alloys on Ex Vivo and In Vitro Thrombosis, **Cole Baker, BS1**, Jeremy Goldman, PhD2, Jennifer Johnson3, Monica Hinds, PhD4, Deirdre Anderson, PhD4 1Oregon Health and Science University, 2Michigan Tech, 3ONPRC, 4OHSU	60. Formulation screening of optimized photoinitiator systems for photopolymerized dental resins, **Afnan Al-Zain, BDS, MSD, PHD1**, Richard Price, BDS, DDS, MS, FDS RCS, FRCD(C), PhD2, Eman Ismail, BDS, MSD, PHD3, Abdulrahman Balhaddad, BDS, MSD, PHD4, Jeffery Platt, DDS, MS5, Mary Anne Melo, DDS, M.Sc, PhD, FADM, FACD6 1King Abdulaziz University, 2School of Biomedical Engineering, Faculty of Medicine, 3Princess Nourah Bint Abdulrahman University, 4Imam Abdulrahman Bin Faisal University, 5Indiana University School of Dentistry, 6School of Dentistry, University of Maryland Baltimore	66. Heightened matrix fiber density drives aberrant angiogenesis to propagate fibrotic signaling, William Wang, PhD1, Jingyi Xia1, Kyle Jacobs, MS2, Ariella Shikanov, Ph.D.1, Matthew Kutys, PhD2, **Brendon Baker, Ph.D.1** 1University of Michigan, 2UCSF	74. High-Throughput In Vivo Screening of Biomaterials, **Fan Zhang1** 1University of Washington	80. Nanoimmunomaterials from the Johns Hopkins Translational ImmunoEngineering Center Enable Immune Cell Specific Targeting, **Jordan Green, Ph.D.1** 1Johns Hopkins University	

THURSDAY, APRIL 10, 2025

7:00 AM - 6:00 PM | Registration | Normandie Lounge

7:00 AM - 6:00 PM | Speaker Ready Room | PDR#6

8:00 AM - 5:00 PM | Personal Care Lounge | 4R

8:00 AM - 8:00 PM | Exhibit Hall | Salon A

8:00 AM - 10:00 AM | CONCURRENT SESSION 3

3A: PANEL: Biomaterials and Medical Products Entrepreneurship & Commercialization | Grand Ballroom

3B: Advanced Applications and Novel Methods in 3D Bioprinting 1 | 4D

3C: Antimicrobial Biomaterials 1 | BLVD C

3D: Biomaterials for Neural Engineering | BLVD B

3E: Biomaterials in Biomedicine: Diagnostics, Therapeutics and Wound Care 1 | BLVD A

3F: Drug Delivery SIG 1 | Marquette

3G: Novel Biomaterials in Non-Viral Drug Delivery Systems | 4C

3H: Tissue Engineering 1 | Joliet

10:00 AM - 10:30 AM | Networking Break with Exhibitors | Salon A | Sponsored by: TESco, Encoll Corp, Chinese Association for Biomaterials (CAB), UC San Diego Shu Chien-Gene Lay Department of Bioengineering Sanford Stem Cell Institute

10:30 AM - 12:30 PM | Plenary Session I: Society Awards | Grand Ballroom

12:30 PM - 1:30 PM | Women's Networking Luncheon | Grand Ballroom | sponsored by: Texas A&M University Department of Biomedical Engineering and UC San Diego Shu Chien-Gene Lay Department of Bioengineering Sanford Stem Cell Institute

12:30 PM - 1:30 PM | JBMR-A Editorial Board Meeting | 4A | by Invitation Only

1:30 PM–3:30 PM | CONCURRENT SESSION 4

4A: PANEL: Breaking Into Women's Health Research with Biomaterials Technologies | Grand Ballroom

4B: Antimicrobial Biomaterials 2 | BLVD C

4C: Biomaterials in Biomedicine: Diagnostics, Therapeutics and Wound Care 2 | BLVD A

4D: Drug Delivery 2 | Marquette

4E: Orthopaedic Biomaterials 1 | 4D

4F: Regenerative Biomaterials for Complex Tissue Regeneration 1 | BLVD B

4G: Tissue Engineering 2 | Joliet

4H: Postdoctoral Recognition Award (PRA) Competition | 4C

3:30 PM - 4:00 PM | Networking Break with Exhibitors | Salon A | Sponsored by: TESco, Encoll Corp, Chinese Association for Biomaterials (CAB), UC San Diego Shu Chien-Gene Lay Department of Bioengineering Sanford Stem Cell Institute

4:00 PM - 6:00 PM | PLENARY SESSION II: ACTA BIOMATERIALIA AWARDS | GRAND BALLROOM

6:00 PM - 7:30 PM | Poster Session II, Networking with Exhibitors | Salon A | Sponsored by TESco

6:00 PM - 7:30 PM | Biomaterials Education Challenge | Salon A | Sponsored by Polbionica S.A.

6:00 PM - 7:30 PM | Historically Marginalized Voices in Biomaterials Science and Engineering | Marquette

7:30 PM - 8:30 PM | SIG Mixers | Offsite Venues

7:00 PM - 8:30 PM | ACTA Reception | BY INVITATION ONLY

8:00 PM - 9:00 PM | Black, Latinx, Indigenous and Persons of Color Mixer | Offsite Venue

CONCURRENT SESSION 3

THURSDAY, APRIL 10, 2025 • 8:00 AM – 10:00 AM

Session Title	3A: PANEL: Biomaterials and Medical Products Entrepreneurship & Commercialization	3B: Advanced Applications and Novel Methods in 3D Bioprinting 1	3C: Antimicrobial Biomaterials 1	3D: Biomaterials for Neural Engineering	3E: Biomaterials in Biomedicine: Diagnostics, Therapeutics, and Wound Care 1	3F: Drug Delivery SIG 1	3G: Novel Biomaterial Developments in Non-Viral Drug Delivery Systems	3H: Tissue Engineering SIG 1
Moderators	**Kenneth Sims**	**Gulden Camci Unal, Vipuil Kishore, Daniel Shiwarski**	**Amber Jennings, Mary Beth Monroe, Anita Shukla**	**Kyle Lampe, Sarah Stabenfeldt, Tim O'Shea**	**David Mills**	**Matt Webber, Kevin McHugh**	**Daniel Galego-Perez, Qiaobing Xu**	**Woojin Han, Jeannine Coburne, Gulden Camci Unal**
Room	**Grand Ballroom**	**4D**	**BLVD C**	**BLVD B**	**BLVD A**	**Marquette**	**4C**	**Joliet**
8:00-8:15	Adam Jakus, Biothera3, Landon Nash, Shape Memory Medical, Tony Duong, Battelle Research, Sarah Stabenfeldt, University of Arizona	82. INVITED SPEAKER: Ultrafast Nanofiber 3D Printing of Polycaprolactone Scaffolds, Ievgenii Liashenko, Ph.D.1, Simon Luposchainsky2, Alberto Ramon1, Huaizhong Xu2, **Paul Dalton1** 1University of Oregon, 2Kyoto Institute of Technology	89. Wound Healing Promoted by Broad-Spectrum, Phage Structure Mimicking, Synthetic Antibacterial Nanoparticles, which Cleared MDR ESKAPE Pathogens Induced Infections in Wound Models, Juliane Hopf1,3, Carlie Kudary3, Shaun Lee2,3, Deborah Donahue2,3, Victoria Ploplis2,3, Francis J. Castellino2,3, and **Prakash. D. Nallathamby 1,3**, 1Coll. of Eng.-Univ. of Notre Dame, USA; 2Coll. of Sci.-Univ. of Notre Dame, USA, 3BIPH, Notre Dame, USA	97. INVITED SPEAKER: Stephanie Willerth, University of Victoria	104. Sea Squirt-inspired Bio-derived Tissue Sealants, **Sean Murray1** 1Purdue University	116. Indoleamine 2,3-Dioxygenase Enzyme-Peptide Gel for Local Immune Modulation, **Madeline Fuchs1**, Jennifer Simonovich, MS1, Isabella Pinto1, Gregory Hudalla, PhD1, Benjamin Keselowsky, PhD1 1University of Florida	124. INVITED SPEAKER: Ke Cheng, Columbia University	131. Aqueous synthesis of poly(ethylene glycol)-norbornene-carboxylate for dynamic hydrogel crosslinking, Nathan Dimmitt1, **Chien-Chi Lin, Ph.D.1** 1Purdue University
8:15-8:30			90. Antibiofilm Properties of Polyurethane Biomaterials Tethered with Small Molecules via Polyethylene Glycol (PEG), **Lichong Xu1**, Jiale Liu2, Chen Chen2, Christopher Siedlecki1 1Penn State College of Medicine, 2Penn State University		105. Tunable Phosphorescent Hydrogels for Cherenkov-Excited Luminescence Imaging (CELI) of Oxygen, **Simin Belali, PhD** in Organic- Polymer Chemistry1, Sergei Vinogradov, PhD1, Marien Iliza Ochoa Mendoza, PhD2, Matthew S. Reed, Master in science2, Annemarie Lang, PhD1, Brian W. Pogue, PhD2 1University of Pennsylvania, 2University of Wisconsin-Madison	117. A Regimen Compression Strategy Leveraging the Administration Route of an Injectable Hydrogel Depot Technology for Sustained Vaccine Exposure, **Jerry Yan1**, Leslee Nguyen2, Ibukun Ajifolokun3, Ben Ou, PhD2, Ye Eun Song, M.S.1, Eric Appel, PhD1 1Stanford University, 2Appel Group, Stanford University, 3Stanford		132. Extracellular matrix stress relaxation regulates spatiotemporal mammary branching morphogenesis, **Ryan Stowers, Ph.D.1**, Daniella Walter1, Juliette Moore1, Abhishek Sharma1 1UC Santa Barbara
8:30-8:45		83. Light-Pipe FRESH 3D Bioprinting for Advanced Engineering of Tissue Scaffolds with Spatial Heterogeneity, **Caner Dikyol, MS1**, Will O'Brien1, Maria Stang, PhD1, Durva Naik, PhD1, Faaz S. Ashraf, MD1, Adam Feinberg, Ph.D.1 1Carnegie Mellon University	91. Coacervate Dense Phase Displaces Surface-Established Pseudomonas aeruginosa Biofilms, Abraham Joy1, Apoorva Vishwakarma2, Amal Narayanan, N/A3, **Zixi Chen, N/A4**, Francis Dang, N/A2, Joshua Menefee5 1Northeastern University, 2Food and Drug Administration, 3University of Florida, 4E Ink Corporation, 5The University of Akron	98. Glycan Functionalized Biomaterials for Modulating Neuroinflammation and Tissue Repair Post Ischemic Stroke, **Yunxin Ouyang1**, Tatiana Segura, PhD1 1Duke University	106. Advanced Biomaterial Scaffolds for Rapid Pathogen Identification: Enabling Ultra-Sensitive Blood Drying, **Jongwon Lim1**, Rashid Bashir1 1university of Illinois at Urbana-Champaign	118. Poly(beta-amino ester)/poly(lactic-co-glycolic acid) blends for co-delivery of small molecules and proteins to enable locoregional combination therapy of primary liver tumor, **Hongzhe Yu1**, Ling Li1, Florin Selaru1, Jordan Green, Ph.D.1 1Johns Hopkins University	125. A Green Chemistry Approach to the Synthesis of Ionizable Lipids for Lipid Nanoparticle-Based mRNA Vaccines and Therapeutic Development, **Xiaoyang Xu1**, Zhongyu Li1 1New Jersey Institute of Technology	133. IGF-1 mimetic peptide conjugated alginate hydrogels enhance survival and blunt inflammation in Mesenchymal Stromal Cells, Xiaohong Tan, PhD1, Liufang Jing, BS1, Sydney Neal, BS, MS1, Munish Gupta, MD1, Jacob Buchowski, MD1, Lori Setton, PhD1, **Nathaniel Huebsch, PhD2** 1Washington University in Saint Louis, 2Washington University in St. Louis
8:45-9:00		84. An Embedded Bioprinting Approach for Engineering Biochemical Heterogeneity in 3D Scaffolds: Toward Complex Tissue Interfaces, **Murat Guvendiren1** 1New Jersey Institute of Technology	92. Enhancing infected wound regeneration using self-locomotive, antimicrobial micro-bubblers, **Yujin Ahn1**, Joo Hun Lee1, Christian Hurd1, Deborah Zhang1, Hyunjoon Kong1 1University of Illinois at Urbana-Champaign	99. Injectable Bioactive Polypeptide Scaffold Enhances Angiogenesis for Peripheral Nerve Repair, **Emily Song1**, Rachael Putman2, Ashutosh Chilkoti, PhD2 1Duke University, 2Duke	107. Topical Exosome-Loaded Gel for the Antibiotic Treatment of Wound Infections, **Melissa Wright, ME1**, Kate Johnson1, Eric Shuler, MS1, Kelsi Smith1, Christopher Tison, PhD1, Stephen Davis, PhD2, Joel Gil2 1Luna Labs USA, 2University of Miami Miller School of Medicine	119. Glucose-Stabilized Peptide Assemblies for Glucagon Delivery, **Matthew Webber, PhD1**, Sihan Yu, PhD1, Weike Chen, PhD1 1University of Notre Dame	126. Engineering controlled release from biodegradable drug delivery devices 3D printed with vat polymerization, **Hafiz Busari, M.S.1**, O. Thompson Mefford, Ph.D.2, Michael Vaughn, Ph.D.3 1Pol-Med, Inc., 2Clemson University, 3Poly-Med, Inc.	134. In Vitro Bioengineered Immune-Competent Colons as a Platform to Study Enteric Neuroinflammation and Neuroimmune Crosstalk, **Karla Ortega Sandoval1**, Claudia Collier2, Aelita Salikhova1, Shreya Raghavn, PhD2 1Texas A&M Univesity, 2Texas A&M University

CONCURRENT SESSION 3 • THURSDAY, APRIL 10, 2025 • 8:00 AM – 10:00 AM

Session Title	3A: PANEL: Biomaterials and Medical Products Entrepreneurship & Commercialization	3B: Advanced Applications and Novel Methods in 3D Bioprinting 1	3C: Antimicrobial Biomaterials 1	3D: Biomaterials for Neural Engineering	3E: Biomaterials in Biomedicine: Diagnostics, Therapeutics, and Wound Care 1	3F: Drug Delivery SIG 1	3G: Novel Biomaterial Developments in Non-Viral Drug Delivery Systems	3H: Tissue Engineering SIG 1
Room	**Grand Ballroom**	**4D**	**BLVD C**	**BLVD B**	**BLVD A**	**Marquette**	**4C**	**Joliet**
9:00-9:15		85. Development of a Novel Hybprinter-SAM for Functionally Graded Tissue Engineering Constructs with Patterned and Localized Biochemical Signals, **Jiannan Li1**, Carolyn Kim1, Hossein Alizadeh1, Yunzhi Peter Yang1 1Stanford University	93. Antimicrobial Metallopolymer to Resensitize Antibiotics Against Gram-negative Superbugs, **Md Waliullah Hossain1**, JiHyeon Hwang1, Swagatam Barman1, Chuanbing Tang1 1University of South Carolina	100. Guiding oligodendrocyte progenitor cell maturation using electrospun fiber cues in a 3D amorphous hydrogel, Rachel Mazur, PhD1, **Kyle Lampe, PhD1** 1University of Virginia	108. A Novel Peptide Hemostat for Enhanced Platelet Adhesion Leading to Improved Hemostasis, **Maithili Joshi1**, Kyung Soo Park2, Anujan Ramesh1, Danika Rodrigues1, Griff Bibbey1, Metecan Erdi1, Samir Mitragotri1 1Harvard University, 2Harvard Unversity	120. Vaccine Delivery from a TLR7 Agonist-Functionalized Peptide Hydrogel Promotes Robust Humoral and Cellular Immune Responses, **Kevin J. McHugh,1,2** Erin M. Euliano,1 Brett H. Pogostin,1 Anushka Agrawal,1 Marina H. Yu,1 Tsvetelina H. Baryakova,1 Tyler P. Graf,1 Jeffrey D. Hartgerink,1,2 1Department of Bioengineering, Rice University, 2Department of Chemistry, Rice University	127. Extracellular Vesicles Facilitate Motor-like Neuron Reprogramming to Support Temporary Muscle Reinnervation After Peripheral Nerve Injury, **Ana Salazar Puerta, PhD1**, Grant Barringer, Student1, Jon Stranan, MS1, Sara Kheirkhah, BS1, Hallie Harris, MS1, Megumi Fukuda, Student1, Amy Moore, MD1, Dave Arnold, MD2, Daniel Gallego-Perez, PhD1 1The Ohio State University, 2University of Missouri	135. Mathematical Modeling of Ligand Interconnectivity Using One-dimensional Magnetic Nanomaterials for Reversible Stem Cell Regulation, **Nayeon Kang1**, Chowon Kim1, Heemin Kang1 1Korea University
9:15-9:30		86. Digital Light Processing 3D Printing of Micro-gel-Reinforced Hydrogels, **Cody Crosby, Ph.D.1**, Abhishek Dhand2, Jonathan Taasan, B.S.3, Jason Burdick4 1Southwestern University, 2University of Pennsylvania, 3University of Colorado Boulder, 4University of Colorado, Boulder	94. Augmenting Ischemic Wound Healing Through Peroxide Decomposition, **Ayden Watt, MSc1**, Benjamin Dallison, PhD1, Nitin chandra teja Dadi, PhD1, Nicholas Makhoul, DMD, MD, FRCD(C)1, Mirko Gilardino, MD, MSc, FRCSC, FACS1, Jake Barralet, PhD1 1McGill University	101. Studying Tenascin-C Effects on Enhancing Neuronal Axonal Alignment in 3D-Printed Hydrogel Scaffolds, **Rounak Pokharel1**, Nic Leipzig, Dr.1 1University of akron	109. Wound Dressings Capable of Delivering OPN and SDF-1α to Enhance Diabetic Wound Healing, **Zhongting Liu, Master1**, Ya Guan2, Hong Niu1, Jiaxing Wen, Master1, Li Ye1, Jianjun Guan, PhD1 1Washington University in St. Louis, 2Duke University	121. Microgel-mediated delivery of decorin prevents pediatric vocal fold scarring, Ryan Friedman1, Elizabeth Brown1, Hannah Bonelli1, Matthew Aronson1, Kendra McDaid2, **Riccardo Gottardi1**, 1University of Pennsylvania, 2Children's Hospital of Philadelphia	128. Rapid, plate robot-integrated microfluidic generation and validation of large, precisely defined lipid nanoparticle libraries for screening, **Andrew Hanna, BA1**, Michael Mitchell, Ph.D.1, David Issadore, Ph.D1 1University of Pennsylvania	136. Patterned siRNA Hydrogels for Spatially Regulating Cell Gene Expression and Driving hMSC Osteogenesis, **Cong Huynh1**, Minh K. Nguyen2, Nicholas Kwon2, Zachary Flohr2, Melanie Chetverikova2, Eben Alsberg1 1University of Illinois at Chicago, 2Case Western Reserve University
9:30-9:45		87. IN4MER Bioink: A Single-Modality Biosensing Bio-ink for Multianalytes and Temperature Monitoring Applications, **Waqas Saleem1**, David Chimene1, Berkley White1, Kaivalya Deo2, Jeremy Thomas3, Nithin Chidambara1, Cole Mandrona1, Kirsten Landsgaard4, Brian Ko1, Roland Kaunas1, Akhilesh Gaharwar1, Michael McShane1 1Texas A&M University, 2Axent Biosciences, 3Duke University, 4TAMU	95. Covalent conjugation of Tanfloc on Titania Nanotube surface Enhancing Antibacterial Properties, **Ramesh Singh1**, Ketul Popat1 1George Mason University	102. Temporospatial Sensitive Nanoprobe for Traumatic Brain Injury, David Flores-Prieto1, Amanda Witten, M.S.1, Rachael Sirianni, PhD2, **Sarah Stabenfeldt, PhD1** 1Arizona State University, 2UMass Chan Medical School	110. Multifunctional hydrogels as wound dressing materials: In vitro and in vivo evaluations, **Muhammad Umar Aslam Khan1**, Muhammad Azhar Aslam2, Tooba Yasin3, Humaira Masood Siddiqi3, Anwarul Hasan1 1Qatar University, 2University of Engineering and Technology, 3Quaid-i-Azam University	122. Aromatic mRNA lipid nanoparticle platform confers vaccine protection with reduced off-target delivery, **Hannah Yamagata, B.S.1**, Marshall Padilla, PhD1, Michael Mitchell, Ph.D.1 1University of Pennsylvania	129. Multifunctional Nanoscale Delivery System for Breast Cancer Brain Metastasis, **Metin Uz, Ph.D**.1, Mohd Ali Abbas Zaidi2, Asad Rehman2, Tugce Dogruel1, Laiba Anwar2, Mahek Fatima2, Md Arafat Khan Arafat Khan2, Parvez Khan3, Juan Santamaria2, Mohd Wasim Nasser2 1Cleveland State University, 2University of Nebraska Medical Center	137. Sacrificial Endothelialized Microfibers for Engineering Aligned Capillary Beds, **Maggie Jewett1**, Harrison Hiraki, PhD1, Firaol Midekssa, MS1, Elizabeth Stanley1, Michael Hu, MS1, Siddhi Bhirud1, Susan Xi1, Brendon Baker, Ph.D.1 1University of Michigan
9:45-10:00		88. High Throughput Screening of Patient-Derived Breast Cancer with Improved Physiological Relevance by Basement Membrane Matrix for Clinical Application, **Wonwoo Jeong, PhD1** 1Wake Forest Institute for Regenerative Medicine	96. Eradication of Staphylococcus aureus Biofilm on Polyethylene when Paired with a Mixed Metal Electrode Using Cathodic Voltage-Controlled Electrical Stimulation and Subsequent Alkaline Incubation, kevin McPhillips, PhD1, Menachem Tobias, MS1, **Mark Ehrensberger, PhD1** 1University at Buffalo	103. Studying astrocyte borders using injectable biomaterials, **Timothy O'Shea, PhD1**, Eric DuBois, MS1 1Boston University	111. A Rotational Shear-Based Device for Fabricating Uniform Hydrogel Microspheres for Prostate Cancer Treatment Using Embolization, **Hanieh Shokrani1**, Sam Stealey, PhD1, Silviya Zustiak, PhD1 1Saint Louis University	123. Lipid nanoparticles targeting smooth muscle cells as a therapeutic platform for ACTA2 genetic vasculopathy of infancy, **Eliz Amar Lewis1**, Juan Carlos Oliva Estrada2, William Sawyer3, Sabyasachi Das4, Pazhanichamy Kalailingam4, Rashmi Richa4, Joseph Lawton4, Christiano Alves4, Lauren Fox4, Ben P. Kleinstiver4, Patricia Musolino4, Mark E Lindsay4, Natalie Artzi2 1Brigham and Women's Hospital, Haravard Medical School, 2Brigham and Women's Hospital, Harvard Medical School, 3Brigham and Women's Hospital, Harvard Medical School, 4Massachusetts General Hospital	130. A Dendrimer-Based Ultrasound-Responsive Gene Delivery System for Precision Cancer Therapy, **Nikita Sehgal, MS1**, Kevin Schilling, PhD1, Riccardo Carloni, PhD1, Carolyn Schutt Ibsen, PhD1 1Oregon Health& Science University	138. Photonic manipulation of ligand spacing in supramolecular self-assembly for stem cell regulation, Sungkyu Lee1, **Heemin Kang1** 1Korea University

CONCURRENT SESSION 4

THURSDAY, APRIL 10, 2025 • 1:30 PM – 3:30 PM

Session Title	4A: PANEL: Breaking Into Women's Health Research with Biomaterials Technologies	4B: Antimicrobial Biomaterials 2	4C: Biomaterials in Biomedicine: Diagnostics, Therapeutics, and Wound Care 2	4D: Drug Delivery SIG 2	4E: Orthopaedic Biomaterials SIG 1	4F: Regenerative Biomaterials for Complex Tissue Regeneration 1	4G: Tissue Engineering SIG 2	4H: Postdoctoral Recognition Award (PRA) Competition
Moderators	**Shreya Raghavan, Erika Moore**	**Elizabeth Brisbois, Zhaowei Jiang, Bingyun Li**	**David Mills**	**Gopal Agarwal, Lisa Volpatti**	**Amber Jennings**	**Gulden Camci Unal, Woojin Han, Jian Yan, Guillermo Ameer**	**Jeannine Coburne, Gulden Camci Unal, Qun Wang**	**Claudia Loebel, Stephanie Fung**
Room	**Grand Ballroom**	**BLVD C**	**BLVD A**	**Marquette**	**4D**	**BLVD B**	**Joliet**	**4C**
1:30-1:45	Sandra Madueke-Laveaux, University of Chicago, Shikha Jain, University of Illinois Cancer Center	140. Interrogating Temperature-Modulated Internal Cavitation Effect on Biofilm Removal Using Self-Propelling Antimicrobial Microbubblers, **Joo Hun Lee1**, Yujin Ahn1, Adam Marcowicz1, Guillermo Monroy1, Stephen Boppart1, Hyunjoon Kong1 1University of Illinois at Urbana-Champaign	148. Minimally–Invasive Implants to Predict Immunotherapy Sensitivity and Map Organ Allograft Tolerance Trajectories, **Russell Urie, PhD1**, Amogh Angadi1, Hailey Brady1, Jiane Feng1, Bryan Wonski1, Lonnie Shea1 1University of Michigan	158. Epigenetic-targeting nanotherapeutics for genetic kidney disease, Joshua Giblin, B.S.1, **Eunji Chung, PhD1** 1University of Southern California	166. Self-Polymerizing, Radio-opaque Resin for Vertebral Augmentation, **Russell Thompson, MD, PhD1**, Maddison Segal, BS1, Stephanie Sipics, BS1, Matthew Becker, Dr.1 1Duke University	182. INVITED SPEAKER: Thanh Nguyen, University of Connecticut	189. Amphiregulin releasing alginate hydrogels for treating ischemic muscle injuries, **Brennagh Shields1**, Lauren Mottel1, Lindsay Gallagher1, Brian Kwee1 1University of Delaware	Alisa Isaac, PhD, UT Health San Antonio-Austin Graham, PhD, University of California, San Francisco David Ramos, PhD, University of California, Davis Fan Zhang, PhD, University of Washington Fang-Yi (Ida) Su, PhD, Georgia Institute of Technology & Emory University Fengqiao (Amanda) Li, PhD, Mayo Clinic Arizona Qiangqiang Shi, PhD, University of Pennsylvania Yizong Hu, PhD, Massachusetts Institute of Technology
1:45-2:00		141. Development of a Nitric Oxide-Releasing Cephalexin-based Hybrid Compound for Enhanced Antimicrobial Efficacy and Biofilm Disruption, **SUMIT KUMAR1**, Myddelton Parker1, Yi Wu2, Hitesh Handa2, Elizabeth J. Brisbois2 1University of Georgia, 2University of Georgia	149. Immunoregulatory matrix-bound nanovesicles improve mesh-aided abdominal hernia repair, **Zhengni Liu, /1**, Lei Liu, /2, Beili Zhang, /3, Rui Tang, /2 1The University of Queensland, Brisbane, 2Shanghai East Hospital, TongJi University, 3Ninth People's Hospital Affiliated to Shanghai Jiaotong University School of Medicine	159. Controlled drug delivery with peptide hydrogel enabled with boronic acid dynamic covalent chemistry, **Chaoyang Tang1**, Brett Pogostin2, Samuel Wu1, Christopher Pennington1, Michael Swierczynski1, Dilrasbonu Vohidova1, Omid Veiseh1, Zachary Ball1, Jeffrey Hartgerink, Ph.D.1, Kevin McHugh, Ph.D.1 1Rice University, 2MIT	167. Bioresorbable Magnesium-Doped Glass-Ceramic Nanoparticle for Osteoimmunomodulation, **Sun Latt1**, Pedram Sotoudeh Bagha, Ph.D.1, Valeria Cardenas1, Andres Larraza1, Mehdi Razavi, Ph.D.1 1University of Central Florida		190. Decellularized Lucky Bamboo Scaffolds as Platforms for Bone Tissue Engineering, **Ali Salifu1**, Precious Etinosa2, Vanessa Uzonwanne1, Joshua Gershlak3, John Obayemi2, Glenn Gaudette1, Wole Soboyejo2 1Boston College, 2Worcester Polytechnic Institute, 3Massachusetts General Hospital	
2:00-2:15		142. Development of an Antimicrobial Bacteriocin-Based Hydrogel for Treating Second-Degree Burns Wounds, **Darnell Campbell, B.S.1**, Nicole Levi, PhD1 1Wake Forest University School of Medicine	150. Novel silicone-based sponge for hemostatic treatment: Spatiotemporal studies using a noninvasive model, **KAUSIK MUKHOPADHYAY**1 1University of Central Florida	160. Targeted Lipid Nanoparticle Delivery for Dual RNA-Mediated Treatment of Obesity, **William Stewart1**, Xiaoyang Xu1, Fengqiao Li2 1New Jersey Institute of Technology, 2New Jersey Institue of Technology	168. Directing the Matrix-Producing Phenotypic Range of Meniscal Fibrochondrocytes with Biomaterial Composition, **Saitheja Pucha1**, Kyley Burkey2, Jenny Robinson, PhD, Texas A&M University2, Jay M Patel3 1Emory University, 2University of Washington, 3Emory	183. Millimeter-scale Dual-Opposing RNAi Gradient Hydrogel for Interfacial Gene Silencing, **Cong Huynh1**, Tyler Hoffman2, Marcus Goudie2, Peyton Tebon2, Minh K. Nguyen3, Kaelyn L. Gasvoda1, Yang Song2, Hyojin Ko2, Kirsten Fetah2, Ali Khademhosseini2, Song Li2, Eben Alsberg1 1University of Illinois at Chicago, 2University of California Los Angeles, 3Case Western Reserve University	191. Hydrogel-Delivery of hiPSC-Cortical Neurons Improves Local and Distal Anatomical and Functional Outcomes Following Chronic Cervical Spinal Cord Injury, **Vanessa Doulames, PhD1**, Meghan Hefferon, BS1, Neil Baugh1, Christopher Long1, Michelle Huang1, Theo Palmer, PhD2, Sarah Heilshorn, PhD1 1Stanford University, 2Stanford University School of Medicine	
2:15-2:30		143. Dual-Action Prevention of Adherent and Non-Adherent Biofouling via Slippery, Nitric Oxide-Releasing Nanoemulsion-Infused Porous Surfaces, **Grace Nguyen1**, Aasma Sapkota1, Hitesh Handa1, Elizabeth J. Brisbois1 1University of Georgia	151. Injectable and biodegradable piezoelectric hydrogel for osteoarthritis treatment, **I'jaaz Muhammad, B.S.E, MS.E1**, Gang Ge, PhD1, Thanh Nguyen, PhD1 1University of Connecticut	161. Engineering CSF pH and tonicity for improved CNS nanoparticle and drug delivery, **Constance Mietus, MD, PhD1**, Olivia Mihalek2, Elena Andreyko, PhD2, Tobi Babayemi3, Rachael Sirianni, PhD2 1University of Massachusetts, 2UMass Chan Medical School, 3Rice University	169. Faster Bone Replacement Achieved by Carbonate Apatite Cement and Granules, **Kunio Ishikawa, PhD1** 1Kyushu University	184. Sustained RNAi Molecule Presentation in Hydrogels Destabilizes Local Actin Polymerization of Encapsulated Cells to Induce Spatiotemporal Shape Transformations, **Kaelyn L. Gasvoda1**, Aixiang Ding1, Cong Huynh1, Oju Jeon1, Alexandria Sterenberg1, Eben Alsberg1 1University of Illinois at Chicago	192. Magneto-Responsive Iron-Chelated Silk Microfibers as an In-Situ Aligning Architecture for Injectable Biomaterials, Melissa Wojnowski, MS1, **Jeannine Coburn, PhD1** 1Worcester Polytechnic Institute	

