

Society for Biomaterials Annual Meeting and Exposition 2023

Riding the Translational Waves
to the Future

San Diego, California, USA
19-22 April 2023

Volume 1 of 2

ISBN: 978-1-7138-7623-6

Copyright and Disclaimer

Society For Biomaterials
Annual Meeting and Exposition 2023

Published by:
Society For Biomaterials
1120 Route 73 Suite 200
Mount Laurel, NJ 08054
(856)439-0826

Copyright © 2023
Society For Biomaterials, USA
ISSN# 1526-7547

All rights reserved. No part of this publication may be reproduced in any form by Photostat, microfilm, retrieval system, or any other means, without written permission from the publisher. The materials published in this volume are not intended to be considered by the reader as statements of standards of care or definitions of the state of the art in patient care or applications of the scientific principles described in the contents. The statements of fact and opinions expressed are those of the respective authors who are identified in the abstracts. Publications of these materials by the Society For Biomaterials does not express or imply approval or agreement of the officers, staff, or agents of the Society with the items presented herein and should not be viewed by the reader as an endorsement thereof. Neither the Society For Biomaterials nor its agents are responsible for inaccuracies or omissions in this Publication.

Every effort has been made to faithfully reproduce these Transactions as submitted. No responsibility is assumed by the Organizers for any injury and/or damage to persons or property as a matter of product liability, negligence or otherwise, or from any use or operation of any methods, products, instructions or ideas contained in the material herein. Because of rapid advances in all sciences, we recommend that independent verification of the material presented should be made.

This product was produced for the Society For Biomaterials by Omnipress.

Duplication of this product and its content in print or digital form for the purpose of sharing with others is prohibited without permission from the Society For Biomaterials.

In no event will Omnipress or its suppliers be liable for any consequential or incidental damages to your hardware or other software resulting from the installation and/or use of this product.

No part of the product navigation and "Help" files may be reproduced or used without written permission from Omnipress.

©2023 Omnipress - All rights reserved.

TABLE OF CONTENTS

VOLUME 1

Dual-Functional Peptide DPI-VTK Promotes Migration of Mscs for Bone Regeneration	1
<i>E. Madsen, S. Rhee, D. Kohn</i>	
Controllable Gelled Magnesium-Nanocomposite as Minimally Invasive Approach for Enhancing Angiogenesis-mediated Mandible Regeneration	2
<i>J. Guo, H. Yao, L. Chang, W. Zhu, X. Li, B. Yang, Z. Chen, Y. Su, J. Xu, L. Qin</i>	
3D Printable Carboxymethyl Chitosan-Amorphous Calcium Phosphate Nanoparticles for Bone Regeneration.....	3
<i>M. Yan, H. Awad</i>	
Effects of Micropore on Mechanical Strength and Tissue Response to Carbonate Apatite Honeycomb	4
<i>K. Ishikawa, K. Shibahara, K. Hayashi, Y. Nakashima</i>	
Bioinspired Scaffold for Sophisticated Regeneration of Osteoporotic Bone Via Regulation of Homeostasis.....	5
<i>J. Lee, D. Kim, D. Han</i>	
Filling the Gaps: Dynamic Bone Graft Substitute Embedding Biodegradable Beads Containing Human Mesenchymal Stromal Cells	6
<i>R. Randriantsilefisoa, E. Bektas, M. D'Este</i>	
Bioactive Material-Coated Microelectrodes for Dielectric Coagulometry Based Detection of Trauma-induced Coagulopathies	7
<i>D. Disharoon, S. Pourang, S. Ahuja, M. Suster, P. Mohseni, A. Gupta</i>	
Bioresorbable, Battery-Free and Wireless Electrotherapy System for Wound Healing and Monitoring in Diabetes.....	8
<i>J. Song, H. Ryu, W. Bai, A. Vazquez-Guardado, G. Ameer, J. Rogers</i>	
Sequential Burst and Sustained Release of P-Coumaric Acid from Shape Memory Polymer Foams for Polymicrobial Infection Prevention in Trauma-Related Hemorrhagic Wounds.....	9
<i>C. Du, D. Fikhman, M. Monroe</i>	
Bioadhesive Hydrogels with Ultrafast Gelation Promote Gastric Ulcer Healing and Arrest Acute Gastric Hemorrhage.....	10
<i>X. Xu</i>	
Sprayable Hydrogel for Instant Sealing of Vascular Anastomosis	11
<i>G. Taboado, P. Dosta, E. Edelman, N. Artzi</i>	
Engineering Thermoresponsive Shear-Thinning Hydrogel (T-STH) Hemostats with Improved Coagulation	12
<i>M. Mecwan, E. Torres, R. Haghniaz, A. Hassani, J. John, A. Khademhosseini</i>	
Targeted Delivery of Peptide-Functionalized Nanoparticles to Improve Tendon Healing	13
<i>E. Sowah, A. Loiselle, D. Benoit</i>	

Spatial Configuration of Charge Modulates Transport of Cationic Carriers in Cartilage Matrix	14
<i>B. Hakim, T. Boyer, A. Bajpayee</i>	
A Targeted Fusogenic Peptide Alters siRNA Delivery in Ovarian Cancer	15
<i>K. Alatise, T. Samec, A. Alexander-Bryant</i>	
Temperature Modulates the Assembled Structure of Co-Assembling Synthetic Peptides.....	16
<i>R. Clark, B. Keselowsky, G. Hudalla</i>	
Post-Translational Glycosylation of Polypeptide Tags for Modification of Protein Assembly and Receptor Targeting	17
<i>E. Hill, A. Kwiatkowski, G. Hudalla, B. Keselowsky</i>	
Local Epsin-Mimetic Peptide Delivery for Improving Vascular Graft Remodeling and Endothelialization.....	18
<i>S. Changizi, M. Sameti, H. Chen, C. Bashur</i>	
Drug-Eluting Adhesive Patches for the Treatment of Ocular Injuries	19
<i>N. Annabi, S. Gholizadeh, X. Chen, Y. Oz, R. Dana</i>	
Improved Eye Drop Formulation Targeting Glaucoma Therapy	20
<i>F. Lasowski, L. Liu, B. Muirhead, T. Rambarran, H. Sheardown</i>	
Stimuli-Activated Hydrogel Tissue Expanders for Guiding Facial Growth in Microphthalmia Patients	21
<i>S. Fung, J. Katowitz, R. Gottardi</i>	
Wireless Theranostic Smart Contact Lens for Monitoring and Control of Intraocular Pressure in Glaucoma.....	22
<i>T. Kim, S. Hahn</i>	
Mucoadhesion and Mucopenetration of Self-Assembled Poly(lactic Acid)-block-poly(oligoethylene Glycol Methacrylate) Block Copolymer Nanoparticles with Different Ethylene Oxide Side-chain Lengths	23
<i>R. Dave, C. Fradin, F. Goycoolea, H. Sheardown, T. Hoare</i>	
Surface Modified Fibrous Scaffold for Ocular Surface Regeneration.....	24
<i>N. Mahmood, M. Eletmany, U. Jahan, A. El-Shafei, J. Gluck</i>	
Undergraduate Biomaterials Instruction with Basic Introduction to Design	25
<i>J. Bumgardner, J. Jennings</i>	
Gleaning Best Practices from a Biomaterials Summer Bridge Program	26
<i>T. Burg, C. Gomillion, K. Burg</i>	
A Case Study for Active Learning in a First-Year Biomaterials Design Course	27
<i>J. Choy</i>	
Soft Robotics in Education: Impact on and Students' Attitude Towards a Soft Material Robotics Curriculum.....	28
<i>E. McNeela, T. Tran, K. Jensen, H. Golecki</i>	
How to Make a New Nose When it is off Entirely and the Dog Has Eaten It: The Lab Tales Workshop as an Approach to Teach Biomaterials Trainees the Art of Narrative Storytelling in Science	29
<i>D. Cohen</i>	

Engineered Macrophages Eliminate Solid Tumors and Initiate Anti-Tumor Immunity	30
<i>D. Discher, L. Dooling</i>	
Conjugated STING-Agonist Nanoparticles Enhance Antitumor Immunity in Multiple Tumor Models.....	31
<i>P. Dosta, A. Cryer, M. Dion, T. Shiraishi, S. Langston, D. Lok, M. Prado, A. Rodriguez, A. Abu-Yousif, N. Artzi</i>	
Multi-Niche Human Bone Marrow On-A-Chip for Studying Interactions of Cell Therapies with Multiple Myeloma.....	32
<i>D. Ghoshal, A. Thomas, I. Petersen, K. Roy</i>	
Multi-Omics Guided Design of Biomaterials-based Lymphoid Tissues to Study BCR-TLR Signaling in Lymphomas.....	33
<i>C. Carlson, S. Shah, Z. Zhong, M. Allam, L. Walter, K. Martin, B. Cosgrove, A. Garcia, A. Coskum, J. Koff, A. Singh</i>	
A Mechanically Tunable Granular Nanofiber-Hydrogel Composite for Host Macrophage Conditioning and Soft Tissue Remodeling.....	34
<i>J. Kong, Z. Yao, J. Stelzel, J. Chen, J. Doloff, S. Reddy, H. Mao</i>	
Catalase-Immobilized Syringes to Create Hyperoxia-Inducible Hydrogels for in Situ Tissue Regeneration.....	35
<i>J. Kang, K. Park</i>	
Zinc Ion-Releasing Hydrogels for in Situ Tissue Regeneration	36
<i>Y. Kim, K. Park</i>	
A Dynamic Cell-Based Therapy Patch for Accelerating Wound Healing.....	37
<i>C. Schreib, L. Kelley, S. Johnson, P. Jiang, R. Garg, T. Cohen-Karni, S. Badylak, O. Veisheh</i>	
Decellularized Dehydrated Human Amniotic Membranes Support the Cellular Functions of Human Tenocytes in Vitro.....	38
<i>A. Gosieska, Y. Mao, N. Protzman, N. John, A. Kuehn, D. Long, R. Sivalenka, R. Hariri, S. Brigido</i>	
Nanofiber Aerogels with Precision Channels and LL-37-derived Peptides for Diabetic Wound Healing	39
<i>J. Xie, J. John, Y. Su, G. Wang</i>	
Monodisperse Microspheres Distinctly Release Multifunctional Peptide-Conjugated Gene Carrier/miRNA218 Complexes for Bone Defect Regeneration	40
<i>Q. Li, X. Liu</i>	
A New Approach to Evaluate the Bond Strength of Dental Restorations.....	41
<i>C. Montoya, M. Bharatkumar, S. Orrego</i>	
Immunomodulatory Antagonist Nanocoatings for Implant Soft Tissue Healing.....	42
<i>N. Fischer, J. Pizarek, C. Aparicio</i>	
Thermoresponsive Polymeric Simvastatin Prodrug Hydrogel for the Treatment of Experimental Periodontitis in Rats	43
<i>X. Xu, Z. Jia, N. Chen, S. Lele, R. Reinhardt, A. Kileen, D. Wang</i>	

Surface Treatment of Titanium Oxides Using Polyaniline for Photocatalytic, Antibacterial and Biocompatible Implants.....	44
<i>A. Ali, M. Carr, S. Chowdhury, A. Janorkar, M. Marquart, J. Griggs, J. Bumgardner, M. Roach</i>	
3D Woven Magnesium Alloy Scaffolds for Craniofacial Defects	45
<i>B. Ulugan, J. Xue, S. Singh, Y. Zhou, R. Guilbault, G. Osgood, W. Grayson, T. Weihs</i>	
Synthetic High-Density Lipoprotein-Like Nanoparticles as a Targeted Approach to Modulate Inflammation in Cytokine-Stimulated Keratinocytes	46
<i>J. Trujillo, A. Calvert, J. Rink, H. Peng, K. Lu, R. Lavker, C. Thaxton</i>	
Phase Separation Driven Assembly of Highly Stable Protein Nanoparticles	47
<i>A. Avecilla, F. Quiroz</i>	
Controlling Self-Assembly and Bioactivity of De Novo Peptides Via Block Heterochirality.....	48
<i>C. O'Neill, J. Fascetti, Z. Clapacs, P. Shrimali, A. Winkler, M. White, J. Rudra</i>	
Rational Design of Supramolecular Polymer-Prodrugs for Regenerative Medicine	49
<i>K. Defrates, J. Engstrom, N. Sarma, A. Umar, J. Shin, J. Cheng, W. Xie, D. Pochan, A. Omar, P. Messersmith</i>	
Designing Peptidic Assemblies as Bioelectronic Interfaces and Adaptive Bioscaffolds	50
<i>H. Ardon, Z. Yao, Y. Kuang</i>	
Tunable and Responsive Modulation of Host–Guest Recognition in Supramolecular Hydrogels	51
<i>L. Zou, A. Braegelman, B. Su, C. Addonizio, M. Webber</i>	
Metanalysis of Global Participation in Biomaterials Publications	52
<i>A. Hernandez, A. Porras</i>	
Leveraging Machine Learning to Assess How Ancestry is Reported in Biomaterial Models	53
<i>N. Kotta, A. Veintimilla, T. Zilbershtein, Y. Roca, E. Moore</i>	
An Omniphobic Spray Coating Created from Hierarchical Structures Prevents the Contamination of High-Touch Surfaces with Pathogens	54
<i>N. Jarad, K. Rachwalski, F. Bayat, S. Khan, A. Shakeri, R. Maclachlan, M. Villegas, E. Brown, L. Soleymani, T. Didar</i>	
Circulating Sex Hormone Response to Traumatic Brain Injury: Implications for Drug Delivery.....	56
<i>A. Simmons, V. Pena, H. Bimonte-Nelson, C. Plaisier, R. Sirianni, S. Stabenfeldt</i>	
Sex-Specific Valvular Myofibroblast Activation in Response to Nano-Scale Stiffness Cues	57
<i>R. Gorashi, M. Wenning, J. Grim, C. Walker, L. Mestroni, B. Pena, K. Anseth, B. Aguado</i>	
A Cell-Degradable, Photo-Stiffening Hydrogel to Study Sex-Differences in Pulmonary Fibrosis	58
<i>M. Mueller; C. Magin</i>	
Stem Cell-Derived Exosome Nebulization Therapy (SCENT) Promotes Heart Repair in Mice and Pigs.....	59
<i>J. Li, K. Cheng</i>	
Engineered Extracellular Vesicles Attenuate Inflammation in a Murine Model of Acute Lung Injury	60
<i>A. Salazar-Puerta, M. Rincon-Benavides, T. Cuellar-Gaviria, L. Ortega-Pineda, D. Dodd, D. Das, D. Gallego-Perez, N. Higueta-Castro</i>	

Phosphatidylserine-Incorporated Exosome Mimetics Encapsulating CXCR3 Antagonist Inhibit Osteoclast Differentiation and Alleviate Osteoporosis	61
<i>M. Kang, J. Fan, M. Chiang, T. Aghaloo, M. Lee</i>	
Engineered Extracellular Vesicles Loaded with Pro-Vascular Cargo Induced Direct Reprogramming to Endothelial Cells and Promote Wound Closure in Vivo.....	62
<i>M. Rincon-Benavides, T. Cuellar-Gaviria, N. Mendonca, A. Salazar-Puerta, B. Blackstone, H. Powerll, D. Gallego-Perez, N. Higueta-Castro</i>	
Immune Engineered Extracellular Vesicles to Modulate T Cell Activation in Type 1 Diabetes.....	63
<i>M. Becker, L. Peters, T. Myint, T. Brusko, E. Phelps</i>	
Analysis and Biomimetic in Vitro Modeling of Extracellular Vesicle-Mediated Perineural Invasion.....	64
<i>G. Powers, I. Jamshidi-Parsian, A. Griffin, R. Song</i>	
TAT2: Next-Generation Endoscopic Tattoo Inks for Multimodal Imaging	65
<i>J. Yaron, M. Gosangi, S. Dutta, M. Vats, R. Pannala, K. Rege</i>	
Nondestructive, Quantitative Monitoring of Tissue Scaffolds with Spectral Photon-Counting Computed Tomography	66
<i>C. Evans, L. Li, C. Gil, V. Serpooshan, R. Roeder</i>	
Gadolinium-Doped Hafnium Oxide Nanoparticles for Contrast-enhanced Imaging of Photopolymerized Hydrogels	67
<i>L. Li, T. McGinnity, J. Bathon, I. Khan, A. Hoffman, R. Roeder</i>	
Incorporating Hydroxyapatite Nanoparticles to Improve the Echogenic Properties of Polyurethane Composites	68
<i>S. Vibostok, D. Leone, M. Baro, C. Bashur, A. Whittington</i>	
3D Muscle Satellite Cell Niche System for Identifying Anti-Geronic Factors in Parabiosis	69
<i>Y. Lee, J. Choi, Y. Jang</i>	
A Multifunctional Epicardial Bioelectronic Patch Made from Soft Rubbery Materials.....	70
<i>C. Yu, K. Sim, F. Ershad</i>	
Development of Tissue-Specific, Perfusable Vasculature in Microphysiological Systems	71
<i>K. Ling, A. Srivatsava, A. Deans, R. Brown, K. Manian, S. George, J. McGrath, R. Singh, D. Benoit</i>	
Hydrogen Peroxide-Releasing Hydrogels for Cellular Behavior Manipulation and Therapeutic Applications.....	72
<i>T. Hoang, Y. Lee, Y. Jang</i>	
A Novel Block Copolyester Photoresin for UV-Assisted 3D Printing	73
<i>W. Ma, Y. Wang</i>	
Hydrogel Encapsulation of Bacterial Biosensors for Detection of Inflammatory Metabolites in IBD.....	74
<i>S. Aghlara-Fotovvat, E. Musteata, M. Doerfert, M. Baruch, M. Levitan, J. Tabor, O. Veiseh</i>	
Conjugation of IL-33 to Microporous Annealed Particle Scaffolds Initiates Type 2 Immune Response in Vitro and in Vivo	75
<i>C. Roosa, S. Lempke, R. Hannan, J. Sturek, S. Ewald, D. Griffin</i>	
Injectable Cellular Spheroid and Microgel Granular Composites for Cartilage Repair	76
<i>N. Caprio, M. Davidson, J. Burdick</i>	