CONCURRENT SESSION 4 • THURSDAY, APRIL 10, 2025 • 1:30 PM – 3:30 PM

Session Title	4A: PANEL: Breaking Into Women's Health Research with Biomaterials Technologies	4B: Antimicrobial Biomaterials 2	4C: Biomaterials in Biomedicine: Diagnostics, Therapeutics, and Wound Care 2	4D: Drug Delivery SIG 2	4E: Orthopaedic Biomaterials SIG 1	4F: Regenerative Biomaterials for Complex Tissue Regeneration 1	4G: Tissue Engineering SIG 2	4H: Postdoctoral Recognition Award (PRA) Competition
Room	**Grand Ballroom**	**BLVD C**	**BLVD A**	**Marquette**	**4D**	**BLVD B**	**Joliet**	**4C**
2:30-2:45		144. Metal-Siloxanes Derived Bio-inspired Superhydrophobicity and Nitric Oxide Generation for Antibiofouling Clinical Applications, **Annalise Tucker1**, Ekrem Ozkan, PhD1, Sarah Wilson1, Arpita Shome, PhD1, Hitesh Handa1, Elizabeth J. Brisbois1 1University of Georgia	152. Fibrin Nanoparticle-Driven Gel Formation on Structural Scaffolds for Enhanced Diabetic Wound Healing, **Nooshin Zandi, Ph.D.1**, Connor Moore, Not Applicable2, Mengnan Dennis, Doctorate Degree3, Martin King, Ph.D.2, Michel Daniele, Ph.D.2, Ashley Brown, PhD3 1UNC-NCSU, 2NCSU, 3North Carolina State University	162. A Scalable, Translatable Hydrogel Platform for Improving Subunit Vaccines, **Priya Ganesh1**, Alexander Prossnitz, PhD1, Carolyn Jons, M.S.1, Ye Eun Song, M.S.1, Noah Eckman, M.S.1, Eric Appel, PhD1 1Stanford University	170. The implantation of a proprietary glass polyalkenoate cement into rat subcutaneous tissue.Daniella Marx, PhD1, Sunjeev Phull, PhD2, Marcello Papini, PhD1, **Mark Towler,** PhD3 1Toronto Metropolitan University, 2University of Missouri Science and Technology, 3Missouri University of Science and Technology	185. Citrate-based micropillar scaffolds promoted bone regeneration via regulation of cell secretome, **Xinlong Wang1**, Yiming Li1, Yuan Luo1, Guillermo Ameer1 1Northwestern University	193. Rapid Fabrication of Polyvinyl Alcohol Hydrogel Foams with Encapsulated Mesenchymal Stem Cells for Chronic Wound Treatment, **Nghia Le Ba Thai1**, Emily Fittante1, Zhen Ma2, Mary Beth Monroe, PhD2 1BioInspired Syracuse, Syracuse University, 2Syracuse University	
2:45-3:00		145. Harnessing nature's blueprints to design antifouling antimicrobial interactive biointerfaces and synthetic cells, **César Rodriguez-Emmenegger1** 1Institute for Bioengineering of Catalonia and Catalan Institution for Research and Advanced Studies	153. Deoxycholate-based Composite Microparticles for Effective and Safe Adipocytolysis, **Daniel Kupor1**, Michael Felder1, Hanieh Safari, PhD1, Lola Eniola-Adefeso2 1University of Michigan, 2University of Chicago, Illinois	163. Microneedle Patches for Minimally-Invasive Transdermal Nanoparticle Delivery, Haylee Wagner1, Tailynn McCarty1, Theo Prachyathipsakul1, Minelise Rivera De Jesus1, S. Thai Thayumanavan1, **Cathal Kearney1** 1University of Massachusetts Amherst	171. In vivo wear of highly crosslinked polyethylene in total hip replacements from two manufacturers, **Valerio Porrati, BS1,** Peter Wahl, MD2, Michel Schläppi, PhD3, Roman Heuberger, PhD4, Deborah Hall, PhD1, Robin Pourzal, PhD1 1Rush University Medical Center, 2University of Bern, 3Kantonsspital Winterthur, 4RMS Foundation	186. Regenerative features in chronic paralyzed rats implanted with 3D reduced graphene oxide foams, Esther Benayas1, Raquel Madroñero2, Ana Domínguez-Bajo1, Yasmina Hernández-Martín3, Marta Zaforas2, Juan Aguilar2, Elisa López-Dolado2, **María Serrano1** 1Consejo Superior de Investigaciones Científicas, 2Hospital Nacional de Parapléjicos, 3Hospital Nacional de Paraplégicos	194. Self-organized insulin-producing β-cells differentiated from human omentum-derived stem cells and their in vivo therapeutic potential, **Ji Hoon Jeong, Ph.D.1**, Yongsung Hwang, Ph.D.1, Joohyun Kim, Ph.D.1, Ki Nam Park, Ph.D.2, Sang-Heon Kim, Ph.D.3, Jae Hong Park, Ph.D.4, Sung Sik Hur, Ph.D.1 1Soonchunhyang institute of medi-bio science, 2Soonchunhyang University Bucheon Hospital, 3Korea Institute of Science and Technology, 4Soonchunhyang University Cheonan Hospital	
3:00-3:15		146. Nanostructured materials as a tool in the fight against hospital-acquired infections, Anna Michalicha1, Karolina Budniak2, Przemyslaw Suchecki2, Michael Kerber3, Malgorzata Lewandowska2, Anna Belcarz1, **Agnieszka Krawczynska2** 1Medical University of Lublin, 2Warsaw University of Technology, 3University of Vienna	154. Emerging Forms of Electrospun Nanofiber Materials for Biomedical Applications, **Jingwei Xie1** 1UNMC	164. Urease-Powered Nanomotor Containing STING Agonist for Bladder Cancer Immunotherapy, **Sei Kwang Hahn1**, Hyunsik Choi1 1POSTECH	172. Osteoinductive Chitosan Hydrogel for Vertebral Compression Fracture Repair Using an Osteoporotic Rabbit Model, **August Hemmerla1**, Abigail Grisolano2, Austin Kimes, DVM2, Sam Huddleston, PhD2, John Wray, DVM2, Shwetha Ramachandra, MS2, Farnoush Rezaei, MS2, Don Moore, MD2, Ji-Hey Lim, DVM, PhD, DACVIM3, Bret Ulery, Ph.D.4 1University of Missouri, 2University of Missouri – Columbia, 3University of California, Davis, 4University of Missouri - Columbia	187. Magnesium ions-incorporating bioactive hydrogels for in situ tissue regeneration, **Jeong Min Kim, BS1**, Kyung Min Park, Ph.D1 1Incheon National University	195. Use of an Injectable Recombinant Polypeptide Scaffold for Peripheral Nerve Repair, **Rachael Putman1**, Stefan Roberts, PhD2, Daniel Joh, MD, PhD1, Neill Li, MD1, Ashutosh Chilkoti, PhD1 1Duke, 2inSoma Bio; Duke	
3:15-3:30		147. Antimicrobial Hemostatic Shape Memory Polymer Foams for Infection Prevention in Traumatic Wounds, **Ernest Obeng1**, Sevde Can1, Nghia Le Ba Thai1, Changling Du2, Katheryn Dong1, Michaela Hall3, Joshua Satalin3, Michaela Kollisch-Singule3, Mary Beth Monroe, PhD2 1BioInspired Syracuse, Syracuse University, 2Syracuse University, 3SUNY Upstate Medical University	155. Hybrid-nested microneedle arrays integrated with cryogels for effective management of biofilm-infected diabetic wounds, **SYED MUNTAZIR ANDRABI1** 1University of Nebraska Medical Center	165. Enhancing Cell Transfection Efficiency via Modulation of Extracellular Fluid Viscosity, **Yining Zhu1**, Jingyao Ma1, Jiayuan Kong1, Di Yu1, Hai-Quan Mao1 1Johns Hopkins University	173. Photocurrent-Directed Immunoregulation Accelerates Osseointegration through Activating Calcium Influx in Macrophages, Yizhou Zhu, PhD1, **Kelvin Yeung, PhD1** 1The University of Hong Kong	188. Reprogrammable 4D Tissue Engineering Scaffold via Reversible Ion-Transfer Printing, **Aixiang Ding1**, Eben Alsberg1 1University of Illinois at Chicago	196. WNT7A mRNA-LNPs Reduce Skeletal Muscle Fibro-adipogenic Progenitor Adipogenesis, **Larion Martin Santiago1**, Kasoorelope Oguntuyo1, Britney Chin-Young1, Angelo Amabile, PhD1, Woojin Han1 1Icahn School of Medicine at Mount Sinai	

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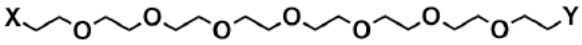
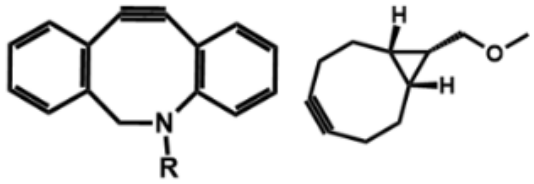


Clickable groups



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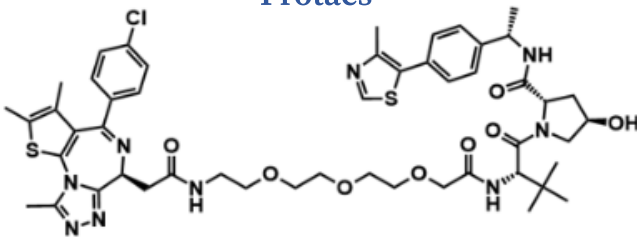

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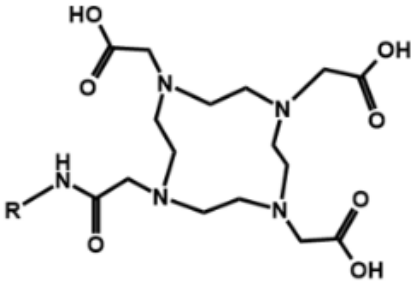
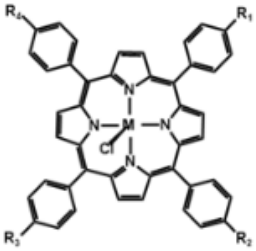
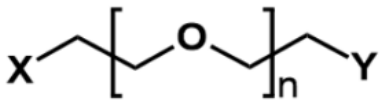


Metal-pophyrin complexes

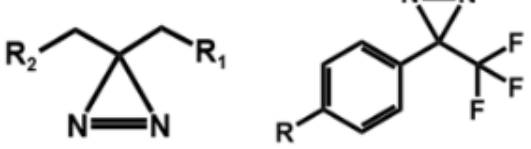


Heterbifunctional linkers



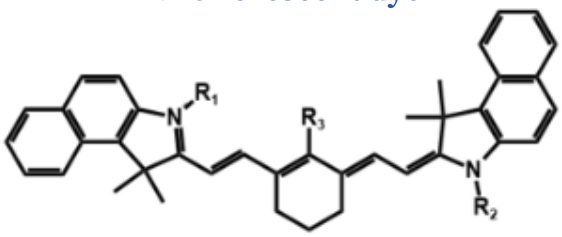
*x, y = Reactive groups
n = up to 45

Photoaffinity linkers



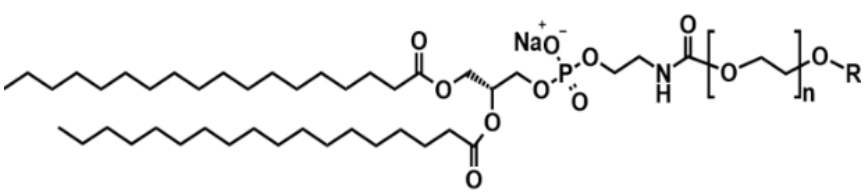
diazirine linkers diazirine group

NIR florescent dye



Cyanine 7.5

DSPE-PEG-R



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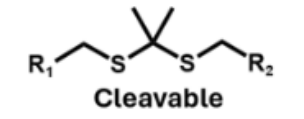

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FRIDAY, APRIL 11, 2025

7:00 AM - 5:00 PM | Registration | Normandie Lounge

7:00 AM - 4:00 PM | Speaker Ready Room | PDR#6

8:00 AM - 5:00 PM | Personal Care Lounge | 4R

8:00 AM - 7:00 PM | Exhibit Hall | Salon A

8:00 AM - 10:00 AM | CONCURRENT SESSION 5

5A: PANEL: Navigating Commercialization Challenges of Medical Devices from a Scientist's Perspective | Grand Ballroom | Sponsored by: Encoll Corp.

5B: Orthopaedic Biomaterials SIG 2 | BLVD B

5C: Biomaterials for Organoids | 4C

5D: Biomaterials Enhanced Cell Therapy: Beta Cells & Beyond | Joliet

5E: Computational & Machine Learning Approaches for Biomaterials Design & Evaluation | 4D

5F: Health Equity SIG: Biomaterials in Women's Health Engineering | BLVD A

5G: Nanomedicine for Targeted Drug Delivery 1 | Marquette

5H: Regenerative Biomaterials for Complex Tissue Regeneration 2 | BLVD C

10:00 AM - 10:30 AM | Networking Break with Exhibitors | Salon A | Sponsored by: TESco, Encoll Corp, Chinese Association for Biomaterials (CAB), UC San Diego Shu Chien-Gene Lay Department of Bioengineering Sanford Stem Cell Institute

10:30 AM - 12:30 PM | PLENARY SESSION III: SOCIETY AWARDS | GRAND BALLROOM

12:30 PM - 1:30 PM | Student Luncheon | Grand Ballroom | sponsored by: TESco, University of Oregon, Department of Bioengineering

12:30 PM - 1:30 PM | JBMR-B Editorial Board Meeting | 4A | By Invitation Only

1:30 PM–3:30 PM | CONCURRENT SESSION 6

6A: PANEL: Meet the Editors of Biomaterials Journals | Grand Ballroom

6B: Advancing the Hemocompatibility of Biomaterials | Joliet

6C: Biomaterials Based Cancer Models | BLVD B

6D: Extracellular Vesicles for Biomedical Applications | 4D

6E: Nanomaterials SIG | 4C

6F: Navigating the Path of Biomaterials and Medical Products | BLVD C | Sponsored by TESco

6G: Stimuli-Responsive Biomaterials | BLVD A

6H: Symposium in Honor of Shelly Sakiyama-Elbert's 50th Birthday | Marquette

3:30 PM - 4:30 PM | Annual Business Meeting | Marquette

3:30 PM - 4:30 PM | Student & POSTDOC Forum | BLVD C

4:30 PM - 6:00 PM | Poster Session III, Networking with Exhibitors | Salon A | sponsored by TESco

7:00 PM - 10:00 PM | BASH | Adler Planetarium | Bus Transportation will be provided out front of the hotel.

CONCURRENT SESSION 5

FRIDAY, APRIL 11, 2025 • 8:00 AM – 10:00 AM

Session Title	5A: PANEL: Navigating Commercialization Challenges of Medical Devices from a Scientist's Perspective	5B: Orthopaedic Biomaterials SIG 2	5C: Biomaterials for Organoids	5D: Biomaterials-Enhanced Cell Therapy: Beta Cells and Beyond	5E: Computational and Machine Learning Approaches for Biomaterial Design & Evaluation	5F: Health Equity SIG: Biomaterials in Women's Health Engineering	5G: Nanomedicine for Targeted Drug Delivery 1	5H: Regenerative Biomaterials for Complex Tissue Regeneration 2
Moderators	**Subramanian Gunasekaran**	**Michael Roach**	**Qun Wang, Janeta Zoldan**	**Edward Phelps, Jessica Weaver**	**Adam Gormley, Bingyun Li**	**Samantha Zambuto, Erika Moore**	**Gopal Agarwal, Xiao Huang**	**Gulden Camci Unal, Woojin Han, Jian Yang, Guillermo Ameer**
Room	**Grand Ballroom**	**BLVD B**	**4C**	**Joliet**	**BLVD B**	**BLVD A**	**Marquette**	**BLVD C**
8:00-8:15	Brian Gillette, Droice Labs Scott Gorenstein, NYU Langone–Long Island Hospital	238. Magnesium-tricalcium phosphate-hydroxyapatite Combination Anodization Coatings on Titanium Solid and 3D-printed implant surfaces, **Amisha Parekh1**, Aya Ali2, Matthew Priddy3, Scott Williamson1, Jason Griggs1, Michelle Tucci1, Amol Janorkar, Ph.D.1, Michael Roach1 1University of Mississippi Medical Center, 2University of North Carolina at Chapel Hill, 3Mississippi State University	198. Developing Chamber-Forming Human Cardiac Organoids in a Synthetic Hydrogel System, **Zhen Ma1** 1Syracuse University	206. INVITED SPEAKER: Holger Russ, University of Florida	213. Automation and Machine Learning for Antibody Formulation in High Concentration Regimes, **David Radford, PhD1**, Matthew Tamasi, PhD1, Elena Di Mare1, Adam Gormley, PhD1 1Rutgers University	221. Subcutaneous scaffold implants recapitulate the placental microenvironment for prenatal immunosurveillance, **Russell Urie, PhD1**, Shannon Dame1, Lauren Hesse1, Elizabeth Lombard1, Chengchuan Xiao1, Lonnie Shea1 1University of Michigan	229. Dual-targeting of uPAR and Ribonucleotide Reductase R2 in Triple-Negative Breast Cancer and Stromal Cells for Better Tumor Retention and Enhanced Therapeutic Efficacy, **Hsin-Yin Chuang1**, Da Huang2, Vidit Singh1, Lin Qi1, Anna Chernatynskaya1, Yue-Wern Huang1, Hu Yang1 1Missouri University of Science and Technology, 2Fuzhou University:	246. INVITED SPEAKER: Richard Tran, Acuitive Technologies, Inc.
8:15-8:30		239. Synthesis of CaCO3 Nanoparticles Using Amino Acids, **Bingyun Li, PhD1**, Qingyang Li, MS1 1West Virginia University School of Medicine	199. Hypoimmunogenic hPSC-derived cardiac organoids evade the host immune response and facilitate cardiac functional recovery, **Sophia Silver, BS1**, Dimitrios Arhontoulis, PhD2, Nathaniel Hyams, BS1, Mei Li, MD2, Alessandro Howells, BS3, Ryan Barrs, PhD1, Jacelyn Bain, BS1, Charles Kerr, PhD1, Xiaojun Lian, PhD3, Leonardo Ferreira, PhD2, Ying Mei, PhD1 1Clemson University, 2Medical University of South Carolina, 3The Pennsylvania State University		214. 3D Multi-Scale Simulations of Electrospun Mesh Mechanical Responses from nanoCT images, Evan He, BS1, Shruti Motiwale, PhD2, Elizabeth Cosgriff-Hernandez, PhD2, **Michael Sacks, PhD2** 1University of Texas at Austin, 2University of Texas at Austin	222. Placental Delivery of Cytokine Immunotherapy to Attenuate Diet-Induced Inflammation in Obese Pregnancy, Chloe Catelain, MS1, Harsh Joshi, PhD1, Rana Ajeeb1, Wanke Zhao2, Karen Jonscher, PhD2, **John Clegg, PhD1** 1University of Oklahoma, 2OUHSC	230. Ligand-targeted polymeric mRNA nanoparticles exhibit T cell tropism for in vivo CAR T cell engineering, **Manav Jain1**, Savannah Est-Witte1, Sydney Shannon1, Francis Yu1, Jonathan Schneck1, Stephany Tzeng1, Jordan Green, Ph.D.1 1Johns Hopkins University	
8:30-8:45		240. Analysis of osteogenic capacity of an octacalcium phosphate bone substitute used in orthopedic bone defect filling, **Osamu Suzuki1**, Yu Mori2, Ryo Hamai1, Susumu Sakai1, Kaori Tsuchiya1, Toshimi Aizawa2 1Tohoku University Graduate School of Dentistry, 2Tohoku University Graduate School of Medicine	200. MAGIC matrices: freeform bioprinting materials to support complex and reproducible organoid morphogenesis, **Austin Graham, PhD1**, Michelle Khoo, BS2, Vasudha Srivastava, PhD3, Kavita Parekh, BS4, Ophir Klein, MD, PhD3, Rafael Gómez-Sjöberg, PhD2, Zev Gartner, PhD3 1UCSF & CZBiohub, 2CZBiohub, 3UCSF, 4UC Berkeley	207. Vasculogenic, Synthetic Hydrogel Enhances a Marginal Corrective Dose of SC-Islets in the Gonadal Fat Pad of Diabetic Immune Deficient Mice, **Sophia Kioulaphides, M.S.1**, Angelica Torres, B.S.1, Michael Hunckler, PhD1, Nathaniel Hogrebe, PhD2, Aayush Vaswani1, Graham Barber, B.S.1, Jeffrey Millman, PhD2, Esma Yolcu, PhD3, Haval Shirwan, PhD3, Andrés García1 1Georgia Institute of Technology, 2Washington University St. Louis, 3University of Missouri	215. Computational Modeling of the Effects of Implant Metallic Composition on the Electrochemical Changes upon Cathodic Stimulation of Total Knee Replacements, Priyanshu Vishnoi, PhD1, Elise Martin, PhD1, Mary Canty, PhD1, **Mark Ehrensberger, PhD1** 1University at Buffalo	223. Developing a Microporous Annealed Particle Hydrogel to Promote Revascularization of Human Ovarian Tissue, **Despina Pavlidis, MS1**, Monica Wall, MS1, Chloe Fischer, BS1, Maria Jennings, BS1, Brendon Baker, Ph.D.1, Ariella Shikanov, Ph.D.1 1University of Michigan	231. Engineering protein-conjugated lipid nanoparticles for targeted, extrahepatic mRNA delivery to the placenta, **Hannah Geisler, MS1**, Hannah Safford1, Ajay Thatte, MS1, Michael Mitchell, Ph.D.1 1University of Pennsylvania	247. A New Biocomposite Scaffold for Osteochondral Regeneration Utilizing a Gyroid Sheet-based Geometry, **Laurel Stefani1**, Yashveer Soni1, Robert McLeod, Ph.D.1, Stephanie Bryant, Ph.D.1 1University of Colorado Boulder

CONCURRENT SESSION 5 • FRIDAY, APRIL 11, 2025 • 8:00 AM – 10:00 AM

Session Title	5A: PANEL: Navigating Commercialization Challenges of Medical Devices from a Scientist's Perspective	5B: Orthopaedic Biomaterials SIG 2	5C: Biomaterials for Organoids	5D: Biomaterials-Enhanced Cell Therapy: Beta Cells and Beyond	5E: Computational and Machine Learning Approaches for Biomaterial Design & Evaluation	5F: Health Equity SIG: Biomaterials in Women's Health Engineering	5G: Nanomedicine for Targeted Drug Delivery 1	5H: Regenerative Biomaterials for Complex Tissue Regeneration 2
Room	**Grand Ballroom**	**BLVD B**	**4C**	**Joliet**	**BLVD B**	**BLVD A**	**Marquette**	**BLVD C**
9:45-9:00		241. Bioactive Magnesium Nanocomposites for Bone Repair and Regeneration, **Samantha Gmitro1**, Andres Larraza1, Pedram Sotoudeh Bagha, Ph.D.1, Mehdi Razavi, Ph.D.1 1University of Central Florida	201. Enema Transplantation of Interleukin-10 Colonoids for the Treatment of Inflammatory Bowel Disease, Zahra Davoudi, Dr.1, Shadi Parvinroo, Dr.1, Dipak Sahoo, Dr.1, Albert Jergens, Dr.1, Michael Wannemuehler1, **Qun Wang1** 1Iowa State University	208. Methacrylic acid-based hydrogel and tuned inflammatory response enable subcutaneous allogeneic islet survival, **Sean Kinney, PhD1**, Alexander Upenieks, MASc1, Michael Sefton, ScD1 1University of Toronto	216. Data-driven design of novel polymer excipients for pharmaceutical amorphous solid dispersions, **Elena Di Mare1**, Ashish Punia, PhD2, Matthew Lamm, PhD2, Timothy Rhodes, PhD2, Adam Gormley, PhD1 1Rutgers University, 2Merck & Co., Inc.	224. Engineering an ECM Sequestering Fibrous Hydrogel to Promote Ovarian Folliculogenesis, **Emily Thomas1**, Yuhong Lu1, Riley Sauter1, Claudia Loebel, M.D., Ph.D.1, Brendon Baker, Ph.D.1, Ariella Shikanov, Ph.D.1 1University of Michigan	232. Protein Corona Impacts Targeting and Affinity of Layer-by-Layer Nanoparticles, **Simone Douglas-Green1**, Tamara Dacoba Gomez2, Bhuvna Murthy2, Alfonso Restrepo2, N. Daniel Hills1, Paula Hammond2 1Georgia Tech and Emory University, 2MIT	248. Modular Shape-Controllable Engineered Tissues for Muscle Tissue Engineering, Bugra Ayan, PhD1, Gaoxian Chen, PhD1, **Ngan Huang, PhD1** 1Stanford University
9:00-9:15		242. Corrosion Characteristics of Electrocautery Damaged (ECD) CoCrMo alloys using Electrochemical Impedance Spectroscopy (EIS), Mohsen Karshenas1, Jeremy Gilbert, Ph.D.1, Charley Goodwin1, Hwaran Lee1 1Clemson University	202. Engineering Human iPSC Derived Planar Neural Organoid (PNO) Models to Study Melanoma Brain Metastases, **Joydeb Majumder1**, Elizabeth Torr2, William Murphy, PhD3, Apoorva Ramamurthy1, Ulrika Muller1 1University of Wisconsin-Madison, 2University of Wisconsin, 3University of Wisconsin Madison	209. Interrogating the Impact of Porous Scaffold Geometry on Host Responses and Transplant Outcomes In Vivo, **Taylor Lansberry, BS1**, Robert Accolla, PhD1, Cameron Crouse, BS1, Justin Walsh, BS1, Cherie Stabler, PhD1 1University of Florida	217. Demonstrating the Impact of L- and D-Peptide Isomer Mixtures on Hydrogel Self-Assembly via Molecular Dynamics, Justin Kim1, Rachel Letteri, PhD1, Phillip Taylor, PhD1, **Kyle Lampe, PhD1** 1University of Virginia	225. Design of Self-fitting Vaginal Stents to Balance Retention and Ease of Removal, **Ashley Hicks1,** Kailey Wilson1, Varsha Kotamreddy1, Melissa Grunlan, Ph.D.2, Courteney Roberts, B.S.2, Nicholas Grammer3, Julie Hakim, MD4, Elizabeth Cosgriff-Hernandez, PhD3, Taylor Sullivan1 1The University of Texas at Austin, 2Texas A&M University, 3University of Texas at Austin, 4Baylor College of Medicine	233. Pemetrexed as folate receptor-α (FRα) targeting moiety, active targeting of colorectal cancer using chemotherapy-loaded nanoparticles., **Mohammad Alnatour1**, Ramkrishna Sen1, Lokesh Janardhanam1, Sean Geary, PhD1, Aliasger Salem, PhD1 1University of Iowa	249. Aminated Gel-SH improves gelation kinetics and collagen integration in a tendon-to-bone junction biomaterial, **Genesis Rios Adorno, MS1**, Kyle Timmer, MS1, Raul Sun Han Chang, Ph.D.1, Jiachun Shi, Ph.D.1, Simon Rogers, Ph.D.1, Brendan Harley, ScD2 1University of Illinois at Urbana Champaign, 2University of Illinois Urbana-Champaign
9:15-9:30		243. Decoupling Interdependent Physical Properties in 3D-Printed Biodegradable Polymer Scaffolds, **Sara Oswald1**, Andrew Kitson1, Santiago Lazarte2, Brandon Krick, PhD3, Lesley Chow, PhD1 1Lehigh University, 2Florida State University, 3Florida A&M University-Florida State University	203. FRESH 3D Bioprinting Cell Aggregates with Engineered Architectures, **Samuel Moss, B.S.1**, Brian Coffin, Ph.D.2, Daniel Shiwarski, Ph.D.2, Adam Feinberg, Ph.D.1 1Carnegie Mellon University, 2University of Pittsburgh	210. Anti-TNFα Antisense Oligonucleotide Conjugated PLG Nanoparticles Protect Transplanted Islets, **Elizabeth Bealer, MS1**, Namit Padgaonkar, BS1, Kelly Crumley, MS1, Eiji Saito, PhD1, Zoe Beekman1, Lonnie Shea1 1University of Michigan	218. 3D pore shape is predictable in randomly packed granular systems, **Yasha Saxena1**, Lindsay Riley1, Wendy Wu1, Shihab Kabir1, Amanda Randles1, Tatiana Segura, PhD1 1Duke University	226. Probing the Role of Lipid Nanoparticle Elasticity on mRNA Delivery to the Placenta, **Hannah Safford1**, Cecilia Shuler1, Michael Mitchell, Ph.D.1 1University of Pennsylvania	234. In vitro and in vivo development of rat macrophage membrane coated nanoparticles for targeted delivery to inflamed peripheral nerves, Chanpreet Kaur, MD1, Maleen Cabe, MS1, **Kelly Langert, PhD1** 1Loyola University Chicago	250. Conductive MXene Scaffolds for Composite Musculoskeletal Tissue Regeneration, **Emma Kerimo1**, Aleyna LaCroix1, Sreejith Panicker, MS2, Anand Tiwari, PhD1, William Scheideler, PhD1, Katherine Hixon, Ph.D.3 1Dartmouth College, 2Washington University St. Louis, 3Dartmouth College, Thayer School of Engineering
9:30-9:45		244. Effects of Galvanic Corrosion on the Cytotoxicity of 3D Printed Magnesium- and Zinc-Based Implants, **Jennifer Patterson1**, Chloé Lelong2, Alex Duke3, Viktoriia Sevostianova1, Blanca Limones-Ahijón1, Ángela Castro-María1, Carlota Corchado1, Shuai Tang1, Miguel Grande4, Lily Reinke3, Alexander Bakke1, Muzi Li1, Óscar Contreras1, Mahdi Sabbaghian1, Simon Pöstges5, Alexander Kopp5, Javier LLorca1, Jon Molina1 1IMDEA Materials Institute, 2University of Paris-Saclay, 3Michigan State University, 4Imperial College London, 5Meotec GmbH	204. Innovating Brain Organoid Technology: Enhancing Lymphatic Vascularization with Synthetic Matrices, **Dominique Gramm1**, Donghyun Jeong1, Brenda Gonzalez1, Christopher Patzke1, Donny Hanjaya-Putra1 1University of Notre Dame	211. Development and encapsulation of programable pro-angiogenic cell factories for long-term support of beta cell transplantation, **ALVARO MORENO LOZANO1**, Martha Fowler1, Shalini Pandey1, Jacob Cabler2, Cassidy Hart1, Michael Gill1, Samantha Fleury1, Yewen Wu3, Qixu Zhang3, Omid Veiseh1 1Rice University, 2Rice Univeristy, 3MD Anderson	219. Machine Learning-Based Morphometric and Biomarker Analysis To Guide Elastic Matrix Regenerative Repair in Abdominal Aortic Aneurysms, **Francesca Morrell1**, Joseph Amitrano2, Anand Ramamurthi, PhD, FAHA2, Dhruv Seshadri2 1Lehigh Univeristy, 2Lehigh University	227. Characterization of Sex-Based Differences in Integrin-Mediated Endothelial Cell Adhesion and Phenotype, **Abbey Nkansah1**, Nicolai Ang1, Nicholas Grammer1, Elizabeth Cosgriff-Hernandez, PhD1, Josephine Allen, PhD2 1University of Texas at Austin, 2University of Florida	235. Ionizable lipid nanoparticles for gene editing of the fetal lung, **Adele Ricciardi, MD, PhD1**, William Peranteau, MD2, Michael Mitchell, Ph.D.1 1University of Pennsylvania, 2Children's Hospital of Philadelphia	251. Multiphasic 3D materials with tailored gradients transformed from 2D mats for complex tissue regeneration. **Shatil Shahriar1**, Jingwei Xie2 1University of Nebraska Medical Center, 2UNMC
9:45-10:00		245. Electrical Behavior of Segregated Network Nanocomposites for Orthopedic Applications, **Peder Solberg1**, Douglas Van Citters, PhD1 1Dartmouth College	205. Optimizing Synthetic PEG-4MAL Hydrogels for the Culture of Patient-Derived Enteroids, **Luis Arrieta-Viana1**, Tatiana Karakasheva2, Katharine Hamilton3, Andrés García1 1Georgia Institute of Technology, 2Children's Hospital of Philadelphia, 3Children's Hospital of Philadelphia	212. In Vitro Model of the Confined Islet Transplant Site to Evaluate Direct and Indirect T Cell Cytotoxicity and Protective Effects of Islet Biomaterial Encapsulation, **Ilaria Pasolini1**, Grisell Gonzalez1, Alice Tomei1 1University of Miami	220. Building Predictive Models of Stem Cell Fate from Curvature-Induced Cytoskeletal Changes, **Elizabeth Byers1**, Justin Brown1 1The Pennsylvania State University	228. Chemical Characterization of Nanoparticles Shed from Tampons, **Jade White1**, AnneMarie Hasbrook1, Claire Edwards1, Kaitlin Fogg, Ph.D.1, Joe Baio, Ph.D.1 1Oregon State University	236. Targeting nanoparticle delivery to metastatic breast cancer by the intrathecal (cisterna magna) route, **Chung-Fan Kuo, PhD1**, Elena Andreyko, PhD1, Tobi Babayemi2, Kha Uyen Dam, BS1, Rachael Sirianni, PhD1 1UMass Chan Medical School, 2Rice University	252. Ulcer-Targeting Prodrug Particles to Promote Regenerative Healing in Inflammatory Bowel Disease, **Erika Salzman1**, Elaine Tong1, Emma Berman1, Esther Chu1, Phillip Messersmith2 1University of California, Berkeley, 2University of California Berkeley