Biomaterial Microstructure and Spatial Bioactivity in Microporous Annealed Particle (MAP) Scaffolds Guides Endothelial Cell Patterning and Lumen Formation	77
<i>A. Anderson, D. Ntekoumes, S. Gerecht, T. Segura</i>	
Impact of Thiol-Ene and Tetrazine Click Annealing Chemistry on Osteogenic Outcomes in a Calvarial Defect Model	78
<i>S. Phillips, E. Ruben, T. Baig, C. Gregory, D. Alge</i>	
Influence of Microgel and Interstitial Matrix Compositions on Granular Hydrogel Composite Properties.....	79
<i>V. Muir, S. Weintraub, A. Dhand, J. Burdick</i>	
Single Microgel Species for Forming Guest-Host Microporous Annealed Particle PEG-MAL Hydrogels	80
<i>A. Widener, A. Roberts, J. Santini-Gonzalez, E. Phelps</i>	
Electrospinning of Decellularized Tissue to Harness Its Angiogenic and Immunoregulatory Bioactivity	81
<i>S. Jones, D. Donehoo, S. Raghavan, E. Cosgriff-Hernandez</i>	
Directed Wet Spinning of Reactive Macromers to Fabricate Multi-Fiber Hydrogel Scaffolds	82
<i>M. Davidson, J. Burdick</i>	
Discrete Electrospun Microfibers Influence Granular Hydrogel Properties.....	83
<i>G. Grewal, G. Helein, J. Sumey, S. Caliani, C. Highley</i>	
Magnetic Alignment of Electrospun Fiber Segments Within a 3D Hydrogel Composite Guides Tendon Fibroblast Spreading and Multicellular Epithelial Migration Phenotype Switching	84
<i>H. Hiraki, D. Matera, R. Kent, S. Depalma, B. Baker</i>	
Anisotropic Guides for Neuronal Regeneration Generated by Microfluidic-Assisted Interfacial Polyelectrolyte Complexation of Extracellular Matrix Biomolecules	85
<i>R. Costa, D. Caballero, D. Costa, R. Rodriguez-Trujillo, S. Kundu, R. Reis, I. Pashkuleva</i>	
Fibrosis Development in Engineered Adipose Tissue Models of Obesity.....	86
<i>G. Anvari, A. Berger, N. Caprio, E. Bellas</i>	
Induced Epithelial Curvature in Photopatterned Intestinal Organoids Regulates Symmetry Breaking Via Pre-Transcriptional Changes in Membrane Tension and Resting Potential	87
<i>B. Kirkpatrick, F. Yavitt, R. Moldovan, P. Dempsey, K. Anseth</i>	
Study Transportation of Drugs Within Newly Established Colon Organoid Systems	88
<i>Z. Davoudi, T. Atherly, D. Borchering, A. Jergens, M. Wannemuehler, Q. Wang</i>	
Pancreatic Differentiation of iPSC in Thiol-Norbornene Photo-Click Hydrogels.....	89
<i>M. Arkenberg, C. Lin</i>	
Spatially Controlled Fabrication of Assembloids with 3D Bioprinting.....	90
<i>M. Huang, J. Roth, L. Brunel, Y. Liu, B. Cai, S. Sinha, F. Yang, S. Pasca, S. Shin, S. Heilshorn</i>	
Rapid and Facile Light-Based Approach to Generate Gut-on-a-chip Systems Using Synthetic Hydrogels	91
<i>A. Mora-Boza, A. Mulero-Russe, A. Singh, A. Garcia</i>	
Engineering Human Induced Pluripotent Stem Cell Derived Neural Tissue Constructs for Modeling Neuroinflammation and Neurotoxicity.....	92
<i>J. Majumder, E. Torr, E. Aisenbrey, W. Murphy</i>	

Local Matrix Stiffening as an Ex-Vivo Model of Early Pulmonary Fibrotic Remodeling	93
<i>D. Ahmed, J. Xia, R. Zemans, B. Baker, C. Loebel</i>	
Engineering a 3D Distal Lung Co-Culture Model of Human Pulmonary Fibrosis.....	94
<i>A. Tanneberger, C. Magin</i>	
Engineered Lung Microtissue to Model Macrophage-Regulated Pulmonary Fibrosis and Anti-fibrosis Treatment.....	95
<i>Y. Xu, R. Zhao</i>	
Lung-Mimetic Sealant: Lab-to-Market Translation Via Biomedical Technology Accelerator	96
<i>M. Pinezich, M. Mir, P. Graney, D. Tavakol, S. Kaslow, P. Chen, J. Chen, M. Hudock, O. Gavaudan, J. Hassel, B. Guenthart, M. Bacchetta, J. O'Neill, J. Kim, G. Vunjak-Novakovic</i>	
Enzyme-Responsive “Smart” Hydrogels for Triggered Delivery of Antibiotics to Infected Wounds	97
<i>A. Abbasi, Z. Jiang, A. McCall, B. Leblanc, A. Shukla</i>	
Enzymatically-Responsive Shape Memory Polymers for Infection Surveillance and Biofilm Removal in Chronic Wounds.....	98
<i>M. Ramezaniand, M. Monroe</i>	
Biodegradable Piezoelectric Nanofibers for Biomedical Applications.....	99
<i>T. Le, T. Nguyen</i>	
Photo-Carbon Monoxide Releasing Molecules for Dual Antibacterial and Vascular Cell Impacts.....	100
<i>M. Hammad, N. Huynh, A. Elgattar, Y. Liao, C. Bashur</i>	
Precisely Controlled Antimicrobial Peptide Delivery Hydrogels for Diabetic Wound Healing	101
<i>S. Jeong, S. Hahn</i>	
Optimized Minerals for Long Term Stabilization and Delivery of Therapeutic mRNA	102
<i>J. Choe, W. Murphy</i>	
Biodegradable Zinc-Transition Metal Alloys as Bone Implants.....	103
<i>Y. Su, Y. Wang, Y. Qin, D. Zhu</i>	
Low Power Electron Beam Modification of Metallic Biomaterial Surfaces	104
<i>P. Kurtz, A. Mace, J. Gilbert</i>	
Innovative Silver Nanohybrids with Enhanced Antimicrobial Properties	105
<i>B. Li, J. Yan</i>	
Controlled Release of Bioactive Antibodies from a Modular Pulsatile Release Platform.....	106
<i>K. McHugh, T. Graf, E. Euliano, M. Laracuenta</i>	
Direct Delivery of Plasmin Using Clot-Anchoring Thrombin-responsive Nanoparticles for Targeted Fibrinolytic Therapy	107
<i>M. Sun, M. Pontius, S. Yang, S. Raghunathan, J. Shavit, A. Gupta</i>	
Evaluation of Clot-Targeted Nanogels for Anticoagulant and Fibrinolytic Dual-delivery in a Rat Model of Disseminated Intravascular Coagulation	108
<i>A. Sheridan, K. Nellenbach, E. Mihalko, E. Byrnes, N. Moiseiwitsch, S. Pandit, G. Scull, A. Brown</i>	
A Conformable Compartmentalized microMESH for the Combinatorial Treatment of Glioblastoma.....	109
<i>G. Irene, C. Pesce, D. Mascolo, A. Palange, P. Decuzzi</i>	

Biodegradable Dendrimers for mRNA Therapeutics Delivery into the Ischemic Brain.....	110
<i>A. Pego, M. Torrado, A. Spencer, V. Leiro, S. Santos</i>	
Throughput-Scalable Silicon and Glass Microfluidic Platform for Manufacturing of SARS-CoV-2 mRNA Lipid Nanoparticles Vaccines	111
<i>S. Shepherd, D. Issadore, M. Mitchell</i>	
Rapid Elimination of Staphylococcus Aureus Achieved by Sonodynamic Au@Cu ₂ O Hybrid Nano-Cubes.....	112
<i>Y. Zhu, K. Cheung, K. Yeung</i>	
A Resurfacing-Regenerative Approach to Repair Osteochondral Defects Using a Bioprosthetic Device.....	113
<i>C. Demott, L. Davis, W. Saunders, M. Grunlan</i>	
Physical and Biochemical Microenvironmental Cues Potentiate TGFβ-Mediated Scleraxis Expression	114
<i>R. Kent III, M. Said, M. Busch, A. Tsai, D. Matera, W. Wang, S. Depalma, H. Hirakai, M. Killian, A. Abraham, A. Huang, A. Shikanov, B. Baker</i>	
Injectable Radiopaque Hyaluronic Acid Granular Hydrogels for Intervertebral Disc Repair	115
<i>V. Muir, S. Gullbrand, J. Burdick</i>	
Woven Bone Organoids as a Therapy Model for in Vivo Bone Regeneration	116
<i>S. Sreenivasamurthy, J. Zhou, J. Zhou, D. Zhu</i>	
Additive Manufactured Bioabsorbable Magnesium/Zinc Scaffolds for in Vivo Bone Regeneration.....	117
<i>J. Zhou, D. Zhu</i>	
Decellularized Meniscus Scaffold and Cartilage Progenitor Cells for Total Meniscal Repair	118
<i>A. Dumas, P. Gehret, R. Gottardi</i>	
Whitlockite-Poly(ethylene Glycol) Hybrid Scaffold Promotes Bone Tissue Regeneration Through Stepwise Magnesium Ion Release	119
<i>W. Qiao, J. Shen, Z. Chen, K. Yeung</i>	
Harnessing Nanoscale Architecture to Program Multi-Faceted Cancer Immunity.....	120
<i>M. Teplensky</i>	
Immune-Modulating Therapy Via the Delivery of Butyrate Using Polymeric Micelles	121
<i>S. Cao, R. Wang, M. Bashir, L. Hesser, C. Nagler, J. Hubbell</i>	
Microneedle-Mediated Delivery of Immunomodulators Restores Immune Privilege in Hair Follicles and Reverses Alopecia Areat	122
<i>N. Puigmal, N. Younnis, D. Cruz, A. Daccache, A. Saad, T. Huerta, A. Halawi, C. Deban, D. Zhang, J. Azzi, N. Artzi</i>	
Induction of Antigen Specific Immunity with a Biologic Scaffold Assisted Therapeutic Cancer Vaccine	123
<i>S. Pal, B. Hill, M. Wolf</i>	
Microribbon Hydrogels with Tunable Compositions Enhances Bone Regeneration Through Immunomodulation	124
<i>N. Su, C. Villicana, X. Tong, P. Freeman, F. Yang</i>	

Immunomodulatory Biomaterials Designs for Long-Term Delivery of Cell Therapeutics	125
<i>B. Kim, S. Mukherjee, L. Cheng, A. Nash, S. Fleury, M. Doerfert, P. Rios, J. Oberholzer, D. Zhang, O. Veisoh</i>	
Engineering Injectable Nanoparticle-Based Hydrogels for Immune Niche Modulation and Improved Immunotherapy	126
<i>E. Meany, S. Correa, E. Appel</i>	
An Infusible Extracellular Matrix Material for the Mitigation of Severe Systemic Inflammation in an Aged Mouse Model.....	127
<i>M. Karkanitsa, R. Wang, A. Lyons, R. Middleton, M. Hepokoski, K. Christman</i>	
Ionizable Lipid Nanoparticle Platform for in Vivo Delivery of Small Protein Scaffolds for Potent RAS Inhibition	128
<i>R. Haley, A. Chan, M. Billingsley, A. Tsourkas, M. Mithcell</i>	
Bone Marrow Vascular Microenvironment Combination RNAi Nanomaterials Therapy for Multiple Myeloma.....	129
<i>C. Figueros-Espada, P. Guimaraes, M. Mitichell</i>	
Targeting of Porous Silicon Nanoparticles to the Traumatically Injured Brain for the Delivery of Growth Factors	130
<i>J. Zuidema, L. Waggoner, J. Kang, S. Vijayakumar, A. Hurtado, M. Sailor, E. Kwon</i>	
Use of a Keap1-Inhibiting Peptide Brush Polymer for Myocardial Infarction Treatment.....	131
<i>J. Mesfin, K. Carrow, A. Chen, E. Wong, E. Zelus, J. Hunter, C. Luo, N. Gianneschi, K. Christman</i>	
Characterizing NP Fate in the CNS After Intrathecal Administration: A PET/CT Imaging Approach.....	132
<i>O. Babayemi, C. Fotso, F. Velasquez, S. Chaudhuri, L. Sablatura, J. Morton, E. Sevick-Muraca, R. Siranni</i>	
Reprogramming Clots for in Vivo Chemical Targeting of Nanomaterials in Traumatic Brain Injury.....	133
<i>R. Kanell, J. Wu, E. Kwon</i>	
Nanoformulation of a Peptide Prophylactic for the Treatment of Traumatic Brain Injury	134
<i>J. Wu, A. Canjels, E. Kwon</i>	
Development of Lipid-Polymer Hybrid Nanoparticles for the Co-encapsulation of 6-bromo-indirubin-3'- Oxime and Copper Diethyldithiocarbamate for Synergistic Cancer Therapy.....	135
<i>R. Paun, D. Dumut, D. Radzioch, M. Tabrizian</i>	
Mechanically-Mediated Biochemical Signaling Guides Assembly and Maturation of Engineered Multicellular Tissues	136
<i>R. Raman, N. Lynch, A. Bu</i>	
3D Bioprinting of Dense Cellular Structures Within Functional Hydrogels	137
<i>A. Abaci, M. Guvendiren</i>	
A Modular Microreactor for the Preparation, Maintenance and Conditioning of Multilayer Tissues or Multitissue Structures.....	138
<i>L. Gasperini, A. Soares, Z. Eltayari, R. Reis, A. Marques</i>	
Investigating Paracrine Signaling in a Triphasic Biomaterial for Rotator Cuff Repair	139
<i>K. Timmer, M. Killian, B. Harley</i>	

Cytokine and T Cell Stimulus Differentially Regulates Aged B Cell Activation and ECM Remodeling	140
<i>S. Demir, Z. Zhong, S. Desai, A. Singh</i>	
Engineering Microscale Co-Cultures of iPSC-derived Cardiomyocytes and Fibroblasts Via Photopatterned Alginate	141
<i>D. Wells, Y. Han, E. Alsberg, S. Khetani</i>	
Heart-On-a-chip with Vascular Plexus for Drug Testing	142
<i>Y. Zhao, G. Vunjak-Novakovic, M. Radisic</i>	
Cell Assembled 3D Tumor Stroma In-A-Dish Using Decellularized Extracellular Matrix Scaffolds.....	143
<i>M. Buckenmeyer, E. Brooks, M. Taylor, M. Wolf</i>	
Intracellular Control of Macrophage Phenotype Via Dexamethasone-Loaded Microparticles for Cell Therapy	144
<i>T. Tylek, J. Wong, A. Vaughan, K. Spiller</i>	
Microporous Scaffold with Vasculogenic Modification for Transplantation of Stem Cell-Derived β -Cells.....	145
<i>K. Crumley, N. Schott, E. Bealer, J. Stegemann, L. Shea</i>	
Reduction of Hypoxia-Induced Cell Death by Macro-encapsulation of Toroid-shaped Microtissues in Homogeneous Spatial Distribution.....	146
<i>Y. Chen, Y. Zuo, N. Tran, V. Tan, T. Dang</i>	
Cell-Assembling Collagen Microgel for Stem Cell Therapy in Critical Limb Ischemia.....	147
<i>H. Chung, J. Choi, K. Hong, S. Oh, S. Song, S. Kim</i>	
Development of a Decellularized Bone Model to Test Efficacy of a Hydrogel Cell Carrier for HSC Transplantation.....	148
<i>M. Green, T. Sullivan, P. Oliveira, E. Cosgriff-Hernandez</i>	
Vasculogenic, Synthetic Hydrogel Supports the Engraftment and Real-Time Tracking of Human Pluripotent Stem Cell-derived β -cells.....	149
<i>S. Kioulaphides, M. Hunckler, A. Garcia</i>	
An Injectable Smart Piezoelectric Hydrogel for Periodontal Disease Treatment.....	150
<i>L. Roldan, C. Montoya, V. Solanki, S. Orrego</i>	
Modeling of Carbon Monoxide Delivery for Treating Disruptions in the Blood Brain Barrier Endothelium	151
<i>R. Jourdain, V. Chivukula, C. Bashur</i>	
Investigating Bio-Nano Interactions of Polyamidoamine Dendrimers Within Synovial Joints.....	152
<i>S. Douglas-Green, J. Aleman, B. Johnston, A. Grodzinsky, P. Hammond</i>	
Development of a Nanoparticle-Hydrogel Composite for Gene Editing in Osteoarthritis	153
<i>L. Stokes, I. Kelly, R. Fletcher, R. Darcy, B. Dollinger, S. Duvall</i>	
SHIELD Hydrogels Allow for Long-Term Survival and Integration of Human Cortical Neurons into a Chronic Adult Cervical Spinal Cord Injury	154
<i>V. Doulames, M. Hefferon, R. Suhar, N. Baugh, T. Palmer, S. Heilshorn</i>	
Culturing Primary Hepatocytes in Glycosaminoglycan-Based Capsules: Interior ECM Components Promote Hepatic Organization and Function.....	155
<i>R. Ramos, H. Matthew</i>	

Alginate-Based Artificial Antigen Presenting Cells Improve CD8+ T Cell Memory Formation	156
<i>M. Omotoso, S. Est-Witte, S. Neshat, S. Shannon, J. Green, J. Schneck</i>	
A Thy-1 Negative Inflammatory Fibroblast Subpopulation Emerges as a Key Determinant of Fibrotic Outcomes to Biomaterials.....	157
<i>D. Abebayehu, B. Pfaff, G. Bingham, D. Miller, D. Griffin, T. Barker</i>	
Gold-Coated Microfluidic-Based Enhanced Capture, Controlled Release, and in Vitro Culture of Heterogeneous Circulating Tumor Cells	158
<i>E. Kwizera, K. Tkaczuk, X. He</i>	
Cancer Engineering a Three-Dimensional Multilayer Multicellular Model of Endometrial Cancer for High Throughput Drug Screening.....	159
<i>I. Cadena, M. Buchanan, K. Fogg</i>	
Unconventional Biomaterials for Regenerative Medicine.....	160
<i>G. Camci-Unal</i>	
Role of Injectable Biomaterials in Restoring Vocal Fold Muscle Volume After Laryngeal Nerve Injury	161
<i>A. Isaac, G. Gonzales, S. Miari, R. Malka, G. Dion, T. Guda</i>	
A Novel Injectable Piezoelectric Hydrogel for Osteoarthritis Treatment	162
<i>T. Vinikoor, T. Nguyen</i>	
Human Fibroblast-Derived Matrix Hydrogel Enables Regenerative Wound Remodeling Via Interaction with Macrophages	163
<i>K. Park, C. Savitri, S. Ha, J. Kwon, S. Kim, Y. Kim, H. Park</i>	
Biodegradable Piezoelectric Skin-Wound Scaffold.....	164
<i>R. Das, T. Nguyen</i>	
Conductive Elastomer for Bladder Regeneration	165
<i>R. Keate, J. Rivnay, G. Ameer</i>	
Decellularized Meniscus Scaffolds for Pediatric Laryngotracheal Reconstruction in a Porcine Model	166
<i>A. Dumas, P. Gehret, S. Ghavimi, I. Jacobs, R. Gottardi</i>	
Rapid Magnetically Directed Assembly of Patterned Capillary-Scale Microvessels	167
<i>M. Jewett, H. Hiraki, M. Wojasinski, A. Bluem, E. Prabhu, Z. Zhang, W. Wang, A. Pena-Francesch, B. Baker</i>	
Transient Injectable Stimulatory Hydrogels to Improve the Efficacy of CAR-T Therapies of Solid Tumors.....	168
<i>E. Appel, A. Grosskopf, L. Labanieh, C. Mackall</i>	
Lipid Nanoparticle Composition Shapes Immune Response to mRNA Vaccine and Potency of Anticancer Immunity.....	169
<i>Y. Zhu, J. Ma, R. Shen, I. Vuong, H. Mao</i>	
Non-Inflammatory mRNA Vaccine for Antigen-specific Immunomodulation in the Lung	170
<i>A. Chakraborty, S. Dharmaraj, N. Truong, R. Pearson</i>	
Biomaterial-Based Ex Vivo Natural Killer Cell Surface Engineering for Enhanced Cancer Immunotherapy	171
<i>S. Kim, K. Kim</i>	

PEGylation of Indoleamine 2,3-Dioxygenase for Systemic Immune Regulation	172
<i>J. Simonovich, A. Kwiatkowski, A. Wanchoo, D. Avram, B. Keselowsky</i>	
Human Stem Cell Derived Beta-Like Cells Engineered to Present PD-L1 Improve Transplant Survival in NOD Mice Carrying Human Hla Class I	173
<i>J. Santini-Gonzalez, R. Castro-Gutierrez, M. Becker, C. Rancout, H. Russ, E. Phelps</i>	
Vaccines Restore Homeostasis in Collagen Induced Arthritis Mice.....	174
<i>A. Thumsi, S. Swaminathan, A. Suresh, A. Esrafil, M. Mohan</i>	
Tissue-Engineered Stromal Reticula to Study Tolerogenic Fibroblastic Reticular Cell Properties in Type 1 Diabetes	175
<i>L. Teles, Z. Wilkes, R. Creusot, A. Tomei</i>	
Dithiolane-Based Dynamic Hydrogels for Photoinduced Crosslinking, Exchange, and Depolymerization	176
<i>B. Nelson, B. Kirkpatrick, C. Miksch, M. Davidson, N. Skillin, G. Hach, B. Fairbanks, J. Burdick, C. Bowman, K. Anseth</i>	
Developing Enzyme-Sensitive Peptide-Polymer Conjugates for Cell-Mediated Degradation.....	177
<i>N. Hunt, S. Singh, E. Pashuck, W. Grayson, L. Chow</i>	
Bioactive Protein Photorelease from Hydrogels Via Tissue-Penetrating Green Light	178
<i>T. Rapp, C. Deforest</i>	
Sorting and Harvesting Cells with Dynamic Bionterfaces	179
<i>S. Minko, Y. Kim, U. Jahan, A. Deltchev, N. Lavrik, V. Reukov</i>	
Ultrasound-Responsive Biomaterial Platform for 3D Spheroid Gene Delivery to Model Early Tumor Initiation.....	180
<i>K. Huynh, M. Lowrey, S. Evans-Dutson, K. Schilling, D. Brasino, M. Handu, S. Speese, C. Schutt</i>	
A Protease-Based Theranostic as a Tool to Understand and Inhibit Calpain in Brain Injury	181
<i>M. Madias, S. Warlopf, E. Kwon</i>	
Novel Intrinsically Disordered Protein Polymers with Tunable Band-Pass Phase Separation Behavior	182
<i>M. Castano, F. Quiroz</i>	
Matrix Remodeling Modulates Therapeutic Potential of Heterotypic Cell Spheroids for Wound Healing	183
<i>V. Thai, D. Ramos-Rodriguez, J. Leach</i>	
Poly(ethylene Glycol)-Based Microcarriers Alter Secretory Activity of Genetically-modified Mesenchymal Stromal Cells.....	184
<i>G. Doron, L. Wood, R. Guldberg, J. Temenoff</i>	
Strain-Stiffening Bottlebrush Polymer Hydrogels Influence hMSC Morphology and Mechano-transduction	185
<i>M. Ohnsorg, V. Rao, A. Khang, K. Anseth</i>	
Stem Cells in Sliding Hydrogels 'dance' to Enhance 3d Chondrogenesis Via Early Cytoskeletal and Nuclear Dynamics	186
<i>M. Ayushman, G. Mikos, X. Tong, P. Cai, A. Spakowitz, S. Heilshorn, F. Yang</i>	

Stiff and Fast-Relaxing Hydrogel to Probe Pancreatic Ductal Adenocarcinoma Cell Behavior	187
<i>H. Nguyen, C. Lin</i>	
Extracellular Matrix Stiffness Mediates Insulin Secretion in Pancreatic Islets Via Phosphofructokinase Activity.....	188
<i>C. Garcia, K. Holcomb, N. Farnsworth</i>	
Enzyme-Functionalized Covalent Alginate Microparticles for Low-cost Anaerobic Culture	189
<i>T. Williams, C. Daboin, P. Kim, F. Guo, P. Figueiredo, D. Alge</i>	
Preserving Vasculature on the Encapsulation Device Led to Successful Stem Cell Derived Beta Cell Engraftment.....	190
<i>G. Chendke, B. Kharbikar, S. Ashe, M. Hebrok, T. Desia</i>	
Non-Specific Proteolytic Degradation of Peptides Within Hydrogels Impacts Cell Function	191
<i>S. Rozans, E. Pashuck</i>	
Engineering High Throughput Screening Platforms for Cervical Cancer	192
<i>I. Cadena, K. Fogg</i>	
Rational Design of an Affinity-Based Biomaterial for Sustained Angiogenic Protein Delivery	193
<i>J. Svendsen, S. Oh, K. Fear, P. Hosseinzadeh, M. Hettiaratchi</i>	
Moderate-Affinity Affibodies for Affinity-Controlled Delivery of Bone Morphogenetic Protein-2 (BMP-2)	194
<i>J. Dorogin, H. Hochstatter, K. Fear, P. Hosseinzadeh</i>	
Computational Simulation of the Impact of Cell-Adhesive Sequence on Supramolecular Peptide Hydrogel Assembly	195
<i>A. Thede, C. Cocker, L. Harold, R. Letteri, K. Lampe</i>	
The Optimization of Poly(vinyl)-Alcohol-Alginate Beads with Tetrabutoxysilane for the Aerobic Cometabolism of Chlorinated Solvents.....	196
<i>C. Harris, H. Gedde, L. Semprini, W. Rochefort, K. Fogg</i>	
Machine Learning on a Robotic Platform for the Design of Protein-Polymer Hybrids	197
<i>M. Tamasi, R. Patel, C. Borca, S. Kosuri, R. Upadhya, N. Murthy, M. Webb, A. Gormley</i>	
Predicting Ti-6Al-4V Corrosion Using Artificial Intelligence	198
<i>M. Kurtz, R. Yang, M. Elapolu, D. Liu, R. Rai, J. Gilbert</i>	
3D Mapping of Whole Human Fallopian Tubes at Single-Cell Resolution.....	199
<i>A. Forjaz, A. Crawford, P. Wu, A. Kiemen, I. Shih, D. Wirtz</i>	
Micromechanical Characterization with AFM Indentation and Viscoelastic Modeling Reveals Both Elastic and Viscoelastic Heterogeneities in Ovarian Tissue	200
<i>S. Stewart, W. Ou, X. He</i>	
Multi-Compartment Organoids of the Human Fallopian Tube.....	201
<i>A. Crawford, I. Bhorkar, A. Forjaz, T. Roy, D. Schell, A. Kiemen, I. Shih, T. Wang, D. Wirtz</i>	
Designing a Synthetic Scaffold to Support Human Folliculogenesis in Vivo	202
<i>M. Wall, A. Shikanov</i>	
Developing a Microporous Annealed Particle Hydrogel for Human Ovarian Tissue Encapsulation	203
<i>D. Pavlidis, A. Shikanov</i>	

Developing Semi-Synthetic Biomaterial Tools to Model the Interface of Endometriotic Lesions & Healthy Tissue	204
<i>H. Theriault, H. Kimmel, K. Clancy, G. Underhill, B. Harley</i>	
Orthogonal Design of Experiments for Engineering of Lipid Nanoparticles for Selective mRNA Delivery to the Placenta.....	205
<i>H. Safford, K. Swingle, H. Geisler, M. Mitchell</i>	
Co-Culture Organoids Recapitulate the Human Menstrual Cycle and Reveal Inflammatory Cascades in Endometriosis	206
<i>J. Gnecco, A. Brown, L. Baugh, J. Huang, K. Buttrey, C. Ives, B. Goods, V. Hernandez-Gordillo, N. Hardcastle, M. Loring, K. Isaacson, I. Morales, B. Bryson, D. Lauffenbruger, L. Griffith</i>	
Hybrid Poly(ethylene Glycol) and Hyaluronic Acid Bioactive Hydrogels for Endometrial Tissue Engineering	207
<i>S. Holt, A. Kilinc, C. Kim, L. Griffith</i>	
Decoding Glycoengineered Vaccine and Carrier Immunogenicity Using Biomaterials-Based Immune Organoids	208
<i>T. Moeller, S. Shah, K. Lai, N. Lopez-Barbosa, P. Desai, W. Wang, Z. Zhong, M. Delisa, A. Singh</i>	
Shaking Hands with Yourself: 3D Nanostructures to Inducing Cellular 'Self-Adhesion' to Adhere Cells to Biomaterials	209
<i>A. Singh, L. Rawson, D. Cohen</i>	
Controlling Biomaterials Associated Infections by Small Molecules that Intefere with Nucleotide Second Messenger Signaling.....	210
<i>L.-C. Xu, A. Ochetto, C. Chen, H. Allcock, C. Siedlecki</i>	
Transcriptional Reprogramming of Endothelial Cells by Topographical Micropatterning Via YAP.....	211
<i>M. Fallon, A. Barnes, M. Hinds</i>	
Directing 4D Cell Fate Through Irreversible Protein Photoassembly in Biomaterials and in Living Cells.....	212
<i>E. Ruskowitz, B. Munoz-Robles, C. Deforest</i>	
Electroconductive Agarose Hydrogels Modulate MSC Adhesion and Spreading Through Protein Adsorption.....	213
<i>A. Casella, A. Panitch, J. Leach</i>	
Functionalization of 3D-Printed Scaffolds with 2D Heterostructures and Immuno-Regulative Cytokines for Osteo-Immunomodulated Bone Repair	214
<i>X. Liu, L. Lu</i>	
Licensed hMSCs Exhibit Enhanced Immunomodulatory Capacity in a Biomaterial Mediated Manner	215
<i>V. Kolliopoulos, B. Harley</i>	
Gaussian Curvature-Driven Direction of Cell Fate Towards Osteogenesis with Triply Periodic Minimal Surface Scaffolds	216
<i>X. Zhao</i>	
3D Printing with Photopolymerizable Polyester Resins for Resorbable Tissue Scaffold Applications.....	217
<i>M. Stanford, M. Harman, M. Vaughn</i>	

Semi-Synthetic Hyaluronic Acid Hydrogels Promote Muscle Regeneration by Inducing BAT Differentiation of FAPs	218
<i>M. Pfaff, A. Killaars, D. Ning, M. Davies, A. Nguyen, P. Nuthalapati, M. Liu, X. Liu, B. Feeley, K. Healy</i>	
Combinatorial Effects of Surface Modification of Poly (Glycerol-Dodecanedioate) on Chondrocyte Behavior	219
<i>Y. Qin, R. Coleman</i>	
Engineering Ligand-Tethered Lipidoids for Targeted RNA Delivery to Treat Liver Fibrosis	220
<i>X. Han, N. Gong, L. Xue, M. Billingsley, S. Shepherd, M. Mitchell</i>	
Zwitterionic Peptide Sequence Determines Anti-Fouling Behavior and Protein Adsorption Profile on Nanoparticle Surfaces.....	221
<i>C. Overby, D. Benoit</i>	
Self-Assembled Oligo-Urethane Nanoparticles for Intracellular Delivery of mRNA.....	222
<i>S. Shrestha, R. Marks, S. Fatehi, A. Teng, J. McFadden, R. Cohn, E. Ivakine, A. Gramolini, J. Santerre</i>	
Monitoring Melanoma Responses to STING Agonism and Focused Ultrasound Thermal Ablation Using Microneedles and Ultra-Sensitive Single Molecule Arrays	223
<i>D. Dahis, M. Dion, A. Cryer, T. Gilboa, M. Alonso, P. Dosta, M. Lewandowsky, N. Puigmal, H. Azhari, R. Ahmed, D. Walt, N. Artzi</i>	
Cytokine-Loaded Nano-in-Cryogel Biomaterials for Repolarization of Tumor Associated Macrophages	224
<i>S. Henriques, O. Chalom, E. Glass, S. Roy, A. Manning, B. Hacker, M. Rafat, L. Kennedy, F. Yull, Y. Kim, T. Giorgio</i>	
Augmented Anticancer Efficacy of Natural Killer Cells Via Surface Functionalized Quantum Dots Using PD-1 Binding Peptides.....	225
<i>S. Jeong, K. Kim, M.-J. Choi, W.-J. Jeong</i>	
Cationic Exosomes Anchored with Receptor Antagonist of IL-1 for Cartilage Targeting and Repair	226
<i>T. Pathrikar, C. Zhang, H. Baby, A. Bajpayee</i>	
In Situ Engineering of an Immunologically Active Tumor Microenvironment with Cold-Responsive Nanoparticles for Cryoimmunotherapy of Breast Cancer	227
<i>W. Ou, S. Stewart, A. White, J. Shamul, X. He</i>	
MRNA Lipid Nanoparticles for Ex Vivo Engineering of Primary Human T Cells for Autoimmunity Therapies	228
<i>A. Thatte, A. Hamilton, M. Billingsley, A. Mukalel, M. Mitchell</i>	
Development of Intranasal Vaccine System Using Hyaluronic Acid-Coated Polymeric Micelles	229
<i>Y. Ohya, K. Suzuki, Y. Yoshizaki, K. Horii, T. Kato, N. Murase, A. Kuzuya</i>	
Modeling Age in Macrophage-Endothelial Interactions and Therapeutic Interventions in a 3D PEG Hydrogel.....	230
<i>J. Silberman, E. Moore</i>	
A 3D Platform to Study Monocyte Activation in Systemic Lupus Erythematosus	231
<i>H. Ryan, M. Segal, E. Moore</i>	
A 3D Bioprinted Hydrogel-Based Microfluidic Device for Anti-Cancer Drug Screening	232
<i>A. Bhusal, B. Cecen, A. Miri</i>	

3D Printed Gelatin Methacrylate Models for Normal and Glaucomatous Trabecular Meshwork Studies	233
<i>B. Adhikari, M. Pantcheva, M. Krebs</i>	
Development of an Injectable Upconversion Nanoparticle Conjugated Doxorubicin Theranostics Electrospun Nanostructure for Breast Cancer	234
<i>A. Khan, M. Gandhi, J. Bellare, R. Srivastava</i>	
Lipid-Polymer Hybrid "Particle-in-Particle" Nanostructure Gene Delivery Platform Explored for Lyophilizable DNA and mRNA COVID-19 Vaccines	235
<i>Z. Li, X. Xu</i>	
Investigation of the Protein Corona's Impact on Nanoliposome Drug Delivery Systems in Cancer Cells Using QCM-D	236
<i>N. Van Der Sanden, M. Tabrizian</i>	
Compressive Mechanical Load Modulates the Secretome and Cytoskeleton of MSC Spheroids	237
<i>S. Mierswa, V. Thai, J. Leach</i>	
Nanoparticle Interaction with Extracellular Matrix Stabilizes Cartilage Tissue Integrity	238
<i>U. Von Mentzer, G. Erensoy, S. Cunha, S. Youesfaldashi, A. Stubelius</i>	
Substrate Stiffness Modulates Endothelial Phenotypic Transition	239
<i>M. Zamani, Y.-H. Cheng, P. Cahan, N. Huang</i>	
Pro-Healing Nanomatrix Coated Stent Analysis in an in Vitro Vascular Double-Layer System and in a Rabbit Model	240
<i>X. Zhang, J. Chen, B. Brott, P. Anderson, P. Hwang, J. Sherwood, G. Huskin, Y.-S. Yoon, R. Virmani, H.-W. Jun</i>	
Decoy Exosomes Offer Protection Against Chemotherapy-Induced Cardiotoxicity	241
<i>M. Fan, K. Cheng, Z. Li</i>	
Targeting Tissue-Resident Macrophage Secreted MCP-1 for Attenuating Inflammation After Myocardial Infarction	242
<i>J. Wen, Y. Guan, H. Niu, Y. Dang, J. Guan</i>	
Metallic Bioresorbable Flow Diverters for the Treatment of Intracranial Aneurysms	243
<i>A. Oliver, C. Bilgin, A. Vercnocke, K. Carlson, R. Kadirvel, R. Guillory, A. Griebel, J. Schaffer, D. Dragomir-Daescu, D. Kallmes</i>	
Engineering Adipose Tissue Using Edible Scaffolds with Tunable Stiffness for Cultured Meat	244
<i>N. Kawecki, K. Chen, S. Norris, A. Rowat</i>	
Preliminary Analysis of the Effect of Dissolution Products of SCPC Resorbable Bioactive Ceramic on Nerve Cells	245
<i>A. Tiwari, I. Yang, A. El-Ghannam</i>	
A Nanofiber-Hydrogel Scaffold Embedded with Adipose-Derived Stem Cells for Treatment of Crohn's Perianal Fistulas	246
<i>Z.-C. Yao, L. Li, A. Zaheer, S. Gearhart, A. Parian, F. Selaru, H.-Q. Mao</i>	
Vascularizing 3D Printed GelMA Hydrogel for Pancreatic Islet Transplantation	247
<i>M. Fowler, B. Kim, C. Fell, M. Doerfert, S. Pandey, J. Swain, C. Wright, N. Miller, J. Hartgerink, O. Veisoh</i>	

Conductive Electrospun Polymer Platforms Improve Stem Cell-Derived Cardiomyocyte Function and Maturation	248
<i>G. Gonzalez, A. Nelson, E. Lamontagne, A. Whitehead, R. Vatsyayan, S. Dayeh, A. Engler</i>	
Light-Pipe FRESH 3D Bioprinting for Engineering Spatial Heterogeneity of Tissue Scaffolds.....	249
<i>C. Dikyol, A. Feinberg</i>	
Two-Dimensional Nanosilicates Stimulate Angiogenesis in Endothelial Cells.....	250
<i>G. Lokhande, K. Singh, A. Kersey, I. Singh, A. Gaharwar</i>	
Incorporating Elastomeric Particles into Bioinks to Enhance 3D-Printed Tissues Stability.....	251
<i>S. Landau, J. Kieda, S. Okhovatian, K. Ramsay, C. Liu, M. Radisic</i>	
Adhesion Strength of Desseminating Tumor Cells Predicts Severity of Metastatic Disease	252
<i>K. Birmingham, B. Yeoman, M. Kane, P. Beri, J. Tuler, I. Williams, A. Kumar, S. Klein, P. Katira, A. Engler</i>	
A Versatile, Reductionist Platform for Studying 3D Microenvironmental Interactions in Colorectal Cancer.....	253
<i>I. Kopyeva, R. Bretherton, J. Ayers, M. Yu, W. Grady, C. Deforest</i>	
Tuning Mineral Cues Modulates Breast Cancer-Bone Metastasis in a Spatially Patterned 3D Model	254
<i>M. Tai, E. Diaz, A. Mao, F. Yang</i>	
Synthetic Matrix Fibers Promote 3D Vasculogenesis Via Intercellular Mechanical Signaling	255
<i>F. Midekssa, C. Davidson, J. Kamen, M. Wieger, B. Baker</i>	
Nitric Oxide Releasing Nanomatrix Gel for Dialysis Fistula Maturation Enhancement.....	256
<i>P. Hwang, M. Somarathna, B. Estep, J. Sherwood, B. Brott, T. Lee, H.-W. Jun</i>	
Engineering of Architectural Complexities of Conical Cardiac Ventricle Using Polyesters	257
<i>S. Okhovatian, S. Landau, M. Mohammadi, H. Savoji, M. Radisic</i>	
Effects of Engineering Nanotopography on the Inflammatory Response of Silk-Fibroin Hydrogels	259
<i>V. Posada, A. Mesa-Restrepo, A. Marin, J. Allain</i>	
A Cell-Free Platform for Urinary Bladder Tissue Engineering	260
<i>L. Wang, M. Bury, N. Fuller, T. Sharma, A. Sharma</i>	
Hydrogel Nanocomposite Emulsion for siRNA Drug Delivery into Adipocytes	261
<i>R. Negru, J. Park, F. Teymour, G. Papavasiliou, M. Vaicik</i>	
Engineered Skeletal Muscle in Space as a Novel Model Sarcopenia.....	262
<i>M. Shayan, B. Ayan, S. Kim, T. Rando, N. Huang</i>	
The Anti-SASP Ruxolitinib Modulates Aged Macrophage Phenotype Transitions and Promotes Aged Bone Healing	263
<i>Y. Liu, K. Spiller, L. Kuhn</i>	
Sliding Hydrogels Attenuate the Inflammatory Phenotype of Osteoarthritic Chondrocytes Via Mechanotransduction	264
<i>M. Ayushman, X. Tong, P. Agarwal, N. Bhutani, F. Yang</i>	
Aspirin Synergizes with Optimized Calcium Phosphate Particles to Enhance Macroporous Scaffold-Mediated Bone Regeneration in Vivo.....	265
<i>N. Su, C. Villicana, C. Zhang, A. Yang, F. Yang</i>	