CONCURRENT SESSION 6

FRIDAY, APRIL 11, 2025 • 1:30 PM – 3:30 PM

Session Title	6A: PANEL: Meet the Editors of Biomaterials Journals	6B: Advancing the Hemocompatibility of Biomaterials	6C: Biomaterial-Based Cancer Models	6D: Extracellular Vesicles for Biomedical Applications	6E: Nanomaterials SIG	6F: Navigating the Path of Biomaterials and Medical Products	6G: Stimuli-Responsive Biomaterials	6H: Symposium in Honor of Shelly Sakiyama-Elbert's 50th Birthday: Celebrating 25 Years of Shaping Biomaterials in Neuroengineering
Moderators	**Kent Leach**	**Hitesh Handa, Mark Garren**	**Ricardo Cruz-Acuna, Sara Pedron-Haba, Sylvia Zustiak**	**Eun Ji Chung**	**Kelly Langert**	**Stephanie Steichen, Brittany Givens Rassoolkhani, Scott Taylor, Lauren Costella, Brian Kwee**	**Carolyn Schutt-Ibsen, Claudia Loebel, Brendon Naker**	**Elizabeth Cosgriff-Hernandez, Sarah Stabenfeldt, Julianne Holloway**
Room	**Grand Ballroom**	**Joliet**	**BLVD B**	**4D**	**4C**	**BLVD C**	**BLVD A**	**Marquette**
1:30-1:45	Alanna Gannon, Advanced Series, Wiley, Jeremy Gilbert, Journal of Biomedical Materials Research Part B, Elaine Jeong, Cell Biomaterials, Biomaterials Advances, William Wagner, Acta Biomaterialia, Jessica Winter, Journal of Material Chemistry B	253. In Vitro and In Vivo Assessment of Fluorinated Polyphosphazene Catheter Coatings, Bryan Gregorits1, Yi Wu2, Hitesh Handa2, Chen Chen1, Harry Allcock1, Eric Yeager3, Christopher Siedlecki3, **Lichong Xu3** 1Penn State University, 2University of Georgia, 3Penn State College of Medicine	261. INVITED SPEAKER: Hua Wang, University of Illinois Urbana-Champaign	268. Silicon nanowires augment therapeutic extracellular vesicle production from human cardiac organoids, **Ryan Barrs, PhD1**, Nathaniel Hyams, BS2, Mei Li, MD1, Bozhi Tian, PhD3, Ying Mei, PhD2 1Medical University of South Carolina, 2Clemson University, 3University of Chicago	281. Using Crystallization To Increase Sustainability In The Synthesis Of Poly(Ethylene Glycol) Nanoparticles, **Emily Ingram1**, Jason Stallings1, Anastasia Shaverina1, Brittany Givens Rassoolkhani, Ph.D1, Malgorzata Chwatko, Ph.D1, Mara Leach1 1University of Kentucky	289. INVITED SPEAKER: Mark Prausnitz, Georgia Institute of Technology	296. Digital Light Processing of Photo-Responsive and Programmable Hydrogels, **Abhishek Dhand1**, Bruce Kirkpatrick2, Manuela Garay-Sarmiento3, Kristi Anseth2, Jason Burdick3 1University of Pennsylvania, 2University of Colorado Boulder, 3University of Colorado, Boulder	Invited Speakers: Stephanie Willerth - willerth@uvic.ca
1:45-2:00		254. Carboxymethyl kappa-carrageenan: anticoagulant coatings as sustainable alternatives to heparin for blood contacting devices, **Liszt Yeltsin Madruga1**, Ketul Popat1, Matt J Kipper2, Roberta Sabino3, Somayeh Baghersad2 1George Mason University, 2Colorado State University, 3University of Wyoming		269. Piezoelectric nanofibrous scaffold (PES) as a 3D culture platform for enhancing the production of small extracellular vesicles, **James Johnston1**, Hyunsu Jeon1, Yun Young Choi1, Gaeun Kim1, Tiger Shi1, Courtney Khong1, Hsueh-Chia Chang1, Nosang Myung1, Yichun Wang1 1University of Notre Dame	282. Proteins Form Reversible Complexes with Two-Dimensional Nanosilicate Particles, **Sam Stealey, PhD1**, Jai Rudra, PhD2, Silviya Zustiak, PhD1 1Saint Louis University, 2Washington University in Saint Louis		297. Dynamic Gelatin Hydrogels Crosslinked by Dithiolane-Norbornene Click Chemistry, **Favour Afolabi1**, Lydia He1, Chien-Chi Lin, Ph.D.1 1Purdue University	Invited Speakers: Evan Scott - der4yt@virginia.edu
2:00-2:15		255. Cytocompatible and Hemocompatible, Slippery Organogel Coatings Integrated with Bioactive Polymers, **Isabel Martinez1**, Arpita Shome, PhD1, Myddelton parker2, Yi Wu1 1University of Georgia, 2Universiry of Georgia	262. Biomaterial-based modeling of radiotherapy outcomes impacts tumor-stroma interactions, Isabella Rivera1, Ryan Yao1, Kimberly Selting, DVM1, Catherine Best-Popescu, PhD1, Brendan Harley, ScD1, **Sara Pedron-Haba, PhD1** 1University of Illinois Urbana-Champaign	270. Engineered Biomimetic Materials for Enhancing Therapeutic Small Extracellular Vesicles, **Yichun Wang1** 1University of Notre Dame	283. Discovery of a Nanospiral Morphology in Self-Assembling Peptide Hydrogels, **Paul Eisold1**, Jonathan Florian1, Diana Kirilov1, Kyle Lampe, Postdoc, PhD, BS1 1University of Virginia	290. Development of the Secure Polymeric Tissue Tag (SPOTT) breast biopsy device, **Juan Llull, BS1**, Nicole Levi, PhD2, Darnell Campbell, B.S.2, Clifford Howard, MD1, Jordan Forte, MD1 1Atrium Health Wake Forest Baptist, 2Wake Forest University School of Medicine	298. Multi-domain disordered proteins enable highly programmable self-assembly of intracellular biomaterial-condensates, **Ian Sicher, M.Eng.1**, Spencer Hayes2, Maria Giraldo-Castano, B.S.3, Keerthy Rangan3, Mariell Pascual, B.S.3, Felipe Quiroz, Ph.D3 1Georgia Institute of Technology, 2Emopry University, 3Emory University	Invited Speakers: Nisha Iyer - nisha.iyer@tufts.edu
2:15-2:30		256. Liquid-Infused (LI) Nitric Oxide (NO) Releasing Submicron-Textured Surfaces for Biocompatibility in Biomedical Devices, **Gaurav Pandey1**, Asma Khursheed2, Li-Chong Xu, PhD2, Christopher Siedlecki1 1Penn state college of Medicine, 2Pennsylvania State University College of Medicine	263. Microgel Encapsulation of Glioblastoma for an In Vitro Drug Screening Platform, **Brittany Payan, B.S.1**, Annika Carrillo diaz de leon1, Tejasvi Anand, B.S.1, Gunnar Thompson, B.S.1, Brendan Harley, ScD1 1University of Illinois Urbana-Champaign	271. Extracellular Vesicle-incorporated Biostimulatory Matrix Prevents Radiation Dermatitis, **Jiayuan Kong1**, Kedar Krishnan1, Hexiang Feng1, Kailei Ding1, Sashank Reddy, MD, Ph.D1, Hai-Quan Mao, Ph.D.1 1Johns Hopkins University	284. Ruthenium-complex Nanomicelle Optical Sensors for High-Resolution Mapping of Oxygen Tension in 3D Tissue-Engineered Tumor Microenvironments, **Kevin Schilling, PhD1**, Nikita Sehgal, MS1, Carolyn Schutt Ibsen, PhD1 1Oregon Health& Science University	291. Scalability of Electrospun Polycaprolactone for Medical Devices: Overcoming Challenges for Commercialization, Hannah Lacy1, **Francisco Chaparro1**, R. Kevin Tindell2 1Nanoscience Instruments, 2Nanoscience Analytical	299. Magnetoactive hydrogels to mimic arterial wall buckling in atherosclerosis, Claudia Loebel, M.D., Ph.D.1, **Avinava Roy, M.S.E1** 1University of Michigan	Invited Speakers: Sarah Stabenfeldt - sarah.stabenfeldt@asu.edu

CONCURRENT SESSION 6 • FRIDAY, APRIL 11, 2025 • 1:30 PM – 3:30 PM

Session Title	6A: PANEL: Meet the Editors of Biomaterials Journals	6B: Advancing the Hemocompatibility of Biomaterials	6C: Biomaterial-Based Cancer Models	6D: Extracellular Vesicles for Biomedical Applications	6E: Nanomaterials SIG	6F: Navigating the Path of Biomaterials and Medical Products	6G: Stimuli-Responsive Biomaterials	6H: Symposium in Honor of Shelly Sakiyama-Elbert's 50th Birthday: Celebrating 25 Years of Shaping Biomaterials in Neuroengineering
Room	**Grand Ballroom**	**Joliet**	**BLVD B**	**4D**	**4C**	**BLVD C**	**BLVD A**	**Marquette**
2:30-2:45		257. New thermoplastic elastomers for safer, greener and customizable blood-contacting medical devices with antithrombotic profile, **Sofia F. Melo1**, Anna Pierrard1, Christophe Detrembleur1, Christine Jerome1, Patrizio Lancellotti1, Cecile Oury1 1University of Liege	264. Engineering Dormancy: Insights from a 3D Model of Microscopic Colorectal Cancer Liver Metastasis, **Sabrina VandenHeuvel1**, Sanjana Roy1, Brinlee Goggans1, Oscar Benavides, PhD1, Alex Walsh, PhD1, Scott Kopetz, MD, PhD2, Shreya Raghavn, PhD1 1Texas A&M University, 2MD Anderson Cancer Center	272. Chiral-Assisted siRNA Loading and pH-Responsive Peptide Functionalization in Small Extracellular Vesicles for Efficient Intracellular Delivery, **Gaeun Kim1**, Runyao Zhu1, Sihan Yu, PhD1, Bowen Fan1, Jennifer Leon1, Matthew Webber, PhD1, Yichun Wang1 1University of Notre Dame	285. Core-shell Polymeric Nanoparticles for the Detection and Treatment of Infected Breast Cancer Cells, **Spencer Phillips, MS1**, Santu Sarkar, Dr.2, Nicole Levi, PhD3, Zach David2 1Wake Forest University, 2Atrium Health Wake Forest Baptist, 3Wake Forest University School of Medicine	292. Regulatory Validation and Commercialization of a Sprayable Hydrogel for Postoperative Adhesion Prevention, **Lauren Costella**1, Kate Johnson1, Christopher Tison, PhD1 1Luna Labs USA	300. Boolean Logic-gated Protein Release via Autonomously Compiled Molecular Topology, Murial Ross1, Ryan Gharios, PhD1, Annabella Li1, Shivani Kottantharayil1, Jack Hoye1, Cole DeForest, PhD1 1University of Washington	Invited Speakers: Tatiana Segura - tatiana.segura@duke.edu
2:45-3:00		258. Dual surface functionalization of microfluidic blood oxygenators using antithrombin-heparin (ATH) and tissue plasminogen activator (t-PA) for enhanced antithrombotic activity, Siyuan Li1, Neda Saraei1, Helen Atkinson1, Christoph Fusch2, Niels Rochow2, Gerhard Gerhard1, Ravi Selvaganapathy1, John Brash1, Anthony Chan1, **Kyla Sask1** 1McMaster University, 2University Hospital Nuremberg	265. A spatially patterned 3D model for assessing drug efficacy in breast cancer-bone metastasis, **Vedant Chittake1**, Michelle Tai, BS2, Fan Yang, Ph.D.2 1Fan Yang Lab, Stanford University, 2Stanford University	273. Urinary extracellular vesicles as gene and protein delivery devices, **Eun Ji Chung**, University of Southern California	286. Rationally designed self-immolative and self-deliverable trimeric prodrug nanoassemblies for synergistic combination anticancer therapy, **Nanhee Song1**, Nuri Kim1, Dongwon Lee1, Changjin Lim1, Ilseob Kim1 1Jeonbuk National University	293. From Concept to Care: Successfully Designing Durability into Product Commercialization, **Ann Gronda, Ph.D.1** 1Medtronic	301. Light-responsive Core-Shell Microparticles for Chemo-Photothermal Triple-Negative Breast Cancer Therapy, **Tom Buckman1**, Vanessa Uzonwanne1, Maria Onyekanne1, Nava Bozorgmehri1, Jordan Paul1, Suhani Gupta1, Ali Salifu1 1Boston College	Invited Speakers: Molly Shoichet - molly.shoichet@utoronto.ca
3:00-3:15		259. Bioinspired Endothelium-Mimicking Slippery Surface: Long-Term In Vivo Infectious Rabbit Model, **Yi Wu1**, Patrick Maffe1, Mark Garren1, Aasma Sapkota1, Grace Nguyen1, keren Beita1, Chad Schmiedt, DVM, DACVS1, Elizabeth J. Brisbois1, Hitesh Handa1 1University of Georgia	266. Embedded Bioprinting of Breast Cancer–Adipose Composite Tissue Model for Patient-Specific Paracrine Interaction Analysis, **Wonwoo Jeong, PhD1** 1Wake Forest Institute for Regenerative Medicine	274. Engineering Lipid Nanoparticles as a Delivery Vehicle for Novel Extracellular Vesicle-Derived Therapeutics, **Lauren Hawthorne1**, George Ronan1, Dila Bozkaya1, Jun Yang1, Pinar Zorlutuna1 1University of Notre Dame	287. Ionizable lipids with reduced numbers of tails direct lipid nanoparticle tropism to the spleen, **Kaitlin Mrksich1**, Marshall Padilla, PhD1, Emily Han, BS1, Dongyoon Kim, Ph.D.1, Michael Mitchell, Ph.D.1 1University of Pennsylvania	294. Advanced Dry Gel Medical Device for Effective Prehospital Management of Junctional Hemorrhage, **Shatil Shahriar1**, Jingwei Xie2 1University of Nebraska Medical Center, 2UNMC	302. Engineering Focused Ultrasound-Responsive Granular Hydrogels for Microvasculature, **Natasha Claxton1**, Matthew DeWitt, PhD2, Richard Price, PhD1, Kelly Bukovic1, Rachel Letteri, PhD1, Steven Caliari, PhD1, Andrew Thim, PhD1, Christopher Highley, PhD1 1University of Virginia, 2University of Virginia/ Focused Ultrasound Cancer Immunotherapy Center	Keynote and Closing: Jeff Hubbell
3:15-3:30		260. Improving the Thromboresistivity of Devices via Surface-Localized Release of Hydrogen Sulfide, **Mark Garren1**, Rashmi Pandey, PhD1, Morgan Ashcraft, PhD1, Yi Wu1, Dagney Crowley, N/A1, Elizabeth J. Brisbois1, Hitesh Handa1 1University of Georgia	267. Extracellular matrix cues combine to generate diverse phenotypes during breast cancer progression, **Ryan Stowers, Ph.D.1**, Abhishek Sharma1, Rowan Steger1, Siddharth Dey, Ph.D.1, Kellie Heom1 1UC Santa Barbara	275. Bioengineering Customized Exosomes as a Cell-free Therapy for Volumetric Muscle Loss Injuries, **Breanne Welsh1**, Surendrasingh Y Sonaye1, Prabaha Sikder, PhD1 1Cleveland State University	288. Parameters of emulsion polymerization and copolymer composition predict nanoparticle properties and lymphatic uptake, **Alexander Heiler1**, Tae Hee Yoon1, Maya Levitan1, Yunus Alapan, PhD2, Susan Thomas, PhD1 1Georgia Institute of Technology, 2University of Wisconsin - Madison	295. Green Lunar: Turning Waste into Wealth with Dual-Function Halloysite Nanotubes for Lunar Agriculture and Medical Applications, **Zeinab Jabbari Velisdeh1**, David K Mills1 1College of Engineering and Science, Louisiana Tech University, Ruston, USA.	303. Mechanical-Driven Sarcomere Disarray of BAG3-mutated Human iPSC-Derived Cardiomyocytes on a Dynamic Topographic Substrate, **Nhu Y Mai1**, Xiangjun Wu1, James Henderson1, Zhen Ma1 1Syracuse University	

SATURDAY, APRIL 12, 2025

7:00 AM - 11:00 AM | Registration | Normandie Lounge

7:00 AM - 12:00 PM | Speaker Ready Room | PDR#6

8:00 AM - 11:00 PM | Personal Care Lounge | 4R

8:00 AM - 10:00 AM | CONCURRENT SESSION 7

7A: Advanced Applications and Novel Methods in 3D Bioprinting 2 | Grand Ballroom

7B: Biomaterials for Cancer Immunotherapy | BLVD B

7C: Matrix & Peptides in Biomaterials | Joliet

7D: Engineering Cells and Their Microenvironments SIG 1 | BLVD C

7E: Granular & Macroporous Biomaterials for Tissue Engineering 1 | 4D

7F: Nanomedicine for Targeted Drug Delivery - 2 | BLVD A

7G: Novel Materials Biologically Inspired | 4C

7H: Orthopaedic Biomaterials SIG 3 | 4A

10:00 AM - 10:30 AM | Break

10:30 AM - 12:30 PM | CONCURRENT SESSION 8

8A: PANEL: Insights & Perspectives from NSF/NIBIB Next Generation Biomaterials | BLVD C

8B: Bioelectronics & Wearable Sensors | 4C

8C: Engineering Cells and Their Microenvironments SIG 2 | BLVD A

8D: Granular & Macroporous Biomaterials for Tissue Engineering 2 | 4D

8E: Immune Engineering 2 | Joliet

8F: BioInterfaces SIG| BLVD B

8G: Tissue Engineering SIG 3 | 4A

CONCURRENT SESSION 7

SATURDAY, APRIL 12, 2025 • 8:00 AM – 10:00 AM

Session Title	7A: Advanced Applications and Novel Methods in 3D Bioprinting 2	7B: Biomaterials for Cancer Immunotherapy	7C: Matrix & Peptides in Biomaterials	7D: Engineering Cells and Their Microenvironments SIG 1	7E: Granular & Macroporous Biomaterials for Tissue Engineering 1	7F: Nanomedicine for Targeted Drug Delivery - 2	7G: Novel Materials - Biologically Inspired	7H: Orthopaedic Biomaterials SIG 3
Moderators	**Vipuil Kishore, Daniel Shiwarski**	**Hua Wang, Brian Kwee**	**Michael Floren, George Hussey, Chien-Chi Lin, Antonella Motta**	**Janeta Zoldan, Kyle Lampe, Sylvia Zustiak**	**Donald Griffin, Tatiana Segura**	**John Clegg, Kelly Langert**	**Gulden Camci Unal, Nasim Annabi**	**Amol Janorkar**
Room	**Grand Ballroom**	**BLVD B**	**Joliet**	**BLVD C**	**4D**	**BLVD A**	**4C**	**4A**
8:00-8:15	311. INVITED SPEAKER: Fan Zhang, University of Washington	318. Engineering A Biomaterials-based Lymphoid Niche for mRNA Lipid Nanoparticle Cancer Vaccines, **Yining Zhu, M.S.E.1**, Zhi-Cheng Yao1, Jingyao Ma1, Christine Wei1, Hai-Quan Mao1 1Johns Hopkins University	341. Cartilage-Targeting and Drug Depot-Forming Cationic Fusion Protein of Insulin-Like Growth Factor 1 Analog, **Bill Hakim1**, Timothy Boyer1, Ambika Bajpayee, PhD1 1Northeastern University	326. 3D Mechanical Confinement Directs Muscle Stem Cell Fate and Function, **GaYoung Park1**, Josh Grey2, Foteini Moukioti3, Woojin Han2 1Ichan School of Medicine at Mount Sinai, 2Icahn School of Medicine at Mount Sinai, 3University of Pennsylvania	334. Stress Relaxation Rate of Alginate Microgel Scaffolds Affects Myogenic Differentiation, **Andrea C Filler1**, J. Kent Leach1 1UC Davis Health	350. Development of Nanomedicines for Targeting and Preventing Pancreatic β-Cell Death, **Jubril Akolade, Ph.D.1**, Jillian Collins, Ph.D.1, Isaac Crossley1, Ashton Fremin, Ph.D.1, Nikki Farnsworth, PhD1 1Colorado School of Mines	358. INVITED SPEAKER: Nicholas Peppas, University of Texas at Austin	366. Independent Control of Biochemical and Physical Cues in 3D-Printed Scaffolds, **Andrew Kitson1**, Santiago Lazarte2, Brandon Krick, PhD3, Lesley Chow, PhD1 1Lehigh University, 2Florida State University, 3Florida A&M University-Florida State University
8:15-8:30		319. Injectable adhesive hydrogel-based in situ vaccines eliminate established brain tumors by stimulating innate and adaptive immune responses that are enhanced by sustained release kinetics, **Michelle Dion1**, Alexander Cryer, PhD2, Daniel Dahis, PhD3, Pere Dosta, PhD4, Natalie Artzi, PhD5 1Harvard-MIT, 2Brigham and Women's Hospital, 3BWH, 4UTSW, 5Harvard Medical School	342. Development and In Vitro Evaluation of Biomimetic Injectable Hydrogels from Decellularized Human Nerves for Central Nervous System Regeneration, **Gopal Agarwal, PhD1**, Kennedy Moes1, Christine Schmidt1 1University of Florida	327. Characterization of Length-Scale Dependent Rheology using Bi-Disperse Multiple Particle Tracking Microrheology during Cell-Material Interactions, John McGlynn1, **Kelly Schultz2** 1Lehigh University, 2Purdue University	335. Enzyme Responsive Granular Hydrogels for Tissue Repair Post-Myocardial Infarction.**Kendra Worthington1,** Chima Maduka, DVM, PhD2, Amy Perry2, Jason Burdick3 1University of Colorado Boulder, 2BioFrontiers Institute, 3University of Colorado, Boulder.	351. Peptide-Functionalized Lipid Nanoparticles for Targeted Systemic mRNA Delivery to the Brain, **Emily Han, BS1**, Michael Mitchell, Ph.D.1 1University of Pennsylvania		367. Fabrication of Bisphosphonates Nanoparticles in Microparticles as Macrophage Targeting and Inflammation Modulating Drug Delivery System for Osteoarthritis Therapy.**Paul Sagoe1**, Era Jain, Ph.D.1 1Syracuse University
8:30-8:45	312. TissueFab® Synthetic DLP bioink for Advanced Tissue and Organ-on-a-Chip Applications, CANCAN XU1, Ganga Panambur1, **Elizabeth Aisenbrey1**, Adam Raw1 1MilliporeSigma	320. Restoration of cGAS in tumor cells promotes antitumor immunity via transfer of tumor-cell generated cGAMP, **Alexander Cryer, PhD1**, Pere Dosta, PhD2, Michelle Dion3, Eliz Amar-Lewis, PhD1, Natalie Artzi, PhD4 1Brigham and Women's Hospital, 2University of Texas Southwestern, 3Harvard-MIT, 4Harvard Medical School	343. HER2-targeting tandem peptide delivery of bioactive siRNAs targeting CD44 for treatment of HER2+ Breast Cancer, **Audreanna Miserendino1**, K. Lora Alatise1, Sevrina Tekle1, Anusha Vemula1, Brian Booth, PhD1, Angela Alexander-Bryant, PhD1 1Clemson University	328. Determining the Role of PIEZO1 in Stiffness Sensing and Regulation of Muscle Fibro-Adipogenic Progenitors, **Kasoorelope Oguntuyo1**, Britney Chin-Young1, Larion Martin Santiago1, Charlene Cai1, Woojin Han1 1Icahn School of Medicine at Mount Sinai	336. Tuning the Morphological Properties of Granular Hydrogels to Control Lymphatic Capillary Formation, **Daniel Montes Pinzon1**, Sanjoy Saha1, Angela Taglione1, Donghyun Jeong1, Liao Chen1, Fei Fan1, Hsueh-Chia Chang1, Donny Hanjaya-Putra1 1University of Notre Dame	352. Optimizing nanoparticle geometry to enhance drug delivery to the brain by the intrathecal route, **Kha Uyen Dam, BS1**, Elena Andreyko, PhD1, Chung-Fan Kuo, PhD1, Oluwatobi Babayemi, BS2, Rachael Sirianni, PhD1 1UMass Chan Medical School, 2Rice University	360. Bioinspired and Mechanically Robust Nanostructured Block Copolymer Hydrogels, **Arkodip Mandal1**, Matthew Davidson2, Abhishek Dhand3, Michael Toney1, Jason Burdick2 1University of Colorado Boulder, 2University of Colorado, Boulder, 3University of Pennsylvania	368. Resurfacing-Regenerative Approach to Repair Osteochondral Defects using a Bioprosthetic Device, Olivia Dingus, B.S.1, Courteney Roberts, B.S.1, Connor Demott, Ph.D.1, Lauren Davis, Ph.D.1, W. Brian Saunders, Ph.D., D.V.M.1, **Melissa Grunlan, Ph.D.1** 1Texas A&M University
8:45-9:00	313. Digital Light Processing 3D Bioprinting of Biomimetic Corneal Stroma Equivalent using Gelatin Methacryloyl and Oxidized Carboxymethylcellulose Interpenetrating Network Hydrogel, Gopinathan Janarthanan1, Kamil Elkhoury2, Sanjairaj Vijayavenkataraman3, **Rashik Chand4** 1New York University Abu Dhab, 2New York University Abu Dhabi,, 3Tandon School of Engineering, New York University & New York University Abu Dhabi, 4New York University Abu Dhabi & Tandon School of Engineering, New York University,	321. Cancer vaccination using cell-mediated delivery of an adjuvant loaded via ionic liquid cocktail, **Danika Rodrigues1**, Kyung Soo Park2, Malini Mukherji1, Maithili Joshi1, Suyog Shaha1, Litsa Kapsalis3, Samir Mitragotri1 1Harvard University, 2Harvard Unversity, 3Harvard College	344. Engineered Decellularized Matrix Hydrogels to Mimic the Crypt-Villus Structures of the Small Intestine, **Ngoc Ha Luong1**, Van Thuy Duong1, Jonathan Barry Bryan1, Chien-Chi Lin, Ph.D.1 1Purdue University	329. Tissue-Penetrating Hyaluronic Acid Hydrogel Provides Multi-Modal Cartilage Microenvironmental Restoration, **Tristan Pepper1**, Lauren Foster2, Jay M Patel2, Thanh Doan2, Saitheja Pucha3 1Georgia Tech and Emory, 2Emory, 3Emory University	337. Toward a Multicellular, Gelatin-based Granular Hydrogel Model of the Bone Marrow, Brendan Harley, ScD1, **Gunnar Thompson, B.S.1** 1University of Illinois Urbana-Champaign	353. Harnessing Dendrimers for Targeted Drug Delivery to Neurons, Anjali Sharma, PhD1, **Anubhav Dhull, MS1**, Zhi Zhang, PhD2, Rishi Sharma, PhD1, Aqib Iqbal Dar, PhD1 1Washington State University, 2University of Michigan -Dearborn	361. Chemically Modified Rhamnan Sulfate Compounds as Therapeutics for Metabolic Dysfunction-Associated Steatotic Liver Disease, **Gregory Callahan1**, Amol Vibhute, PhD1, Cassandra Callmann, PhD1, Aaron Baker, PhD1 1University of Texas at Austin	369. An Engineered Hydroxyapatite-Binding Fusion Protein to Improve Localized Delivery of Bone Morphogenetic Protein-2 (BMP-2) for Bone Regeneration, **Malvika Singhal, BS1**, Caroline Foskett1, Marian Hettiaratchi, PhD1 1University of Oregon