Biomimetic Proteoglycans Molecularly Engineer and Mechanically Modulate Human Osteoarthritic Cartilage	266
<i>E. Kahle, C. Trouillot, P. Desantis, A. Aitha, L. Han, M. Marcolongo</i>	
Nanofibrillar Engineered Muscle Therapy Enhances Muscle and Bone Functional Healing in Composite Lower Extremity Trauma	267
<i>C. Alcazar, K. Habing, Z. Working, N. Willett, A. Tahayeri, L. Bertassoni, K. Nakayama</i>	
Microporogen-Structured Collagen Matrices for Embedded Bioprinting of Functional Tumor Models.....	268
<i>D. Reynolds, I. De Lazaro, M. Blache, R. Doolittle, D. Mooney, J. Lewis</i>	
Spheroid-Only Bioinks for Suspension Bioprinting of Tissue Engineered Cartilage Constructs.....	269
<i>M. Cooke, J. Burdick</i>	
Cell-Laden Composite Hydrogel Bioinks with Human Bone Allograft Particles to Enhance Stem Cell Osteogenesis	270
<i>H. Gharacheh, M. Guvendiren</i>	
Tuning the Rheology of Wholly-Cellular Bioinks for Bioprinting.....	271
<i>J. Du, S. Lee, D. Ho, S. Sinha, M. He, M. Skylar-Scott</i>	
Development of Bioinks for 3D Bioprinting of an Osteochondral Tissue Substitute.....	272
<i>M. Heydarigoojani, E. Lehoux, I. Catelas</i>	
Bioinks Designed for Contrast-Enhanced X-Ray Imaging with Photopolymerizable and Renally-Clearable Nanoparticles.....	273
<i>L. Li, C. Gil, X. Yu, V. Serpooshan, R. Roeder</i>	
Multisized Photoannealable Microgels Regulate Cell Aggregation and Macrophage Phenotype Through Microporous Void Space.....	274
<i>J. Lowen, G. Bond, K. Griffin, N. Shimamoto, V. Thai, J. Leach</i>	
Regulating Biophysical Cues in Engineered Extracellular Matrices with Peptoids	275
<i>A. Rosales, L. Morton, D. Castilla-Casadiago</i>	
Alginate Microfibers as Anisotropic Porogens to Enhance Vasculogenic Assembly in Dense Fibrin Hydrogels	276
<i>F. Midekssa, M. Jewett, M. Busch, M. Wieger, J. Kamen, B. Baker</i>	
Mobile Sliding Hydrogels with Tunable Stiffness Enhance MSC Osteogenesis in 3D Via Mechanosensing	277
<i>G. Mikos, M. Ayushman, X. Tong, S. Jones, F. Yang</i>	
Reciprocal Cell-ECM Dynamics Drive Nematic Ordering of C2C12 Myotubes on Anisotropic Liquid Crystalline Polymer Networks.....	278
<i>N. Skillin, K. Herbert, B. Kirkpatrick, G. Hach, K. Gunay, F. Delrio, R. Khan, K. Anseth, T. White</i>	
Small Molecules to Modulate Hydrogel Gelation and Mechanics for Dynamic Organoid Culture	279
<i>A. Gilchrist, Y. Liu, Y. Guan, G. Peltz, S. Heilshorn</i>	
Therapeutic Nanocarriers Inhibiting Chemotherapy-Induced Breast Cancer Metastasis	280
<i>T. Li, T. Akinade, J. Zhou, H. Wang, Q. Tong, S. He, E. Rinebold, L. Salazar, D. Bhansali, Y. Zhong, J. Ruan, J. Du, P. Dalerba, K. Leong</i>	

Organotypic Breast Tumor Model Enables Drug Screening Against Tumor-Stromal Interactions	281
<i>H. Tavana</i>	
Glioblastoma Spheroid Growth, Infiltration, Motility, and Chemotherapeutic Responses in Single and Dual-Stiffness Hydrogels.....	282
<i>J. Bruns, S. Nejat, S. Zustiak</i>	
Merging Biomaterials and Microscale Technologies to Engineer Ex Vivo Organotypic Tumor Microenvironment (TME) Models	283
<i>M. Nikkhah</i>	
Microphysiological Prostate Cancer System for in Vitro Evaluation of Anti-Cancer Nanotherapeutics	284
<i>N. Habbib, B. Anbiah, T. Anani, A. David, R. Arnold, B. Prabhakarpanedian, E. Lipke</i>	
Interrogating Matrix Determinants of Cell Migration Mode and Survival in a Tunable Tumor Stroma Mimetic	285
<i>H. Hiraki, D. Matera, W. Wang, B. Baker</i>	
Analysis of Lipid Nanoparticle Formulations in a Mouse Model of Traumatic Brain Injury.....	286
<i>K. Miyasaki, L. Waggoner, E. Kwon</i>	
DNA-Inspired Electrically Conductive Nanocoating for Intracortical Microelectrode Stimulation and Recording.....	287
<i>I. Sands, A. Ersoz, W. Zhang, L. Zhou, W. Linthicum, S. Santaniello, B. Huey, M. Han, Y. Chen</i>	
Cell Specific Spatially Resolved, Multi-Omic Analysis of Intracortical Microelectrode-Tissue Interface.....	288
<i>L. Druschel, S. Song, J. Conard, J. Capadona</i>	
Multichannel Bridge Implantation and Neural Stem Cell Transplantation to Facilitate Axonal Regeneration, Myelination, and Connectivity After Spinal Cord Injury	289
<i>U. Nekanti, P. Sakthivel, A. Zahedi, D. Creasman, R. Nishi, X. Lin, Z. Guo, X. Xu, L. Shea, B. Cummings, A. Anderson</i>	
TGF- β 1 and PCL Nanofibers to Enhance Schwann Cell Migration.....	290
<i>Y. Hu, Y. Chan, A. Zhang, M. Becker, R. Willits</i>	
Design of Cell-Adhesive Guest-Host Hydrogels for Neural Tissue Engineering.....	291
<i>G. Jensen, S. Stabenfeldt, J. Holloway</i>	
Glioma-Derived Matrices to Probe Stromal-Matrix Interactions in the Brain Tumor Microenvironment.....	292
<i>R. Cornelison</i>	
Mechanical Loading Unveils Calcium Handling Dysfunction in iPSC Micro-Heart Muscle Harboring Hypertrophic Cardiomyopathy Mutations.....	293
<i>J. Guo, D. Schuftan, H. Jiang, D. Bhagavan, L. Aryan, J. Silva, N. Huebsch</i>	
Microfluidic Bioprinting of Tough Hydrogel-Based Vascular Conduits for Functional Blood Vessels	294
<i>X. Kuang, D. Wang, S. Maharjan, Y. Zhang</i>	
Long-Term Performance of a Biodegradable Elastomer Based Vascular Graft Prepared by Metal Ligand Chelation in Rat/Sheep Carotid Artery Replacement and Pig CABG Models	295
<i>Y. Chen, A. D'Amato, A. Musciano, H. Welch, C. Latvis, I. De Vlamincck, Y. Wang</i>	

Integrated Functional Analysis for Engineered Cardiac Organoids Enabled by Artificial Intelligence.....	296
<i>Z. Ma, A. Kowalczewski, S. Sun, P. Hoang</i>	
Matrix Mechanics Regulate Engineered Myocardial Microtissue Organization and Contractility	297
<i>S. Depalma, A. Stis, D. Huang, J. Vallejos, J. Lo, C. Davidson, A. Chowdhury, M. Jewett, A. Helms, D. Nordsletten, B. Baker</i>	
Connexin Rich Biomaterials Electrochemically Couple Induced Pluripotent Stem Cell-Derived Cardiomyocytes.....	298
<i>N. Momtahan, J. Stachowiak, J. Zoldan</i>	
Hydrogel Assisted Double Molding of 3D Print Reveals Prestress Regulation of MicroHeart Muscle Electrophysiology	299
<i>D. Simmons, D. Schuftan, J. Guo, K. Oguntuyo, G. Ramahdita, M. Munsell, B. Kandalajt, M. Pear, N. Huebsch</i>	
High-Throughput Screening Identifies Hydrogel Conditions for Cardiomyocyte Differentiation and Maturation	300
<i>M. Amitrano, W. Murphy</i>	
Novel Targeted Treatment of Coagulase-Mediated S. Aureus Biofilms.....	301
<i>G. Scull, A. Aligwekwe, D. Koch, K. Nellenbach, J. Sollinger, J. Gilbertie, L. Schnabel, A. Brown</i>	
Efficacy of Saline Wash Plus Vancomycin/Tobramycin-Doped PVA Composite (PVA-VAN/TOB-P) in a Mouse Pouch Infection Model Implanted with 3D-Printed Porous Titanium Cylinders.....	302
<i>D. Markel, T. Bou-Akl, P. Dietz, B. Wu, W. Ren</i>	
Peptidomimetic Polyurethanes Inhibit Bacterial Biofilm Formation and Disrupt Surface Established Biofilms.....	303
<i>A. Joy, A. Vishwakarma, Z. Chen</i>	
The Surface Topography of Silicone Breast Implants Mediates the Foreign Body Response in Mice, Rabbits, and Humans.....	304
<i>J. Doloff</i>	
Dynamic Profiling of Inflammatory Protease Biomarkers in Subcutaneous Host Response to Implanted Biomaterials	305
<i>T. Truong, N. Tran, T. Dang</i>	
The Role of Toll-Like Receptor 2 and 4 in the Innate Immune Cell Response to Biomaterials and the Foreign Body Response.....	306
<i>B. Thompson, L. Saleh, S. Bryant</i>	
Attenuated Foreign Body Response to Subcutaneous Implants in Regenerative Spiny Mice.....	307
<i>M. Dill, J. Gaire, V. Supper, E. Moore, C. Simmons</i>	
Injectable and Expansile Nanofiber Peanuts for Junctional Hemorrhage Treatment.....	308
<i>J. Xie, S. Andrabi, M. Carlson</i>	
Self-Assembled Amino Acid Nanofibers for Infection Control	309
<i>A. Sowers, B. Li</i>	
Fabrication of Lamellar-Structured Material with Controlled Shape Inspired by Fish Bone.....	310
<i>Y. Jiao, M. Okada, T. Matsumoto</i>	

Self-Immolative Boronated Retinoic Acid Prodrug Nanoassemblies for Treatment of Hepatic Ischemia/Reperfusion Injury	311
<i>N. Song, E. Jung, M. Yang, S. Kwon, D. Lee</i>	
Branched Lipid Architecture Enhances LNP-Mediated mRNA Delivery to the Liver Via Enhanced Endosomal Escape.....	312
<i>M. Padilla, M. Mitchell</i>	
Ionizable Lipid Nanoparticles for in Vivo mRNA Delivery to the Placenta During Pregnancy.....	313
<i>K. Swingle, M. Mitchell</i>	
Ionizable Lipid Nanoparticles for Therapeutic Base Editing of Congenital Brain Disease.....	314
<i>R. Palanki, S. Bose, A. Dave, B. White, K. Swingle, M. Billingsley, W. Peranteau, M. Mitchell</i>	
Delivery of Decorin Via Microspheres to Inhibit Fibrosis in Pediatric Vocal Folds.....	315
<i>R. Friedman, E. Brown, M. Aronson, K. Zur, R. Gottardi</i>	
Antimicrobial Peptide Eluting Endotracheal Tubes Prevent Subglottic Stenosis in a Mouse Model.....	316
<i>M. Aronson, A. Mehta, R. Friedman, R. Borek, D. Ghaderi, H. Nguyen, K. McDaid, I. Jacobs, N. Mirza, R. Gottardi</i>	
Development of a Geometrically Tunable Blood Shunt for Pediatric Heart Reconstruction Surgery	317
<i>V. Mishin, S. Soni, A. Seiner, A. Throckmorton, C. Rodell</i>	
Pediatric Gummy Formulations for Drug Resistant Tuberculosis	318
<i>K. Broderick, M. Mostashari, M. Wright, N. Braun, L. Woodard</i>	
Mussel-Inspired Nanoparticles for Mucoadhesion.....	319
<i>A. Jaramillo, K. Defrates, P. Messersmith</i>	
Electroactive Gelatin Composites for Flexible Biodevices and Tissue Engineering	320
<i>A. Brooks, V. Yadavalli</i>	
Cell-Secreted Extracellular Matrix Modulates Expression of Osteogenic Markers in iPSC-MSC Spheroids.....	321
<i>D. Ramos-Rodriguez, S. Lau, J. Leach</i>	
Toward Quantifying Silk Scaffold Degradation Rates in Vivo.....	322
<i>J. Jameson, H. Lutz, N. Kotta, J. Grasman, W. Stoppel</i>	
Evaluating Therapeutic Potential of Silk Fibroin Nanoparticles for Intravenous Oxygen Delivery.....	323
<i>M. Pacheco, J. Armada, H. Bagnis, B. Spiess, W. Stoppel</i>	
Characterization and Digital Light Processing of a Hydrolytically Degradable Hyaluronic Acid Hydrogel.....	324
<i>A. Dhand, J. Galarraga, B. Enzmann, J. Burdick</i>	
Anti-Inflammatory and Initiator-Free Photopolymerized Zwitterionic Hydrogels.....	325
<i>M. Stager, M. Krebs</i>	
Novel Fructose Based Levan Nanoparticles for Receptor Mediated Osteoarthritis Treatment	326
<i>J. Lee, H. Oh, W. Choi</i>	
Novel Levan Dermal Filler with Hydroxyapatite for Anti-Wrinkle Efficacy in Vivo	327
<i>H. Oh, J. Lee, W. Choi</i>	

Development of Peptide Amphiphile Micelles Targeted to Lymph Node Metastases	328
<i>N. Trac, E. Chung</i>	
Glioblastoma Microenvironment Modulation Via Electrical Stimulation for Cell-To-Cell Functional Pathomechanism.....	329
<i>J. Lee, B. Koo, T. Le-Kim, Y. Nam</i>	
Induced Pluripotent Stem Cell-Derived Synthetic Neural Constructs for Brain Cancer Modeling.....	330
<i>A. Ramamurthy, J. Majumder, E. Torr, W. Murphy</i>	
Optimization of Synthetic Matrices for Endothelial Cell Network Formation in Microfluidic Devices	331
<i>L. Pruetz, M. Johnson, P. Roy, L. Griffith</i>	
Development of a New 3D Bioprinted Antibiotic Delivery System Based on a Cross-Linked Gelatin-Alginate Hydrogel.....	332
<i>H. Belaid, A. Mirek, V. Cavailles, D. Lewinska, M. Bechelany</i>	
Fabrication of Radio-Opaque and Macroporous Injectable Calcium Phosphate Cement.....	333
<i>H. Belaid, D. Cornu, V. Cavailles, M. Bechelany</i>	
Multifunctional Membrane with Interpenetrating Collagen/AMP Nanofibers for Guided Bone Regeneration.....	334
<i>Z. Ye, J. Dai, N. Fischer, J. Rahimi, H. Wang, H. Chew, C. Aparicio, S. Huang</i>	
Development of Soft-Hard Inter-Regional Tissue Using a Mineralized dECM Membrane.....	335
<i>T. Kimura, M. Suzuki, Y. Hashimoto, M. Okada, T. Matsumoto, N. Nakamura, A. Kishida</i>	
Osteo-Immunomodulating Periosteum for Accelerated Osteogenesis and Angiogenesis.....	336
<i>H.-P. Bei</i>	
Promoted Myogenesis Within 3D Bioprinted Constructs of MXene-Incorporated Hyaluronate/Gelatin Hydrogels.....	337
<i>D.-W. Han, H. Jo, H. Jang, M. Kang, B. Kim, S. Hong, J.-C. Park</i>	
Cell-Adaptable Hierarchical Hydrogel with High Stiffness and Fast Relaxation.....	338
<i>Z. Yang, B. Yang, Z. Gao</i>	
Strontium Decreases Mitochondrial Reactive Oxygen Species Production in Chondrocyte Spheroids.....	339
<i>S. Chaney, Z. Qiryaqoz, A. Akkouch</i>	
Effect of Hot Caliber Rolling on Microstructure and Corrosion Behavior of Bioabsorbable Mg-Sc-Sr Alloy	340
<i>P. Bagha, V. Cardenas, M. Razavi</i>	
Antimicrobial and Antioxidant Chitosan-PVA Hydrogel Hernia Mesh Loaded with S-Nitroso-N Acetyl-DL-Penicillamine	341
<i>Z. Wang, A. Brown, A. Perez, J. Gluck, M. King</i>	
In Vivo Evaluation of Bone Regeneration in Maxillary Sinus with a New Bioactive Glass Biomaterial	342
<i>I. Balderrama, G. Oliveira, R. Faeda, I. Matos, M. Souza, E. Zanotto, M. Stabili, P. Coelho, L. Witek, E. Marcantonio</i>	

Multifunctional Gallium Doped Bioactive Glasses: A Targeted Delivery for Antineoplastic Agents and Tissue Repair Against Osteosarcoma.....	343
<i>S. Hanaei, R. Martin</i>	
Wnt Agonists-Loaded Electrospun Cellulose Acetate Scaffolds for Bone Tissue Engineering Applications.....	344
<i>S. Bello, A. Vargas-Morales, J. Velazquez-Mendez, E. Nicolau</i>	
Technical Innovation in Bioceramic Formula Design for Regenerative Medicine.....	345
<i>A. El-Ghannam, R. Horowitz</i>	
Preparation of Co-Electrospinning Membrane Loaded with Simvastatin and Substance P to Accelerate Bone Regeneration by Promoting Cell Homing, Angiogenesis and Osteogenesis	346
<i>M. Al-Baadani, K. Cai, J. Liu</i>	
Systematic Investigation of Magnesium Corrosion Affecting the Biological Response-Importance of Metal-Cell Interactions.....	347
<i>J. Kim, H. Pan</i>	
Bioinspired Patch Platform for Translational Adhesive Technologies	348
<i>J. Wu, H. Yuk, X. Zhao</i>	
In Vivo Evaluation of OssiMend™ Bioactive Moldable Scaffold Vs SignaFuse Putty in a Rabbit Femoral Condylar Defect Model.....	349
<i>H.-C. Chen, S. Saxena, E. Choudhury, D. Ammon</i>	
Gallium-Doped Cement for the Treatment of Bone Cancers - The Effect of ZnO ↔ Ga ₂ O ₃ Substitution of an Ionomeric Glass Series on the Rheological, Mechanical, pH and Ion-Eluting Properties of Their Corresponding Glass Polyalkenoate Cements	350
<i>S. Phull, A. Yazdi, M. Towler</i>	
Optimization and Characterization of Pre-Osteoblast Seeded Bone Graft Materials	351
<i>K. Challapalli, K. Nobles, C. Cates, S. Chowdhury, A. Janorkar, R. Williamson</i>	
De Novo Design of Short Peptide Hydrogelators as Synthetic and Viscoelastic Organoid Matrices.....	352
<i>A. Nguyen, T. Molley, S. Ganda, K. Kilian</i>	
Extending the Bioavailability of Hydrophilic Antioxidants for Metal Ion Detoxification Via Crystallization with Polysaccharide Dopamine.....	353
<i>R. Miller, Y. Kim, C. Park, C. Torres, B. Kim, J. Lee, D. Flaherty, H.-S. Han, Y. Kim, H. Kong</i>	
Designing Hybrid Hydrogels with Tunable Viscoelastic Properties.....	354
<i>A. Moghaddam, E. Pashuck</i>	
Three-Dimensional-Printed Multicomponent Biofilm-Based Scaffolds	355
<i>Z. Abdali, X. Hao, D. Saldanha, N.-M. Courchesne</i>	
Assessment of a Novel Low-Cost Personal Respirator Evaluation Device.....	356
<i>Q. Burke, K. Aroom, M. Wang</i>	
An in Vitro Platform for Investigating Myocardial Therapeutic Angiogenesis	357
<i>R. Shaik, J. Xu, Y. Wang, Y. Hong, G. Zhang</i>	
Fabrication of Electromechanical Integrated Cardiac Patch for Treatment of Infarcted Myocardium.....	358
<i>X. Wang, Y. Liu, C. Duan, B. Jiang, G. Ameer</i>	

Investigating Extracellular Vesicle Therapeutics in Cardiac Tissue-On-a-Chip Models of Ischemia-Reperfusion Injury.....	359
<i>K. Wagner, A. Bannerman, R. Lu, M. Radisic</i>	
Hydrogels with Tunable Stress Relaxation Rate and Stiffness Modulate Endothelial Cell Function.....	360
<i>M. Shayan, M. Huang, R. Navarro, G. Chiang, C. Hu, B. Oropeza, P. Johansson, S. Heilshorn, N. Huang</i>	
Adipose-Derived Stromal Cells Support the Endothelialization of an Electrospun Polyurethane Vascular Scaffold.....	361
<i>K. Macquarrie, J. Antonyshyn, M. McFadden, A. Gramolini, S. Hofer, J. Santerre</i>	
Re-Endothelialization and Anti-Inflammation Using PLLA Composites Combined with Delivery System of Bioactive Agents.....	362
<i>S.-W. Baek, C. Park, D. Han</i>	
Novel Liposomal JNK2 Gene Silencing Platform for Elastic Matrix Regenerative Repair in Abdominal Aortic Aneurysms (AAAs)	363
<i>S. Dahal, S. Bastola, A. Ramamurthi</i>	
Cell-Encapsulating PEG Microbeads Support Prevascularization in Vitro and Angiogenic Sprouting in Vivo	364
<i>N. Friend, J. Stegemann, A. Putnam</i>	
Left and Right Ventricle Derived Myocardial Matrix Hydrogels Rescue Right Ventricular Function in a Model of Right Ventricular Heart Failure	365
<i>J. Hunter, T. Ahmed, A. Hankco, M. Davis, K. Christman</i>	
Cell-Mediated Matrix Stiffening Accompanies Vascular Morphogenesis in Both Natural and Synthetic Hydrogels	366
<i>A. McCoy, N. Friend, I. Zhang, J. Stegemann, A. Putnam</i>	
Untethered Cardiac Stimulation and Pacing Based on Rubbery Optoelectronic Stimulators.....	367
<i>C. Yu, Z. Rao</i>	
Microfabricated Anisotropic Myobundles Towards the Scaled Generation of 3D Cardiac Tissue.....	368
<i>M. Jewett, A. Bluem, S. Xi, S. Depalma, B. Baker</i>	
Ultra-Violet Crosslinked Decellularized Heart Matrix Allows for Surface Micropatterning and Cardiomyocyte Maturation in Vitro.....	369
<i>V. Pierre, C. Liu, S. Senyo</i>	
Injectable ECM-Basd Embolic Delivering Therapeutic Agents for Treating Cerebral Saccular Aneurysms.....	370
<i>S. Kim, K. Nowicki, K. Wang, S. Ye, W. Wagner</i>	
Edible Microcarriers for FAPs Proliferation and Differentiation	371
<i>R. Rivero, R. Oliveira, F. Zaccarian, A. Kumar, A. Dogan, P. Moutsatsou, M. Post</i>	
A Comparative Study of Fetal Bovine Serum Alternatives for Muscle Tissue Engineering Applications.....	372
<i>G. White, I. Tahir, R. Floreani</i>	
3D Nanofiber Scaffolds by Touch Spinning Method.....	373
<i>S. Minko, N. Yadavalli, B. Blevins, V. Mohakar, K. Peranidze, A. Sorkin, V. Reukov</i>	

3D-Printable Plant-Protein Enriched Scaffolds for Cultivated Meat Development	374
<i>I. Ianovici, Y. Zagury, I. Redenski, N. Lavon, S. Levenberg</i>	
Mussel-Inspired Bioadhesives with Hemostatic and Antimicrobial Properties for Wound Healing	375
<i>S. Jain, A. Baidya, N. Annabi</i>	
Development of a Flexible Tissue Repair Patch Composed of Co-Electrocompacted Chorion and Collagen for Treatment of Vesicovaginal Fistula	376
<i>I. Isali, P. McClellan, V. Pierre, T. Wong, S. Hijaz, R. Pope, S. Gupta, J. Anderson, O. Akkus, A. Hijaz</i>	
Reprogrammed Brown Adipose Tissue Via Implantable Silicon Capsules as a Treatment Modality for Type II Diabetes	377
<i>D. Das, E. Goebel, N. Ott, S. Sanmiguel, K. Dathathreya, D. Gallego-Perez</i>	
A Woven Scaffold Fabricated from Highly Aligned Electrospun Yarn for Skin Tissue Regeneration	378
<i>D. Zha, J. Petite, A. Brown, R. Kellar, J. Gluck, M. King</i>	
Effect of Ellagic Acid and Retinoic Acid on Collagen and Elastin Production by Human Derman Fibroblasts	379
<i>C. Duckworth, J. Stutts, K. Clatterbuck, N. Nosoudi</i>	
Development of Oxygen-Generating Scaffolds Supporting Cell Proliferation Under Hypoxia.....	380
<i>R. Augustine, G. Camci-Unal</i>	
Hyaluronic Acid Hydrogel with Gradient Mechanical Properties for Biomedical Applications	381
<i>M. Kwon, K. Kim</i>	
Development of Photocrosslinkable Albumin-Based Hydrogels	382
<i>N. Bostanci, D. Lantigua, G. Camci-Unal</i>	
Eggshell Microparticle-Reinforced Scaffolds for Bone Regeneration	383
<i>M. Gezek, X. Wu, G. Camci-Unal</i>	
Does the Hydrogel Stiffness Modulate in Vivo Vascularization?	384
<i>F. Zhang, C. O'Connor, S. Simmonds, K. Stevens</i>	
Modulating Pentenoate-Functionalized Hyaluronic Acid Hydrogel Network Formation for Meniscal Fibrochondrocyte Mechanotransduction.....	385
<i>K. Castillo, P. Elrod, K. Burkey, M. Suekuni, S. Gehrke, A. Allgeier, J. Robinson</i>	
Watt's the Buzz? Electrically Active Hernia Repair Mesh Cellular Viability Study.....	386
<i>S. Mosier, V. Drapal, J. Robinson, E. Friis</i>	
3D Printed Porous Scaffolds Infused with a Bioresorbable Mineral-Organic Bone Adhesive	387
<i>A. Kirillova, K. Gall</i>	
Nanoparticle Loaded Granular Scaffolds for Local Gene Delivery to Enhance Wound Repair	388
<i>E. Kurt, T. Segura</i>	
Gene Delivery Via Reactive Polymer Coating for Enhanced Cell Communication.....	389
<i>M. Mededovic, X. Zhong, J. Lahann, D. Kohn</i>	
3D Printed Synergistic Graphene Citrate Composite Scaffolds for Craniofacial Bone Reconstruction.....	390
<i>M. Kim, C. Collins, T.-C. He, C. Sun, G. Ameer, R. Reid</i>	

ECM Gel Injection Enhances Recovery from Both Disuse and Degenerative Muscle Atrophy	391
<i>T. Huynh, C. Slavin, S. Ahmadi, J. Wolchok</i>	
Bioprinted Wound Mesh for Pressure Ulcers	392
<i>S. Zori, J. Zwiesler-Vollick, Y. Li</i>	
Anisotropic Decellularized Skeletal Muscle Extracellular Matrix	393
<i>Y. Tan, O. Lally, K. Nakayama</i>	
The Newly Discovered Chemokine-Mimicking Peptide-Loaded Cross-Linked Hyaluronan Scaffold to Accelerate Wound Healing Through Endogenous Mesenchymal Stem Cell Recruitment	394
<i>Y. Kim, M. Kim</i>	
Osteogenic Potential of the Construct Composite with Adipose Tissue-Derived Mesenchymal Stem Cells (ADSCs), Bone Substitutes and Platelet Rich Fibrin (PRF).....	395
<i>R. Oliveira, B. Costa, A. Pessoa, C. Tokuhara, M. Sanchez, A. Bighetti, T. Cestari, P. Lisboa-Filho</i>	
Engineered Asymmetric Hydrogel for Controlling Muscle Stem Cell Proliferation and Expansion	396
<i>G. Park, W. Han</i>	
Protein Release by Controlled Desorption from Transiently Cationic Nanoparticles	397
<i>T. Cheung, C. Xue, D. Kurtz, M. Shoichet</i>	
The Effect of Bi-Modal Structure on Curcumin Release from Electrospun Gelatin/PCL Scaffolds	398
<i>A. Sadeghianmaryan, J. Bumgardner, H. Sardroud, A. Bryan, A. Asefnejad</i>	
Injectable and Immunomodulatory Hydrogels for Promoting Axonal Regeneration in Injured Spinal Cord.....	399
<i>G. Agarwal, A. Campbell, A. Wanchoo, J. Fuhr, O. Osborne, B. Keselowsky, C. Schmidt</i>	
Evaluating a Novel Cell Source for Bladder Tissue Engineering.....	400
<i>M. Goedegebuure, M. Bury, A. Sharma, G. Ameer</i>	
Evaluation of Glutaraldehyde Crosslinked Electrospun Chitosan Membranes Modified with Gelatin and Elastin for Skin Wound Healing	401
<i>E. Wales, A. Bryan, A. Sadeghianmaryan, A. Blanquer, L. Svobodova, L. Bacakova, J. Bumgardner</i>	
A Self-Healing Hyaluronic Acid-Poly(Vinyl Alcohol Citrate) Hydrogel for Spinal Cord Injury Treatment.....	402
<i>M. Pitman, J. Larsen</i>	
A Modified Chitosan-Polyethylene Glycol Bio-ink for Use in Additive Manufacturing	403
<i>A. Watson, J. Strecker, J. Bumgardner, T. Fujiwara</i>	
Panthenol Citrate-Based Biomaterials Accelerate Diabetic Wound Closure and Promote Tissue Regeneration.....	404
<i>H. Wang, C. Duan, G. Ameer</i>	
Multi-Structured Scaffold for Myotendinous Junction Regeneration.....	405
<i>K. Shama, E. Aikman, M. Pacheco, W. Stoppel, B. Taylor</i>	
Differentiation of hMSCs on Mineralized Silk Nanofibers for Enthesis Repair	406
<i>G. Hamner, J. Brown</i>	

Hybrid Double Network Cryogels Scaffold for Repair of Focal Cartilage Defect.....	407
<i>K. Zhang, M. Seitz, Z. Yang, E. Jain</i>	
Injectable and Biodegradable Hybrid Double-Network Cryogels Scaffold for Cartilage Regeneration.....	408
<i>Z. Yang, K. Zhang, M. Seitz, E. Jain</i>	
Evaluating the Osteoinductivity of Different Biomaterials Used for Bone Regeneration.....	409
<i>A. Martinez, A. Reza, J. Mercuri</i>	
Isolating Dural Stem Cells for Mechanical Stimulation with Ultrasound	410
<i>H. Anderson, K. Grassie, D. Hersh, Y. Khan</i>	
Engineering Injectable Synthetic ECM-Based Hydrogels as Vehicles for Retinal Progenitor Cells Transplantation.....	411
<i>P. Zhao, S. Bencherif, M. Young, R. Carrier</i>	
Threat of Biocompatibility Due to Allogeneic Cells in Tissue Regenerative Matrices	412
<i>S. Gunasekaran</i>	
Evaluating the Osteostimulatory Properties of OssiMend® Bioactive Moldable, a Bone Graft Substitute for Spine and Orthopedic Use.....	413
<i>D. Legarda, S. Fink, H.-C. Chen, D. Ammon</i>	
A Potential Extracellular Matrix-Based Scaffold for Cartilage Regeneration	414
<i>V. Thomas, J. Mercuri</i>	
Development of a Multifunctional Hydrogel Platform for Investigating and Enhancing Muscle Regeneration.....	415
<i>A. Galindo, V. Spaulding, E. Mozipo, K. O'Neill, I. Liashenko, C. Asnes, M. Ford, P. Dalton, M. Hettiaratchi</i>	
Development of a Pre-Crosslinked Decellularized Extracellular-Based Scaffold for Nucleus Pulposus Replacement.....	416
<i>C. Theos, J. Mercuri</i>	
Engineering Large Anisotropic Meniscal Microtissues Via Digital Light Processing Printed Molds	417
<i>A. Defoe, A. Dhand, M. Davidson, M. Obenreder, J. Burdick</i>	
Mineral-Coated Iron Oxide Microparticles Promote M1 Macrophage Polarization	418
<i>H. Martin, I. Baurceanu, P. Smith, W. Murphy</i>	
Shear-Thinning Hydrogel for the Delivery of Combined Chemo- And Immunotherapies for the Treatment of Hepatocellular Carcinoma.....	419
<i>N. Falcone, M. Ermis, N. Barros, Auveen, Choroomi, P. Young, V. Jucaud, H. Kim, A. Khademhosseini</i>	
Exploring Lymphangiogenic Function of Microglia in Brain Microphysiological Models in Vitro	420
<i>C.-W. Chang, B. Harley</i>	
Studies of Polymeric Quaternary Ammonium Salts with Biomimetic Catechol Terminal End: Synthesis and Its Application for Surface Modification of Various Biomaterials	421
<i>C.-H. Cheng, X.-Z. Zeng, W.-Y. Chiu, J.-C. Lin</i>	
Effects of Pore Structure on Coagulation in Shape Memory Polymer Foam Hemostatic Dressings.....	422
<i>N. Petryk, G. Haas, A. Vakil, M. Monroe</i>	

A Hydrogel Foam Dressing with Self-Tuning Moisture Balance to Improve Chronic Wound Healing	423
<i>Z. Lan, R. Kar, M. Chwatko, E. Shoga, E. Cosgriff-Hernandez</i>	
Profiling the Cellular Uptake of Nucleic Acids Locally Released in Wounds from Self-Assembled Dressings	424
<i>A. Berger, C. Vo, E. Deiss-Yehiely, M. Feinberg, P. Hammond</i>	
A Neat Approach to Developing Tissue Adhesives	425
<i>B. Mizrahi, N. Shimony, A. Shagan, D. Kohane</i>	
Human Hair Bio-Waste Extracted Keratin and Alginate Dual Crosslinked Micro-Fibers for Haemostatic ApplicationS	426
<i>A. Mukherjee, S. Parhi, P. Ghosh</i>	

VOLUME 2

Rapid Action Polymer-Based Sponges for in Situ Hemostatic Treatment.....	428
<i>P. Sarkar, K. Mukhopadhyay</i>	
Antimicrobial Peptide Functionalized Bacterial Cellulose for Wound Dressing Applications.....	429
<i>E. Van Zyl, J. Coburn</i>	
Modular Stabilization of Whole Blood Components for Reconstitution and Transfusion at the Point of Injury.....	430
<i>K. Johnson, K. Broderick, W. Velandar, M. Mangino, L. Costella</i>	
Layer-By-Layer Functionalized Gauze for Synthetic Anti-Biofilm Peptide Releasing Wound Dressings	431
<i>S. Nick, J. Bryers, V. Daggett</i>	
Neonatal Fibrin Based Nanoparticles for Wound Healing.....	432
<i>S. Pandit, K. Nellenbach, N. Moiseiwitsch, A. Brown</i>	
Efficacy of Knitted Biotextile Substrates for Conductive Nanocomposite Sensors for Diabetic Chronic Wound Healing	433
<i>C. Streeter, S. Thammana, S. Jeziorski, C. Miller, J. Gilmore</i>	
Keratin-Biphalin Dressing Accelerates Skin Wound Healing in Diabetic Mice Through Activation of AKT-mTOR Pathway	434
<i>M. Konop, . Mazurek, M. Rybka, M. Szudzik, A. Laskowska, J. Czuwara, M. Ufnal</i>	
Keratin-Trimethylamine-N-oxide Dressing Accelerates Skin Wound Healing in Diabetic Rats.....	435
<i>. Mazurek, M. Rybka, M. Szudzik, J. Czuwara, D. Sulejczak, M. Ufnal, M. Konop</i>	
Effects of Varying Pitch Angle on Stress Response of an Algorithmically Designed 3D Printed Bone Scaffold.....	436
<i>J. Millburn, C. Buckley, S. Shady</i>	
Novel Drug Delivery System to Reduce Fibrous Encapsulation in Glaucoma Drainage Devices	437
<i>M. Zernic, M. Kohen, O. Akkus, F. Orge</i>	

Spatio-Temporal Photothermal and Chemotherapy Using Injectable Composite Hydrogel Embedding Eutectic Ga/In Liquid Metal Particle Against Triple Negative Breast Cancer	438
<i>W. Lee, M. Shin, J. Kim, K. Kim</i>	
Cell Migration and Growth Within Electrospun Nanofiber Sheets with Defined Pore Sizes in a Mouse Pouch Model.....	439
<i>D. Markel, T. Bou-Akl, P. Dietz, B. Wu, W. Ren</i>	
Identifying Peptides with Cell-Specific Degradation	440
<i>K. Atherton, E. Pashuck</i>	
Elucidating Macrophage Persistence in the Immune Response to Implanted Biomaterials	441
<i>J. Suresh, A. McCubbrey, S. Alper, W. Janssen, S. Bryant</i>	
Observation of Microgel Poroelastic Deformation Via Nanopore Translocation	442
<i>L. Lyon, E. Narbay, A. Santich</i>	
Thermogelling Hydrogel Charge and LCST Influence Cellular Infiltration and Tissue Integration in an Ex Vivo Cartilage Explant Model.....	443
<i>H. Pearce, J. Swain, L. Victor, K. Hogan, E. Jiang, M. Bedell, A. Navara, A. Farsheed, Y. Kim, J. Guo, J. Hartgerink, K. Grande-Allen, A. Mikos</i>	
High Cell Density and High Resolution 3D Bioprinting of Vasularized Tissue	444
<i>Y. Xiang, S. You, D. Berry, S. Chen</i>	
3D Bioprinting for the Production of a Perfusable Vascularized Model of a Cancer Niche.....	445
<i>F. Maggioletto, C. Pozzer, E. Cimetta</i>	
Adding PLGA Nanoparticles to HAMA-GelMA Hydrogels to Bioprint in Vitro Blood-Brain Barrier Models.....	446
<i>K. Cheng, N. Pyles, R. Ajeeb, J. Clegg, C. Crosby</i>	
Large-Scale Tissue Fabrication and Micro-Scale 3D Cell Migration.....	447
<i>Q. Gu</i>	
Template-Based Formation of Interconnected, Perfusable Channel Networks for Bone Tissue Regeneration.....	448
<i>C. Buckley, H. Wang</i>	
Gelatin Norbornene-Based Bioink for Vascularized Tissue Fabrication Using Digital Light Processing 3D Bioprinting	449
<i>V. Duong, C.-C. Lin</i>	
In Vitro Engineering of a 3D Pulp Tissue Model for in-Lab Assessment of Dental Biomaterials.....	450
<i>F. Tabatabaei</i>	
High-Temperature 3D Printing of Patient-Specific Polyetheretherketone (PEEK)-based Restorative Orthopedic Devices	451
<i>S. Sonaye, V. Bokam, P. Sikder</i>	
Doxycycline Loaded Thiol-Ene Microparticles for Periodontal Disease Treatment	452
<i>C. Chapusha, N. McGowan, P. Smith, M. Carr, M. Marquart, A. Janorkar</i>	
Branched Channels in β -Tricalcium Phosphate (β -TCP) Scaffolds Promote Vascularization.....	453
<i>Y. Kang, E. Qian</i>	