Session Title	7A: Advanced Applications and Novel Methods in 3D Bioprinting 2	7B: Biomaterials for Cancer Immunotherapy	7C: Matrix & Peptides in Biomaterials	7D: Engineering Cells and Their Microenvironments SIG 1	7E: Granular & Macroporous Biomaterials for Tissue Engineering 1	7F: Nanomedicine for Targeted Drug Delivery - 2	7G: Novel Materials - Biologically Inspired	7H: Orthopaedic Biomaterials SIG 3
Room	**Grand Ballroom**	**BLVD B**	**Joliet**	**BLVD C**	**4D**	**BLVD A**	**4C**	**4A**
9:00-9:15	314. Synergistic Effects of Periostin and Oxygen Generators in Complex Skin Tissue 4D Bioprinting, **Maedeh Rahimnejad1**, Jinping Xu1, Cristiane Squarize1, Rogerio Castilho1, Marco Bottino1 1University of Michigan	322. Clickable Nanoplex Cluster-Mediated Synergistic Modulation of Dendritic Cells and T Cells Amplifies Tumor-Specific Adaptive Immunity, Wei Mao1, **Hyuksang Yoo2** 1Knagwon National University, 2Kangwon National University	345. Cryogenically Sintered Extracellular Matrix Particle Scaffolds to Modulate Porosity, Increase Macrophage Infiltration, and Promote Long-Term Remodeling in Volumetric Muscle Loss Injuries, **Iris Baurceanu, B.S.1**, Adrienne Kimmel, B.S.2, Matthew Wolf, Ph.D.1 1National Institutes of Health, 2National Cancer Institute	330. Using a Library Approach to Identify Optimal Peptide Crosslinks for Cell-Responsive Hydrogels, **Yingjie Wu1**, E. Thomas Pashuck, PhD1 1Lehigh University	338. Bioprinting and Microvascular Assembly within PEGNB Granular Materials, **Irene Zhang1**, Lucia Choi1, Andrew Putnam, Ph.D.1 1University of Michigan	354. Platelet-inspired Intravenous Nanomedicine enabling Injury-Targeted Thrombin Delivery for Hemorrhage Control, **Abigail Roeckmann1**, Bipin Chakravarthy Paruchuri2, Rohini Sekar2, Danielle Sun2, Dante Disharoon2, Anirban Sen Gupta2 1Case Western Reserve University, 2Case Western Reserve Society	362. Liquid-liquid Phase Separating Peptide Condensates for Therapeutic Delivery, Ushasi Pramanik1, Anirban Das1, Elise Brown1, Heather Struckman1, Huihao Wang1, Sam Stealey, PhD2, Macy Sprunger1, Abdul Wasim3, Jonathan Fascetti1, Jagannath Mondal3, Jonathan Silva1, Silviya Zustiak, PhD2, Meredith Jackrel1, **Jai Rudra, PhD4** 1Washington University in St. Louis, 2Saint Louis University, 3TIFR Hyderabad, 4Washington University in Saint Louis	370. Application of flow synthesis method for stable synthesis of OCP, **Keizo Hosoya1**, Tomohiro Hayashi1, Yuka Maruko1, Ryo Hamai2, Osamu Suzuki2 1Japan Fine Ceramics Co., Ltd., 2Tohoku University Graduate School of Dentistry
9:15-9:30	315. 3D Printing Bioresorbable Scaffolds for Wound Healing via Engineering Stochastic Voronoi Structures, **Mohsen Esmaeili, PhD1**, Alex Wong1, Michael Vaughn, Ph.D.1 1Poly-Med, Inc.	323. Plasmid DNA Vaccine for Post-Surgical Immunotherapy Against Murine Melanoma, **Trishita Chowdhury1**, Vanshika Singh1, Sudhakar Godeshala, PhD1, Jordan Yaron, PhD1, Kaushal Rege, PhD1 1Arizona State University	346. Characterization of POSH-(3.3A)-Tat Peptide Amphiphile Micelles as Novel Therapeutic for Non-Hodgkin Lymphoma, **Joshua Shelton, B.S.1**, Aylin Kalabak1, Agustin Barcellona, B.S.1, Megan Schulte, Ph.D.1, Donald Burke, Ph.D.1, Mark Daniels, Ph.D.1, Bret Ulery, Ph.D.1 1University of Missouri - Columbia	331. Ultrafast-Relaxing and Photocrosslinkable PEG Hydrogels for Cell and Organoid Culture in 3D-Printable Dynamic Matrices, **Bruce Kirkpatrick1**, Lea Pearl Hibbard, BS2, Kristi Anseth1 1University of Colorado Boulder, 2University of Colorado	339. Dynamic granular hydrogels as an in vitro cancer model, **Ellen Frahm1**, chun-Yi Chang1, Chien-Chi Lin, Ph.D.1 1Purdue University	355. mRNA-LNP Delivery to the Damaged Spinal Cord, **Jacobus Burger1**, Daniel Hellenbrand, PhD2, Luke Bolstad3, Amgad Hanna, MD4, William Murphy, PhD5 1University of Wisconsin-Madison, 2University of Wisconsin-Madison, 3University of Wisconsin, 4University of Wisconsin - Madison, 5University of Wisconsin Madison	363. Regulating Diabetic Fibroblasts Using Bioinspired Hyaluronan Binding Silk Hydrogels, **Amelia Huffer1**, Noah Terkildsen2, Lichong Xu3, Roman Shchepin2, Tugba Ozdemir2 1South Dakota School of Mines andTechnology, 2South Dakota School of Mines and Technology, 3Penn State College of Medicine	371. Biohybrid Shape Memory Polymer (SMP) Scaffolds for Potential Bone Regeneration and Infection Resistance, **Damion Dixon, Ph.D.1**, Ainsley Shields2, Melissa Grunlan, Ph.D.1 1Texas A&M University, 2Texas A&M Univeristy
9:30-9:45	316. Magnetic Mixer (MagMix): Advancing Bioink Homogeneity in Extrusion-Based Bioprinting, Ferdows Afghah1, Ava Ladd1, Verra McCoy1, Farrah Ye1, Jane Bai1, **Ritu Raman1** 1MIT	324. Inhalable Unnatural Sugar for Tagging and Targeting of Lung Cancer Cells, **Jiadiao (David) Zhou1**, Hua Wang2 1University of Illinois Urbana Champaign, 2University of Illinois	347. Developing and Characterizing an Engineered Collagen-Binding Fusion Protein to Enhance Localized Delivery of Bone Morphogenetic Protein-2 (BMP-2) for Bone Regeneration, **Malvika Singhal, BS1**, Marian Hettiaratchi, PhD1 1University of Oregon	332. Tunable and modular viscoelastic matrices to study morphogenesis and invasion of mammary epithelium, **Jane Baude1**, Ryan Stowers, Ph.D.1, Megan Li1, Abhishek Sharma1, Sabrina Jackson1, Daniella Walter1 1UC Santa Barbara	340. Tuning Mesenchymal Stem Cell Extracellular Vesicle Content Through Extracellular Cues in Microgel Scaffolds, **Matthew Jaeschke1**, Georgios Tseropoulos1, Nicole Friend1, Mark Young1, Abigail Bole1, Kristi Anseth2 1University of Colorado, Boulder, 2University of Colorado Boulder	356. Formulation methods for peptide-modified lipid nanoparticles, **Katelyn Miyasaki1**, Sangwoo Han, Ph.D. Chemical Engineering - University of Seoul, 20221, Ester Kwon, Ph.D. Bioengineering -- University of Washington2, Olivia Carton2, Rebecca Kandell, Ph.D. Bioengineering -- UC San Diego, 20232, Jonathan Gunn2 1University of California San Diego, 2UC San Diego	364. Unconventional Biomaterials for Tissue Engineering and Regenerative Medicine, **Gulden Camci-Unal, PhD1** 1University of Massachusetts Lowell	372. Impact of Process Parameters and Heat Treatment on Pitting Corrosion in Additively Manufactured CoCrMo Implant Alloy, **Amandine Impergre, PhD1**, Nick Hantke, PhD2, Julia Hochstatter3, Alfons Fischer, Prof4, Jan Sehrt, Prof2, Robin Pourzal, PhD3 1Clemson University, 2Ruhr-University Bochum, 3Rush University Medical Center, 4Max-Planck-Institut
9:45-10:00	317. Automated Organoid and Cell Spheroid Assembly for Enhanced Disease Modeling, Remington Martinez, BSE1, Taylor Bertucci, PhD2, **Christopher Highley, PhD1** 1University of Virginia, 2Neural Stem Cell Institute	325. Macroporous Hydrogel-Based mRNA Cancer Vaccine for In Situ Recruitment and Modulation of Dendritic Cells, **Ruike Dai1**, Jiadiao (David) Zhou2, Hua Wang3 1University of Illinois at Urbana-Champaign, 2University of Illinois Urbana Champaign, 3University of Illinois	348. Decellularized Lymph Node Biomaterial Platform to Study the Impact of Microenvironment on Fibroblastic Reticular Cell Phenotype, **Estefania Esparza, BS1**, Alisa Fedotova2, Leonor Teles, BS1, Alice Tomei1, Mira Sayegh1 1University of Miami, 2Johns Hopkins University	333. Stimuli-Responsive Polyethylene Glycol Hydrogels with Dynamic Mechanical Properties, **Michael Seitz1**, Tessa Decicco2, Erik Schaeffer2, Era Jain, Ph.D.1 1Syracuse university, 2Syracuse	341. TissueFab® Porous Bioink for the Next Generation of 3D Bioprinting, **Vinson Chu1**, Elizabeth Aisenbrey1 1MilliporeSigma	357. Precision-Targeted Stem Cell-Derived Extracellular Nanovesicles for Elastic Matrix Regenerative Repair in Abdominal Aortic Aneurysms (AAAs), Anand Ramamurthi, PhD, FAHA1, **Ali Abba Mutah, DVM, MVSc2** 1Lehigh University, 2Lehigh University, Bethlehem PA.	365. Making Synthetic Hydrogels Inspired by Spider Silk, Ruth Ebubechukwu, BS1, **E. Thomas Pashuck, PhD2** 1Lehigh Universities, 2Lehigh University	373. Potential toxicity from Implant Wear Products – Cobalt, Chromium, and Titanium Ions on Neuroblastoma IMR-32, **Vanaja Narayanaswamy1**, Mareeswari Paramasivan, PhD1, Mathew Mathew, PhD1, Xuejun Li, PhD1 1University of Illinois Chicago

CONCURRENT SESSION 8

SATURDAY, APRIL 12, 2025 • 10:30 AM – 12:30 PM

Session Title	8A: PANEL: Insights & Perspectives from NSF/ NIBIB Next Generation Biomaterials	8B: Bioelectronics & Wearable Sensors	8C: Engineering Cells and Their Microenvironments SIG 2	8D: Granular & Macroporous Biomaterials for Tissue Engineering 2	8E: Immune Engineering SIG 2	8F: BioInterfaces SIG	8G: Tissue Engineering SIG 3
Moderators	**Danielle Benoit, Marian Hettiaratchi**	**Zheng Yan, Cunjang Yu, Murat Guvendiren**	**Janeta Zoldan, Kyle Lampe, Sylvia Zustiak**	**Donald Griffin, Tatiana Segura**	**Joshua Doloff, Santi**	**Nathan Gallant, Mary Beth Monroe**	**Woojin Han, Qun Wang**
Room	**BLVD C**	**4C**	**BLVD A**	**4D**	**Joliet**	**BLVD B**	**4A**
10:30-10:45	Kenneth Sims, Battelle Ryan Trombetta, FDA Samantha Maragh, NIST Daniel Savin, NSF Germano Iannacchione, NSF	374. INVITED SPEAKER: John Rogers, Northwestern University	386. Development of a Gelatin-based Hypoxic Perivascular Niche to Model the Bone Marrow, **Gunnar Thompson, B.S.1**, Victoria Barnhouse, PhD1, Sydney Bierman, B.S.1, Brendan Harley, ScD1, Kristopher Kilian, PhD2 1University of Illinois Urbana-Champaign, 2University of New South Wales	394. MAP scaffolds modulate collagen fibril formation and fibroblast phenotype, **Alejandra Suarez Arnedo1**, Michaela Harris1, Ari Willig1, Brenton D Hoffman1, Tatiana Segura, PhD1 1Duke University	402. Comparative Analysis of Tonsil Versus PBMC-derived Human Immune Organoids in Long-term Immune Response to Vaccines and Adjuvants, **Zhe Zhong1**, Andrés García1, Jean Koff, MD, MS2, Ankur Singh, Ph.D.1 1Georgia Institute of Technology, 2Emory University School of Medicine	380. INVITED SPEAKER: Ana Isabel Salazar Puerta, Ohio State University. 2025 Burroughs Wellcome Fund Rising Star Award Winner Talk Title: Micro/Nanotechnology-Guided Reprogramming for Tissue Repair and Regeneration for Ana Salazar Puerta for BioInterfaces SIG Session	411. Exercise-induced piezoelectric stimulation for cartilage regeneration in large animal model.**Nidhi Sharma, nis220121**, Yang Liu1, Thanh Nguyen, PhD1 1University of Connecticut
10:45-11:00			387. Hydrogel Facilitated Immune-Cancer Cell Co-culture Tumor Microenvironments.Vanshika Singh, PhD1, Muhammad Raisul Abedin2, Jordan Yaron, PhD1, Kaushal Rege, PhD1, **Trishita Chowdhury1** 1Arizona State University, 2Adipo Therapeutics	395. A Novel PEG-Based Injectable Macroporous Hydrogel Scaffold, **Mary Dickenson, MSE1**, Sydney Wheeler, MSE1, Kiera Downey, MSE1, Weiping Li, PhD1, Jan Stegemann, PhD1, Cheri Deng, PhD1, Aaron Morris, PhD1 1University of Michigan	403. Synergistic generation of cardiac resident-like macrophages and cardiomyocyte maturation in tissue engineered platforms, **Michael Monaghan,PhD1** 1Trinity College Dublin		412. Sustained Local Delivery of Butyrate for Enhanced Muscle Regeneration in Ischemic Limbs. **Nikita John1**, Calvin Chao, M.D.2, Caitlyn Dang3, Bin Jiang, Ph.D.1 1Northwestern University, 2Feinberg School of Medicine, Northwestern University, 3Feingberg School of Medicine, Northwestern University
11:00-11:15		375. INVITED SPEAKER: Rashid Bashir, University of Illinois Urbana-Champaign	388. Hydrogels with both dynamic and static RGD have increased adhesion formation and cell spreading, Abolfazl Moghaddam, MS1, **E. Thomas Pashuck, PhD1** 1Lehigh University	396. Investigating the Impact of Biomaterial Chirality on Host-material Interaction Using a Limited Lymphocyte Egress Model, **Eleanor L.P. Caston1**, Yongjae Lee1, Pablo Cordero Alvarado1, Michelle Schneider, MD/PhD1, Tatiana Segura, PhD1 1Duke University	404. The aged bone marrow and the onset of hematopoietic stem cell aging in a polyisocyanopeptide hydrogel, **Aidan Gilchrist, PhD1** 1University of California, Davis	381. INVITED SPEAKER: Lulu Xue, University of Pennsylvania. 2024 Burroughs Wellcome Fund Rising Star Award Winner	413. A Viscoelastic Tissue-Mimetic Hydrogel for Modelling Chondrogenesis, **Elizabeth George1**, Stephanie Bryant, Ph.D.1 1University of Colorado Boulder
11:15-11:30			389. Magnetic control of biomimetic multiscale ligand dynamics for stem cell regulation, **Sunhong Min1**, Heemin Kang1 1Korea University	397. Alginate granular scaffolds support formation of hypertrophic and chondrogenic constructs made from ECM-loaded MSC spheroids, **David H Ramos-Rodriguez1**, Andrea C Filler1, J. Kent Leach1 1UC Davis Health	405. Immune Organ-on-Chip Reveal Dysregulated Zonal Compartmentalization in Cancer Patients, **Zhe Zhong1**, Manuel Quiñones Pérez1, Andrés García1, JEAN KOFF, MD, MS2, Ankur Singh, Ph.D.1 1Georgia Institute of Technology, 2Emory University School of Medicine		414. Microparticles with Tunable Aspect Ratios Using Photolithography for Injectable Granular Hydrogel Formation and Cell Delivery, **Jun Kim, PhD1**, Dean Stornello1, Taimoor Qazi, PhD1 1Purdue University

CONCURRENT SESSION 8 • SATURDAY, APRIL 12, 2025 • 10:30 AM – 12:30 PM

Session Title	8A: PANEL: Insights & Perspectives from NSF/ NIBIB Next Generation Biomaterials	8B: Bioelectronics & Wearable Sensors	8C: Engineering Cells and Their Microenvironments SIG 2	8D: Granular & Macroporous Biomaterials for Tissue Engineering 2	8E: Immune Engineering SIG 2	8F: BioInterfaces SIG	8G: Tissue Engineering SIG 3
Room	**BLVD C**	**4C**	**BLVD A**	**4D**	**Joliet**	**BLVD B**	**4A**
11:30-11:45		376. Biodegradable Piezoelectric Nanofibers for Medical Applications, **Jinyoung Park1**, Thinh Le1, Meysam Chorsi1, Thanh Nguyen, PhD1 1University of Connecticut	390. Modulating 4D Cell Function via Grayscale Spatiotemporal Biomaterial Customization, **Ryan Brady1**, Ryan Francis1, Jeremy Filteau, PhD1, Irina Kopyeva, PhD1, Cole DeForest, PhD1 1University of Washington	398. Development of Avidity-Controlled Biotherapeutic Delivery Systems for the Treatment of Acute Kidney Injury, **Arielle D'Elia, MS1**, Kenneth Kim, MS2, Carl Russell III, BS3, Akari Seiner, MS1, Alex Osidach, M.S.1, Winni Gao, BS1, Danielle Soranno, MD3, Christopher Rodell, Ph.D.1 1Drexel University, 2Drexel University College of Medicine, 3Indiana University	406. Localized Delivery of Encapsulated Cell Therapy for Targeted Modulation in Pulmonary Fibrosis, **Kailyn Nunez1**, Samira Aghlara-Fotovat2, Miguel Mendez3, Ravi Ghanta3, Omid Veiseh1 1Rice University, 2Sentinel Biotherapeutics, 3Baylor College of Medicine	382. Vocal Fold Functional Recovery after Intubation Trauma Treated with Composite-Coated Endotracheal Tubes, **Gabriela Cervantes-Gonzales1**, Ronit Malka2, Joo Ong1, Rena Bizios1, Greogry Dion3, Teja Guda1 1The University of Texas at San Antonio, 2Brooke Army Medical Center, 3University of Cincinnati Medical Center	415. Patterning fiber types in engineered muscle tissues with optogenetics, **Ronald Heisser, PhD1**, Angel Bu1, Tamara Rossy, PhD1, Ritu Raman1 1MIT
11:45-12:00		377. Hydrogel Electrodes for Real-Time Tumor Sensing and Extracellular Matrix Response, **Aydasadat Pourmostafa1**, Anant Bhusal2, Niranjan Menon3, Amir K Miri1, Sagnik Basuray1 1New Jersey Institute of Technology, 2Rowan university, 3newjersy institute of technology	391. Synthetic Regulation of Cell Signaling within Engineered Microenvironments to Control Vascularization, **Mai Ngo, PhD1** 1University of Wisconsin-Madison	399. Granular Hydrogel Composites for Microvascularized Engineered Tissue Grafts, **Michael Hu, MS1**, Gonzalo Anyosa-Galvez1, Firaol Midekssa, MS1, Brendon Baker, Ph.D.1 1University of Michigan	407. Anatomical location and alloy/surface treatment composition-specific immune responses to metallic implants, Stuart Bauer, B.S., M.S.1, Jessica Stelzel, B.S.1, Valerie Wong1, Allison Horenberg, B.S.1, Warren Grayson, Ph.D.1, **Joshua Doloff, Ph.D.1** 1Johns Hopkins University	383. Biodegradable Polyurethane Foams with Enhanced Bioactivity to Improve Traumatic Wound Healing, **Natalie Petryk, MS1**, Leo Saldanha1, Shawn Sutherland1, Mary Beth Monroe, PhD1 1Syracuse University	416. Covalent Tethering of Immunomodulatory Cytokines into Poly(ethylene glycol) thiol-norbornene Hydrogels, laurel Stefani1, Stephanie Bryant, Ph.D.1, **Kayla Castillo-Aguilar1** 1University of Colorado Boulder
12:00-12:15		378. Electrochemical Sensing of Endogenous Nitric Oxide as a Function of Diabetes, **Mikaylin Nogler1**, Mark Schoenfisch2 1The University of North Carolina at Chapel Hill, 2UNC Chapel Hill	392. Tri-Directional Interactions between Cells, Hydrogels, and Nascent ECM Govern Cell Fate, **Yu-Chung (Joshua) Liu, M.S.1**, Eleanor Plaster1, Avinava Roy, M.S.E1, Matthew Tan, Ph.D.1, Pamela Duran, PhD1, Gabriel Walters, BS1, Carlos Aguilar, PhD1, Claudia Loebel, M.D., Ph.D.1 1University of Michigan	400. Multicellular Granular Hydrogels of the Perivascular Niche to Study Glioblastoma Progression, **Brittany Payan, B.S.1**, Tejasvi Anand, B.S.1, Joel Kattoor1, Brendan Harley, ScD1 1University of Illinois Urbana-Champaign	408. Glycation of collagen affects osteogenic differentiation of hMSCs and intrafibrillar mineralization, **Siyoung Choi1**, Lara Estroff1, Claudia Fischbach1 1Cornell University	384. Engineering Dynamic Topographies to Modulate Biological Interactions, Jouha Min1 1University of Michigan, **Mohammad Asadi**	417. Determining Matrix Contributions Leading to Dysfunction in Adipocytes, **Sameera Vellore1**, Qinghua Xu1, Marisa Egan2, Paulina Babiak1, Julie Liu, PhD2, Luis Solorio, PhD1 1Purdue University West Lafayette, 2Purdue University
12:15-12:30		379. Development of an Electrogenetic Cell-Based Therapy for On-Demand Cytokine Delivery, **Grace May1**, Rachel Daso1, Victoria Kindratenko2, Ellie Chen1, Samantha Fleury1, Amaury Bittar1, Matthew Parker1, Christian Schreib, PhD1, Isaac Hilton, PhD1, Laura Segatori, PhD1, Jacob Robinson, PhD1, Jonathan Rivnay, PhD2, Omid Veiseh, PhD1 1Rice University, 2Northwestern University	393. Tuning hydrogel cell scaffolds by varying secondary structure of peptoid crosslinkers, **Aldaly Pineda-Hernandez1**, David Castilla-Casadiego, PhD1, Logan Morton, PhD2, Adrianne Rosales, PhD3 1The University of Texas at Austin, 2Tufts University, 3University of Texas at Austin	401. Programmed Shape Transformations in Cell-laden Granular Hydrogel Composites, **Nikolas Di Caprio1**, Alex Hughes, PhD2, Jason Burdick3 1University of Pennslyvania, 2University of Pennsylvania, 3University of Colorado, Boulder	409. Matrix Mechanics Influences Microvascular Senescence and Pro-inflammation, **Jiyeon Song, PhD1**, Ya Guan1, Connor Amelung1, Sharon Gerecht, PhD1 1Duke University	385. Hydrogel Viscoelasticity Regulates Cellular Adhesion to Nascent Matrix, **Matthew Tan, Ph.D.1**, Eleanor Plaster1, Haguy Wolfenson, Ph.D.2, Claudia Loebel, M.D., Ph.D.1 1University of Michigan, 2Technion - Israel Institute of Technology	418. Stronger by Nature: Advancing Biomaterials with Functional Nanoparticle-Enhanced Silk Hydrogels, **Olivia Foster, B.S.1**, Derek Hiscox, B.S1, Sawnaz Shaidani, B.S.1, Riley Patten, B.S.1, Ella Canas1, Jean Park1, Charlotte Jacobus, B.S.1, David Kaplan, PhD1 1Tufts University

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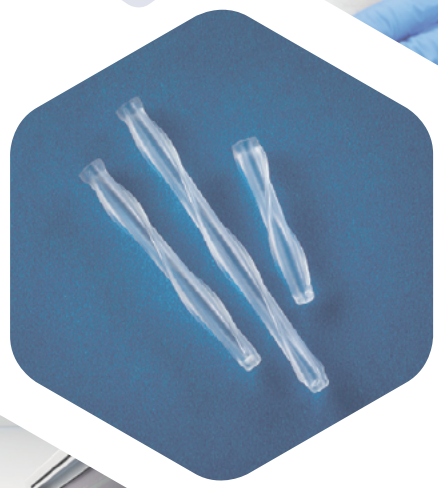

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POSTERS

Society For Biomaterials

Poster Session 1

Wednesday, April 9, 2025, 6:30 pm – 8:00 pm

ADVANCED APPLICATIONS AND NOVEL METHODS IN 3D BIOPRINTING

1P500. Response of Human Bone Marrow Stromal Cells to Additively Manufactured Porous 3-Dimensional Biomimetic Titanium-Aluminum-Vanadium Constructs Is Mediated via Wnt16 and microRNA-145, David Cohen1, Michael Berger, PhD1, Jingyao Deng, PhD1, Thomas Jacobs1, Barbara Boyan1, Zvi Schwartz1 1Virginia Commonwealth University

1P501. High-Throughput Precision Particle/Cell Sorting Using 3D Microfluidic Channels with Vertically Oriented Cross-Section, Guigen Zhang, PhD1 1University of Kentucky

1P502. Multiplexing Bioprinting and Near-Field Electrospinning to Develop Multi-Material Constructs for Meniscus Tissue Engineering, Alyssa Salazar1, Justin Brown1 1The Pennsylvania State University

1P503. 3D jet writing of tunable hydrogel scaffolds for tissue engineering applications, Eleanor Plaster1, Seongjun Moon, Ph.D.1, Joerg Lahann, Ph.D.1 1University of Michigan

1P504. Microwave-assisted synthesis of norbornene-functionalized macromers for hydrogel crosslinking and 3D bioprinting, Jonathan Bryan, B.S.1, Chien-Chi Lin, Ph.D.1 1Purdue University

1P505. 3D-printable multifunctional single-network hydrogels with native tissue-like mechanical properties for surgical training and biomedicine, Junggeon Park1, Joanne Hwang1, Hyunjoon Kong2 1UIUC, 2University of Illinois at Urbana-Champaign

1P506. Fabrication and Optimization of a 3D Printed Polyhydroxybutyrate/MXene Hybrid Scaffold for Bone Regeneration, Mingzu Du1, Xuebin Yang2, giuseppe Tronci2, David Wood2 1Univeristy of Leeds, 2university of leeds

1P507. Evaluating the Impact of Scaling on the Mechanical Strength and Accuracy of 3D-Printed Trabecular Bone Structures, Nolan Cooper1, Garret Morrissiey1, Naser Haghbin, Faculty1 1Fairfield University

1P508. Engineering Small Diameter Vascular Networks with Hollow Fibers Generated Using a 3D-Printed Coaxial Extrusion System, Obinnaya Agomuoh1, Rafael Ramos, BS, MS1, Howard Matthew, PhD1 1Wayne State University

1P509. 4D Bioprinting of Smart Self-Morphing Hydrogel Structures, Shuaiqi Song1, Tarun Agarwal1, Shengbo Guo1, Lijie Zhang, Ph.D.1 1The George Washington University

1P510. Natural Polymer-based Composite Hydrogels for 3D Printing of Tissue Engineering Scaffolds for Liver Regeneration, XINYANG ZHANG1, Min Wang, none1 1The University of Hong Kong

1P511. 3D Bioprinted Electroconductive Hydrogels with Controlled Electrical Stimulation for Enhanced Tissue Regeneration, Deepak Khare, PhD1, Adolfo Ocampo, MS1, Xiaojun Yu, Professor2 1Stevens Institute of Technology, 2Professor

1P512. In situ 3D printing with silk fibroin-based inks: a double crosslinking process, Francesca Agostinacchio, PhD1, Vincent Fitzpatrick, PhD2, David Kaplan, PhD2, Antonella Motta, PhD1 1University of Trento, 2Tufts University

1P513. 3D Bioprinting of Concentrically Layered Bioactive Factors for Targeted Vasculature in Bone, Kristine Suritis1, Levi Olevsky, BS1, Eric Holmgren, MD2, Katherine Hixon, Ph.D.3 1Dartmouth College, 2Dartmouth Hitchcock Medical Center, 3Dartmouth College, Thayer School of Engineering

1P514. 3D bioprinted scaffolds using Fibercoll-Flex-N® fibrillar collagen bioinks for Tissue Engineering, James Murray, BA, MBA1, T. Zuniga, Ph.D.2 1Viscofan Bioenginering, 2Viscofan SA

ADVANCING THE HEMOCOMPATIBILITY OF BIOMATERIALS

1P515. Reimagining hemocompatible coatings: modulation of hemostasis by interactive polymer brushes, César Rodriguez-Emmenegger1 1Institute for Bioengineering of Catalonia and Catalan Institution for Research and Advanced Studies

1P516. Improving hemocompatibility by suppression of the first steps of blood coagulation, Jenny v. Campenhausen, M. Sc.1, César Rodriguez-Emmenegger2 1DWI Leibniz Institute for Interactive Materials, 2Institute for Bioengineering of Catalonia and Catalan Institution for Research and Advanced Studies

1P517. "Surface fluorination to decrease thrombogenicity of flow diverting stents used to treat intracranial aneruysms", Malia McAvoy, M.D., M.S.1, Kan Wu, Ph.D.1, Michael Levitt, M.D.1, Buddy Ratner, Ph.D.1 1University of Washington

1P518. Modified Carrageenan on Titania Nanotubes as a Sustainable Heparin Alternative for Blood-Contacting Surfaces, Somayeh Baghersad1, Liszt Yeltsin Madruga2, Alessandro F. Martins3, Ketul Popat2, Matt J Kipper1 1Colorado State University, 2George Mason University, 3Pittsburg State University

1P519. The Functionalization of Chondroitin Sulfate on a Medical Grade SNAP Blended Polymer for Improved Antifouling and Anti-thrombotic Properties, Tia Shorter1, Mark Garren2 1The University of Georgia, 2University of Georgia

POSTERS (CONTINUED)

ANTIMICROBIAL BIOMATERIALS

1P520. A Drug Releasing Chest Tube for Infection Prevention in the Far Forward Environment, Gregory callahan1, Xuening Zhou1, Alberto Madariaga1, Varsha Karanam2, Marilyn Wells1, Michelle Mikesh1, Manuel Rausch, PhD1, Daniel Stromberg, MD3, Vernita Gordon, PhD1, Aaron Baker, PhD1 1University of Texas at Austin, 2UT San Antonio, 3Dell Medical Sch

1P521. Nitric Oxide-Releasing Polydimethylsiloxane Sponges with Tunable Porosity, Adam Goodman1, Natalie Crutchfield1, Manjyot Chug1, Hitesh Handa1, Elizabeth J. Brisbois1 1University of Georgia

1P522. Inherently Antimicrobial Bone Cement Composite, Lauren Kemp, B.A.1, Alexander Tatara, M.D., Ph.D.1 1University of Texas Southwestern Medical Center

1P523. Antibiotic Loaded Cement Has Prolonged Surface Bacterial Attachment Inhibition, Amanda Boyle1, Joshua Lawton2, Terence Mclff, MBA, PhD3 1KU Medical Center, 2University of Kansas School of Medicine, 3University of Kansas Medical Center

1P524. Polymicrobial Growth on Submicron Textured and Smooth Polyurethane, Asma Khursheed1, Gaurav Pandey, PhD1, Christopher Siedlecki2, Li-Chong Xu, PhD1 1Pennsylvania State University College of Medicine, 2Penn State College of Medicine

1P525. Characterization of Antimicrobial and Wound Healing Properties of Peroxide-Doped Film Systems, Ayden Watt, MSc1, Dario Job, MScA2, Justin Matta, MSc1, Cat-Thy Dang, MScA2, Yara Raphael, MSc2, Geraldine Merle, PhD2, Jake Barralet, PhD1 1McGill University, 2Polytechnique Montreal

1P526. Designer antimicrobial polymers with facial amphiphilicity, Alimi Abiodun1, Leman Kurnaz1, Swagatam Barman1, Adam Parris1, Chuanbing Tang1 1University of South Carolina

1P527. Acylated Chitosan Nanofibers Loaded with Cis-2-Decenoic Acid and a Local Anesthetic Perform Comparably to Commercial Silver Products, Ezzuddin Abuhussein, M.S.1, Yogita Dintakurthi1, Michelle Lee1, Josh Bush, PhD1, Jessica Jennings, PhD1 1The University of Memphis

1P528. Evaluation of Bacterial Adhesion on Borate Bioactive Glass Incorporated PMMA Bone Cement in a Modified CDC Biofilm Reactor®, Kara Hageman, MPH1, Rebekah Blatt2, Richard Brow, PhD2, Terence Mclff, MBA, PhD1 1University of Kansas Medical Center, 2Missouri University of Science and Technology

1P529. Hydrogel-based co-delivery of antimicrobial agents to eliminate chronic infection and promote bone healing, Luiza DaMotta, B.S.1, Andrés García1, Eunice Chee, Ph.D.1 1Georgia Institute of Technology

1P530. Live Microbe Imaging of Bacterial Biofilm Disruption by Cathodic Voltage-Controlled Electrical Stimulation on CoCrMo substrates, Jesse Schmitz, MS1, Menachem Tobias, MS1, Mark Ehrensberger, PhD1 1University at Buffalo

1P531. Eradication of Staphylococcus aureus Biofilm Infections on Polyethylene when Coupled with Titanium Alloy Ti64 and Cobalt-Chromium-Molybdenum Using Cathodic Voltage-Controlled Electrical Stimulation, kevin McPhillips, PhD1, Menachem Tobias, MS1, Mark Ehrensberger, PhD1 1University at Buffalo

1P532. Halloysite-Polydopamine based photoreactive nanohybrids to treat multidrug-resistant Bacterial infection, Mohammad Jabed Perves Bappy1, David K Mills2 1Louisiana Tech University, 2College of Engineering and Science, Louisiana Tech University, Ruston, USA.

1P533. Phytochemicals for Periprosthetic Joint Infection Prophylaxis against Staphylococcus Aureus, Nicole D'Souza1, Terence Mclff, MBA, PhD1 1University of Kansas Medical Center

1P534. Novel Immuno-Inspired Biomaterial for Wound Healing and Suppression of Microbial Growth, Priyan Weerappuli, PhD1, Sasha Cai Lesher-Pérez2 1University of Michigan, 2Univeristy of Michigan

1P535. Evaluation of Tethered Liquid Perfluorocarbon, Nitric Oxide-Releasing Intravascular Catheters in Antimicrobial Applications: A Synergistic Bioactive-Bioinert Strategy, Sierra Milligan1, Elizabeth J. Brisbois1, Hitesh Handa1 1University of Georgia

1P536. Synthesis and antifungal efficacy of Human serum albumin nanoparticles loaded with Posaconazole, Vimalin Jeyalatha Mani1, Hu Yang1 1Missouri University of Science and Technology

1P537. On-Demand Biofilm Removal by Shape Memory Triggered Changes in Surface Topography, Wenhan Zhao1, Dacheng Ren1 1Syracuse University

1P538. Thermosensitive Hydrogel Loaded with S-Nitrosoglutathione/Cyclodextrin Complexesfor Localized Nitric Oxide Delivery, Wuwei Li, PhD1, Xuewei Wang, PhD1 1Virginia Commonwealth University

1P539. Gravity Driven Flow for Biofilm Formation Analysis: OCT Observations of Marine Biofouling, Taylor Seawell1, Farhad Shokati1, Reece Fratus1, David Karig1, Bruce Gao1 1Clemson University

1P540. Self-Defensive Adhesive Nanotherapeutics Capable of On-Demand Antibiotics Release for Prevention of Surgical Site Infection, Ji Won Choi1, Mou Seung Kim1, Yun Kee Jo, Ph.D.1 1Kyungpook National University

POSTERS (CONTINUED)

1P541. Dual Action Nitric Oxide-Releasing Polydimethylsiloxane Sponge Preventing Infection in Needleless Connectors, Adam Goodman1, Manjyot Chug1, Natalie Crutchfield1, Mark Garren1, Hitesh Handa1, Elizabeth J. Brisbois1 1University of Georgia

1P542. Reduction of Staphylococcus aureus Biofilm Infections on Conductive Ultra -High Molecular Weight Polyethylene Using Cathodic Voltage-Controlled Electrical Stimulation, kevin McPhillips, PhD1, Peder Solberg2, Menachem Tobias, MS1, Douglas Van Citters, PhD2, Mark Ehrensberger, PhD1 1University at Buffalo, 2Dartmouth College

1P543. Live Microbe Imaging of Bacterial Biofilm Disruption by alkaline pH shift, Jesse Schmitz, MS1, Menachem Tobias, MS1, Mark Ehrensberger, PhD1 1University at Buffalo

BIOELECTRONICS & WEARABLE SENSORS

1P544. Sulfonation Enhances Conductivity of Soy Protein Gels for Applications in Muscle Engineering, Andrea C Filler1, J. Kent Leach1 1UC Davis Health

1P545. Flexible Pressure Sensor as an Integrative Companion Digital Diagnostic for Dysphagia, Anthony Cino, BS1, Mark Seeley, MD2, Narayan Bhattarai, PhD3, Kellly Troxell, MA CCC-SLP4, Dhruv Seshadri1 1Lehigh University, 2Geisinger Health System, 3NC A&T State University, 4Good Shepherd Specialty Hospital

1P546. Wireless Smart Wearable Device Using Multifunctional Bioactive Nanowires for Personalized Healthcare Applications, Sei Kwang Hahn1, SANG HOON HONG, B.S1 1POSTECH

1P547. Solution Blow Spun Nonwoven Nanofiber Mats for Real-time Wound Virulence Sensing, Jordon Gilmore, PhD1, Md Salauddin Sk, Msc1 1Clemson University

1P548. 11, Sehong kang, M.S.1, Hyunjoon Kong2 1University of Illinois at Urbana-Champagin, 2University of Illinois at Urbana-Champaign

1P549. Controllable fabrication of multifunctional micro-thermocouples for temperature detection inside single suspending droplets, Yuan An1, Lina Xu, Associate Professor1, Wei Mao1, Ning Gu, Professor2 1Southeast University, 2Nanjing University

BIOINTERFACES SIG

1P550. Substrate Charge Modulates Protein Adsorption and Mesenchymal Stromal Cell Adhesion, Erika Wheeler, M.S.1, J. Kent Leach1 1UC Davis Health

1P551. Cerebrospinal Fluid (CSF) Interactions with Nanoparticles and Impact on Tissue Transport, Marisa Egan1, Evelyn Nonamaker1, Luis Solorio, PhD2, Julie Liu, PhD1 1Purdue University, 2Purdue University West Lafayette

1P552. Assessing the Sensitivity of Hybrid Gold-Hydrogel Nanocomposites for LSPR-Based Protein Sensing, Priscilla Lopez, Ph.D.1, Marissa Wechsler, Ph.D.1 1University of Texas at San Antonio

1P553. Transparent Biocompatible Interfaces for Prolonging the Lifetime of the Remotely controlled Photothermal Therapy Devices Used in Brain Tumor Treatment, Naghmeh Shahraki1, Seyedamin Hashemi1, Maryam Ghareh Sheikhlou1, Mostafa Sajjadi1, Hamed Arami1, Saman Ebrahimibasabi1, Layla Khalifehzadeh1, Maryam Golshahi1 1Arizona State University

1P554. Facile Platform for Multifunctional Bioinspired Antifouling Coordination Complex Coating, Natalie Crutchfield1, Ekrem Özkan, PhD1, Annalise Tucker1, Yi Wu1, Elizabeth J. Brisbois1, Hitesh Handa1 1University of Georgia

1P555. Matrix Mechanics Modulates the Permeability and Contractility of Endothelium within Engineered Microvessels, Elizabeth Stanley1, Lydia Kruis1, Anna Bunge1, Michael Hu, MS1, Brendon Baker, Ph.D.1 1University of Michigan

1P556. Peptidomimmetic Polyester Electrospun Mats for Hemorrhage Control, Prathamesh Mane1, Avanti Pandit2, Abraham Joy3 1Northeastern University, 2n/a, 3Northesatern University

1P557. Intracellular Self-Assembly of Organelle-like Biomaterials from Diverse Disordered Protein-Polymers, Spencer Hayes, M.S.1, Maria Giraldo-Castano, B.S.2, Mariell Pascual, B.S.2, Kevin Tao, B.S.3, Felipe Quiroz, Ph.D2 1Georgia Institute of Technology, 2Emory University, 3Albert Einstein College of Medicine

1P558. Programming Surface Motility and Modulating Physiological Behaviors of Bacteria via Biosurfactant-Mimetic Polyurethanes, Zixi Chen, N/A1, Apoorva Vishwakarma2, Abraham Joy3 1Northeastern University, 2Food and Drug Administration, 3Northesatern University

BIOMATEREIALS FOR CELLULAR IMMUNOTHERPAY

1P559. LNP-mediated delivery of Foxp3-CAR mRNAs for in vivo engineering of CD4+ T cells into CAR-Tregs for the treatment of autoimmunity, Fengqiao Li1, Gloria B. Kim1 1Mayo Clinic Arizona

1P560. Biomaterial Carriers for Macrophage Cell Therapy in Regenerative Medicine, Samuel Sung, MS1, Ricardo Whitaker, PhD2 1Drexel University, 2University of Pennsylvania

1P561. Precision biomaterials sustain durable and massive expansion of human CAR-T cells in vitro, Xiao Huang1 1Drexel University

1P562. Determining Release Kinetics of a Combination Oxygen Generating, Drug-Releasing 3D Printed Silicone Scaffold, Cameron Crouse, BS1, Taylor Lansberry, BS1, Cherie Stabler, PhD1 1University of Florida

1P563. Macroencapsulation Cell Therapies to Treat Type I Diabetes, Tuhfah Abdallah, MS1, Tanush Varma, Student1, JESSICA WEAVER, PhD1, Matthew Becker, PhD1 1Arizona State University

POSTERS (CONTINUED)

BIOMATERIAL-BASED CANCER MODELS

1P564. Biophysical Characterization of Extracellular Matrix Remodeling In Microengineered Solid Tumors, Aydasadat Pourmostafa, PhD scholar1, Gabrielle Uskach, Undegraduate Researcher1, Amir K Miri, Dr Faculty1 1New Jersey Institute of Technology

1P565. Engineered Hydrogel Reveals the Biochemical Role of the Extracellular Matrix in Esophageal Adenocarcinoma, Daniel Garcia, MA1, Esha Uddin1, Noriyuki Nishiwaki, MD, PHD2, Yasuto Tomita, MD, PhD1, Joel Gabre, MD2, Ricardo Cruz-Acuña, PhD2 1Columbia Univeristy Irving Medical Center, 2CUIMC

1P566. Investigating the Effects of Tensile Strain on Breast Cancer Cell Dormancy Using a Lung-Mimetic Magnetic Actuation Platform, Madison Howard1, Luis Solorio, PhD2 1Purdue University, 2Purdue University West Lafayette

1P567. Investigating extracellular matrix interactions driving hepatocellular carcinoma progression using hyaluronic acid hydrogels, Silviya Zustiak, PhD1, James Baker, B.S.1, Wing-Kin Syn, MD1, Jason Coombes, Ph.D.1 1Saint Louis University

1P568. Assessment of Electrical Activity in Glioma Cell Lines Encapsulated in GelMA Hydrogel, Maryam Ghareh Sheikhlou1, Naghmeh Shahraki1, Seyedamin Hashemi1, Saman Ebrahimibasabi1, Mostafa Sajjadi1, Maryam Golshahi1, Hamed Arami1, Layla Khalifehzadeh1 1Arizona State University

1P569. Characterization of Three-Dimensional Spheroids for Glioblastoma Treatment, Emalee Mann1, Sylvanie Johnson, Bachelor of Science1, Jessie Boulos, Bachelor of Science1, Megan Pitz, PhD1, Angela Alexander-Bryant, PhD1 1Clemson University

1P570. Ex situ evaluation of the synergistic anticancer effect of curcumin and ZIF-8 nanoparticles on A2780 ovarian cancer cell line, Mostafa Bashiri1, Hadi Tabesh1, Ali porkhalil1, Elham Saberian2, David K Mills3 1University of Tehran, Iran, 2Dep. of Medicine and Dentistry, Pavol Jozef Šafárik University, Clinic and academy of Maxillofacial surgery of Kosice, Kosice, Slovakia., 3Colleg

1P571. Biomimetic 3D Hydrogel Based Modeling Advances in Neuroblastoma Research: The Inverted Colloidal Crystal Scaffold Approach, Aliciana Ilias1, Hyunsu Jeon2, James Johnston2 1Saint Mary's College, 2University of Notre Dame

BIOMATERIAL-MEDIATED IMMUNE MODULATION FOR AUTOIMMUNITY TREATMENT

1P572. Methyl Syringate as a Potential Biomaterial Additive: A Honey-Derived Compound with Strong Antioxidant and Anti-Inflammatory Capabilities, Evan Main, MS1, Evan Main, BS1, Evan Main, Ph.D.1 1The University of Memphis

1P573. Synthetically enhancing molecular flexibility to immune ligands for augmenting their immunoregulatory potency, Nicole Racca1, Esma Yolcu, PhD2, Haval Shirwan, PhD2, María Coronel1 1University of Michigan, 2University of Missouri

1P574. Engineered Polysaccharide A Nanoparticles for Inflammatory Bowel Disease, Zhenyu Wang, M.S.1, Jamal Lewis, Ph.D.1, Rian Harriman, Ph.D.2, Jada Brown1, Nicole Crow1 1University of Florida, 2University of California, Davis

BIOMATERIALS EDUCATION SIG

1P575. Calibrating Our NIH Enhancing Science, Technology, EnginEering, and Math Educational Diversity Program, Karen Burg, Ph.D.1, Caitlin Conyers1, Timothy Burg, Ph.D.1 1University of Georgia

1P576. Integration of Virtual Laboratory Modules in a Lecture-Based Tissue Engineering Course, Cheryl Gomillion, Ph.D.1 1University of Georgia

BIOMATERIALS FOR CANCER IMMUNOTHERAPY

1P577. PEG-Crosslinked Azlactone Hydrogels with Tunable Hydrolytic Stability for Multimodal Drug Release, Emily Rasmussen, M.S. Pharmacology1, SK Arif Mohammad, PhD1, Kendall Kelly1, Ally Grace Bounds1, Penelope Jankoski2, Evan Stacy2, William Jarrett, PhD2, Tristan Clemons, PhD2, Adam Smith, PhD1, Thomas Werfel, PhD1 1University of Mississippi, 2University o

1P578. Adsorptive Blood Filtration Improves Signs and Symptoms in Late-Stage Metastatic Cancer Patients, Robert Ward, NAE, PhD(h.)1, Keith McCrea, Ph.D.1, Rob Ward, B.S.1 1ExThera Medical Corporation

1P579. T cell-responsive macroporous hydrogels for in situ T cell expansion and enhanced antitumor efficacy, Rimsha Bhatta1, Hua Wang2, Daniel Nguyen3 1University of Illinois at Urbana Champaign, 2University of Illinois, 3UIUC Dept. of Material Science Engineering

1P580. Polylactic Acid-based Multifunctional Porous Microspheres Loaded with Oncolytic Spores for Imaging-guided Cancer Therapy, Gahyun Bae, M.S.1 1Sungkyunkwan University

1P581. Magnetic DNA Nanoscrews for Enhanced Tumor Drug Delivery, Nanditha Gayathri srinivasan1, Kehao Huang1, Courtney Culkins, PhD1, Blaise Kimmel, PhD2, Carlos Castro, PhD1, Jessica Winter, PhD1 1The Ohio State University, 2The Ohio State Unversity

1P582. Exosomes as Biomaterials for Vascular Regeneration in a Murine Model of Peripheral Artery Disease, Sree Aravindan, BS1, Renato Reyes, BS1, Dana Larocca, PhD2, Jieun Lee, PhD2, Ngan Huang, PhD1 1Stanford University, 2Serina Therapeutics

POSTERS (CONTINUED)

1P583. Metabolic Labeling and Targeted Modulation of Adipocytes, Yueji Wang1, Yang Bo2, Hua Wang3 1UIUC, 2University of Washington, 3University of Illinois

BIOMATERIALS FOR FUNCTIONAL VASCULATURE

1P584. Transitional Support from Fibrin Critical for Angiogenesis in Collagen:Fibrin Interpenetrating Hydrogels, Gennifer Chiou1, Liliana Danford2, Joo Ong1, Rena Bizios1, Teja Guda1 1The University of Texas at San Antonio, 2The Unversity of Texas at San Antonio

1P585. Pro-Angiogenic Cell Factories Promote Vascularization and Improve Ventricular Function in the Post-Myocardial Infarction Heart, Jacob Cabler1, Miguel Mendez2, Saad Malik2, Ravi Ghanta2, Omid Veiseh3 1Rice Univeristy, 2Baylor College of Medicine, 3Rice University

1P586. Degradable Microporous Annealed Particle Hydrogels to Promote Neovascularization at Implant Sites, Jean-Pierre Pierantoni, B.S.1, María Coronel1, John-Paul Pham1, Nicole Racca1 1University of Michigan

1P587. Biophysical Modulation of 3D Hydrogels for Enhanced Vascular Regeneration, Jiwan Han, Ph.D. (in progress)1, Janet Zoldan, PhD2 1The University of Texas at Austin, 2University of Texas at Austin

1P588. Development of engineered endothelium model using artificial basement membrane and vascular cells, Avelino Dos Santos Da Costa1, Kwideok Park, Ph.D.2 1Korea Institute of Science Technology, 2Korea Institute of Science and Technology

1P589. Development of an engineered brain microvascular model using synthetic zinc finger transcription regulator (synZiFTR), Sheridan Fok, M.Sc.1, Brendan Harley, ScD1, Hanrong Ye, PhD candidate2, Ahmad Khalil, PhD2 1University of Illinois Urbana-Champaign, 2Boston University

1P590. Metabolic Effects on Angiogenesis in 3D cultures under Hypoxia, Joyce Jang, M.Sc1, Joseph Kinsella1 1McGill university

1P591. Synthetic Hyaluronic Acid Coating Enhances Lymphatic Endothelial Cell Maturation Response to Oscillatory Shear Stress, N. Keilany Lightsey, MSE1, Sanjoy Saha1, Eva Hall1, Donny Hanjaya-Putra1 1University of Notre Dame

1P592. Extraction and purification of haemoglobin from blood, Ricardo Pires1, Vânia Casto1, Ana Araújo2, Eimear Byrne3, Nuria Montserrat4, Ricardo Marano5, Jack Lee6, Nairouz Farah7, Yossi Mandel7, Maria Cosma3, Rui Reis1 1A4TEC, 2University of Minho, 3Barcelona Institute of Science and Technology, 4The Barcelona In

BIOMATERIALS FOR NEURAL ENGINEERING

1P593. Development of Extracellular Matrix-laden Piezoelectric Scaffolds to Guide Nerve Repair, Andrew Bryan, MS1, Greg Harris, PhD1 1University of Cincinnati

1P594. Towards Flexible Bioelectrodes: Enhancing Biocompatibility and Electrical Interface in Alginate-Gelatine Hydrogels, Karolina Cysewska1, Lisa Schobel2, Aldo Boccaccini2 1Gdansk University of Technology, 2Friedrich-Alexander-Universität Erlangen-Nürnberg

1P595. Investigation of neurogenesis and axonal extension in spinal progenitor cells after inhibition of chondroitin sulfate proteoglycans, Oluwaseyi Shofolawe-Bakare1 1University of Akron

1P596. Independent Effects of Microenvironment Elasticity and Viscoelasticity in Mouse Neural Stem Cell Cultures, Sabrina Pietrosemoli Salazar, B.S. Biomedical and Health Sciences Engineering1, Talia Sanazzaro, B.S. Bioengineering1, Arushi Nath1, Stephanie Seidlits, B.S. Bioengineering; M.S, Ph.D. Biomedical Engineering; Postdoctoral - Chemical and Biological Enginee

1P597. Unidirectional Chitosan Nerve Conduits with Polydopamine and Proteins for Peripheral Nerve Regeneration, Jue Wang, PhD1, Xiaojun Yu, Professor2 1Stevens Institute of Technology, 2Professor

1P598. NeuroPulse: Advancing Non-Invasive EEG and ECG Monitoring with Innovative In-Ear Electrode Technology, Dylan Luong, Pursuing Bachelor's Degree1, Pierce Perkins, PhD Student1, Prachi Agarwal, PhD Student1, Mingfeng Cao, Master's Student1, Alessandro Orsini, PhD Student1, Johnnie Johnson, Bachelor's Degree1, Raeann Kalinowski, Currently Pursuing Bachelor's D

BIOMATERIALS FOR ORGANOIDS

1P600. Influence of RGD in Elastin-Based Coatings on the Stability, Morphology, and Differentiation of 3D Spheroids, Sheetal Chowdhury, B.S.1, Gene Bidwell, Ph.D.1, Joshua Speed, Ph.D.1, Amol Janorkar, Ph.D.1 1University of Mississippi Medical Center

1P601. Mechanically defined alginate matrices for forming induced pluripotent stem-cell derived human intestinal organoids, Sriramya Ayyagari1, Patrizia Tornabene2, Masaki Kimura2, Ria Shah3, Arya Patel3, Oju Jeon3, Moo-Yeal Lee4, Takanori Takebe5, James Wells2, Eben Alsberg3 1University of Illinois Chicago, 2Cincinnati Children's Hospital Medical Center, 3University of Illino

1P602. Mesenchymal Stem Cell Spheroid Responses Differently to Hydrogel Stiffness Impact Myogenesis, Thi Thai Thanh Hoang1, Andrea C Filler1, David H Ramos-Rodriguez1, Ki Dong Park2, J. Kent Leach1 1UC Davis Health, 2Ajou University

POSTERS (CONTINUED)

1P603. Injectable Tissue-Adhesive Intestinal Organoid Carriers for Reconstruction of Intestinal Injuries, Yun Kee Jo, Ph.D.1, Dong Chang Kim1 1Kyungpook National University

1P604. Injectable Organoids Building Blocks for Endometrial Reconstruction and Infertility Recovery, Sung Min Han1, Myeong Jae Beak1, Yun Kee Jo, Ph.D.1 1Kyungpook National University

1P605. Liver-Specific Designer Matrices for Optimized Transplantation of Hepatic Organoids to treat Liver Injuries, Dong Chang Kim1, Yun Kee Jo, Ph.D.1 1Kyungpook National University

BIOMATERIALS IN BIOMEDICINE: DIAGNOSTICS, THERAPEUTICS, AND WOUND CARE

1P606. Heparin porous microneedles spatially extract chemokines and immune cells to alleviate inflammatory skin disorders, Andy Kah Ping Tay, PhD1 1NUS

1P607. The chicken embryo model: a relevant in vivo model for biomaterial characterization, Chloé Prunier, Doctoral Degree1, Xavier Rousset, Doctoral Degree1, Yan Wang, Doctoral Degree1, Emilien Dosda1, Jean Viallet, Professor1 1Inovotion

1P608. Preventing peritendinous adhesions using lubricious supramolecular hydrogels, Christian Williams, B.S.1, Emily Meany, PhD1, Ye Eun Song, M.S.1, Vanessa Doulames, PhD1, Sophia Bailey, PhD1, Shoshana Williams, M.S.1, Carolyn Jons, M.S.1, Paige Fox, MD, PhD, FACS1, Eric Appel, PhD1 1Stanford University

1P609. A wavelength-regulated cell-based hydrogel patch for accelerated wound healing, Elizabeth Kelley1, Christian Schreib, PhD1, Gillian Audia1, Matthew Parker1, Naayaa Mehta1, Omid Veiseh1 1Rice University

1P611. Effect on Zn Addition on the Corrosion Resistance of Mg in Physiological Conditions, Julia Mirza-Rosca1, Magdalena Valles-Labrador1, Ionelia Vasilescu2, Victor Geanta2 1University of Las Palmas de Gran Canaria, 2Politehnica University of Bucharest

1P612. Hydrogel-Immobilized NanoBiT Sensors for Dynamic Cytokine Monitoring after Islet Allograft Transplantation, Kayle Riley1, María Coronel1, Nandita Boddu1, Jaselyn Porter1 1University of Michigan

1P613. APLICOR 3D™-Fabricated Adipose Wound Grafts: Material Characterization and Evaluation, Laura Rivera Tarazona1, Donghee Kim2, Jeehee Kim3, Babak Safavieh1, Mora Melican1 1Tides Medical, 2ROKIT Healthcare, Inc, 3ROKIT HEALTHCARE Inc.

1P614. Nitric Oxide-Releasing Polyglutamic Acid as a Wound Healing Therapeutic, Margery Purvis1, Courtney Johnson1, Mark Schoenfisch1 1UNC Chapel Hill

1P615. Inflammatory Response of Contaminated Burn Wounds Treated with Electrospun Chitosan Membranes Loaded with Biofilm Inhibitors and Bupivacaine, Michelle Lee1, Jessica Jennings, PhD1, Yogita Dintakurthi1, Nicholas Knott2 1The University of Memphis, 2New York Institute of Technology

1P616. Silk-ionomer-coated mesenchymal stem cell delivery within a carrier silk fibroin hydrogel as a regenerative therapy for osteoarthritis, Nilotpal Majumder1, Udathari Kumarasinghe1, Brooke Longo1, Chunmei Li, PhD1, Ying Chen, PhD1, Sourabh Ghosh, PhD2, David Kaplan, PhD1 1Tufts University, 2Indian Institute of Technology Delhi

1P617. Smart Foams vs. Wounds: Vanillic Acid-Incorporated Polyurethane Shape Memory Polymer Foams for Hemorrhage and Infection Control, Sevde Can1, Ernest Obeng1, Changling Du2, Mary Beth Monroe, PhD2 1BioInspired Syracuse, Syracuse University, 2Syracuse University

1P618. Secondary Structure Composition of Silk Fibroin determines Immunomodulation and Tissue Repair Outcomes in Mice, Shubham Pallod, MS1, Weston DeCambra, MS1, Brian Cherry, BS1, Jeffery Yarger, Ph.D.1, Kaushal Rege, PhD1 1Arizona State University

1P620. An injectable and rapid shape memory cryogel for efficient hemostasis in uncontrolled and lethal marginally/non compressible hemorrhage, SYED MUNTAZIR ANDRABI1 1University of Nebraska Medical Center

1P621. Thermosensitive, ROS Scavenging, and Antibacterial Hydrogels for Repairing Infected Wounds, XI ZHANG, PhD1, Bojing Jiang, Master1, Zhongting Liu, Master1, Jiaxing Wen, Master1, Fuzhong Zhang, PhD1, Jianjun Guan, PhD1 1Washington University in St. Louis

1P622. 3D Printed Dual Functional Tissue Engineering Scaffolds for Postoperative Management for Liver Cancer Patients, XINYANG ZHANG1, Liwu Zheng, none1, Min Wang, none1 1The University of Hong Kong

1P623. Tannic acid-based elastic bioadhesive patches, Zining Yang1, Huikang Fu1, Yi Hong2 1University of Texas at Arlington, 2The University of Texas at Arlington

1P624. Composite Nanoparticle-in-gel Biomaterials to Accelerate Diabetic Wound Healing, Brian Xi1, Yun Fang1, Matthew Tirrell1 1University of Chicago

1P625. Graphene-Based Electrochemical Biosensors as a Diagnostic Tool for Early Pancreatic Cancer Detection., Rashwitha Julia Saldanha1, Mareeswari Paramasivan, PhD2, Gnanasekar Munirathinam, PhD1, Christopher Sumeet Gondi, PhD3, Lusine Demirkhanyan, PhD3, Mathew Mathew, PhD2 1University of Illinois Chicago, Rockford., 2University of Illinois Chicago, 3University

POSTERS (CONTINUED)

1P626. Citrate-based material for infection prevention, Rebecca Keate, PhD1, Guillermo Ameer2 1Cellmend Technologies, 2Northwestern University

1P627. Evaluation of Controlled Release Curcumin from Electrospun Nanofibrous Mesh for Accelerating Infected Wound Healing, Milani Needam1, Langston Hill1, Sita Shrestha, PhD2, Narayan Bhattarai, PhD2 1North Carolina a&t state university, 2NC A&T State University

BIOMATERIALS IN THE TUMOR IMMUNE MICROENVIRONMENT

1P628. Exploring the Relationship Between Collagen Fiber Alignment and Internal Structure on Tumor Cell Motility, Poorya Esmaili Bambizi1, Indranil Mandar Joshi1, Tresa Elias2, Vinay Abhyankar1 1Rochester Institute of Technology, 2University of Rochester

1P629. A small animal study on the inhibition of tumor growth mediated by implanted Sporopollenin membrane, Wei Beng Ng1, Chai Hoon Quek2, Siow Kay Wong3 1National University of singapore, 2Columbia University, 3Duke-NUS Medical School

BIOMATERIALS IN WOMEN'S HEALTH ENGINEERING

1P630. Development and Validation of an Endometriosis Model For High-Throughput Drug Screening, Ines Cadena, Ph.D.1, Del Donehoo, Ph.D. Student1, Molly Jenne1, Kaitlin Fogg, Ph.D.1 1Oregon State University

1P631. Enhancing Healthy Vaginal Microbial Transference with Biochemically Modified Sterile Gauze, Daniel Ng1, Malik Padellan2, Sarah Malik3, Jiaxuan Li1, Michael Miller, PhD1 1University of Illinois Urbana Champaign, 2John Hopkins University, 3Upstate Medical University

BIOMATERIALS TO STUDY HUMAN HOST-MICROBIOME INTERACTIONS

1P633. Ingestible Molecular Probes for Non-invasive Monitoring of Microbiome Drug Metabolism, Leslie Chan, Ph.D.1, Vishal Manickam, B.S.1, Carly Kimpling1, Khoi Le, B.S.1 1Georgia Institute of Technology

1P634. Monitoring Microbiome and Inflammation after Burn Inhalation Injury and Localized Delivery of Corticosteroids, Teja Guda1, Gabriela Cervantes-Gonzales1, Ronit Malka2, Rena Bizios1, Greogry Dion3 1The University of Texas at San Antonio, 2Brooke Army Medical Center, 3University of Cincinnati Medical Center

1P635. The impact of gut microbiota metabolites on immune cell recruitment, Taravat khodaei1, Abhinav Acharya2 1Case Western Reserve, 2Case Western Reserve University

BIOMATERIALS-ENHANCED CELL THERAPY: BETA CELLS AND BEYOND

1P636. Injectable, shear-thinning hydrogels for localized cell therapy, Alex Osidach, M.S.1, Christopher Rodell, Ph.D.1 1Drexel University

1P637. Three-dimensional hydrogel platform allows for temporal tracking of T cell migration patterns and islet cell killing, Magdalena Samojlik, M.S.1, Cherie Stabler, PhD1 1University of Florida

1P638. SUBCUTANEOUS IMPLANT ENCAPSULATING HOMOGENEOUSLY DISTRIBUTED TOROID MICROTISSUES FOR IN VIVO GLYCEMIC CORRECTION, Chi H.L. Pham, BSc1, Nam M. Tran, BSc1, Dang T. Nguyen, PhD1, Tram Dang, PhD1 1Nanyang Technological University

1P639. Laminin interactions in a 3D reverse thermal gel scaffold promote islet survival under cytokine-mediated stress, Christine El-Dirani1, Meghana Shivananda Murthy1, Nikki Farnsworth, PhD1, Daewon Park, PhD2 1Colorado School of Mines, 2Anschutz Medical Campus

1P640. Improving Stem Cell-Derived Insulin-Producing Cells Response to Hypoxia with Pre-upregulation of HIF-1a, Cynthia Perez1 1University of California

1P641. Nano-Encapsulated Microparticulate Long-Acting Drug Delivery Platform for Decreasing Islet Graft Immunogenicity, Dhanashree Surve1, Chris Li1, Oriana Mantovani1, Grisell Gonzalez1, Peter Buchwald1, Alice Tomei1 1University of Miami

1P642. Membrane-coated Nanoparticles Protect Allogeneic Transplanted Islets from Rejection, Elizabeth Bealer, MS1, Zoe Beekman1, Kelly Crumley, MS1, Brooke Smiley, MS1, Feiran Li, PhD1, Esma Yolcu, PhD2, Haval Shirwan, PhD2, Lonnie Shea1 1University of Michigan, 2University of Missouri

1P643. Engineering Insulin-Secreting and Pre-Vascularized FRESH 3D Bioprinted Islet-Like Constructs, Ezgi Bakirci, PhD1, Samuel Moss, B.S.1, Faaz S. Ashraf, MD1, Alec Kramer, MSC1, Andrew R Hudson, MSC1, Daniel Shiwarski, Ph.D.2, Adam Feinberg, Ph.D.1 1Carnegie Mellon University, 2University of Pittsburgh

1P644. Stem Cell-Derived-Cell Transplantation is Enhanced by Vasculogenic Modification of Scaffold, Kelly Crumley, MS1, Elizabeth Bealer, MS1, Jan Stegemann, PhD1, Lonnie Shea1 1University of Michigan

1P645. Clinically Relevant 3D Bioprinting of Functional Human Pancreatic Islets in Alginate-dECM Bioink for Type 1 Diabetes, Wonwoo Jeong, PhD1 1Wake Forest Institute for Regenerative Medicine

POSTERS (CONTINUED)

1P646. Macroencapsulation of human stem cell-derived beta cells ameliorates rejection in CAR T cell humanized mice, Jinal Mehta, MS1, Matthew Becker, PhD1, Jessie Barra, PhD2, Alexander Baker, BS2, Leonardo Ferreira, PhD3, Holger Russ, PhD2, JESSICA WEAVER, PhD1 1Arizona State University, 2University of Florida, 3Medical University of South Carolina

BIOMATERIAL-TISSUE INTERACTION SIG

1P647. Remote control of nanomaterials in diverse morphologies for stem cell modulation and cancer therapy, Hyunsik Hong1, Sunhong Min1, Nayeon Kang1, Heemin Kang1 1Korea University

1P648. Impact of PEG Immunogenicity on the Host Response to Hydrogel Implants, Mahmood Zabihi1, Tyrell Williams1, Patricia Pitty-Montgomery1, Daniel Alge1 1Texas A&M University

1P649. The Effect Curvature on Cell Lineage Commitment, Martin Michaels1, Elizabeth Byers2, Justin Brown2 1The Penn State University, 2The Pennsylvania State University

1P650. Development of tissue adhesives based on ideas from bone growth, Koichi Kadoya, DDS, PhD1, Masahiro Okada, PhD2, Soichiro Ibaragi, DDS, PhD1, Takuya Matsumoto, DDS, PhD1 1Okayama University, 2Tohoku University

1P651. Proinflammatory response of a genetically-modified macrophage cell line with luminescent peptide to biomaterials, Tsuyoshi Kimura1, Mika Suzuki2, Yoshihide Hashimoto2, Akio Kishida2, Naoko Nakamura3, Wataru Nomura4, Tadao Tanabe3, Masaya Yamamoto5 1Toyo University, 2Institute of Science Tokyo, 3Shibaura Institute of Technology, 4Hiroshima Univ., 5Tohoku University

1P652. Assessment of Surface Morphology, Surface Roughness, and Wetting Angle of Tissue Grafts, Shruti Chhabra, MD1, Amisha Parekh2, Scott Williamson2 1University of Mississippi Medical Centre, 2University of Mississippi Medical Center

CARDIOVASCULAR BIOMATERIALS SIG

1P653. Development of a Geometrically-Tunable Shunt for Personalized Care Following Pediatric Heart Reconstruction, Akari Seiner, MS1, Elisabeth Posthill, MS1, Lindsay Hager1, Amy Throckmorton, Ph.D.1, Christopher Rodell, Ph.D.1 1Drexel University

1P654. In vivo performance of bismuth nanoparticle and dipyridamole-loaded bioresorbable electrospun poly(ε caprolactone)-poly(ethylene glycol) small-diameter vascular graft in a rat model, Allan John Barcena, MD, PhD1, Archana Mishra, PhD1, Sarah Honegger, BS1, Erin Marie San Valentin, BS1, Marvin Bernardino, BS1, Jossana Damasco, PhD1, Karem Court, PhD2, Biana Godin, PhD2, Natalie Fowlkes, DVM, PhD1, Jizhong Cheng, MD3, Steven Huang, MD1,

1P655. Controlled delivery of UPI peptide via microparticles to enhance graft endothelialization, Shirin Changizi, PhD1, Sunita George1, Nithyashri Muthu Vijayan1, Hong Chen, PhD2, Chris Bashur, PhD1 1Florida Institute of Technology, 2Harvard University

1P656. Enhanced Biological Properties of Biodegradable Vascular Scaffolds by Spatiotemporal Drug Release via a Multi-coating System, Duck Hyun Song1, Seung-Woon Baek1, Won-Gun Koh2, Won Hyoung Ryu2, Yeu-Chun Kim3, Young Joon Hong4, Dong Keun Han1 1CHA university, 2Yonsei University, 3Korea Advanced Institute of Science and Technology, 4Chonnam National University Hospital

1P657. Biodegradable, Precision-Porous Polyurethanes: Next Generation Vascular Grafts for Pediatric Patients, Emina Muratspahic, Ph.D.1, Buddy Ratner, Ph.D.2, Felix Simonovsky, Ph.D.2 1Seattle Children's Hospital, 2University of Washington

1P658. Fibrous Materials for Medical Implants : Durability Issues, Frederic Heim1, Amandine Lequeux1, Tesnime Kacem1, Foued KHOFFI2, Elise Girault1, Slah Msahli2 1Université de Haute Alsace, 2Université de Monastir