Cell Accelerated Corrosion: The Impact of Human Gingival Fibroblasts on Dental Implant Corrosion.....	454
<i>M. Alhamad, Y. Chen, A. George, V. Barão, C. Sukotjo, M. Mathew</i>	
3D Printed Patient-Specific Bone Graft Composite for Improved Cell Infiltration and FGF Release	455
<i>C. Alston, M. Chadwick, S. Rupani, M. Murphy, N. Moldovan, C. Barco, L. Solorio</i>	
Surface Chemistry Analysis of Commonly Used Titanium Surfaces Under Controlled Conditions.....	456
<i>J. Ricci, M. Jeon, B. Maas, N. Kerayehchian, D. Mijares</i>	
Impact of Dental Cement on Peri-Implant Disease Development: A Preclinical Study in Lewis Rats	457
<i>B. Chandrashekar, C. Bigueti, A. Arteaga, A. Miramontes, E. Rios, D. Rodrigues</i>	
Electrospun Chitosan Membranes Dually Loaded with Raspberry Ketone and Simvastatin to Determine Drug Release for Guided Bone Regeneration.....	458
<i>H. Pruitt, J. Bumgardner</i>	
Zinc-Doped Fluoridated Apatite as an Engineered Bone Filler for Craniofacial Bone Regeneration	459
<i>S. Steyl, A. Griffin, J. Shea, C. Nielson, P. Beck, J. Agarwal, S. Jeyapalina</i>	
Bioactive Grafts, Growth Enhancers and Barriers in Implant Surgery.....	460
<i>R. Horowitz</i>	
Growth Factors and Enhancers for Dental, Periodontal and Oral Surgical Regeneration of Hard Tissue.....	462
<i>R. Horowitz</i>	
Effect of Pre-And Post-irradiation Silver Diamine Fluoride Treatment on the Hardness of Dentin	464
<i>R. Kulchar, F. Eggmann, C. Mina, S. Szewczyk, K. Yusuke, J. Deng, F. Mante</i>	
Stabilised Calcium Phosphate for Encapsulation in PLGA Particles	465
<i>H. Poli, A. Anitha, L. Grondahl</i>	
Titanium Anodization Processes to Create Multifunctional Oxide Surfaces.....	466
<i>A. Parekh, P. Odom, A. Janorkar, M. Roach</i>	
Innovative Nanoparticle Scaffold for Enhanced Bone Regeneration in Craniomaxillofacial Tissues.....	467
<i>K. Alghazali, S. Myneni, S. Trigwell, M. Srivatsan, D. Lam, A. Biris</i>	
Self-Standing Alginate-hyaluronate Hydrogel for 3D Bioprinting-based Tissue Engineering.....	468
<i>I. Noh, G. Janarthanan, J. Kim, A. Bhattacharyya</i>	
Ultra-Thin PDMS Microgrids for Two-Photon and AFM Alignment	470
<i>K. Powers, A. Baker, B. Gao</i>	
Contrast-Enhanced Detection and Quantitative Molecular Imaging of Breast Microcalcifications with Spectral Photon-Counting Computed Tomography.....	471
<i>C. Evans, T. Finamore, R. Roeder</i>	
The Effects of Varying Levels of Fibrin on Human Astrocyte Behavior Using 3D Engineered Scaffolds	472
<i>M. McKee, S. Ravi, A. Jimenez-Vergara, D. Munoz-Pinto</i>	
Polysaccharide-Based Films Facilitate Single-Step Targeted Expression of Optogenetic Proteins	473
<i>C. Jons, E. Appel</i>	

Direct Laser Writing of Multi-Material Microelectrodes for Potential Neural Recording and Stimulation	474
<i>O. Dadras-Toussi, M. Abidian</i>	
Altering the Gut Microbiome Influences Intracortical Microelectrode Performance and Brain Bacteria Levels	475
<i>G. Hoeflerlin, J. Duncan, J. Zhang, A. Lee, C. Hong, G. Burkhart, J. Cadnum, G. Jaskiw, C. Donskey, J. Pancrazio, H. Von Recum, J. Capadona</i>	
Direct Laser Writing of Multi-Material Microelectrodes for Potential Neural Recording and Stimulation	476
<i>O. Dadras-Toussi, M. Abidian</i>	
Gold Nanostars as Brain-Machine Interfaces for Photothermal Neuromodulation	477
<i>S. Ebrahimibasabi, H. Arami</i>	
3D in Vitro Model for Human Microglia-Mediated Inflammatory Responses to Amyloid Beta Species.....	478
<i>N. Fulcomer, A. Jimenez-Vergara, G. Perry, G. Plascencia-Villa, D. Pinto</i>	
Electrical Stimulation of Human Schwann Cells for Disease Models.....	479
<i>J. Senanayake, H. Sundararaghavan</i>	
Expanding the Application of Drug-Eluting Reservoirs in the Brain	480
<i>C. Moody, P. Durham, P. Dayton, Y. Brudno</i>	
Mechanically-Adaptive, Resveratrol-Loaded Intracortical Microelectrodes for Neural Interfacing.....	481
<i>N. Mueller, Y. Kim, M. Ocoko, A. Hermoso, P. Dernelle, D. Chirra, J. Capadona, A. Hess-Dunning</i>	
Investigating the Potential of Aligned Peripheral Nerve Scaffolds in Vitro	482
<i>M. Lewis, G. David, P. Kuczvara, J.-W. Kim, Y. Song</i>	
Decellularized Porcine Sciatic Nerve Based Hydrogel for Tissue Regeneration: Challenges and Opportunities	483
<i>G. Agarwal, O. Osborne, M. McCrary, J. Santiago, B. Ausec, C. Schmidt</i>	
Sustained Release of Biologically Active Neurotrophin-3 from Hyaluronic Acid Hydrogels.....	484
<i>P. Ferrer, S. Sakiyama-Elbert</i>	
Nanomaterials for Immunotherapy Against Multiple Sclerosis/experimental Autoimmune Encephalomyelitis (EAE).....	485
<i>A. Najafabadi, N. Mohaghegh, A. Khademhosseini, J. Moon</i>	
Characterization of a Low-Cost, Open-Source Nanoprecipitation Method for Fabrication of Polyester Nanoparticles	486
<i>D. Dalal, D. Flores-Prieto, S. Stabenfeldt</i>	
Dose-Dependent Cytotoxicity of IV Chemotherapeutics to Cellular Components of the Blood-Brain-Barrier	487
<i>T. Hoff, K. Mdoe, J. Clegg</i>	
Bioinks Based on Recombinant Collagenoid Protein for 3D Bioprinting	488
<i>Y. Liu, E. Loo</i>	
An On-Demand Photodegradable Recombinant Protein Hydrogel for Injectable Cell Delivery	489
<i>N. Gregorio, C. Deforest</i>	

Bioprinting of a Novel Hydrogel Derived from Hagfish Keratin Proteins	490
<i>B. McFarland, E. Edwards, C. Chen, J. Jones, Y. Huang</i>	
Investigation of Urinary Extracellular Vesicles (uEVs) for ADPKD Therapy	491
<i>Y. Huang, E. Chung</i>	
Natural Killer Cell-Derived Extracellular Vesicles as Potential Anti-Viral Nanomaterials	492
<i>S. Lim, E. Chunga</i>	
Engineering Vascular Smooth Muscle Cell Extracellular Vesicles as Theranostic Agents for Vascular Calcification	493
<i>N. Patel, E. Chung</i>	
Supramolecular Hydrogel Loaded With Small Extracellular Vesicles Derived from Magnesium Ions-Stimulated Bone Marrow Stromal Cells Facilitate Osteochondral Defect Regeneration	494
<i>C. Liang, G. Jiaxin, T. Wenxue, Q. Ling, X. Jiankun</i>	
DNA Tags to Study Red Blood Cells-Derived Extracellular Vesicles Uptake and Biodistribution.....	495
<i>O. Boyadjian, S. Lehoux, M. Tabrizian</i>	
Exosomes as Donor of Sphingosine-1 Phosphate to Promote a Microenvironment for Metastatic Lung Cancer	496
<i>J.-H. Kim, E.-S. Choi, K.-M. Lee, Y. Hwang, E. Kim</i>	
The Neural Regeneration Effect of Matrix Bound Nanovesicles Derived from High Hydrostatic Pressure Decellularized Tissues.....	497
<i>M. Kobayashi, J. Negishi, N. Ishida, Y. Hashimoto, M. Yamamoto, Y. Sasaki, K. Akiyoshi, T. Kimura, A. Kishida</i>	
Chitosan/Polyvinyl Alcohol Methacrylate Hydrogels for Tissue Engineering Scaffolds	498
<i>N. Thai, H. Beaman, M. Perlman, M. Monroe</i>	
On-Demand Activation of Protein Wrinkled Coatings for Biomedical Applications	499
<i>E. Oguntade, H. Zha, J. Henderson</i>	
Sweet Corn Phytoglycogen as a Protein Stabilizing Excipient	500
<i>J. Park, R. Liu, B. Kim, R. Marcio, G. Hudalla</i>	
Tuning the Topography of Dynamic, 3D Scaffolds Through Wrinkled Protein Coatings	501
<i>E. Oguntade, H. Zha, J. Henderson</i>	
Lens Epithelial Cell Response to Polymer Mechanical Properties and Micropatterns.....	502
<i>H. Hamedi, R. Puri, J. Liu, H. Cho, D. Hansford, H. Chandler, K. Swindle-Reilly</i>	
Living Probiotics Biofilm Contact Lenses Coating for Drug-Resistant Bacterial Keratitis Therapy	503
<i>M. Xu, H. Shum</i>	
Bio-Orthogonally Crosslinked, in Situ-Forming Collagen-Hyaluronan Hydrogel Promotes Corneal Stromal Restoration: 2-Month Response in Vivo	504
<i>F. Chen, C. Logan, G. Fernandes-Cunha, P. Le, D. Myung</i>	
Biophysical Comparison of Photocrosslinked Gelatin-Hyaluronate Hydrogels Designed for 3D Bioprinting of Corneal Tissue.....	505
<i>U. Han, D. Myung</i>	

4D Bioprinted Tri-Layer Scaffolds with Biomimetic and Hierarchical Structure for Uterine Tissue Regeneration.....	506
<i>S. Chen, L. Zheng, M. Wang</i>	
In Situ Graphene Oxide Incorporated Glycol Chitosan/oxidized Hyaluronic Acid Injectable Hydrogel for Bone Tissue Regeneration in a Rat Calvarial Bone Defect Model	507
<i>H. Nah, M. Heo, J.-H. Choi, D. Heo</i>	
Extracellular Tumor Microenvironment Influences Glioma Progression After Therapeutic Intervention	508
<i>E. Neves, J. Mueller, A. Anand, K. Selting, B. Harley, S. Pedron-Haba</i>	
Ruthenium-Complex Nanomicelle Sensors for Reporting Oxygen Tension Within the 3D Tumor Model Microenvironment.....	509
<i>K. Schilling, R. Chapla, C. Schutt</i>	
Human Ovarian Cortex Encapsulated in Immune-Isolating Poly(ethylene Glycol)-based Capsules Restores Cyclicity in Ovariectomized Mice	510
<i>M. Brunette, M. Wall, C. Cruz, A. Shikanov</i>	
Development of a Low-Cost 3D Printer for Multiplexing Bioprinting and Near-Field Electrospinning.....	511
<i>A. Salazar, J. Brown</i>	
Formation of Complex Multi-Cellular Structures of MSCs Embedded in Stress Relaxing PEG-HA Hybrid Hydrogels	512
<i>A. Borelli, M. Young, K. Anseth</i>	
Exploring the Effects of Microarchitecture on Astrocyte Behavior and Vascular Remodeling in Spinal Cord Injury	513
<i>D. Gerber, I. Baek, Y. Song</i>	
Collagen I Hydrogel Model to Study the Effects of Diabetes on Calcific Aortic Valve Disease.....	514
<i>J. Simon, M. Donato, S. Dharmarajan, M. Scatena, C. Giachelli</i>	
Investigation of Pore Shape on Cell Infiltration of Soy-Based Resin Via Vat Photopolymerization for Tissue Scaffolds	515
<i>S. Choi, J. Will, K. Feller, C. Williams, A. Whittington</i>	
Synthesis of Norbornene-Modified Hyaluronic Acid Hydrogels Via Water-based DMTMM Coupling	516
<i>E. Plaster, M. Eiken, C. Loebel</i>	
Corticosteroid Eluting Endotracheal Tubes Impact Mechanical Properties in Laryngeal Burn Injury Model	517
<i>G. Gonzales, S. Miar, R. Malka, G. Dion, T. Guda</i>	
In Vivo Efficacy and Biodistribution of Platelet-Like Particles	518
<i>K. Nellenbach, S. Nandi, E. Mihalko, J. Shetty, D. Koch, J. Sollinger, A. Sheridan, L. Lyon, L. Schnabel, T. Barker, A. Brown</i>	
In Vitro and in Vivo Degradation Correlations for Polyurethane Foams with Tunable Degradation Rates.....	519
<i>M. Monroe, A. Vakil, N. Petryk, C. Du, B. Howes, D. Stinfort, S. Serinelli, L. Gitto, M. Ramezani, H. Beaman</i>	

Derivatization of NO-Releasing Graphene Oxide Nanosheets for Antibacterial Biomaterials	520
<i>M. Garren, M. Ashcraft, D. Crowley, H. Handa</i>	
Antimicrobial Efficacy of Nitric Oxide-Releasing Silicone Rubber at Clinical Bacterial Loads	521
<i>L. Bright, A. Mondal, A. Kumar, S. Thompson, E. Brisbois, H. Handa</i>	
Surface Engineering of a Dual-Reactive Oxygen Species Strategy Against Device-Related Infection	522
<i>M. Garren, A. Mondal, M. Ashcraft, R. Pandey, M. Douglass, H. Handa</i>	
Investigation of Calcospherites Fusion by Using Apatite Plate Model.....	523
<i>Y. Jiao, C. Fang, E. Hara, M. Okada, T. Matsumoto</i>	
Wrinkling Patterns on 4D-Printed Substrates and Their Effect on Contact Guidance.....	524
<i>J. Agyapong, B. Van Durme, J. Henderson</i>	
Nanoparticle Polypropylene Mesh Composite Utilizing Calcium Channel Modulation for Post-Surgical Adhesion Prevention: An In-vitro Study	525
<i>J. Chen, J. Li, Y. Zhang, A. Perez, M. King</i>	
Enhancing Switchable Cell Adhesion to PNIPAAm Through Incorporation of Cationic Monomers	526
<i>A. Brady-Mine, R. Toomey, N. Gallant</i>	
Effects of Nanopatterning on the Osteoimmunomodulatory Response of Titanium Implants	527
<i>A. Mesa-Restrepo, V. Posada, A. Snyder, A. Marin, J. Allain</i>	
Highly Porous Gas-Blown Hydrogels for Direct Cell Encapsulation with High Cell Viability	528
<i>M. Monroe, H. Beaman</i>	
Delivery of Hair Follicle Dermal Papilla Cell Spheroids into Hairless Mice Using Microneedles for Alopecia Treatment	529
<i>M. Kang, R. Park, S. Hong, K. Kim, S. Jeong, D.-W. Han</i>	
Effect of Microbeads Composition, Fabrication and Cryopreservation Processes and Cell Preconditioning on Survival and Function of Microencapsulated Cells.....	530
<i>F. Touani, S. Sarkissian, B. Marin, I. Hamouda, S. Lerouge</i>	
Confirming the Extent and Mechanisms of the Immunosuppressive Enhancement of hMSCs Initiated by COL/HEP Layer by Layer Coatings.....	531
<i>J. Putman, K. Nagashima, J. Almodovar</i>	
In-Situ Photocrosslinked PEG Microgels as Delivery Platform for Human Mesenchymal Stem Cells.....	532
<i>S. Ghebrezadik, A. Mora-Boza, A. Garcia</i>	
Use of Oxygen Sensitive Microcapsules to Assess MAA-PEG Induced Vascularization of the Subcutaneous Space	533
<i>K. Ortaleza, M. Sefton</i>	
Targeting Neutrophils for Early Allogeneic Islet Survival in a Methacrylic Acid (MAA)-Induced, Vascularized Subcutaneous Space	534
<i>S.-Y. Won, M. Sefton</i>	
Novel LRP-1 Targeted Exosome-Liposome Hybrid Nanoparticles for Crossing the Blood-brain Barrier.....	535
<i>S. Chakravarty, N. Revi, D. Bijukumar</i>	

Extending the Three-Dimensional Culture of Adipocytes Through Surface Coatings	536
<i>S. Chowdhury, Z. Wallace, M. Moore, C. Cates, G. Bidwell, A. Janorkar</i>	
Design and Development of a Microfluidic Platform for Colorectal Cancer Organoids On-A-chip.....	537
<i>E. Zanrè, S. Micheli, A. Biccari, F. Sensi, E. D'Angelo, M. Agostini, E. Cimetta</i>	
Development of a High-Throughput Bio-printable Organoid System Mimicking Complex Microenvironment.....	538
<i>L. Lin, P. Tebon, B. Wang, A. Soragni</i>	
Self-Organized Insulin-producing Beta Cells Differentiated from Human Omentum-derived Stem Cells.....	539
<i>J. Jeong, K. Park, S. Hur, J. Park, S.-H. Kim, Y. Hwang</i>	
Chemically Defined and Dynamic Gelatin-Based Hydrogel Supports Hair Cell Differentiation in Human Inner Ear Organoids.....	540
<i>M. Jafarkhani, M. Arkenberg, Y. Ueda, C.-C. Lin, E. Hashino</i>	
Incorporating Vasculature into Cortical Organoids Using a 3D Bioprinted Platform	541
<i>M. Cadena, A. Sing, K. Taylor, L. Ning, S. Lanjewar, M. Tomov, S. Sloan, V. Serpooshan</i>	
Cell-Adhesion Peptide Immobilized Nanofibrillar Scaffold for Induced Pluripotency Stem Cell Spheroid Engineering	542
<i>W. Cho, J. Park, J. Park, H. Yoo</i>	
3D Micro Tissue-Microfluidic Platform.for Development of Drug Screening for Treatment Or Prevention of Chronic Kidney Disease.....	544
<i>Y. Hwang, E. Kim, J.-H. Kim, E.-S. Choi, C. Jin, J. Kim, K.-M. Lee</i>	
Tuberculosis Treatment Strategies Through Sustained Local Delivery.....	545
<i>E. Opolot, H. Von Recum</i>	
Bleomycin-Induced Pulmonary Fibrosis Reveals Temporal Drivers of Fibrotic and Remodeling Biophysical States	546
<i>J. Guo, M. Griffin, N. Guardino, D. Abbas, J. Lu, A. Cotterell, J. Parker, D. Wan, M. Longaker</i>	
Engineered 3D Hydrogels to Probe Mechanisms of Matrix Stiffness Within Lung Alveolar Epithelial Organoids.....	547
<i>M. Eiken, J. Spence, C. Loebel</i>	
Mesenchymal Stem Cell Extracellular Matrix Nanoparticles Possess Proliferative and Antibacterial Effects.....	548
<i>E. Wandling, K. Rhoads, K. Moore, R. Heise</i>	
Myofibroblast De-Differentiation and Fibrotic Tissue Reversion in a Synthetic 3D Interstitial Matrix	549
<i>J. Xia, D. Matera, E. Poupard, V. Fiore, B. Baker</i>	
Tunable Polymeric Microparticles for Delivery of Anti-Inflammatory Therapeutics to Macrophages.....	550
<i>E. Grey, S. Alper, W. Janssen, S. Bryant</i>	
Treatment of Acute Pulmonary Inflammation with Engineered Extracellular Vesicles in a Murine Model Changes the Metabolic Profile of the Lungs While Successfully Dampening Inflammation	551
<i>T. Cuellar-Gaviria, A. Salazar-Puerta, M. Rincon-Benavides, J. Aldana, D. Gallego-Perez, N. Higuera-Castro</i>	