1P659. Examining the Degradation Rates of Fibrin-Based Scaffolds to Optimize Delivery of Satellite Cells in a Mouse Model of Peripheral Artery Disease, Isabel Wallgren, BS1, Tao Yu, PhD1, Jared Albert, BS2, Ashley Brown, PhD3, Laura Hansen, PhD1 1Emory University, 2NCSU, 3North Carolina State University

1P660. Chamber-Specific Differentiation of Induced Pluripotent Stem Cells Using Porcine Decellularized Myocardial Extracellular Matrix, Kiran Ali1 1North Carolina State University

1P661. Effect of PEG Hydrogel Surface Topography on iPSC-Derived Cardiomyocytes, Margot Amitrano, MS1, Adeel Ahmed, PhD1, Mina Cho1, David Beebe, PhD1, William Murphy, PhD1 1University of Wisconsin Madison

1P662. Cardiomyocyte growth on iECM-coated and annealed polyurethane fibers, Yufeng Wen1, Alan Taylor2, Huikang Fu2, Jiazhu Xu1, Yi Hong1 1The University of Texas at Arlington, 2University of Texas at Arlington

1P663. One-step Synthesis of Iron Oxide Nanoplatform as T1 Contrast and Its Application in Atherosclerosis Magnetic Resonance Imaging, Huari Kou1 1Missouri University of Science and Technology

1P664. Mitochondria-targeted nitric oxide releasing materials (mitoNORMs) for cardiovascular therapeutics, Tanveer Tabish1 1University of Oxford

1P665. PLGA coated novel Mg-Li-Y bioabsorbable wires for cardiovascular applications, Mitchell Connon1, Carolyn Czerniak1, Calum MacLeod2, Mark Steckel2, Roger Guillory, PhD1 1Medical College of Wisconsin, 2Lumenology Ltd

POSTERS (CONTINUED)

1P666. Infection Rates in Cardiovascular Biomaterials: Comparing Synthetic vs. Zooplastic Heart Valves, Asma Khursheed1, Gaurav Pandey, PhD1, Woolim Han, MD Student2, Maqdous Awan, MD Student2 1Pennsylvania State University College of Medicine, 2Pennsylvania State University, College of Medicine

1P667. Design and Characterization of Controlled Mitochondrial Eluting Vascular Stents, Fang Tang1, Bin Jiang, Ph.D.1 1Northwestern University

Society For Biomaterials

Poster Session 2

Thursday, April 10, 2025, 6:00 pm – 7:30 pm

COMPUTATIONAL AND MACHINE LEARNING APPROACHES FOR BIOMATERIAL DESIGN & EVALUATION

2P500. Optimizing Hydrogel Drug Release by Machine Learning on a Robotic Platform, Cristian Lopez1, Eugene Cheong1, Adam Gormley, PhD1 1Rutgers University

2P501. Low-Cost Liquid Handler with Machine Learning Integration for Autonomous Experiments, Dylan Waynor, BS1, Apostolos Maroulis, BS1, Adam Gormley, PhD1 1Rutgers University

2P502. Matrix Mechanics and Cyclic Hydrostatic Pressure: Working in Synergy to Promote Vascularized Osteogenesis, Eugenia Morales Carrillo, B.S. in Biotechnology Engineering1, Joo Ong2, Rena Bizios2, Teja Guda2 1University of Texas at San Antonio, 2The University of Texas at San Antonio

2P503. Multi-Omics Analysis of Synthetic Immunological Niche Predicts the Onset of Type 1 Diabetes, Jyotirmoy Roy1, Yifei Jiang1, Amod Talekar1, Peter Sajjakulnukit1, Jessica King1, Lillian Holman1, Shahzad Sohail1, Antonio Holmes2, Costas Lyssiotis1, Lonnie Shea1 1University of Michigan, 2University of Maryland

2P504. Computational Modeling of the Electrochemical Microenvironment Adjacent to Cathodically Stimulated Knee Implant, Priyanshu Vishnoi, PhD1, Elise Martin, PhD1, Mary Canty, PhD1, Mark Ehrensberger, PhD1 1University at Buffalo

2P505. Construction of an AI-based Phenotypic Discrimination Model for Macrophages and Identification of Factors Characterizing M1 and M2, Naoko Nakamura1, Yurika Shibuya1, Tsuyoshi Kimura2 1Shibaura Institute of Technology, 2Toyo University

2P507. Supervised Machine Learning for Predicting Drug Release from Acetalated Dextran Nanofibers, Ryan Woodring1, Elizabeth Gurysh, PhD1, Tanvi Pulipaka1, Kevin Shilling1, Rebeca Stiepel1, Erik Pena2, Eric Bachelder, PhD1, Kristy Ainslie, PhD1 1UNC, Chapel Hill - Eshelman School of Pharmacy, 2UNC, Chapel Hill

2P508. A Platform for High-Throughput Optimization of Polymer Chemistry Using Automation and Machine Learning, Gabriela Tirado-Mansilla1, David Radford1, Apostolos Maroulis, BS1, Matthew Tamasi1, Eugene Cheong1, Dylan Waynor, BS1, Adam Gormley, PhD1 1Rutgers University

DENTAL/CRANIOFACIAL BIOMATERIALS SIG

2P509. An Evaluation of Novel AMP2-Coated Electrospun Composite Scaffolds for Intraoral Bone Regeneration: A Proof-of-Concept In Vivo Study, Lukasz Witek, MSci, PhD1, Blaire Slavin, BS2, Shangtao Wu, BS2, Savanah Sturm, BS2, Kevin Hwang, BS2, Ricky Almada, BS, MSci2, Nicholas Mirsky, BS2, Vasudev Vivekanand Nayak, MSci, PhD2, Paulo Coelho, MD, DDS, PhD, MBA2 1New York University College of Den

2P510. Structure and Morphology of Calcium Phosphates Obtained from a Flowable Dental Composite Stored in Simulated Body Fluid and Artificial Saliva, Piotr Psuja1, Erick Yu1, Byoung I Suh1 1BISCO

2P511. Designing Functionally Graded Adhesive Interfaces for Superior Bond Strength: A Bioinspired Approach, Shashwat Maharjan, EIT1, Carolina Montoya, PhD2, Santiago Orrego2, David Cereceda, PhD1 1Villanova University, 2Temple University

2P512. Comparative Pre-clinical Evaluation of Bovine- and Porcine-Derived Collagen Membranes in Guided Bone Regeneration: A Non-Inferiority Study, Vasudev Vivekanand Nayak, MSci, PhD1, Joao Arthur Kawase De Queiroz Goncalves, BS1, Nicholas Mirsky, BS1, Aris Arakelians, MD1, Nick Tovar, PhD, DDS2, Lukasz Witek, MSci, PhD2, Paulo Coelho, MD, DDS, PhD, MBA1 1University of Miami Miller School of Medicine

DRUG DELIVERY SIG

2P513. Efficacy and Safety of a Polymeric Particle-Based Influenza A Vaccine, Alaric Siddoway, PhD1, Tyler Harm1, David Verhoeven1, Michael Wannemuehler1, Surya Mallapragada1, Balaji Narasimhan1 1Iowa State University

2P514. Controlled Release of Pyocyanin for Triple-Negative Breast Cancer Therapy, Ali Salifu1, Nava Bozorgmehri1, Tom Buckman1, Vanessa Uzonwanne1, Maria Onyekanne1, Suhani Gupta1, Jodan Paul1 1Boston College

2P515. Passive Targeting of Nanoparticles In Ischemia Reperfusion Injury - A Feasibility Study, Ashley Peters, MD MS1, Gloria Grace Poland1, Chanpreet Kaur, MD1, Maleen Cabe, MS1, Xuerong Wang, MD1, Kelly Langert, PhD1, Kristopher Maier, PhD1, Vivian Gahtan, MD1 1Loyola University Chicago

2P516. Therapeutic deep eutectic solvent of lidocaine and vitamin C (t-Livit) for osteoarthritis pain treatment, Cao-Sang Truong, Master1, Thanh Nguyen, PhD1 1University of Connecticut

POSTERS (CONTINUED)

2P517. Fungal Frontiers: Repurposing a Neurotropic Pathogen to Shuttle Drug-Loaded Nanoparticles to the Central Nervous System, Clinton Smith, B.S.1, Zhenyu Wang, M.S.1, Stephanie Miller1, Daniel Stafstrom1, Jamal Lewis, Ph.D.1 1University of Florida

2P518. Controlled Delivery of Muscarinic Receptor Agonists to Aid Xerostomia After Head/Neck Radiotherapy, Cruz Franich1, Tugba Ozdemir1 1South Dakota School of Mines and Technology

2P519. Structure and Antigenicity of RSV Post-F Protein Released from Polyanhydride Nanoparticles, Daniela Sanchez1, Balaji Narasimhan1 1Iowa State University

2P520. N-acetylcysteine-loaded Polymer Microparticles Promote Neural Stem Cell Viability Under Oxidative Stress, Deniye Gedara Nadeesani Lakshika Sirinayake, BSc1 1University of Virginia

2P521. Factors affecting endocytosis of cargo bound to metabolically labelled cells, Dhyanesh Baskaran1, Hua Wang2 1University of Illinois at Urbana-Champaign, 2University of Illinois

2P522. Engineering Red Blood Cells to Sequester Immune Checkpoint Inhibitors and Reduce Immune-Related Adverse Events, Emily Henrich, B.S.1, Diane Moturi1, Kevin McHugh, Ph.D, M.S.1 1Rice University

2P523. Cationic CaMKIIN-loaded Liposomes that Reduce Chlorine-induced Airway Oxidative Stress, Esraa Mohamed, Master's Degree1, Andrea Adamcakova-Dodd, PhD1, Xuefang Jing, PhD1, Isabella Grumbach Grumbach, PhD1, Peter Thorne, PhD1, Aliasger Salem, PhD1 1University of Iowa

2P524. Evaluating the effects of PEG-lipid shedding on T cell targeted nanomedicines, Ethan Cisneros, B.S1, Aadya Wijesekera1, Lisa Volpatti, Ph.D.1 1Northwestern University

2P525. Evaluating the Cytotoxicity and Drug Release of Imageable Microgels for Prostate Cancer Chemoembolization, Silviya Zustiak, PhD1, Fatema Jamali1 1Saint Louis University

2P527. Effect of Drug Type on Polymerization and Performance of Biodegradable Drug Delivery Devices 3D Printed with Vat Polymerization, Hafiz Busari, M.S.1, O. Thompson Mefford, Ph.D.2, Michael Vaughn, Ph.D.3 1Pol-Med, Inc., 2Clemson University, 3Poly-Med, Inc.

2P528. Acoustically Responsive Scaffolds for Sequential Steady and Pulsatile Drug Delivery, Haijun Xiao1, Mario Fabiilli2, Mitra Aliabouzar1 1University of Michigan, 2University of Micigan

2P529. Long Term Storage of Lyophilized mRNA Lipid Nanoparticles via Biomimetic Minerals, Jamie Jones, MS1, Joshua Choe, PhD1, Jena Moseman1, Douglas McNeel, MD, PhD, MS1, William Murphy, PhD2 1University of Wisconsin-Madison, 2University of Wisconsin Madison

2P530. Investigating a novel multi-functional tandem peptide for delivery of bioactive siRNA for glioblastoma treatment, Kay Russi1, Jessie Boulos1, Daphne Gomez Escudero1, Angela Alexander-Bryant, PhD1 1Clemson University

2P531. Development of a polymeric microparticle-lipid nanoparticle hybrid system as a Regulatory Vaccine (REGvak) for Dendritic cell modulation and Rheumatoid Arthritis Immunotherapy, kevin Smith, B.S.1, Jamal Lewis, Ph.D.1 1University of Florida

2P532. Coacervate formulation parameters mediate intracellular protein delivery to neural cells, Laboni Hassan1, Timothy O'Shea, PhD1 1Boston University

2P533. Prolonged Release of Insulin for Use in Diabetes Management and Tolerogenic Vaccines, Leslee Nguyen1, Vanessa Doulames, PhD2, Eric Appel, PhD2 1Appel Group, Stanford University, 2Stanford University

2P535. Targeted Nanofiber-Based Drug Delivery System for Inhibition of TGF-β Signaling in Pancreatic Ductal Adenocarcinoma, Mahtab Khodadadi, MS1, Martin King2, Jessica Gluck2 1North Carolina State University, 2NC state university

2P536. H2O2-Responsive Bile-Acid Based Polymeric Prodrug Nanoparticles for Targeted Anticancer Therapy and Reduced Off-Target Toxicity, nuri kim, student1, nanhee song, student1, dongwon lee, professor1 1Jeonbuk national university

2P537. Cerebrospinal Fluid Flow Enhancement (CFE) For improving small molecule and nanoparticle delivery to the Central Nervous System, Olivia Mihalek1, Constance Mietus1, Oluwatobi Babayemi, BS2, Elena Andreyko, PhD1, Rachael Sirianni, PhD1 1UMass Chan Medical School, 2Rice University

2P538. Development and Characterization of Drug-Loaded Poly(Lactic-co-Glycolic Acid)-Based Microspheres in Intra-Articular Cartilage for Osteoarthritis Treatment, Pamela Samonte, MS1, Noelle Comolli, PhD1 1Villanova University

2P539. Biocompatible hydrogel nanoparticle emulsions for targeting synovium and ileum to mitigate joint and intestinal pathologies of inflammatory arthritis, Rayan Abdulhadi, BS1, Georgia Papavasiliou2, Anna Plaas, PhD3, Meghan moran, PhD3, Jun Li, PhD3 1IIT, 2Illinois Institute of Technology, 3Rush University

2P540. Development of poly(ethylene) glycol hydrogel drug delivery device to study intramuscular adipose tissue signaling, Rebekah Boos, BSBME1, Chang Gui, BS2, Gretchen Meyer, PhD2, Silviya Zustiak, PhD1 1Saint Louis University, 2Washington University in St. Louis

2P541. PEGDA Hydrogel Nanoparticle Emulsions Deliver siRNA Intracellularly and Sustain Target Protein Knockdown, Ruth Negru1, Fouad Teymour1, Georgia Papavasiliou1, Marcella Vaicik1 1Illinois Institute of Technology

POSTERS (CONTINUED)

2P542. Investigating the Effect of Calcium Alginate Hydrogels on Chordoma, Temitope Aina, Bachelor's of Science, Biomedical Engineering1, Beatrice Campilan, Bachelor's of Science, Biology2, Christian Godinez, Bachelor's of Science, Cellular and Molecular Neuroscience2, Tyler Owens, Bachelor's of Science, Biology3, Margot Moreno,

2P543. Targeting Postoperative Recurrence of Desmoplastic Small Round Cell Tumor (DSRCT) with Chemotherapeutic Drug -Releasing Implantable Mesh, Ummay Mowshome Jahan1, Martin King1, Andreaa Hayes-Dixon2 1NC state university, 2Howard University, Howard University Hospital

2P544. In Vivo Metabolic Tagging and Targeting of Circulating Red Blood Cells, Yusheng Liu1, Hua Wang2 1University of Illinois Urbana-Champaign, 2University of Illinois

2P545. A particulate drug delivery system utilizing affinity interactions for controlled release of osteogenic peptides, Zina Helal, B.S.1, Emily Jiang, B.S.1, Nothando Chingodza1, Antonios Mikos, Ph.D.1 1Rice University

2P546. Steroid-Incorporated Lipid Nanoparticles for Anti-Inflammatory Delivery of mRNA, Benjamin Nachod1, Ajay Thatte, MS2, Michael Mitchell, Ph.D.2 1The University of Pennsylvania, 2University of Pennsylvania

2P547. Thiol-ene microparticles made with degradable linkers for drug delivery applications, Chipo Chapusha1, Nicholas Mcgowan1, Anthony Hasley1, Amol Janorkar, Ph.D.1 1University of Mississippi Medical Center

2P548. Manufacturing Dip Coatings: Considerations for Consistent Drug Delivery at Scale, Ejaz Haque, PhD1, Zachary Hales, MS1, Christopher Quach, MS1, Nicholas Papadopoulos, MS1 1BD Medical

2P549. Investigating the Use of Chondroitin Sulfate Microparticles to Prevent Neurite Growth and Development of Disc-Associated Low Back Pain in a Rat Model, Evie Reddick1, Anjeza Erickson, MS2, Rebecca Wachs, PhD1 1Arizona State University, 2University of Nebraska-Lincoln

2P550. Drug Delivery Systems for the Topical Treatment of Age-Related Macular Degeneration, J Jesus Rodriguez-Cruz1, Jessica Cutrufello1, Grace Cropper1, Nicholas Peppas1 1University of Texas at Austin

2P551. Pro-Angiogenic Peptide-loaded Hydrogel Nanoparticle Ointment Emulsion Formulations for Diabetic Wound Healing, Georgia Papavasiliou1, Rayan Abdulhadi, BS2, shadi motamed, BS2, Fouad Teymour1, ruyue luo3, Chongwen Duan3, Guillermo Ameer3 1Illinois Institute of Technology, 2IIT, 3Northwestern University

2P552. Berberine-Loaded Electrospun Chitosan as a Potential Drug-Eluting Biomaterial for Wound Healing in hEDS, Andie Tubbs1, Rabeta Yeasmin, M.S.1, Ezzuddin Abuhussein, M.S.1, Jessica Jennings, PhD1 1The University of Memphis

2P553. Strengthening Antisense Oligonucleotide Anti-Tumor Immunity via Metal Organic Framework Nanoparticle Delivery, Julia Nowak1, Michelle Teplensky, PhD1 1Boston University

2P555. Mucin Mimics and Impacts the Function of Polymeric Inhibitors in Stabilizing Drug Supersaturation, Victus Kordorwu1, Steven Castleberry2, Steve Lustig1, Rebecca Carrier1 1Northeastern University, 2Genentech

2P556. Single-Particle Spectroscopic Chromatography Reveals Heterogeneous RNA Loading and Size Correlations in Lipid Nanoparticles, Yizong Hu, PhD1, Sixuan Li, Ph.D.1, Taz-Huei Wang, Ph.D.1, Hai-Quan Mao, Ph.D.1 1Johns Hopkins University

2P557. Fluticasone furoate-loaded hyaluronic acid-based microgel for bleomycin-induced acute lung injury therapy, Bo Liu, PhD1, Samuel Gillman, BS1, Mollie Nielsen1, Mena Krishnan, PhD1, Michael Lush, BS1, Hanjun wang, PhD1, Bin Duan, PhD1 1University of Nebraska Medical Center

ENGINEERING CELLS AND THEIR MICROENVIRONMENTS SIG

2P558. Probing Glioblastoma-Mediated Microglia Activation and Invasion Using Microengineered Models, Chia-Wen Chang1, Ashwin Bale1, Rohit Bhargava1, Brendan Harley, ScD1 1University of Illinois Urbana-Champaign

2P559. Characterizing and Modeling the Triple-Negative Breast Cancer Tumor Microenvironment across Ancestry Groups, Matthew Harrington1, Heather Dunn, PhD1 1Clemson University

2P560. Hydrogel Facilitated Immune-Cancer Cell Co-culture Tumor Microenvironments, Vanshika Singh, PhD1, Muhammad Raisul Abedin2, Jordan Yaron, PhD1, Kaushal Rege, PhD1, Trishita Chowdhury1 1Arizona State University, 2Adipo Therapeutics

2P561. Size-Isolated Microparticles for Selective Ultrasound-Activated Gene Delivery in Tissue-Engineered Constructs, Alexandra Tihomirov Bukchin, PhD1, Kevin Schilling, PhD2, Carolyn Schutt Ibsen, PhD2 1Oregon Health & Science University, 2Oregon Health& Science University

2P562. Fabrication of a 3D Damage Extracellular Matrix Containing Microenvironment and its Effects on Hydrogel Properties, Ope Sanyaolu1, Victoria Garza1, Teja Guda2, Alisa Isaac, PhD1 1UTSA, 2The University of Texas at San Antonio

2P563. Dynamic Modulation of Hydrogel Stiffness to Enhance Vasculogenesis of Human Induced Pluripotent Stem Cell-Derived Endothelial Progenitors, Brett Stern, BS1, Katie Halwachs, BS1, Kristie Cheng, BS1, Davina Tran1, Bryce Larsen, BS1, Nicholas Peppas1, Adrianne Rosales, PhD1, Janet Zoldan, PhD1 1University of Texas at Austin

2P564. Functional heterogeneity of endothelial cells in self-assembled engineered vasculature, Bruno de Medeiros Esmeraldo1, Brian Kwee1 1University of Delaware

POSTERS (CONTINUED)

2P565. Changes in extracellular matrix stiffness mediate pancreatic islet function: insights into glucose metabolism and mitochondrial dynamics, Chelsea Johansen, MS1, Amit Sela1, Nikki Farnsworth, PhD1 1Colorado School of Mines

2P566. Muscle progenitor cell heterogeneity in 3D engineered skeletal muscle, Keely Laurence1, James Martin1, Brian Kwee1 1University of Delaware

2P567. Fibrin Content Controls Temporal Matrix Support for Capillary Sprouting in Collagen:Fibrin Hydrogels, Liliana Danford1, Gennifer Chiou2, Teja Guda2, Joo Ong2 1University of Texas San Antonio, 2The University of Texas at San Antonio

2P568. Effect of Varying Nanofiber Diameter on POR1-Arf Interactions, Megan Horan1, Elizabeth Byers1, Justin Brown1 1The Pennsylvania State University

2P569. Multifunctional Hybrid Surface Topographies: Full Protection in Guided Bone Regeneration, Mohammad Asadi Tokmedash1, Jacob Robins1, Jouha Min1 1University of Michigan

2P570. Graphene-based Wireless Antenna Arrays to Transdifferentiate Mesenchymal Stem Cells into Schwann Cells for Skin Tissue Engineering, Naomi Addai Asante, Student1, Hasan Erbil Abaci, Professor2, Metin Uz, Ph.D. in Chemical Engineering1 1Cleveland State University, 2Columbia University

2P571. Tuning Viscoelasticity in a Hyaluronic Acid-Based Hydrogel System to Investigate Meniscal Cell Mechanotransduction, Nitya Lagadapati1, Jenny Robinson, PhD, Texas A&M University1, Kyley Burkey1 1University of Washington

2P572. Thermal Inkjet Bioprinting of Human Fibroblasts into Stem Cell Environment Reveals Changes in Protein Expression and Changes in the Hippo Pathway, Patricia Ablanedo-Morales, BS1, Jonah Ayala2, Thomas Boland, PhD1 1The University of Texas at El Paso, 2University of Texas at El Paso

2P573. Angiogenic sprouting from vascular spheroids is disrupted by enhanced stiffness in a mechanically tunable poly(ethylene glycol) diacrylate hydrogel co-culture model of idiopathic pulmonary fibrosis, Samuel Agro1, Lakeshia Taite2 1University at Virginia, 2University of Virginia

2P574. Bioprinting as a tool to interrogate and engineer intracellular pathways, Thomas Boland, PhD1, Abraham Villa Mundo, MS1, Patricia Ablanedo-Morales, BS1, Jenny Pamanes Cavazzini, MS1 1The University of Texas at El Paso

2P575. Evaluating the Autologous Potential of a Patient-Specific hiPSC-Neuron/Hydrogel Therapy for Spinal Cord Injury, Vanessa Doulames, PhD1, Meghan Hefferon, BS1, Neil Baugh1, Michelle Huang1, Theo Palmer, PhD2, Sarah Heilshorn, PhD1 1Stanford University, 2Stanford University School of Medicine

2P576. Inflammatory Cytokines Impact on Stem Cell Differentiation for Cartilage Tissue Engineering, Zachary Beickman1, Carly Battistoni, PhD1, Julie Liu, PhD1 1Purdue University

ENGINEERING HEART AND LUNG MODELS TO STUDY DISEASE PROGRESSION AND THERAPEUTIC DEVELOPMENT

2P577. Macrophages Enhance Metabolism of Stem Cell-Derived Cardiomyocytes, Frank Ketchum1, Pinar Zorlutuna1 1University of Notre Dame

2P578. 3D Bioprinted Fat-Myocardium Model Unravels the Role of Adipocyte Hypertrophy in Atrial Dysfunction, Lara Celebi1, Pinar Zorlutuna1 1University of Notre Dame

2P579. 3D-Printed Hydrogel Scaffolds for Modeling Endothelial Reprogramming in Pulmonary Hypertension under Mechanical Stress, Naghmeh Abbasi1, Miranda Tai1, Stephen Yu-Wah Chan1, Daniel Shiwarski, Ph.D.1 1University of Pittsburgh

2P580. Modeling the Human Immune Response to Severe Influenza Infection in an Immune-competent Lung-on-Chip, Ankur Singh, Ph.D.1, Rachel Ringquist1, Rachel Ringquist1, Krishnendu Roy2 1Georgia Institute of Technology, 2Vanderbilt University

2P581. Using mechanical cues to study desmin-related cardiomyopathy in hiPSC-derived cardiac-micro tissues, Yasaman Kargar Gaz Kooh1, Ghiska Ramahdita1, Ganesh Malayath1, Huanzhu Jiang1, Xiucui Ma2, Chen Zhao2, David Rawnsley2, Abhinav Diwan2, Nathaniel Huebsch, PhD1 1Washington University in St. Louis, 2Washington University School of Medicine

ENGINEERING SOLUTIONS FOR IMMUNITY IN AGING POPULATIONS

2P582. Aged Bone Regeneration - Timing of Navitoclax Delivery to Restore Balanced Osteoblast/Osteoclast Activity, Govindaraj Perumal, Ph.D.1, Travis Robert Wallace, MS1, Liisa Kuhn, Ph.D.1 1University of Connecticut Health Center

2P583. PIEZO1 and Rho-associated Protein Kinase Cooperatively Regulate FAP F-Actin and Morphology, Charlene Cai1, Kasoorelope Oguntuyo1, Woojin Han1 1Icahn School of Medicine at Mount Sinai

2P584. Quantifying the Effects of Extracellular Matrix Composition on Breast Cancer Morphology, Lily Watts1, Kyndra Higgins, B.S.M.E.1, Cheryl Gomillion, Ph.D.1 1University of Georgia

EXTRACELLULAR VESICLES FOR BIOMEDICAL APPLICATIONS

2P585. Harnessing Targeted Therapeutic Exosomes for Efficient Peripheral Nerve Delivery and Regeneration, Mena Krishnan, PhD1, Olawale Alimia, MS1, Mitchell Kuss, BS1, Tianshu Pan, MS1, Bin Duan, PhD1, Bo Liu, PhD1 1University of Nebraska Medical Center

POSTERS (CONTINUED)

2P586. Bioproduction of Neural Stem Cells Derived Extracellular Vesicles Using Electrical Stimulation, Ekin Simsar1, Metin Uz, Ph.D. in Chemical Engineering1 1Cleveland State University

2P587. Hyaluronic acid hydrogels for minimally invasive and controlled delivery of extracellular vesicles in tendon injuries, Kristiyan Stiliyanov-Atanasov, MSc1, Manuel Gomez-Florit, PhD1 1Health Research Institute of the Balearic Islands (IdISBa)

2P588. Enhancing Extracellular Vesicles Secretion Via Electrical Stimulation and Utilizing EV-Loaded Pluronic F-127- Based Hydrogels for Wound Healing Applications, Tugce Dogruel1, Ekin Simsar1, Metin Uz, Ph.D. in Chemical Engineering1 1Cleveland State University

FIBROUS BIOMATERIALS IN TISSUE ENGINEERING

2P589. Assessing Multiple Antioxidant Loaded Electrospun Fibres for the Mediation of Oxidative Microenvironments, Ella-Louise Handley1, Maria Heim1, Lorna Westwood1, Elaine Emmerson, PhD1, Anthony Callanan, PhD1 1University of Edinburgh

2P590. Fibrous TPU scaffolds produced by filament-based melt-electrowriting, Jaka Pižorn, MSc1, Elisa Bruatto, BSc1, Nikola Cesarovic, Dr.1, Volkmar Falk, Prof. Dr.1, Stephen Ferguson, Prof. Dr.2 1ETH Zurich, 2Institute for Biomechanics, ETH Zürich

2P591. Enhanced Mechanical Properties of Additive-Free Sodium Alginate Fibers via Moisture Elimination for Sustainable Tissue Engineering, Jingyi Zhou, MS1, Ericka Ford1 1North Carolina State University

2P592. Integrating Hemp Fibers as Sustainable Alternatives in Biomaterials in a Comprehensive Approach to Enhancing Cell Adhesion, Kaleah Gaddy1, Jessica Gluck2 1North Carolina State University, 2NC State University

2P593. Non-Ionic Surfactant Modification of Electrospun Scaffold Properties for In Vitro Fibrous Tissue Injury Model, Katherine Meinhold, B.S.1, Jenny Robinson, PhD, Texas A&M University1 1University of Washington

2P594. Composite Hydrogel-Nanofiber Structures for Enhanced Mechanical Properties in Biomedical Applications, Mahtab Khodadadi, MS1, Martin King2, Jessica Gluck2 1North Carolina State University, 2NC state university

2P595. Zn particle infused fibrous scaffolds promote differentiation of HFDn, and induce neovascularization in HUVECs, Narayan Bhattarai, PhD1, Sita Shrestha, PhD1, Salil Desai, PhD1 1NC A&T State University

2P596. Cell Encapsulated 3D Hydrogel Microcapsules of Alginate and Chitin Fibrils Using Divalent and Trivalent metal ions, Thakur Sapkota, MS1, Sita Shrestha, PhD1, Narayan Bhattarai, PhD1 1NC A&T State University

2P597. Shear-induced collagen fibril alignment using FRESH 3D bioprinting, Carly Austin1, Adam Feinberg, Ph.D.1, Neeha Dev Arun1 1Carnegie Mellon University

2P598. Therapeutic Delivery Capabilities of Aptamer-Functionalized Nucleic Acid-Collagen Complexes in vitro and in vivo Biocompatibility Assessment, Nikolaos Pipis1, Josephine Allen, PhD1 1University of Florida

2P599. Comparison of Traditional Ultrasound-Enhaced Electrospinning in Generating in Fabricating Nanofibrous Structures from Gelatin Methacryloyl and Silver Bioactive Glass for Tissue Engineering, Johannes Schavikin, Master of Science1, Romila Manchanda, PhD1, Christina Wark, Masters1, Scott Calabrese Barton, PhD2, Xanthippi Chatzistavrou, PhD3, Ivo Laidmäe, PhD4, Ari Salmi, PhD5, Jyrki Heinämäki, PhD6, Nureddin Ashammakhi, PhD1 1Michigan State Uni

GRANULAR & MACROPOROUS BIOMATERIALS FOR TISSUE ENGINEERING

2P600. Measurement and Comparison of Hyaluronic Acid Hydrogel Mechanics Across Length Scales, Aina Solsona Pujol1, Nikolas Di Caprio2, Hannah Zlotnick1, Matthew Davidson1, Morgan Riffe1, Jason Burdick1 1University of Colorado, Boulder, 2University of Pennsylvania

2P601. Enzyme Responsive Granular Hydrogels for Tissue Repair Post-Myocardial Infarction, Kendra Worthington1, Chima Maduka, DVM, PhD2, Amy Perry2, Jason Burdick3 1University of Colorado Boulder, 2BioFrontiers Institute, 3University of Colorado, Boulder

2P602. Multi-Material Adhesive Cryogel Patch for Cardiac Applications, Morgan Riffe, M.S.1, Matthew Davidson2, Manuela Garay-Sarmiento, PhD3, Jason Burdick2 1University of Colorado-Boulder, 2University of Colorado, Boulder, 3University of Colorado Boulder

2P603. Living Cells as Dynamic Microgel Annealing Material for Transient Microstructure, Wahidur Rahman1, Sasha Cai Lesher-Pérez2 1University of Michigan, 2Univeristy of Michigan

2P604. Batch Production of Polyhedron Microgels through Buoyancy Forces, Yoke Qi Ho1, Durante Pioche-Lee1, Andrew Schaefer2, Sasha Cai Lesher-Pérez3 1University of Michigan, 2University of Michigan, Ann Arbor, 3Univeristy of Michigan

2P605. Application of a Yield-stress Fluid Model to Describe Monolithic and Heterogeneous Granular Hydrogel Properties, Gunnar Thompson, B.S.1, Jiye Lee, B.S.1, Krutarth Kamani, PhD1, Noah Flores-Velasco, B.S.1, Simon Rogers, Ph.D.2, Brendan Harley, ScD1 1University of Illinois Urbana-Champaign, 2University of Illinois at Urbana Champaign

2P606. PEG-Alginate Hybrid Double-Network Cryogels with Tunable Degradation Rates for Cartilage Tissue Engineering, Kaixiang Zhang1, Michael Seitz1, Zining Yang2, Era Jain, Ph.D.1 1Syracuse university, 2University of Texas at Arlington

POSTERS (CONTINUED)

HEALTH EQUITY SIG: BIOMATERIALS IN WOMEN'S HEALTH ENGINEERING

2P607. Sex-based Differences in Schwann Cell Migration on Aligned Polycaprolactone Nanofibers, Yang Hu1, Yin Mei Chan2, Nicola Judge, Dr.2, Rebecca Willits, Dr.1, Matthew Becker, Dr.2 1Northeastern University, 2Duke University

2P608. Sex-dependent innate immune cell populations in the brain after TBI: Opportunities for therapeutic intervention, Amberlyn Simmons, B.S.1, Sierra Chimene, B.S.1, Crystal Willingham, M.A.1, Amanda Witten, M.S.1, Heather Bimonte-Nelson, PhD1, Christopher Plaisier, PhD1, Rachael Sirianni, PhD2, Sarah Stabenfeldt, PhD1 1Arizona State University, 2UMass Chan Medical Schoo

2P609. Characterization of Graphene-Based Flexible Electronics for Pudendal Nerve Stimulation for Stress Urinary Incontinence Treatment, Andrea Zuccaro1, John Rogers, Ph.D. in Physical Chemistry2, Margot Damaser, Ph.D. in Bioengineering3, Metin Uz, Ph.D. in Chemical Engineering1 1Cleveland State University, 2Northwestern University, 3Cleveland Clinic Lerner Research Institute

2P610. Bioengineered 3D In Vitro Human Myometrium: A New Approach to Quantify Myometrial Contractility, Claudia Collier1, Anirudh Madyastha1, Kaci Martin2, Antonina Frolova, MD, PhD2, Shreya Raghavn, PhD1 1Texas A&M University, 2Washington University School of Medicine

2P611. Restoring Ovarian Function with Microporous Immune-Isolating Capsules containing Sacrifical Gelatin Microgels, Delaney Sinko, BSE, MSE1, Margaret Brunette, PhD1, Despina Pavlidis, MS1, Bipasha Ray1, Michelle Tong1, Suhani Thakur1, Ariella Shikanov, Ph.D.1 1University of Michigan

2P612. Developing an In Vitro Gelatin Hydrogel Model of Endometrioma Angiogenesis, Hannah Theriault1, Kathryn Clancy1, Brendan Harley, ScD2 1University of Illinois at Urbana Champaign, 2University of Illinois Urbana-Champaign

2P613. Genotoxic Effects of Copper Oxide Nanoparticles in Endometrial Cancer Cell Models, Jordan Berezowitz1, Claire Rowlands, Ph.D2, Lauren Mehanna, Ph.D1, Breanna Knicely, MS1, Eva Goellner, Ph.D1, Brittany Givens Rassoolkhani, Ph.D1 1University of Kentucky, 2Bluegrass Advanced Materials

2P614. Isolation of Poly(caprolactone) Nanoparticles in an Effective Size Range for Endometrial Cancer Drug Delivery, Lauren Mehanna, Ph.D1, Trisha Sullivan, BS1, Brittany Givens Rassoolkhani, Ph.D1 1University of Kentucky

2P615. Improving Maternal Health Outcomes Following Cesarean Delivery with the Prevention of Postoperative Adhesions, Lauren Costella, Principal Scientist1, Kate Johnson1, Rick Hassan1, Irina Buhimschi, MD, MMS2 1Luna Labs USA, 2University of Illinois - Chicago

2P616. Decoupling sex chromosome and sex hormone regulation of cardiac myofibroblast activation, Rayyan Gorashi, MS1, Talia Baddour, BS1, Kati Richter, N/A1, Brian Aguado, PhD1 1UC San Diego

2P617. Sex Differences in Adaptive Immune Responses after Traumatic Brain Injury, Sierra Chimene, B.S.1, Amberlyn Simmons, B.S.1, Crystal Willingham, M.A.1, Amanda Witten, M.S.1, Abhinav Acharya2, Sarah Stabenfeldt, PhD1 1Arizona State University, 2Case Western Reserve University

HIGH PERFORMANCE BIOMATERIALS FOR TISSUE ENGINEERING AND REGENERATIVE MEDICINE

2P619. Functionalized scaffold with renal differentiation factors-incorporated extracellular vesicles and intermediate mesoderm for kidney regeneration, Boram kim1, Jeong Min Park1, Sun Hong Lee1, Dong Ryul Lee1, Dong Keun Han1 1CHA University

2P620. Chitosan Micromesh for Promoting Myoblast Orientation and 3D Tissue Structuring in Cultured Meat Applications, JIACHENG XU1, Takeshi Hori1, Yuji Nashimoto1, Shotaro Yoshida1, Hirokazu Kaji1 1Institute of Science Tokyo

2P621. Electrospun Nanofibrous Scaffolds from Dissolved Cotton: A Sustainable Approach to ECM-Mimicking Biomaterials, Nasim Nosoudi, PhD1, Xavier Lewis, bsc1, Lyana Green, bsc2 1Marshall university, 2Marshall u

2P622. Strain-programmed adhesive patch for accelerated photodynamic wound healing, Seong-Jong Kim, PhD1, Sei Kwang Hahn2 1Pohang University of Science and Technology, 2POSTECH

2P623. Phototunable control of stress relaxation in viscoelastic hyaluronic acid hydrogels, Olivia Morren, BS1, James Gentry, BS1, Steven Caliari, PhD1 1University of Virginia

2P624. Photo-responsive decellularized small intestine submucosa hydrogels for skeletal muscle regeneration, Van Thuy Duong1, Ngoc Ha Luong1, Chien-Chi Lin, Ph.D.1 1Purdue University

2P625. Enhancing Mechanical Properties of Collagen Hydrogels by Silk Fibroin Incorporation and Riboflavin Crosslinking, Nithyashri Muthu Vijayan1, Rohin Shyam2, Arunkumar Palaniappan2, Vipuil Kishore1 1Florida Institute of Technology, 2Vellore Institute of Technology

2P626. Optimization of Affibody-Conjugated Hyaluronic Acid Hydrogels for Bone Regeneration, Yan Carlos Pacheco, B.S.1, Alycia Galindo, B.S.1, Juan Garcia, B.S.1, Nick Willett, Ph.D.1, Marian Hettiaratchi, PhD2 1University of Oregon Knight Campus, 2University of Oregon

POSTERS (CONTINUED)

2P627. Modular fibrous architecture designed to promote integrin-VEGFR crosstalk enhances the in vitro and in vivo vascularization of synthetic nanoporous hydrogels, Yimeng Zhao, B.S.1, Harrison Hiraki, PhD1, Eashan Prabhu, B.S.1, Jingyi Xia1, Ariella Shikanov, Ph.D.1, Brendon Baker, Ph.D.1 1University of Michigan

2P628. Alginate hydrogels: a tunable tool for biotech applications, Anastasia Panfilova1, Janek Hillmann1, Marizela Delic-Schlumbohm, PhD1, Henriette Sætrang1, Lise Cathrine Asdahl1, Samantha Cassel, PhD1 1IFF

2P629. An alginate-based foam scaffold for 3D culture of mammalian cells, Samantha Cassel, PhD1, Mark Dreibelbis, PhD1, Susan Jordan, PhD1, Joshua Katz, PhD1, Marizela Delic-Schlumbohm, PhD1 1IFF

2P630. Bioengineered Mussel Matrix Protein-Based Viscous Immiscible Liquid for Injectable Stem Cell Therapy, Sung Min Han1, Myeong Jae Beak1, Yun Kee Jo, Ph.D.1 1Kyungpook National University

2P631. Pioneering Biocomposite System for Bone Regeneration: Dual-Setting Cement Based on Magnesium Potassium Phosphate and Sodium Alginate with Controlled Hydration and Cross-Linking Reactions, Marcin Wekwejt, PhD1, Rafał jesiołkiewicz2, Aleksandra Mielewczyk-Gryń, Prof., PhD2, Dawid Kozień, PhD3, Anna Ronowska, PhD4, Justyna Kozłowska, PhD5, Uwe Gbureck, Prof., PhD6 1Gdansk University of Technology, 2Gdańsk University of Technology, 3AGH Univer

2P632. Silk Fibroin Cryogels with Bone Char Additive for Bone Regeneration, Kate Wasacz1, Amritha Anup, BE, BA1, Katherine Hixon, Ph.D.1 1Dartmouth College, Thayer School of Engineering

2P633. An Animal-Free Medium Enables Simple and Cost-Effective Construction of a 3D Skin Model for Animal Testing Alternatives, Yun-Mi Jeong1, WON-SOO YUN1 1Tech University of Korea

2P634. Metallized Clay Nanoparticles for Tissue Regeneration, Abdul-Razak Masoud1, David K Mills2, Elham Saberian3 1School of Biological Sciences, Louisiana Tech University, Ruston, USA., 2College of Engineering and Science, Louisiana Tech University, Ruston, USA., 3Dep. of Medicine and Dentistry, Pavol Jozef Šafári

IMMUNE BIOMECHANICS & MECHANOBIOLOGY

2P635. Time-dependent elasticity of primate bone marrow and aging of the immune system, Dallin Jacobs, N/A1, Truc Dinh, N/A1, Aidan Gilchrist, PhD1 1UC Davis

IMMUNE ENGINEERING SIG

2P637. Dynamic engineering of submolecular ligand structure for macrophage regulation, Yuri Kim1, Heemin Kang1 1Korea University

2P638. DOCK8 enhanced Dendritic cells as a therapy against Melanoma, Abhirami suresh1, Brandon kim1, Anna Mathis1, Abhinav Acharya1 1Case Western Reserve University

2P640. Regenerative Immunomodulation for Multiple Sclerosis Murine Model using Biomaterial-Based Immunosuppressive Dendritic Cell Delivery, Advika Srinivasan, B.Tech1, Abigail Damico, MS1, Julia Babensee, PhD1, Priya Narayanan, PhD2, Liu Fang, PhD2 1Georgia Institute of Technology, 2University of Georgia (Augusta Campus)

2P641. A Novel Lipid Nanoparticle for Serial Delivery of mRNA to Human T cells, Apoorva Ramamurthy, M.S. in Biomedical Engineering1, Giulia Scimonelli1, Krishanu Saha, Ph.D.2, William Murphy, PhD1 1University of Wisconsin Madison, 2University of Wisconsin-Madison

2P642. Therapeutic Peptide Amphiphile Micelles as a Novel Leukemia Treatment, Aylin Kalabak1, Joshua Shelton, B.S.1, Agustin Barcellona, B.S.2, Megan Schulte, Ph.D.2, Donald Burke, Ph.D.1, Mark Daniels, Ph.D.2, Bret Ulery, Ph.D.2 1University of Misouri - Columbia, 2University of Missouri - Columbia

2P643. Evaluation of Fc-III Peptides Modified for Hydrogel Incorporation to Bind and Prolong the Release of Biologics, Dhanashree Surve1, Chris Li1, Oriana Mantovani1, Grisell Gonzalez1, Iga Kucharska1, Peter Buchwald1, Alice Tomei1 1University of Miami

2P644. Early Exposure to Cytokine Tips the Balance in B-Cell Maturation in Human Immune Organoids, Hyeon Ju Song1, Zhe Zhong1, Manuel Quiñones Pérez1, Christopher Carlson1, Valeria Juarez1, Ankur Singh, Ph.D.1 1Georgia Institute of Technology

2P645. Engineering an enzyme-peptide biomaterial to suppress the emergence of anti-enzyme antibodies, Lucas Melgar, M.S.1, Gregory Hudalla, PhD1 1University of Florida

2P646. Human Immune Organoids to Decode Immune Response in Healthy Donors and Lymphoma Patients, Zhe Zhong1, Andrés García1, JEAN KOFF, MD, MS2, Ankur Singh, Ph.D.1 1Georgia Institute of Technology, 2Emory University School of Medicine

2P647. Harnessing DNA Nanoarchitecture to Overcome Immunoevasion in Cancer, Meredith Davis1, Ezra Cho1, Siyi Zheng1, Michelle Teplensky, PhD1 1Boston University

2P648. Exploring "optimal" adjuvants in nanoparticle-based flu vaccines for improving immune responses in obesity, Rohit Chaudhari1, Kaitlyn Holden1, Alaric Siddoway, PhD1, Ananya Van Zanten1, Promit Sinha Roy1, Gunnar Moen1, Surya Mallapragada1, Michael Wannemuehler1, Marian Kohut2, Balaji Narasimhan1 1Iowa State University, 2Iowa State Univeristy

2P649. Biotin-avidin affinity-based controlled release of interleukin-4 for immunomodulation, Victoria Nash1, Juan Cortes1, Kara Spiller1 1Drexel University

POSTERS (CONTINUED)

2P650. Programmable B Cell Interactions Using Metal–Organic Framework–Hydrogel Depots, Lauren Bell1, Ezra Cho1, Julia Nowak1, Mayayi Izzo1, Fanrui Sha, PhD2, Julian Magdalenski2, Omar Farha, PhD2, Michelle Teplensky, PhD1 1Boston University, 2Northwestern University

MATRIX & PEPTIDES IN BIOMATERIALS

2P651. Branched Amphiphilic Peptide Capsules: A Promising PEG-Free Nanoformulation for mRNA Vaccine Delivery, Adriana Avila Flores1, Collin Wall1, Nitish Kunte1 1Auburn University

2P652. Elucidating the Composition and Targeting of an Intravascularly Infusible Extracellular Matrix Biomaterial, Alexander Chen1, Michael Nguyen1, Maxwell McCabe2, Kirk Hansen2, Karen Christman1 1UC San Diego, 2University of Colorado

2P653. Improved Wound Healing Capabilities of Electrospun PCL-Zinc Scaffolds via Coating with Fibroblast-Derived Extracellular Matrix, Alexis Moody, M.S.1, Narayan Bhattarai, PhD2 1NCAT, 2NC A&T State University

2P654. Optimizing the internalization of a peptide based nanoplatform for Cas9 ribonucleoprotein delivery and gene editing, Alyson Schwartz1, Joey LaValla1, Audrey Wessinger1, Jennifer Singleton1, Jessica Larsen, PhD1, Angela Alexander-Bryant, PhD1 1Clemson University

2P655. Developing Extracellular Matrix-Based Fibers for Biocompatible Biomedical Implants, Anelisse Claros Mendieta1, Chris Slavin1, Jeff Wolchok1, Jamie Hestekin1 1University of Arkansas

2P656. Proteomic Analysis of Goldfish Extracellular Matrix Reveals Key Proteins in Neuronal Regeneration Following Spinal Cord Injury, Cátia Dombaxe, MS.c.1, Yadong Wang, Ph.D.1 1Cornell University

2P657. Self-assembling peptide hydrogels for TMZ conversion and delivery of targeted stimuli-responsive peptide-siRNA nanoparticles for combination treatment of glioblastoma, Jessie Boulos, Bachelor of Science1, Kay Russi1, Daphne Gomez Escudero1, Emalee Mann2, Angela Alexander-Bryant, PhD1 1Clemson University, 2Clemson

2P658. Peptide-based Nanoplatform for Cas9 Ribonucleoprotein Delivery and Gene Editing, Joseph Lavalla1, Alyson Schwartz1, Jessica Larsen, PhD1, Angela Alexander-Bryant, PhD1 1Clemson University

2P659. Effects of CNN Models on Feature Extraction for Extracellular Matrix Structure Feature Map Generation, Kazuki Hoashi1, Naoki Matsuda2, Ikuro Suzuki2, Tsuyoshi Kimura3, Motoki Takagi1, Akio Kishida4, Naoko Nakamura1 1Shibaura Institute of Technology, 2Tohoku Institute of Technology, 3Toyo University, 4Institute of Science Tokyo

2P660. Application of Young and Aged Patterned Decellularized Muscle Bioinks, Krista Habing, B.S.1, Yong How Tan, B.S.1, Karina Nakayama, PhD1 1Oregon Health & Science University

2P661. Mineralized decellularized pericardium for soft-to-hard tissue application, Mika Suzuki1, Tsuyoshi Kimura2, Yoshihide Hashimoto1, Naoko Nakamura3, Akio Kishida1 1Institute of Science Tokyo, 2Toyo University, 3Shibaura Institute of Technology

2P662. Controlled Peptide Hydrogel Degradation via RAPID Sequence Design and Stereocomplexation, Paul Eisold1, Diana Kirilov1, Emani Glover2, Kyle Lampe, Postdoc, PhD, BS1 1University of Virginia, 2North Carolina Agricultural and Technical State University

2P663. Advancing Colorectal Cancer Models: Mechanical Properties of Colon Basement Membrane, Roxana Roshankhah1, Marcella Vaicik1, Benjamin Shogan2, Mohsen Rouhani Ravari2 1Illinois Institute of Technology, 2University of Chicago

2P664. Investigation of cytocompatibility and cellular internalization of novel, enzyme-cleavable peptides in 2D and 3D cultures, Ruxi Xia1, Kharimat Alatise1, Angela Alexander-Bryant, PhD1 1Clemson University

2P666. Hybrid dECM/PCL Nanofibrous Scaffolds for Bone Tissue Engineering, Weiwei Wang, PhD1, Xiaojun Yu, Professor2 1Stevens Institute of Technology, 2Professor

2P667. Tissue Engineered Microphysiological System for Probing Desmoplastic Pancreatic Cancer Perineural Invasion, Emory Gregory, PhD1, Sam Stephens, MS1, Nathaniel Harris1, Min Zou, PhD1, Morton Jenson, PhD, DrMed1, Younghye Song, PhD1 1University of Arkansas

2P668. Harnessing the potentials of Ultra-High Molecular Weight proteins as next-generation biomaterial, Swati Srivastava1 1South Dakota School of Mines and Technology

2P669. Enzymatic Crosslinking of Decellularized Extracellular Matrix to Generate Mechanically Tunable Hydrogels, Omar Peza-Chavez1 1McGill University

Society For Biomaterials

Poster Session 3

Friday, April 11, 2025, 4:30 pm – 6:00 pm

MICROFLUIDICS AND BIOMATERIALS FOR ENGINEERING 3D IN VITRO MODELS

3P500. Controlling Oxygenation of In-vitro Liver Organoid Models via a Combinatorial Microparticle and Perfusion Approach for Improved Physiologic Relevance, Ahmed Usaid, N/A1, Nic Leipzig, Dr.2 1The University of Akron, 2University of akron

POSTERS (CONTINUED)

3P501. Investigating the effect of Irgacure concentration and UV exposure time on the mechanical and diffusivity properties of hydrogels used in a physiologically relevant model of peripheral pain, Benjamin Gane1, Rebecca Wachs, PhD1 1Arizona State University

3P502. Optimizing Microfluidic Co-Culture for Vascular Integration in Early Ovarian Follicle Development, Bhavya Vats, BSE1, Emily Thomas1, Taylor Schissel, MS1, Despina Pavlidis, MS1, Monica Wall, MS1, Brendon Baker, Ph.D.1, Ariella Shikanov, Ph.D.1 1University of Michigan

3P503. Design and Development of a Perfusable Agarose Hydrogel Platform with 3D Sacrificial Vasculature, Calvin Chernyatinskiy1, Bruce Gao1, Lidadi Agbomi1, Wesley Nichols1 1Clemson University

3P504. Engineering a 3D Printed Microfluidic Placenta-on-chip, Chishiba Chilimba, MS1, Chad Sherwood1, Vibha Kannan1, JESSICA WEAVER, PhD1 1Arizona State University

3P505. Patient-specific 3D breast cancer and cardiac tissue model within capillary-circuit microfluidic platform to study chemotherapy-induced cardiotoxicity, Edgar Alonso Borrego Puerta1, Janine Hagar-Montoya1, Paula Delgado1, Jose Perez1, Sylvia Natividad-Diaz1 1The University of Texas at El Paso

3P506. Human Joint-on-a-Chip: A Microfluidic Co-Culture Model Integrating Osteoblasts, Chondrocytes, Fibroblasts, and Macrophages for Osteoarthritis Research, Hosein Mirazi1 1South Dakota School of Mines and Technology

3P507. A 3D Vascular Model to Study Endothelial Cell Role in Breast Cancer Progression Following Cardiovascular Disease, Kira Lynch1, Holly Day1, Kevin Schilling, PhD2, Monica Hinds, PhD3, Carolyn Schutt Ibsen, PhD1 1Oregon Health & Science University, 2Oregon Health& Science University, 3OHSU

3P508. A Microengineered High-Throughput Vocal Fold Model to Study Fibroblast Behavior in Phonation, Amir K.Miri, researcher1, Aydasadat Pourmostafa, PhD scholar1, Mohaddeseh Mohammadi2, Amir K Miri, Dr Faculty1, Chen shen, associate PROFESSOR3 1New Jersey Institute of Technology, 2NJIT, 3ROWAN UNIVERSITY

3P509. Microfluidic chip with perfusable microchannels and vascularizing hydrogel for stem cell-derived islet vasculogenesis, Mariana Rodriguez, B.S. Candidate1, Ana Mora-Boza, PhD1, Angelica Torres, B.S.1, Sophia Kioulaphides, M.S.1, Eric O'Neill, B.S.1, Graham Barber, B.S.1, Michelle Quizon, PhD1, Andrés García1 1Georgia Institute of Technology

3P510. Role of Microscale Vibrations on Fibrotic Markers in Human Vocal Fold Fibroblasts, Mohaddeseh Mohammadi1 1NJIT

3P511. A Biomimetic Approach to Studying Human Vascular Inflammation on a chip, Fatemeh Sharifi, PhD1, Lola Eniola-Adefeso2 1University of Michigan, 2University of Chicago, Illinois

3P512. A Versatile Droplet Generation Platform for Tunable Microgel Production and High-Throughput Cell-Matrix Studies, Zachary Varrenti1, Ramkumar Annamalai1 1University at Buffalo

3P513. A 3D Printed Millifluidic Bioreactor for Examining the Influence of Shear Stress on Vascular Cells Cultured on Electrospun Scaffolds with Surface Topography, Andrew Johnston1, Todd Burton, Phd1, Anthony Callanan, PhD1 1University of Edinburgh

NANOMATERIALS FOR IMMUNE MODULATION

3P514. Biodegradable particles for controlled antigen delivery, Adam Salem1, Pornpoj Phruttiwanichakun, PharmD1, Sean Geary, PhD1 1University of Iowa

3P515. Subcutaneous nanotherapy for islet transplantation preserves functional protective immunity in a skin infection model of Staphylococcus aureus, El Hadji Arona Mbaye1, Débora B. Scariot, PhD1, Amanda Bakoshi2, Rayanne B. Machado2, Natalie R. Klug1, Natalia Mendonca1, Szumo Wang1, Sultan Almunif1, Jacqueline A. Burke, PhD1, Evan A. Scott, PhD3 1Northwestern University, 2State university of Maringá,

3P516. Modulating Antigen Processing through Nanoporous Cages to Bias Adaptive Immunity, Ezra Cho1, Meredith Davis1, Julia Nowak1, Mayayi Izzo1, Anna Ferrante1, Fanrui Sha2, Julian Magdalenski2, Omar Farha, PhD2, Michelle Teplensky, PhD1 1Boston University, 2Northwestern University

3P517. Protein corona formation on polymer nanoparticles causes endosomal sorting resulting in a reduced NLRP3 inflammasome activation, Maharshi Debnath, NA1, Mehak Malhotra, NA1 1University of Massachusetts Amherst

3P518. In vivo Natural Killer Cell Activation with siRNA-Lipid Nanoparticles for Cancer Checkpoint Inhibition, Theresa Raimondo, PhD1 1Brown University

3P519. Investigating the Role of Bone-Targeted Nanoparticles in Osteoclast Modulation, Vigneshkumar Rangasami, PhD1, Danielle Benoit, Ph.D.1 1University of Oregon

3P520. DNA nanoparticles elicit tunable inflammation dependent on sequence, shape, and chemical identity, Chung Yi Tseng1, Ryan C. Lee1, Shana Alexander1, Eric S.Y. Chiu1, Leo Y.T. Chou1 1University of Toronto

3P521. Immunoagonist Non-Coding RNA (incRNA) as an Intrinsic Nucleic Acid-Based Combination Cancer Immunotherapy, James Forster1, Adam Fish1, Mehak Malhotra, NA1, Aniruddha Pinjari2, Maharshi Debnath, NA1, Ashish Kulkarni1 1University of Massachusetts Amherst, 2University of Massachusetts, Amherst

NANOMATERIALS SIG

3P522. Automation of Oxygen-Tolerant Atom Transfer Radical Polymerization, Cesar Ramirez, Student1, D. Radford, PhD1 1Rutgers University

POSTERS (CONTINUED)

3P523. Comparing Yield Between Different Methods of Polycaprolactone Particle Preparation, Trisha Sullivan, B.S1, Lauren Mehanna, PhD1, Brittany Givens, PhD1 1University of Kentucky

3P524. In Vivo Distribution of Degradable P(AAm-co-MAA) Nanogels: Highlight on Sex Differences, Rana Ajeeb1, Harsh Joshi, PhD1, Mojtaba Ghanbari Mehrabani, M.S.2, John Clegg, PhD1 1University of Oklahoma, 2The University of Oklahoma

NANOMEDICINE FOR TARGETED DRUG DELIVERY

3P525. Fibroblast-like synoviocytes (FLS) targeted FAP-2286 decorated liposomes for rheumatoid arthritis, Abishek Kamalakkannan1, Divya Bijukumar2 1University of Illinois College of Medicine Rockford, 2University of Illinois Chicago College of Medicine

3P526. Promising targeted therapy for Fuchs' endothelial corneal dystrophy (FECD) assisted with cRGD conjugated ubiquinol loaded nanoparticles, Sanjib Saha, Ph.D.1, Jessica M. Skeie, Ph.D.1, Megan Polz, BS1, Hanna Shevalye, BS2, Timothy Eggleston, BS2, Apurva Dusane, M.Pharm1, Pornpoj Phruttiwanichakun, PharmD1, Esraa Mohamed, Master's Degree1, Gregory Schmidt, M.B.A., C.E.B.T.2, Mark Greiner, M.

3P527. Nanoparticle-Releasing Composite Hydrogel for Sustained Ophthalmic Delivery, Hyeohn Kim1, Sofia Iara Ochoa1, Asmaa A. Youssif1, Benjamin Thomson1, Mark Johnson1, Evan A. Scott1 1Northwestern University

3P528. Fibrosis Pathways and Mitigation for Arthrofibrosis Using microRNA, Kait Hosmer1, Barbara Boyan1, David Cohen1, Zvi Schwartz1, Stephen Kates, M.D.2, Christine VanDuyn, PhD1 1Virginia Commonwealth University, 2Virginia Commonwealth University Medical Center

3P529. Ultrasonic Shearing for Improved Monodispersity and Scalable Nanobubble Manufacturing, Margaret Nanfria1, Pedram Sotoudeh Bagha, Ph.D.1, Mehdi Razavi, Ph.D.1 1University of Central Florida

3P530. Tailoring Polymeric Nanoparticles Properties for Enhanced Targeted Delivery to Macrophage Subpopulation., Paul Sagoe1, Isabel Mittal2, Era Jain, Ph.D.1 1Syracuse University, 2Bioinspired Institute, Syracuse University

3P531. Curcumin-loaded Poly(octanediol-co-citrate) Nanoparticles for Targeted Breast Cancer Therapy, Rachel Logan1, Nicole Levi, PhD2 1Wake Forest School of Medicine, 2Wake Forest University School of Medicine

3P532. Encorafenib and Trametinib Co-loaded Nanoparticles Actively Targeting BRAF V600E Colon Cancer, Ramkrishna Sen, Ph.D.1, Lokesh Janardhanam1, Mohammad Al-Natour, Ph.D.1, Meraj Anjum, Ph.D.1, Sean Geary, PhD1, Aliasger Salem, PhD1 1University of Iowa

3P533. Collagen Matrix-specific Peptide Decorated Nano-carriers for Tumor Microenvironment Targeted Drug Delivery, Sharmishthaa Gudetee Padmanaban1, Mohammad Fazle Alam1, Divya Bijukumar1 1University of Illinois Chicago College of Medicine

3P534. Developing a Targeted, Localized Delivery Platform for miRNA using Lipid Nanoparticles, Thomas Jacobs1, Anushka Phadke1, David Cohen1, Barbara Boyan1, Zvi Schwartz1 1Virginia Commonwealth University

3P535. Iron based Targeted Ionizable Lipid-Based Nanoparticles for Head and Neck Cancer Treatment, Tristan Cole1 1Missouri University of Science and Technology

3P536. Designing novel antioxidant and iron-chelating nanoparticles for the treatment of ferroptosis, Cameron Moore, BS & BA1, Danielle Benoit, Ph.D.1 1University of Oregon

3P537. Oral Senolytic Nanomedicine Targeting β-Galactosidase in Retinal Senescent Cells for Treating Age-Related Macular Degeneration, Ja-Hyoung Ryu1, Haewon Ok, Ph.D2 1Ulsan National Institute of Science and Technology, 2Ulsan National Institute Science & Technology

3P538. Functionalized engineered extracellular vesicles for targeted delivery to intervertebral disc cells, Mia Kordowski1 1The Ohio State University

3P539. Polyurethane Nanocapsule mediated delivery of Acriflavine for the treatment of neovascular AMD, Narendra Pandala1, Lorena Haefeli1, Adnan Khan1, Ian Han1, Hailey Steffen1, Erin Iavik2, Robert Mullins1, Budd Tucker1 1University of Iowa, 2National Cancer Institute

3P540. Polyethylenimine-conjugated Arabinogalactan Based Gene Delivery Systems for Hepatocellular Carcinoma, Seojin Choi1, Seoyoung Kim1, Tae-il Kim, PhD1 1Seoul National University

3P541. Multifunctional Drug/Gene Co-delivery Systems Based on Polyphenol Polymer-coated Cationic Hydroxyethylcellulose Nanocomplexes for Anticancer Therapy, Seoyeon Park, PhD candidate1, Tae-il Kim, PhD1 1Seoul National University

3P542. Polyelectrolyte complex micelles for targeted nucleotide delivery to treat atherosclerosis, Siyang Wang1, Yun Fang2, Matthew Tirrell2 1The University of Chicago, 2University of Chicago

3P543. Pulmonary surfactant-based Lipid nanoparticles for pulmonary delivery of circRNA vaccines, You Xu, Phd1, Jinyi Tang, Phd2, Zitong Wang, Phd student1, Shimiao Liao, Phd1, Xiang Liu, Phd student1, jie Sun, Phd2, Guizhi Zhu, Phd1 1University of Michigan, 2University of Virginia

3P544. Tumor-Targeted Sprayable Nanotherapeutics for Focal Cancer Therapy, Yun Seop Shim1, Yu Ri Jeon1, Yun Kee Jo, Ph.D.1 1Kyungpook National University

POSTERS (CONTINUED)

3P545. Redox-activatable mucoadhesive non-viral vectors for inhalable gene therapies of lung cancer, Yun Seop Shim1, Yun Kee Jo, Ph.D.1 1Kyungpook National University

3P546. Development of injectable alginate/gelatin hydrogel for proper release of tranexamic acid to control the cerebral hemorrhage in rat brain damage models, Ali Golkar1, Hadi Tabesh1, Farhad Ahmadi1, Amin Jahanbakhshi1, Ali porkhalil1, Razieh Haji-Soltani1, Elham Saberian2, David K Mills3 1University of Tehran, Iran, 2Dep. of Medicine and Dentistry, Pavol Jozef Šafárik University, Clinic and academy of Maxill

3P547. uPA-mediated Dendrimer-based Nanoparticles for Atherosclerosis Diagnosis and Therapy, Hsin-Yin Chuang1, Huari Kou1, Yue-Wern Huang1, Hu Yang1 1Missouri University of Science and Technology

NOVEL BIOMATERIAL DEVELOPMENTS IN NON-VIRAL DRUG DELIVERY SYSTEMS

3P548. Enhanced pDNA Delivery Mediated by Backbone-Degradable RAFT Copolymers, Adam Gormley, PhD1 1Rutgers University

3P549. Hybrid Charge-reversed Cationic Exosomes for Non-Viral Gene Therapy in Osteoarthritis, Andrew Selvadoss, BS1, Hengli Zhang, MS1, Hector Millan Cotto, BS1, Tanvi V. Pathrikar, BS1, Helna M. Baby, MS1, Ambika Bajpayee, PhD1 1Northeastern University

3P550. Temperature Resilience and Swelling Behavior of Glyceraldehyde-Crosslinked Gelatin Hydrogels Compared to Glutaraldehyde in In Vivo-Mimicking Conditions, Betul Karanfil, PhD Candidate in Chemical Engineering, Virginia Tech1, Abby Whittington, Associate Professor at Virginia Tech1 1Virginia Tech