Alveolar Macrophages Drive Lung Fibroblast Function in Co-Cultures of IPF and Normal Patient Samples	552
<i>C. Novak, J. Wheat, S. Ghadiali, M. Ballinger</i>	
Matrix Stiffness Alters Microvascular Sprouting in a PEG Hydrogel Model of Idiopathic Pulmonary Fibrosis.....	553
<i>J. Leonard-Duke, A. Bruce, S. Peirce, L. Taite</i>	
Endothelial Cell-Pericyte Interactions in a PEGDA Hydrogel Co-Culture Model of Idiopathic Pulmonary Fibrosis.....	554
<i>T. Tavakol, A. Kittel, J. Leonard-Duke, Y. Yuan, C. Tyson, A. Szyniec, S. Peirce, L. Taite</i>	
Early Development of a Low-Cost Ethyl Cellulose Injector for Cervical Pre-Cancer Ablation	555
<i>D. Garvey, V. Sarojasamhita, J. Mueller, K. Aroom, M. Wang</i>	
Developing a Hyaluronic Acid-Based Hydrogel Platform to Probe Ovarian Follicle-Extracellular Matrix Interactions	556
<i>E. Thomas, Y. Lu, N. Hoffman, A. Shikanov</i>	
EGFR-Targeted Lipid Nanoparticles for Selective mRNA Delivery to the Placenta	557
<i>H. Geisler, A. Ghalsasi, M. Mitchell</i>	
Redox-Initiated Cure Improves Uniformity of Shape Memory Foams for Self-fitting Vaginal Stents	558
<i>A. Hicks, A. Veyssi, C. Roberts, M. Grunlan, J. Hakim, E. Cosgriff-Hernandez</i>	
Translation of a Bioactive Calcium Alkali Orthophosphate (CAOP) Bone Grafting Material from Bench to Bedside & Effect of This Si-CAOP on Craniofacial Bone Regeneration and Angiogenesis in Humans.....	559
<i>C. Knabe, T. Knauf, R. Gildenhaar, G. Berger, J. Günster, J. Wilbig, D. Adel-Khattab, A. Rack, M. Stiller</i>	
Advancing Non-Viral Delivery Vehicle Discovery Via Battelle’s HIT SCANTM Platform.....	560
<i>K. Sims, D. Huk, C. Gupta, M. Riedl, C. Hillrich, E. Schmitz, A. Colbert, Z. Shank, M. Makobongo, A. McCue, J. Hoy, A. Secard, M. Kaufman, A. Rich, A. Matas, C. Snow, A. Duong</i>	
Machine Learning Analysis of Matrix Architecture Following Treatment of Abdominal Adhesions	561
<i>J. Guo, D. Foster, N. Liang, C. Berry, D. Li, M. Januszyk, G. Wernig, J. Norton, M. Longaker</i>	
Lipid Metabolomics for Characterization of Mesenchymal Stromal Cell Fitness on Biomaterial Culture Surfaces	562
<i>M. Ogle, J. Corstvet, D. Vallejo, F. Fernandez, J. Temenoff</i>	
ML-Based Prediction of Hydrogel Gelation Kinetics and Their Mechanical Properties.....	563
<i>G. Pinilla, D. Camasao, C. Schmitt, A. Henni</i>	
Combined Experimental and Machine Learning Approach to Classifying Cardiomyocyte Content and Clustering Structural Maturation of Differentiated Hydrogel-Encapsulated hiPSCs.....	564
<i>M. Hashemi, S. Mohammadi, S. Rajendiran, F. Finklea, S. Cremaschi, E. Lipke</i>	
Spray-Dried Keratin Nanoparticles with Varied Hair Protein Fractions for Drug Delivery Application	565
<i>Y. Wei, M.-C. Huang</i>	
Non-Immunogenic Ligand-targeted PEG-b-PPS Micelles Blocks AKT Pathway in Endothelial Cells.....	566
<i>R. Padaria, N. Revi, F. Du, E. Scott, D. Bijukumar</i>	

Prolonged Release of Insulin for Use in Diabetes Management and Tolerogenic Vaccines.....	567
<i>L. Nguyen, C. Maikawa, E. Appel</i>	
Lipid-Based Nanoparticle Delivery System for Pulmonary Route of Administration.....	568
<i>V. Singh, W. Hao, M. Batista, L. Bhargawa, A. Chernatynskaya, Y. Wang, H. Yang</i>	
Novel Mesh Formulation for Targeted Delivery of Chemotherapeutic Drugs	569
<i>U. Jahan, A. Peace, M. King, A. Hayes</i>	
Nanosilicate Hydrogel Composites for Sustained Therapeutic Delivery.....	570
<i>S. Stealey, A. Gaharwar, S. Zustiak</i>	
Formulation of Lipid/ Polymer Hybrid Nanoparticles in Microfluidics for Plasmid DNA (pDNA) Delivery	571
<i>D. Santhanes, H. Zhang, A. Wilkins, R. Aitken, A. Gannon, M. Liang</i>	
Choline-Decorated Biodegradable Polymeric Nanoparticles for Anti-Cancer Effects	572
<i>N. Park, H. Kang</i>	
EnteroPatho Nanoparticles for the Oral Delivery of Biologics	573
<i>I. Velez, N. Peppas, B. Belardi</i>	
Shear-Induced Embeddable Microneedle Patches for Hair Loss Treatment	574
<i>K.-Y. Seong, M.-J. Kim, H. Lee, S. Kim, S. Lee, H.-S. Kim, B.-S. An, S. Yang</i>	
Gellan Gum and Trilysine Hydrogels with Tunable Mechanical Properties for Drug Delivery	575
<i>C. Villarreal-Otalvaro, J. Coburn</i>	
Analysis of Calcium Sulfate Bone Graft Materials with the Incorporation of Antibiotics and Antifungals	576
<i>J. Strecker, S. Noel, J. Jennings, J. Bumgardner</i>	
Temporally Controlling the Release of Biofactors from Polymeric Microspheres.....	577
<i>S. Kharileh, K. Etienne, S. Popuri, L. Fitzgerald, B. Taylor</i>	
Antiviral Delivery from Endotracheal Tube Coating Temporally Modulates Airway Inflammation in Swine	578
<i>G. Gonzales, S. Miar, R. Malka, G. Dion, T. Guda</i>	
Carrier-Free Self-assembled Palmitic-DEVD-doxorubicin Nanoparticles for Anticancer Therapy	579
<i>S.-B. Yang, D.-N. Lee, J. Park</i>	
Characterizations of PLA-PMAA/PBA Block Copolymer Forming Micelles for Ophthalmic Drug Delivery Applications.....	580
<i>L. Liu, T. Rambarran, H. Sheardown</i>	
Evaluation of Transfection Efficacy, Biodistribution, and Toxicity of Branched Amphiphilic Peptide Capsules (BAPCs) Associated with mRNA	581
<i>A. Flores, N. Kunte, M. Westerflied, E. McGraw</i>	
Evaluation of the Performance of Breast Cancer-Targeted Nanocarriers Triggered by High- Frequency Ultrasound and Microbubbles.....	582
<i>G. Husseini, W. Abuwatfa, S. Anjum</i>	
The Effect of Lipid Composition on Low-Frequency Ultrasound Calcein Release from Trastuzumab Liposomes for Breast Cancer Treatment.....	583
<i>G. Husseini, N. Al Sawafah, N. Awad, V. Paul</i>	

Ultrasound-Mediated Release of Curcumin from Nanoliposomes and Cytotoxicity Studies on the Breast Cancer Cell Line HCC 1954	584
<i>G. Husseini, R. Radha, V. Paul</i>	
Modeling of the in Vitro Release Kinetics of Sonosensitive Targeted Liposomes	586
<i>Z. Almajed, N. Salkho, H. Sulieman, G. Husseini</i>	
Application of Random Forest Regressor for the Prediction of Estrone – Liposomal Drug Release at Different Ultrasound Power Densities	588
<i>I. Shomope, N. Jabbar, G. Husseini</i>	
Release of Calcein from eLiposomes Via Acoustic Stimulation: A Study for Enhancing Sonosensitivity of Liposomes.....	589
<i>M. Zafar, G. Husseini</i>	
Varying Formulation Methods to Achieve Desired Diameter of Poly (caprolactone) Particles to Treat Disease.	591
<i>C. Rowlands, A. Manning, H. Saindon, B. Givens</i>	
Intratumoral Injection of a Novel Hydrogel Drug Delivery System Achieves 10 Millimeters of Drug Diffusion in the Brain Tumor Microenvironment	592
<i>A. Jones, J. Patel, E. Barker</i>	
Local Drug Delivery of Doxorubicin Achieves Complete Response in a Preclinical Pediatric Brain Tumor Model.....	593
<i>J. Patel, A. Jones, E. Barker</i>	
Histomorphometric Analysis of Rat Femur Refractory Defect Repair by an Octacalcium Phosphate Composite.....	594
<i>O. Suzuki, Y. Mori, R. Hamai, R. Kanabuchi, S. Hamada, Y. Shiwaku, N. Miyatake, K. Baba, I. Oizumi, K. Tsuchiya, T. Aizawa</i>	
Cell-Resorbable Bone Cements for Orthopedic Implant Fixation.....	595
<i>R. Dos Santos, A. Ahmed, B. Hunn, J. Martin</i>	
A Corrosion Study of WE43 and ZX10 Alloy Wires for Multiple Biomedical Applications	596
<i>B. Ulugun, A. Robinson, S. Abduljabbar, R. Guilbault, A. Griebel, G. Osgood, W. Greyson, T. Weihs</i>	
Long Term Effects of Storage Condition and Antioxidants on Oxidative Behavior of Free Radicals in UHMWPE	597
<i>A. Sharmin, B. Walters, J. Shah</i>	
A Study on the Biomechanical Effect of the Vertebral Body According to the Lumbar L4-L5 Disc Height Under the Same Load Condition	598
<i>S. Kang, D. Kim, J.-G. Jeong, J.-M. Hwang, S.-Y. Song, D.-H. Kim</i>	
In Vitro Osteogenic Performance of Two Novel Strontium and Zinc-Containing Glass Polyalkenoate Cements	599
<i>D. Marx, A. Yazdi, M. Papini, M. Towler</i>	
Bioprinted Fibroblasts Show Some Hallmarks of Pluripotency by Immunofluorescence and RNA Seq Analysis	600
<i>T. Boland, P. Morales, K. Molina, M. Furth, J. Mohl</i>	

Physicochemical Surface-Driven Ceiling Culture Method for Improving Dedifferentiated Fat Cell Rate.....	601
<i>A. Karanfil, F. Louis, Y. Sowa, M. Matsusaki</i>	
Brain Microvascular Endothelial Cells Exhibit Altered Claudin-5 Expression Following Inflammatory Assault	602
<i>K. Ebbert, R. Chen, R. Culibrk, D. Yeisley, M. Hahn</i>	
The Effect of Substrate on the Mechanical State of the Cell	603
<i>E. Byers, J. Brown</i>	
Engineered Bone for Preclinical Modeling of Prostate Cancer Metastatic Tumor	604
<i>S. Barrios, S. Maksimovic, A. Mikos, E. Dondossola</i>	
Effects of Matrix Composition and Stiffness on Astrocyte Cell Response in Xeno-Free Biomimetic Brain ECM Models.....	605
<i>B. Saleh, A. Pourmostafa, N. Patrawalla, V. Kishore</i>	
Gelatin as a Sacrificial Network to Enable Multi-Material Volumetric Additive Manufacturing of Hydrogels	606
<i>M. Riffe, A. Dhand, M. Davidson, G. Seymour, R. McLeod, J. Burdick</i>	
Photo-Responsive Synthetic Hydrogels for the Culture of Murine Intestinal Stem Cell Derived Monolayers.....	607
<i>M. Young, C. Oroke, A. Borelli, F. Yavitt, P. Dempsey, K. Anseth</i>	
Epicardial-Coated Cardiac Tissue Engineered Constructs for Modelling of Ischemia Reperfusion Injury	608
<i>A. Bannerman, S. Pascual-Gil, Q. Wu, K. Wagner, S. Okhovatian, M. Radisic</i>	
Computational Pipeline for the Design of Multi-Organ Type 2 Diabetes Microphysiological System.....	609
<i>I. Goswami, L. Qi, M. Groeger, A. Sharma, P. Carnese, V. Cochrane, S. Ashe, M. Hebrok, E. Hsiao, H. Willenbring, A. Stahl, K. Healy</i>	
Engineering a Biomaterial-Based in Vitro Skeletal Muscle Tissue Platform	610
<i>E. Aikman, A. Rao, E. Fussell, V. Mejia, W. Stoppel</i>	
Investigation of Non-Ionic Surfactant Effects on Aligned Fiber Morphology and Macroscopic Scaffold Properties	611
<i>K. Meinhold, T. Tankersley, J. Robinson</i>	
HABP Functionalized Electrospun PCL Fibers as a Candidate for Building an Artificial Synovial Membrane.....	612
<i>H. Mirazi, T. Ozdemir, S. Wood</i>	
ECM-Mimetic Synthetic Fibrillar Hydrogel with Macroscopic Stability and Microscopic Dynamics Enhances Cell Mechanosensing in 3D	613
<i>X. Xie, Z. Li, L. Duan, L. Bian</i>	
The Impact of the Microenvironment on Cardiac Differentiation of Human Induced Pluripotent Stem Cells.....	614
<i>K. Ali, C. Watts, L. Payne, J. Gluck</i>	
Zinc Particles Embedded Electrospun Fiber Mesh for Controlled Release Study and Wound Healing Application.....	615
<i>F. Tettey, S. Sheikh, S. Desai, N. Bhattarai</i>	

Spatially Controlling Mineralization Via Photoconjugation of Calcium-Binding Peptides on Norbornene-Modified Cellulose.....	616
<i>S. Suvarnapathaki, J. Holloway</i>	
Electrospun Fibrous Mesh of Poliglecaprone Blended Polycaprolactone for Biomedical Application.....	617
<i>F. Tettey, J. Siler-Dearring, A. Moody, N. Bhattarai</i>	
Iron-Chelated Silk Microfibers as a Novel Magneto-Responsive Scaffold Architecture	618
<i>M. Wojnowski, J. Coburn</i>	
Effect of Collector Polarity on Electrospun Polycaprolactone	619
<i>F. Chaparro, M. Cudworth</i>	
Fabrication and Analysis of the Mechanical Properties of Polycaprolactone-Zinc Nanofibers for Biomedical Applications	620
<i>M. Long, F. Tettey, N. Bhattarai</i>	
Tailored Nanofiber Microspheres with Tunable Morphology for Accelerated Diabetic Wound Healing	621
<i>J. John, A. Hkademhosseini, J. Xie</i>	
Combinatorial Microgel Scaffolds with Distinct ECM Protein and Stiffness Modulate Hepatic Stellate Cell Activation.....	622
<i>H. Ryoo, G. Underhill</i>	
Spatially-Defined Cell-Secreted Protein Detection Using Granular Hydrogels: iGeLISA	623
<i>H. Ryoo, G. Underhill</i>	
Surface Functionalization of Microgel Building Blocks in Granular Hydrogel to Direct Stem Cell Fate	624
<i>J. Lou, C. Meyer, D. Mooney</i>	
Gelatin Maleimide Granular Hydrogels as a Model to Study Glioblastoma	625
<i>B. Payan, G. Thompson, B. Harley</i>	
A Hierarchically Porous, Fiber-Enhanced Microparticle Scaffold for in Vitro Vascularization	626
<i>J. Whitewolf, G. Grewal, N. Brooks, C. Highley</i>	
Extrusion Bioprinting of Nanoengineered Granular Hydrogel Scaffolds with Preserved Microporosity	627
<i>A. Sheikhi, Z. Ataie, S. Kheirabadi, J. Zhang, A. Kedzierski, C. Petrosky, R. Jiang, C. Vollberg</i>	
Granular Hydrogels with Inter-Particle Crosslinking as Injectable and Printable Biomaterials.....	628
<i>R. Davis, H. Lee, K. Deo, S. Rajput, A. Gaharwar</i>	
Measurement of Cell-Mediated Extracellular Matrix Remodeling in a Granular Hydrogel Scaffold.....	629
<i>G. Thompson, K. Kamani, A. Nunes, V. Lam, S. Nelson, A. Mora-Boza, A. Garcia, S. Rogers, B. Harley</i>	
Molecular Weight of Hyaluronic Acid Crosslinked into Biomaterial Scaffolds Affects Angiogenic Potential.....	630
<i>J. Karam, B. Singer, H. Miwa, L. Chen, M. Hasani, H.-C. Yeh, S. Li, D. Di Carlo, S. Seidlits</i>	
Role of Degree of Crystallinity of Biomaterials on Modulation of Immune Responses	631
<i>A. Esrafil, G. Nile, A. Thumsi, A. Suresh, M. Jaggarapu, N. Appel, K. Jin, A. Acharya</i>	

In Situ PEGylation of CAR T Cells Alleviates Cytokine Release Syndrome and Neurotoxicity.....	632
<i>N. Gong, X. Han, L. Xue, R. El-Mayta, A. Metzloff, M. Billingsley, A. Hamilton, M. Mitchell</i>	
Oxidized Lipid Nanoparticles for in Situ CAR Monocyte Engineering.....	633
<i>A. Mukalel, M. Billingsley, J. Li, A. Thatte, M. Mitchell</i>	
Acute Inflammatory Subcutaneous Model Facilitates Ectopic Gene Immuno-Engineering In-Situ.....	634
<i>A. Panic, D. Gallego-Perez</i>	
Using Artificial Antigen-Presenting Cells to Generate Cytotoxic CD4+ T Cells in Vitro.....	635
<i>G. Aihara, A. Isser, J. Choy M. Lanis, J. Schneck</i>	
Induction of Antigenic Tolerance for Applications in Multiple Sclerosis.....	636
<i>R. Stiepel, S. Simpson, D. Middleton, N. Lukesh, L. Ontiveros-Padilla, D. Hendy, E. Pena, C. Genito, E. Bachelder, K. Ainslie</i>	
Raising Mucosal and Systemic Immune Responses Against Complement Anaphylatoxins for Inflammatory Disease.....	637
<i>H. Haddad, K. Hainline, E. Curvino, J. Collier</i>	
Immunomodulatory Lipid-Based Nanoparticles for Controlling and Treating Obesity.....	638
<i>A. Najafabadi, N. Mohaghegh, D. Khorsandi, F. Zehabi, H. Mouri, A. Ahari, A. Khademhosseini</i>	
Re-Engineering REGvac for Rheumatoid Arthritis Immunotherapy.....	639
<i>A. Tu, R. Allen, S. Raychaudhuri, J. Lewis</i>	
A Mucoadhesive, Paracellular Transport-Enhancing Conjugate Vaccine for Respiratory Infections.....	640
<i>J. Zhou, D. Wilson</i>	
Macrophage Immunotherapy with Nanogel-Cytokine Bioconjugates.....	641
<i>R. Ajeeb, D. Radya, J. Clegg</i>	
Sustained Release of Macrophage-Targeted Nanoparticles Enables Long-term Control of Macrophage Phenotype.....	642
<i>S. Soni, A. D'Elia, S. Cho, C. Rodell</i>	
Immune-Responsive Biodegradable Scaffolds for Enhancing Neutrophil Regeneration.....	643
<i>M. Kerr, N. Shah</i>	
Sialic Acid-Blocking Nanoparticles Modulate Inflammation.....	644
<i>L. Raberg, G. Erensoy, A. Stubelius</i>	
Modulating Macrophage Polarization Using Surface Roughness of Electrospun Fibrous Mesh.....	645
<i>A. Alemifar, S. Hurt, J. Robinson</i>	
Influence of Biotin-Avidin-Modified Biomaterials on Macrophage Phenotype.....	646
<i>V. Nash, J. Eager, E. O'Brien, K. Spiller</i>	
Biofunctional Biomaterial Design to Reduce Macrophage Activation for Chronic Wound Healing.....	647
<i>A. Jha, J. Larkin, E. Moore</i>	
Dexamethasone-Decorated Poly(ϵ -caprolactone) Nanoparticles for Anti-Inflammatory Effects.....	648
<i>J. Hyun, H. Cho, H. Kang</i>	