3P551. High-throughput screening of topographical cues for enhanced nonviral gene delivery, Abigail Conner, MSc1, Daichen Liu, MSc1, Huiyi Liang, PhD2, Kam W Leong, PhD2, Evelyn Yim, PhD1 1University of Waterloo, 2Columbia University in the city of new york

3P552. Yeast-derived Polyplexes for Oral CRISPR Cas9 and dCas9 Delivery, Huiyi Liang, PhD1, Kam Leong, Ph.D.2 1Columbia University in the city of new york, 2Columbia University

3P553. Layer-by-Layer self-assembly of polymer-metal organic framework coatings for tunable drug delivery, Jacob Robins1, Mohammad Asadi Tokmedash1, Adrian Li1, Jouha Min1 1University of Michigan

3P554. Advancing Polymer Nanoparticles for Gene Therapy Use by Improving Manufacturability, Cargo Loading and Safety, Kenneth Sims, PhD1, Emma Schmitz, BS1, Andrea McCue, PhD1, Danielle Huk, PhD1, Ashlee Colbert, PhD1, Matthew Neal, PhD1, Cherry Gupta, PhD1, Anthony Duong, PhD1, Chelsi Snow, PhD1, Gabe Meister, PhD1 1Battelle Memorial Institute

3P555. Super-Lubricious Platelet-Rich Plasma Loaded Microgels for the Treatment of Knee Osteoarthritis, Sam Stealey, PhD1, Abdul Malik Tyagi, PhD2, Yousef Abu-Amer, PhD2, Paul Jelliss, PhD1, Silviya Zustiak, PhD1 1Saint Louis University, 2Washington University in Saint Louis

3P556. Supramolecular Assembly of Polycation/mRNA Nanoparticles and In Vivo Monocyte Programming, Yizong Hu, PhD1, Stephany Tzeng1, Jordan Green, Ph.D.1, Hai-Quan Mao, Ph.D.1 1Johns Hopkins University

3P557. Spatially-Controlled Polymerization for Dynamic siRNA Nanocarriers: Enhancing Stability and Therapeutic Synergy, Gaeun Park1, Ja-Hyoung Ryu1 1Ulsan National Institute of Science and Technology

3P558. A lesion-targeted nanoparticle platform enables disease-severity-responsive ghrelin mRNA delivery and attenuates osteoarthritis progression, Mahima Dewani, PhD1, Anjali Rajesh Mamidwar2, Miraj Rawal2, Nutan Bhingaradiya, PhD1, Jingshu Liu3, Nishkal Pisal4, Elyse Blank, BA3, Arpita Banerjee5, Christopher Jiang5, Keren Chen3, Ziting Xia5, Jeffrey Karp, PhD5, Jingjing Gao, PhD6, Nitin Joshi, PhD1

3P559. Dendritic-Peptide Conjugated Polymer Nanoparticles for Safe, Effective Plasmid Delivery, Robert Reichert, M.S.1, Natalia Mendonca1, Lisa Volpatti, Ph.D.1, Evan A. Scott, PhD2 1Northwestern University, 2NanoSTAR Institute/ University of Virginia

NOVEL MATERIALS - BIOLOGICALLY INSPIRED

3P560. Mechanically Tunable and Celluarly-Adhesive Hydrogels, Alex Sunday1 1Freedman Lab

3P561. A Diels-Alder Click Chemistry Approach to Fabricating Hydrogels with Physiologically-Relevant Properties, Rabia Fatima, MS1, Bethany Almeida, PhD1 1Clarkson University

3P562. Biomimetic Multifunctional Nanogel Eye Drops for Prolonged Drug Release and Iron Chelation, BURHAN ATES1, Ashish Trital1, Jonathan Kenlee1, Nuran Ercal1, Hu Yang1 1Missouri University of Science and Technology

3P563. A Perfusable Leaf Model to Investigate Engineered Construct Endothelialization, Tanya Enderli1, Kira Scarpignato1, Zackary Lorton1, Paul Gatenholm, PhD2, Chris Bashur, PhD1 1Florida Institute of Technology, 2Cellheal AS

3P564. Sweet Corn Phytoglycogen as a Protein Stabilizing Excipient, Junha Park1, Renjie Liu1, Susan Boehlein1, Marcio Resende1, Gregory Hudalla, PhD1 1University of Florida

3P565. 3D Printed Composite Scaffolds Incorporating Eggshell Particles for Enhanced Bone Repair, Mert Gezek1, Gulden Camci-Unal, PhD1 1University of Massachusetts Lowell

3P566. Type I Collagen Biomimetic Extracellular Matrix for Endothelium Repair, Minaine Bouabdallah1, Alessia Castagnino2, Isabelle Martinier1, Abdul Barakat2, Karim Dorgham3, Makoto Miyara3, Léa Trichet1, Francisco Fernandes4 1Sorbonne Université, 2Ecole Polytechnique, 3Inserm, 4Sorbonne University /CNRS

POSTERS (CONTINUED)

3P567. Engineered, hydrazone-crosslinked fucoidan hydrogel as a novel immune-modulatory biomaterial., Omanin Siddiqua Prova, B.Sc in Biomedical Engineering1, Shajia Afrin, PhD in Biochemistry1, Muhammad Rizwan, Ph.D. Biomedical Engineering1 1University of Texas Southwestern Medical Center

3P568. Ultrafine Particle Filtration in Sustainable Keratin/PVA Nanofibers: Role of Keratin Subfractions, yang wei1 1national taipei university of technology

3P569. Bioinspired fouling control with mucin coated active topography, Zehui Han1, Yikang Xu, PhD2, Dacheng Ren2 1Syracsue University, 2Syracuse University

3P570. mRNA Activated Blood Clots for Tissue Regeneration, Apurva Panjla1 1UW Madison

3P571. Creation of a Hydrogel with Similar Biomechanical Properties as Human Brain, Rune Isherwood, Bachelor's Degree1, Rafael Ramos, BS, MS1, Gwen Williams, PhD candidate1, Matthew Howard, PhD, Chemical Engineering1, Carolyn Harris, PhD, Chemical Engineering1 1Wayne State University

3P572. Investigating the Effects of Crosslinking and Catechol-Mediated Interactions on the Mechanical Properties of Mussel Foot Protein 5, Alex Gerber, BS1, Jacob Graham, BS1, Sinan Keten, PhD, MEng, BS1 1Northwestern University

3P573. Amino Acid-Mediated Cubo-Octahedral Modulation Inspired by Magnetosome Biomineralization, 易凡 赵1, 悠毛2, 吉兹 刘2, Ning Gu, Professor2 1Southeast University, 2Nanjing University

NOVEL MATERIALS FOR SPACE APPLICATIONS

3P574. Modelling Cardiac Atrophy Utilizing Engineered Tissue Platforms Subjected to Microgravity, Ivana Hernandez1, Binata Joddar1 1Oregon State Univeristy

OPHTHALMIC BIOMATERIALS SIG

3P575. Retinal Organoid Chip: A Novel Tissue Bioreactor for Retinal Organoid Microenvironmental Control, ashutosh agarwal, PhD1 1UNIVERSITY OF MIAMI

3P576. Nanostructured Lipid Carrier Synthesis for Encapsulation of Dasatinib, Anna Kate Miedler1, Sara Moradi, Ph.D2, Hamid Hamedi, Ph.D2, Megan Allyn, BS3, Shigeo Tamiya, Ph.D2, Katelyn Swindle-Reilly, PhD2 1Ohio State University, 2The Ohio State University, 3Columbus, Ohio 43210 United States

3P577. In Vivo Anti-Angiogenic Therapeutic Efficiency of SDV Peptide Decorated PEG-b-PPS Micelles in Danio rerio (Zebrafish) Diabetic Retinopathy Model., Jahnavi Anil1, Aishwarya Gangadhar1, Oladejo Oluwatosin1, Neeraja Revi2, Fanfan Du3, Evan A. Scott4, Hyun Min-Jung5, Divya Bijukumar2 1University of Illinois College of Medicine, Rockford, 2University of Illinois Chicago College of Medicine, 3Northwestern

3P578. A Mildly Cross-linked Dendrimer Hydrogel for 4-PBA Delivery in Glaucoma Therapy, Tzu-Chen Wang1, Lei Xu1, Tristan Cole1, Hu Yang1 1Missouri University of Science and Technology

3P579. Optical and Mechanical Characterization of Curcumin Loaded SilMA-GelMA Scaffolds for Corneal Wound Healing, Vedshree Deshmukh1, Poulami Ghosh1, Sanjusha Gudla1, Issac Reynaga1, Peter Jansen1, Brian Lawrence, PhD2, Cynthia Roberts, PhD1, Katelyn Swindle-Reilly, PhD1 1The Ohio State University, 2SILKTECH

3P580. Resorbable Radiopaque Pin for the reduction of fractures, madhulika narayan, PhD student1 1IITB

3P581. Single-Cell RNA Sequencing Unveils Diabetes-Induced Molecular Alterations in Human Corneal Limbal Epithelium, Daxian Zha1, Ruchi Shah1, Cynthia Amador1, Priyanka Bhandary1, Yizhou Wang1, Alexander V. Ljubimov1, Mehrnoosh Ghiam1 1Cedars-Sinai Medical Center

ORTHOPAEDIC BIOMATERIALS SIG

3P582. 3D Melt Electrowriting of Electrically Conductive PEDOT Scaffolds for Bone Tissue Engineering, Kunal Ranat, BSc1, mitchell Kenter, MSc1, Adil Akkouch, PhD1 1Western Michigan University Homer Stryker M.D. School of Medicine

3P583. Manufacturing and Processing of Novel Magnesium-based Metal Matrix Nanocomposite for Bone Fracture Healing, Andres Larraza1, Shane Burke1, Pedram Sotoudeh Bagha, Ph.D.1, Mehdi Razavi, Ph.D.1 1University of Central Florida

3P584. Composite Tendon-Bone Regeneration using a Biphasic Collagen Biotextile in a Rabbit Rotator Cuff Model, Christian Denny, PhD1, Joohee Choi2, Philip McClellan2, Di Fan2, Robert Gillespie, MD3, Subba Shankar, PhD1, Ozan Akkus2 1CollaMedix, 2Case Western Reserve University, 3University Hospitals of Cleveland

3P585. Calcium Clings: Improving Strain Gauge Stability for Reliable In Vivo Bone Tracking, Gayatri Kaimal1, Gerardo Figueroa1, Robert Childers1, David Gonzales1, John Szivek, Ph.D.1, David Margolis, MD, Ph.D.1 1University of Arizona

3P586. Alginate/Gelatin/Cerium doped Hydroxyapatite Biocomposite Scaffolds : Synthesis, Antibacterial Efficacy and Mechanical Stability, Kashif Ijaz1, Oluwatosin Popoola,1, Silvana Andresscu1, Devon Shipp1 1Clarkson University

3P587. The implantation of a proprietary glass polyalkenoate cement into rat subcutaneous tissue., Daniella Marx, PhD1, Sunjeev Phull, PhD2, Marcello Papini, PhD1, Mark Towler, PhD3 1Toronto Metropolitan University, 2University of Missouri Science and Technology, 3Missouri University of Science and Technology

3P588. Fabrication of Bisphosphonates Nanoparticles in Microparticles as Macrophage Targeting and Inflammation Modulating Drug Delivery System for Osteoarthritis Therapy, Paul Sagoe1, Era Jain, Ph.D.1 1Syracuse University

POSTERS (CONTINUED)

3P589. Toughness in Solid-State Nanocomposites of UHMWPE for Orthopedic Bearing Applications, Peder Solberg1, Douglas Van Citters, PhD1 1Dartmouth College

3P590. A novel biomimetic Vascularized 3D reinforced scaffold for Anterior Cruciate Ligament (ACL) repair, Pooyan vahidi pashaki, PV1 1North Dakota State University

3P591. Innovative Iontophoretic Transdermal Patch for Controlled Methotrexate Delivery in Rheumatoid Arthritis Treatment: An In Vitro Study, Rahul kumar gupta1 1IIT BOMBAY

3P592. Is the incidence and extent of fretting corrosion in total knee replacement taper junctions comparable to total hips?, Jennifer L. Wright, MS1, Julia Hochstatter1, John Wong, BS1, Amy Miller, BS1, Brett R. Levine, MD2, Deborah Hall, PhD1, Robin Pourzal, PhD1 1Rush University Medical Center, 2Georgetown University

3P593. Fluorine-bioactive glass for Osteoregenerative Applications: Microstructural and Mechanical Characterization, Amina Gharbi, PhD1, Wissem Cheikhrouhou-Kouba, PhD2, Nabil Derbel, PhD3, Romila Manchanda, PhD4, Nureddin Ashammakhi, PhD4 1Michigan State University,, 2Digital Research Center of Sfax, Centre de Recherche en Numérique de Sfax (CRNS),, 3University of Sfax

3P594. Assessment of a gallium-doped glass polyalkenoate cement: Chemotherapy, cytotoxicity and osteogenic effects., Sunjeev Phull, PhD1, Daniella Marx, PhD2, Margarete Akens, PhD3, Michelle Ghert, MD4, Mark Towler, PhD5 1University of Missouri Science and Technology, 2Toronto Metropolitan University, 3University of Toronto, 4University of Maryland, 5Missouri University

3P595. Effects of Different Blue Light Conditions on Saos-2 Cell Viability, Differentiation, and Mineralization, Jamielyn Jarvis, BS1, Nashaita Patrawalla, PhD1, Margaret Ahmad2, Vipuil Kishore1 1Florida Institute of Technology, 2Sorbonne University

3P596. Formation of Hydroxyapatite-Like Layer on Poly (Methyl Methacrylate) formed from 13-93B3 Borate Bioactive Glass in a Dynamic Environment, William Kuenne, Bachelors of Science1, Kara Hageman, MPH2, Rebekah Blatt3, Richard Brow, PhD3, Terence McIff, MBA, PhD2 1University of Kansas, 2University of Kansas Medical Center, 3Missouri University of Science and Technology

3P597. Advanced Injectable Cement for Bone Regeneration: Dual-Setting Magnesium Phosphate-Based Technology with-Carrageenan Hydrogel, Anna Melnyk1, Anna Ronowska, PhD2, Dawid Kozień, PhD3, Justyna Kozłowska, Doctor habilitatus4, Marcin Wekwejt, PhD5, Aleksandra Mielewczyk-Gryń, Dr.hab1, Monika Wojtala, Master1, Uwe Gbureck, Prof., PhD6 1Gdańsk University of Technology, 2Medical Universi

3P598. Anodization of titanium to improve osseointegration, Arunendu Ettuthaiyil Sambasivan1, Amisha Parekh1, Amol Janorkar, Ph.D.1, Michael Roach1 1University of Mississippi Medical Center

3P599. Porous Zirconia and Alumina Matrix Composite Scaffolds Show Early Osseointegration and Long-Term Biocompatibility in an Ovine Bone Defect Model, Ina Lackner, CeramTec GmbH1, Yvonne Mödinger, CeramTec GmbH1, Christiane Freytag, FREY-TOX GmbH2, Rainer Detsch, Friedrich-Alexander-Universität Erlangen-Nürnberg3, Michael Goetz, CeramTec GmbH1, Nils Warfing, AnaPath Services4, Aléthéa Liens, AnaPath Ser

3P600. Wood-based nanofibrillated cellulose hydrogel for intervertebral disc degeneration treatment, Lauri Paasonen, Ph.D. in Biopharmacy1, Marcia Mürner2, Chencheng Feng, Ph.D. MD2, Sibylle Grad, Ph.D., Adj. Prof.2 1UPM-Kymmene Oyj, 2AO Reserach Institute Davos

3P601. Next-Generation of Dual-Setting Bone Cement: Synergistic Integration of Magnesium Phosphate and Synthetic Poly(vinyl alcohol) Hydrogel, Magdalena Górecka1, Anna Ronowska, PhD2, Dawid Kozień, PhD3, Justyna Kozłowska, Doctor habilitatus4, Marcin Wekwejt, PhD5 1Gdańsk University of Technology, 2Medical University of Gdańsk, 3AGH University of Kraków, 4Nicolaus Copernicus University, 5Gdansk

3P602. Systemic versus local delivery of mesenchymal stem cells to improve fracture healing in a polytrauma model, Augustine Mark Saiz, Dr1, Maryam Rahmati, Dr1, Soren Johnson1, Aneesh Bhat1, Tony Baldini1, Øystein Øvrebø, Dr2, Thaqif El Khassawna, Dr3, Fernando A. Fierro, Dr1, Mark A Lee, Dr1, J. Kent Leach4, Håvard Jostein Haugen, Dr2 1University of California, Davi

3P603. Decellularized Placental Biomaterials for Management and Protection of Tendon Injuries, Rajarajeswari Sivalenka, PhD1, Anna Gosiewska, PhD1, Joseph Gleason, MSc1, Yong Mai, PhD2, Desiree Long, Masters1, Stephen Brigido, MD1, Robert Hariri, M.D., Ph.D.1 1Celularity Inc, 2Rutgers University

3P604. Bioabsorbable Mg-Y-Li Alloy inflammatory and corrosion behavior in vitro and in vivo, Ryan Jacoby1, Roger Guillory, PhD1, Mitchell Connon1, Calum MacLeod2, Mark Steckel2 1Medical College of Wisconsin, 2Lumenology Ltd

PEPTIDE BIOMATERIALS FOR THERAPEUTIC APPLICATIONS

3P605. Co-delivery of mesenchymal stem cells and disordered peptides attenuates the inflammatory response and improves fracture healing in polytrauma, Augustine Mark Saiz, Dr1, Øystein Øvrebø, Dr2, Tony Baldini1, Mengyao Liu1, Aneesh Bhat1, Soren Johnson1, Renato Miguel Reyes1, Shierly Wan Yi Fok Lau1, J. Kent Leach3, Mark A Lee, Dr1, Thaqif El Khassawna, Dr4, D.C. Florian Wieland, Dr5, Andre Lopes, Dr5

REGENERATIVE BIOMATERIALS FOR COMPLEX TISSUE REGENERATION

3P606. Silk Fibroin Combination Scaffolds for Bone-Tendon Interface Regeneration, Amritha Anup, BE, BA1, Katherine Hixon, Ph.D.1, Milenka Men, Student1, Kate Wasacz1 1Dartmouth College, Thayer School of Engineering

POSTERS (CONTINUED)

3P607. Biofabrication of Small Vascular Graft with Human Amniotic Membrane, BO Wang, MCW1 1Medical college of Wisconsin

3P609. Polyelectrolyte Complex Hydrogels Modified with Hyaluronic Acid and A7R Peptide for Reducing Angiogenesis and Improving Growth Plate Repair, Elise Collins1, Bikram Adhikari1, Dale Thompson1, Karin Payne2, Melissa Krebs1 1Colorado School of Mines, 2University of Colorado Anschutz

3P610. Development of an Autologous, Bilayered, Tissue Engineered Skin Graft Substitute, Jewelia Durant1, Katherine Hixon, Ph.D.2, Oraya Vesvoranan3, Victoria Cubina Lopez4, M. Shane Chapman, MD, MBA3, Matthew LeBoeuf, MD, PhD3, Michelle Tong5 1Thayer School of Engineering at Dartmouth, 2Dartmouth College, Thayer School of Engineering, 3Geise

3P611. Tendon-tissue derived monofilaments by electrochemical compaction: production and characterization, Joohee Choi1, Philip McClellan1, Maximilian Zernic1, Ozan Akkus1 1Case Western Reserve University

3P612. Enhanced Collagen and Elastin Production in Dermal Fibroblasts via Antioxidant Synergy, Nasim Nosoudi, PhD1, Jada Stutts, bsc1, Kayla Clatterbuck, BSc1, Chloe Duckworth, BSc1, Tyera Pemberton, BSc1, Aillea Elkins, BSc1, Prabir Patra, PhD1 1Marshall university

3P613. Multiphasic 3D materials with tailored gradients transformed from 2D mats for complex tissue regeneration, Shatil Shahriar1, Jingwei Xie2 1University of Nebraska Medical Center, 2UNMC

3P614. 3D Bioprinting of Electroactive Constructs for Treating Skeletal Muscle Injuries, Smriti Bohara1, Breanne Welsh1, Surendrasingh Y Sonaye1, Prabaha Sikder, PhD1 1Cleveland State University

3P615. Collagen scaffold viscoelasticity regulates muscle cell phenotype, Emily Roloson1, Wei-Hung Jung, PhD1, Stephanie McNamara, PhD1, Catherine Van Stone1, David Mooney, PhD1 1Harvard University

3P616. Customizable 3D Printed Scaffolds for Soft-Tissue Support in Osseointegration, Jack Flaggert, BE1, Adelaide Cagle, BS1, Katherine Hixon, Ph.D.2, Leah Gitajn, MD3 1Thayer School of Engineering, Dartmouth College, 2Dartmouth College, Thayer School of Engineering, 3Dartmouth Hitchock Medical Center

3P617. 3D Reconstruction through Gene Transfected MSC-seeded with Polymer Scaffold in Partial Esophageal Defect, Hanaro Park1, Hye-Joung Kim2, Se Heang Oh3, In Gul Kim4, In Gul Kim4 1Samsung Changwon Hospital, Changwon, Korea, 2Korea University, Seoul, Korea, 3Dankook University, Cheonan, Korea, 4Seoul National University Hospital

STIMULI-RESPONSIVE BIOMATERIALS

3P618. Bioinspired Inverse Opal Hyaluronic Acid Hydrogels for Biomedical Applications, Alan Shi1, Supasinee trakanrungsi1, Claudia Loebel, M.D., Ph.D.2 1University of Pennsylvania, 2University of Michigan

3P619. Triggered sequential viral-transduction from collagen-based scaffolds for tissue regeneration, John Amante1, Cathal Kearney1 1University of Massachusetts Amherst

3P620. Development of Three-dimensional (3D) Printable Shape Memory Inks for Minimally Invasive Tissue Engineering, Ebrahim Tajik1, Hossein Ravanbakhsh1 1The University of Akron

3P621. Thioether-modified cellulose for multifunctional biomaterial coatings and films, Eric DuBois, MS1, Kate Herrema1, Matthew Simkulet1, Laboni Hassan1, Payton O'Connor2, Riya Sen3, Timothy O'Shea, PhD1 1Boston University, 2Rensselaer Polytechnic Institute, 3Georgia Tech School of Engineering and Emory School of Medicine

3P622. Remote control of bioinspired materials for dynamic macrophage regulation, Yuri Kim1, Sungkyu Lee1, Sunhong Min1, Hyunsik Hong1, Nayeon Kang1, Heemin Kang1 1Korea University

3P623. Ultrasound-Responsive Biomaterials for Controlled Genetic Manipulation of 3D-Biofabricated Tumor Models with Vascular Structures, Holly Day1, Mary Lowrey, BS1, Kira Lynch1, Ariana Borda1, Kevin Schilling, PhD2, Cristiane Franca, DDS, PhD1, Carolyn Schutt Ibsen, PhD2 1Oregon Health & Science University, 2Oregon Health& Science University

3P624. Magneto-Mechanical Actuation Induces Endothelial Permeability, Mohammad Kanber1, Obum Umerah1, Juan Beltran-Huarac1 1East Carolina University

3P625. Engineering of degradable linkers to improve oxidative sensitivity of thioketal-based biomaterials for regenerative medicine applications, Karina Bruce1, Dylan Marques1, Emma-Louise Lowell1, John Martin, PhD1 1University of Cincinnati

3P626. Inflammation-responsive antibiotic coatings for prophylactic bacterial infection treatment in orthopedic reconstructions, Karina Bruce1, Dylan Marques1, Rais Fataki1, Jake Ryan1, John Martin, PhD1 1University of Cincinnati

3P627. Environmentally Responsive Polymeric Nanoparticles for Reactive Oxygen Species Scavenging in the Central Nervous System, Jordyn Wyse, B.S.1, Marissa Wechsler, Ph.D.1 1University of Texas at San Antonio

3P628. Creating Novel Sensor Biointerfaces via Surface Modification with Elastin like Polypeptide, Olivia Bridges, BS1, Sheetal Chowdhury, B.S.1, Samantha Sullivan, MS2, Austin Scircle, BS3, Amol Janorkar, Ph.D.1, Jared Cobb, Ph.D.3, charles Laber, MS3 1University of Mississippi Medical Center, 2Old Dominion University, 3ERDC

POSTERS (CONTINUED)

3P629. Ultrasound-Responsive Nanobubble for Gene Delivery and Ultrasound Imaging, Pedram Sotoudeh Bagha, Ph.D.1, Tara Pattilachan1, Mehdi Razavi, Ph.D.1 1University of Central Florida

3P630. Advanced Design and Fabrication of Soft Mechanical Actuators based on Programming via Printing (PvP), S M Asif Iqbal1, Aoyi Luo1, Joseph D Paulsen1, James Henderson1 1Syracuse University

3P631. Leveraging radical-mediated degradation of thiol-maleimide bonds for responsive and programmable hydrogels, Tayler Hebner, Ph.D.1, Bruce Kirkpatrick2, Benjamin Fairbanks, Ph.D.2, Christopher Bowman, Ph.D.2, Kristi Anseth2, Danielle Benoit, Ph.D.3 1Purdue University, 2University of Colorado Boulder, 3University of Oregon

3P632. Inflammation-responsive dressing for chronic wound management: gender-specific efficacy in mice and clinical relevance with human wound fluid., Tram Dang, PhD1 1Nanyang Technological University

3P633. "On-Demand" pH Triggered Drug Release System with Tunable Isoelectric Point, Valerie Ow1, Choon Boon Cheong, PhD2, Rubayn Goh2, Xian Jun Loh3 1National University of Singapore, 2Agency for Science, Technology and Research, 3Nanyang Technological University

3P634. Biomineralized Adhesive Silver Nanodots Using a Chimeric Mussel Protein for NIR-triggered Cancer Theranostics, Ji Won Choi1, Mou Seung Kim1, Yun Kee Jo, Ph.D.1 1Kyungpook National University

3P635. Leveraging Thiol functionalized enzyme responsive biomucoadhesive hybrid nanoliposome for local therapy of Ulcerative colitis, KANIKA ., PhD1 1Institute of Nano Science and Technology Mohali

3P636. Kinetic Control of Photochemical Reactions Enables Mechanical Reprogramming of DLP-printed Hydrogels, Manuela Garay-Sarmiento, PhD1, Arkodip Mandal1, Abhishek Dhand2, Jason Burdick3 1University of Colorado Boulder, 2University of Pennsylvania, 3University of Colorado, Boulder

SURFACE CHARACTERIZATION & MODIFICATION SIG

3P637. The Role of Fetuin on Cellular Attachment and Proliferation of Osteoblast-like Cells on Bare and Functionalized Gold Surfaces, Alessandra Merlo1, Kathryn Grandfield1, Kyla Sask1 1McMaster University

3P638. Surface Characterization and Biointerface Potential of Post-Detoxified Titanium, Anthony Reyes1, Danieli Rodriues, Dr.1 1University of Texas at Dallas

3P639. Independently Tuning Surface and Bulk Properties of Polymer Scaffolds by Grafting Gel-like Bottlebrushes, Diana Hammerstone1, Santiago Lazarte2, D. Radford, PhD3, Adam Gormley, PhD3, Brandon Krick, PhD4, Lesley Chow, PhD1 1Lehigh University, 2Florida State University, 3Rutgers University, 4Florida A&M University-Florida State University

3P640. The Control of Wrinkle Morphologies on the Surfaces of Shape Memory Polymer Substrates for Mechanobiological and Antimicrobial Applications, Johnson Agyapong1, James Henderson1 1Syracuse University

3P641. Laser-etched Ti6Al4V Implants Exhibit Osteoclast Resorption Pit Morphology and Drive Bone Marrow Stromal Cells to an Osteoblastic Phenotype, Jonathan Dillon1, David Cohen1, Scott McLean2, Haibo Fan2, Zvi Schwartz1, Barbara Boyan1 1Virginia Commonwealth University, 2Spine Wave

3P642. Fabrication of Biocompatible, Flexible, and Brain-conforming Cranial Windows by Robotic Surgery for In vivo Brain Microscopy, Mostafa Sajjadi1, Seyedamin Hashemi2, Saman Ebrahimibasabi1, Maryam Ghareh Sheikhlou1, Maryam Golshahi1, Naghmeh Shahraki1, Layla Khalifehzadeh1, Hamed Arami1 1Arizona State University, 2ASU

3P643. Development of MR-Visible SPIONs-PDMS Nanocomposite Encapsulation Layer for Post-Surgery Tracking of Implantable Flexible Bioelectronics, Saman Ebrahimibasabi1, Seyedamin Hashemi1, Mostafa Sajjadi1, Naghmeh Shahraki1, Maryam Ghareh Sheikhlou1, Maryam Golshahi1, Hamed Arami1, Layla Khalifehzadeh1 1Arizona State University

3P644. Influence of Ultrasound on Micro-Arc Oxidized Coatings on Ti-13Nb-13Zr Alloy for Biomedical Applications, Balbina Makurat-Kasprolewicz1, Marcin Wekwejt, PhD1, Luca Pezzato2, Anna Ronowska, PhD3, Jolanta Krupa4, Sławomir Zimowski4, Stefan Dzionk1, Agnieszka Ossowska1 1Gdansk University of Technology, 2Institute of Condensed Matter Chemistry and Energy Technolo

TISSUE ENGINEERING SIG

3P646. Poly (Propylene Fumarate) and Poly (Caprolactone Fumarate) Composite Scaffolds: Achieving High 3D Printing Resolution with Bone-Mimicking Compressive Properties, Areonna Schreiber1, Asghar Rezaei, Ph.D.1, Xifeng Liu, Ph.D.1, Lichun Lu, Ph.D.1 1Mayo Clinic

3P647. On Demand Cell Encapsulation and Retrieval From Soft Nanocomposite Hydrogel, Eya Ferchichi1, Sam Stealey, PhD1, Silviya Zustiak, PhD1 1Saint louis university

3P648. A decellularized meniscus (MEND) biomaterial combined with accessible progenitor cells for temporomandibular joint repair, Hannah Bonelli1, Cristina Barbella2, Sophia Klessel3, Hagar Kenawy, PhD3, Riccardo Gottardi, Dovtort1 1University of Pennsylvania, 2Brown University, 3University of Pennsylvania/ Children's Hospital of Philadelphia

POSTERS (CONTINUED)

3P649. Injectable, IL-33-releasing hydrogels for treatment of ischemia, Lauren Mottel1, Brennagh Shields1, Lindsay Gallagher1, Brian Kwee1 1University of Delaware

3P650. Magnetically Actuated Shape Memory Polymer Scaffolds with Sequential Shape Memory for Pediatric Tissue Engineering, Matthew Lesko, MS1, Maryam Ramezani, PhD1, Mary Beth Monroe, PhD1, James Henderson1 1Syracuse University

3P651. Human Myoblast Injection into a Fibrotic Lesion Augments Myogenesis, Not Muscle Function, Aislin West, BS1, Kevin Hart, PhD2, Seth Kreger, PhD2, Nicholas Amoroso, PhD2, James Redden, BS1, Jonathan Dillon1, David Cohen1, Zvi Schwartz1, Michael McClure, PhD1 1Virginia Commonwealth University, 2Cook Biotech

3P652. Exercise-induced piezoelectric stimulation for cartilage regeneration in large animal model, Nidhi Sharma, nis220121, Yang Liu1, Thanh Nguyen, PhD1 1University of Connecticut

3P653. Sustained Local Delivery of Butyrate for Enhanced Muscle Regeneration in Ischemic Limbs, Nikita John1, Calvin Chao, M.D.2, Caitlyn Dang3, Bin Jiang, Ph.D.1 1Northwestern University, 2Feinberg School of Medicine, Northwestern University, 3Feingberg School of Medicine, Northwestern University

3P654. Functionalized Nanofibers Activate Cell-surface Receptors and Enhance Bone Regeneration, Tongqing Zhou1, Rafael Cavalcante, DDS1, Chunxi Ge, MD and PhD1, Renny Franceschi, PhD1, Peter Ma, PhD1 1University of Michigan

3P655. Cryogel Scaffold-Loaded Bilayered Nanoparticles for Osteomyelitis, Daniel Kang1, Calista Adler1, Katherine Hixon, Ph.D.2, Neva Nemanic1, Alexandra Will1 1Thayer School of Engineering, 2Dartmouth College, Thayer School of Engineering

3P656. Gold Nanoturf-Mediated Wireless Photothermal Upregulation of Human Adipose-Derived Stem Cell Spheroids for Synergistic Skin-Wound Closure, Jiyu Hyun1, Jong Uk Kim2, Gyan Raj Koirala1, Suk Ho Bhang1, Tae-il kim1 1Sungkyunkwan University, 2Northwestern University