Physico-Chemical Characterization of an Immunomodulatory Bacterial Exopolysaccharide Polyelectrolyte Coating	649
<i>R. Bagnol, L. O'Mahony, V. Barnier, D. Eglin, T. Moriarty</i>	
Bispecific Antibody-Nanoparticle Conjugate for Receptor Crosslinking of Lymph Node T Cells	650
<i>A. Heiler, S. Thomas</i>	
Low-Swelling, Amphiphilic Hydrogels for Local Anti-Inflammatory Drug Delivery	651
<i>S. Linderman, D. Refai, A. Klein, A. Garcia</i>	
Augmentation of Oral Immunotherapy with Tolerance-Induce Nanoparticles.....	652
<i>R. Harriman, A. Tu, N. Radoc, H. Kakwere, J. Lewis</i>	
Combining Adjuvants and Biomaterials Appropriately Enhances Stimulation of Aged Dendritic Cells.....	653
<i>A. Ananya, K. Holden, Z. Gu, D. Nettleton, S. Mallapragada, M. Wannemuehler, M. Kohut, B. Narasimhan</i>	
Co-Assembling Peptide Hydrogels for Protein Localization: Humoral Immune Response	654
<i>L. Melgar, B. Soto-Morales, G. Hudalla</i>	
A Polymeric-Fentanyl Conjugate Vaccine.....	655
<i>S. Kumar, D. Wilson</i>	
Optimizing a Nanogel-Interferon Gamma Conjugate for Targeted Delivery to Macrophages.....	656
<i>D. Radyna, R. Ajeeb, J. Clegg</i>	
Affinity-Based Molecules for Immunomodulatory Regulation.....	657
<i>M. Benz, J. Dorogin, M. Martin, M. Hettiaratchi</i>	
Membrane-Coated Nanoparticles for Recognition by T Cells.....	658
<i>E. Bealer, F. Li, F. Li, R. Urie, E. Saito, A. Turan, E. Volcu, H. Shirwan, L. Shea</i>	
The Role of Prostaglandin E2 Receptor Subtypes EP2 and EP4 in the Foreign Body Response to Biomaterials.....	659
<i>B. Thompson, E. Carillion, S. Bryant</i>	
A Molecular Level Analysis of Lipid-Composition Dependent NLRP3 Inflammasome Activation by mRNA-Lipid Nanoparticles	660
<i>J. Forster III, D. Nandi, A. Kulkarni</i>	
Magnetically-Controlled Alternating Presentation of Activation Signals Enhances CD8+ T Cell Activation Capacity	661
<i>X. Wang, Z. Gao, S. Wong, L. Bian</i>	
Fibrin-Laden Tumor Stroma as an Immunosuppressive Factor in Pancreatic Ductal Adenocarcinoma.....	662
<i>M. Karim, M. Hassan, R. Wahab, J. Hooper, F. Bisheshari, T. Al-Hilal</i>	
Manufacturing Dual Drugs Loading Liposomes Stimulated by Physical Activation	663
<i>S. Lee, H. Cho, H. Kim, S. Lee, H.-R. Kim, K.-H. Park</i>	
Characterizing the Effects of Polymer and Surfactant Concentration on Nanoparticle Size.....	664
<i>R. Jones, W. Johnson, N. Shah</i>	
Nanomaterials SIG	665
<i>H. Cho, S. Lee, H. Kim, S. Lee, H.-R. Kim, K.-H. Park</i>	

An Evaluation of DNA Replication Dynamics in Macrophages Induced by Functionalized Graphene Nanoparticles	666
<i>O. Oladejo, J. Bradley, S. Patel, S. Chakravarty</i>	
Synthesis and Characterization of Dendrimer-Based Nanogel with ROS-Scavenging Activity	667
<i>L. Qi, D. Huang, A. Chernatynskaya, J. Wu, N. Ercal, H. Yang</i>	
Molecular Biosensing in the Long-Wavelength Infrared with ZnO Nanoparticles	668
<i>L. Li, I. Khan, M. Palei, J. Jacobe, T. McGinnity, A. Hoffman, R. Roeder</i>	
Exploring the Role of Antioxidants to Mitigate Implant Corrosion and Consequences.....	669
<i>S. Kamaraj, H. Kanniyappan, A. Thayer, Y. Sun, E. Oral, M. Barba, M. Mathew</i>	
Possible Risks of Hepatotoxicity Associated with Implant -An Invitro and in Vivo Study.....	670
<i>S. Thakur, H. Kanniyappan, P. Gupta, R. Hillwig, V. Bodke, S. Khetani, M. Mathew</i>	
Zn-Doped Titania Nanotube Arrays with Improved Antibacterial Activity and Cell Viability.....	671
<i>A. Bhattacharjee, E. Goodall, K. Popat</i>	
Antibacterial Activity on Copper Doped Titania Nanotube Arrays	672
<i>A. Savargaonkar, A. Bhattacharjee, K. Popat</i>	
Effects of Bioactive Glass Induced Hydroxyapatite-Like Layer on Bacterial Adherence and Viability	673
<i>K. Hageman, R. Blatt, R. Brow, T. McIff</i>	
Esting of Different Hydroxyapatite Particles in Cell Culture	674
<i>S. Maldonado, G. Figueroa, D. Gonzales, D. Margolis</i>	
MMP-Responsive, Heparin-Containing Hydrogel Particles for TSG-6 Delivery to Rotator Cuff Muscle	675
<i>J. Pearson, L. Wilch, J. Temenoff</i>	
Are sGAGs Transferred onto the Surface of Hemiarthroplasty Implants While Rubbing Against Cartilage?.....	676
<i>A. Impergre, M. Wimmer</i>	
Biomolecule Delivery to Synergistically Mobilize and Locally Recruit Bone Marrow Cells Enhances Early Muscle Regeneration Following Rotator Cuff Tear.....	677
<i>L. Anderson, L. Tellier, K. Shah, J. Pearson, E. Botchwey, J. Temenoff</i>	
Dynamization Increases Bone Stiffness in Regenerated Bone with Polymer Scaffolds.....	678
<i>G. Figueroa, D. Gonzales, E. Smith, J. Szivek, D. Margolis</i>	
Cathodic Activation and Inflammatory Species Alter the Corrosion Resistance of Ti-6Al-4V Oxide	679
<i>M. Kintz, A. Wessinger, L. Taylor, J. Gilbert</i>	
Synergistic Effects of Endocannabinoid Nanoparticles and Local Anesthetics to Reduce Periarticular Inflammation and Pain in a Rodent Osteoarthritic Model	680
<i>D. Kishnan, C.-H. Liu, M.-P. Nieh, J. Walker, L. Nair</i>	
Ti-6Al-4V Selective Dissolution is Identifiable Using Nearfield Electrochemical Impedance Spectroscopy	681
<i>M. Kurtz, D. Liu, J. Gilbert</i>	
Surface and Antimicrobial Characterization of Silorane-Based Bone Cement	682
<i>A. Varner, K. Hageman, G. Funk, E. Menuey, K. Kilway, T. McIff</i>	

Injectable, Cellulose Reinforced Osteoinductive Chitosan Hydrogels for Vertebral Compression Fractures	683
<i>A. Hemmerla, B. Ulery</i>	
Compressive Properties of Ceramic Fisher-Koch-S Scaffolds for Bone Regeneration`	684
<i>C. Bailey, I. Kaze, E. Gunn, V. Riegle, D. Prawel</i>	
Processing of Fe35Mn Alloy Using ECAP for Biomedical Applications – in Vitro Studies.....	685
<i>A. Claro, K. Maia, F. Maia, J. Oliveira</i>	
AFM Based Nanoscale Tribocorrosion on Single Region of CoCrMo Alloy.....	686
<i>H. Lee, J. Gilbert</i>	
Design and Characterization of a Functional Ti-PVA/PAAm-PVA Artificial Intervertebral Disc	687
<i>X. Du, H. Ansari-pour, Y. Zhou, L. Kolle, R. Leon, C. Persson, S. Ferguson</i>	
A Procedure for Establishing Bone Materials Properties Using the Cutting Mechanics.....	688
<i>D. Kim, S. Kang</i>	
Magnesium Phosphate Modified with 2-Hydroxyethyl Methacrylate as a Novel Representative of Dual-Setting Composite Bone Cements	689
<i>M. Wekwejt, M. Khamenka, J. Kozłowska, A. Ronowska, U. Gbureck</i>	
Mineralized Collagen-Chitosan Scaffolds Promote Osteogenic Potential of Rat Mesenchymal Stem Cells.....	690
<i>S. Stangeland-Molo, K. Benedict, C. Gamble, J. Cole</i>	
Development and Characterization of a Novel Biocompatible and Injectable Composite with Potential for Applications as the Bone-To-Implant Bonding Material	691
<i>M. Bartmanski, M. Rosciszewska, M. Wekwejt, A. Ronowska, A. Mielewczyk-Gryn, M. Nadolska-Dawidowska, N. Moritz</i>	
Quantifying Fatigue Fracture Surfaces for UHMWPE Composites.....	692
<i>A. Chase, P. Solberg, R. Thomson, D. Van Citters</i>	
Cellular Traction Force-Mediated Delivery of Biologics Modulates Angiogenesis in Vitro and in Vivo During Tissue Repair	693
<i>B. Almquist, M. Ho, N. Jorge, C. Basu</i>	
Synthetic Scaffolds as Matrices for 3D Induced Pluripotent Stem Cell Culture	694
<i>L. Arrieta-Viana, M. Torres-Lago</i>	
Tumor-Targeting Prooxidant Prodrug Nanoparticles as Immunogenic Cell Death-inducing Anticancer Nanomedicine	695
<i>N. Song, S. Jeong, H. Jo, M. Yang, D. Lee</i>	
Tin Silver Alloy as a Metallic Biomaterial: Impedance Behavior in Physiological Solutions	696
<i>C. Goodwin, J. Gilbert</i>	
Enzyme Responsive Polymersomes as a Pathology-Driven Treatment for Neurologic Lysosomal Storage Disease	697
<i>D. Foster, A. Cakely, J. Larsen</i>	
Thermally Responsive Hydrogels for In-Situ Application Post-Brain Tumor Resection	698
<i>M. Garifo, J. Larsen</i>	

Engineering of Degradable Linkers to Improve Oxidative Sensitivity of Thioketal-Based Biomaterials.....	699
<i>K. Bruce, D. Marques, A. Fullenkamp, J. Martin</i>	
Creation of Dual-Stage, ROS-responsive Microparticles for Drug Delivery to Critically-Sized Bone Defects.....	700
<i>D. Marques, A. Fullenkamp, J. Martin</i>	
Bioprinted Hybrid PCL/PVDF/DBM Piezoelectric Scaffolds for Bone Tissue Engineering Applications.....	701
<i>D. Dixon, E. Landree, C. Gomillion</i>	
In Vitro Release Kinetics of Bupivacaine and Trans-2-decenoic Acid from Electrospun Chitosan Membranes with Direct Acylation of 2-decenoic Acid	702
<i>E. Abuhussein, J. Tate, B. Ballard, T. Fujiwara, D. Baker, J. Bumgardner, J. Jennings</i>	
Stimuli-Responsive Cyanobacteria Biocomposite Hydrogels with Complex Phenotypes for Bioremediation	703
<i>D. Datta, E. Weiss, J. Golden, S. Golden, J. Pokorski</i>	
Dual Drug Delivery Via Multiscale Structures Fabricated on Open-Cell Porous 3D Printed Neovius Scaffold for Osteosarcoma Management.....	704
<i>S. Singh, R. Roy, P. Vashisth, D. Kalyanasundaram</i>	
Multi-Functional Bioinspired Coating for Enhanced Self-lubrication and Bacterial Resistance	705
<i>D. Suo</i>	
Vertically-Aligned Dipeptide Nanotube Arrays as a Substrate for Neural Cell Differentiation	706
<i>J. Pagliuca, A. Da Silva, M. Vasudev</i>	
Monodisperse Elastomeric Particle Jamming for Use in Self-Healing Biomaterials	707
<i>J. Kieda, K. Ramsay, R. Jiang, M. Radisic</i>	
Synthesis of Photo-Crosslinkable Hyaluronan Based Nanofibrous Structure for Enhancing Mechanical Property of Cells-Nanofibrils Complex	708
<i>H.-T. Bui, W. Lee, W. Cho, L. Pham, H. Yoo</i>	
Cell-Specific Impacts of Surface Coating Composition on Extracellular Vesicle Secretion	709
<i>Y. Liu, C. Holmes</i>	
Studying Interactions Between PEI-DNA Polyplexes and Polymer Surface Coatings for Localized Transfection.....	710
<i>S. Joshi, S. Hall, C. Holmes</i>	
Janus-Type Dressings for Effective Delivery of Antimicrobial Peptide/Agents to Treat Wound Biofilms.....	711
<i>J. Xie, Y. Su, G. Wang</i>	
Biofilm Elimination Using Self-Loomotive, Antimicrobial Microrobots (SLAM).....	712
<i>J. Lee, Y.-H. Deng, H. Kong</i>	
Poly(arginine) and Hyaluronic Acid Multimodal Coating of Hernia Meshes with Antimicrobial Properties.....	713
<i>C. Calligaro, M. Daoudi, M. Tagzirt, N. Vrana</i>	
A Predictive Chemoinformatic Model for Discovering New Persister Control Agents	714
<i>S. Roy, Z. Cakmak, D. Ren</i>	

Chitosan-Based Formulations for Controlling the Hospital-Acquired Infections in a Public Setting	715
<i>S. Sawant, M. Bredikhin, A. Vertegel</i>	
Antibacterial Treatments on the Surface of Novel Beta Metastable Titanium Alloys	716
<i>F. Quadros, G. Almeida, P. Kuroda, W. Zambuzzi, C. Grandini</i>	
Incorporation of Silver Salts Within a Transcutaneous Biosensor for Infection Control.....	717
<i>J. McCannless, J. Jennings, B. Feldman</i>	
Nitric Oxide and Bacteriophages as Combined Antibacterial Agents to Counter Drug-Resistant Infections.....	718
<i>S. Wilson, V. Gondil, E. Brisbois, H. Handa</i>	
Preclinical Performance Testing of Medical Devices with Antimicrobial Effects.....	719
<i>J. Chediak, H. Wang, K. Phillips, P. Belmont, D. Saylor</i>	
Novel Diagnostic Tool for Battling Breast Cancer: Urine-Based Biosensor (iBiosensC) with Artificial Intelligence Model	720
<i>S. Prithweeraj, H. Kanniyappan, M. Mathew</i>	
3D in Vitro Model of Osteosarcoma.....	721
<i>R. Rao, B. Villa-Martin, S. Heilshorn</i>	
Investigating Ovarian Cancer Spheroids as Improved in Vitro Models of Inherent Chemoresistance.....	722
<i>A. Murray, K. Alatise, A. Alexander-Bryant</i>	
A Modular Gelatin-Based Bioink for Modeling Soft Tissue Sarcoma	723
<i>E. Dogan, C. Galifi, R. Shukla, S. Kuchibhotla, T. Wood, A. Miri</i>	
Cancer Cell Character Alteration Cultured in a Novel Collagen Microfiber with High Dispersibility Could Be Retained After the Removal of Scaffold.....	724
<i>A. Kato, S. Kitano, M. Matsusaki</i>	
3D Printable Phantom for Mimicking Electrical Properties of Dermal Tissue.....	725
<i>B. Kuzemchak, R. Choe, M. Sherry, E. Porter, J. Fisher</i>	
Evaluating the Effect of Radiation on Vessel Formation in an In-Vitro Vascularized Glioblastoma Model	726
<i>Y. Ivanova, M. Ngo, K. Selting, B. Harley</i>	
3D in Vitro Bone-Mimetic Testbed for Screening Phenolic Compounds Against Bone Metastatic Breast Cancer	727
<i>P. Ravi, H. Jasuja, D. Sarkar, D. Katti, K. Shetty, K. Katti</i>	
Validating Three-Dimensional Hydrogel Models of Glioblastoma for Discovery of Novel Therapeutics	728
<i>V. Kriuchkovskaia, B. Harley, R. Riggins</i>	
Biomaterial Optimization for Cell Separation in Wicking Fiber Bundles	729
<i>C. Long, W. Chen, K. Collins, T. Burg, K. Burg</i>	
Development of a Biocompatible UV-Curing Polymer and 3D Microfluidic Electroporators.....	730
<i>G. Zhang, S. Tong</i>	
Laser Fabricated Barbed Suture for Wound Closures During Plastic Surgery	731
<i>K. Gowri, R. Narayan, G. Ruff, M. King</i>	

Characterization and Comparison of Dipropylhexanediamine Incorporated Nitric Oxide Releasing Medical Grade Polymers with Varying Water Uptakes	732
<i>P. Maffe, M. Garren, M. Chug, L. Bright, E. Brisbois, H. Handa</i>	
Designing Wearable Nitric Oxide Releasing Catheter Insert Via Covalently Immobilized S-Nitroso-Nacetylpenicillamine (SNAP) for Preventing Bacterial Infection.....	733
<i>M. Chug, A. Sapkota, M. Garren, H. Handa, E. Brisbois</i>	
Inclusion Complexation of S-Nitrosoglutathione for Sustained Nitric Oxide Release from Catheters: A Strategy to Prevent and Treat Device-associated Infections	734
<i>X. Wang, W. Li, D. Wang, K. Lao</i>	
Nanocellulose Based Foams for Low-Cost Disposable Medical Applications.....	735
<i>D. Kugell, A. Co, S. Sheehan, S. Johndro, M. Mason</i>	
Hydrophobic Interaction Chromatography of Hair Protein Biomaterials.....	736
<i>M. Forst, R. Guzman</i>	
Comparative Degradation Profiles of Glycoprene® 935 and Vicryl® Warp Knit Mesh.....	737
<i>K. Acampora, J. Boyon, S. Nuckles, M. Taylor, S. McCullen</i>	
Resorbable Dental Membranes with Improved Chair-Side Handling Properties	738
<i>J.-F. Zhang, D. Koo, S. Jones, M. Dadsetan, T. Kuntz</i>	
Bioactive Bioresorbable Implant for Tibial Tuberosity Advancement in Dogs: Preliminary Results of a Clinical Trial.....	739
<i>J. Kulkova, G. Arthurs, N. Moritz</i>	
Micropatterned hiPSC-CMs for Disease Modeling of Hypertrophic Cardiomyopathies	740
<i>H. Yang, D. Strimaityte, N. Rogozinski, I. Murugesan</i>	
Conductive Scaffolds to Mature Induced Pluripotent Stem Cell-Derived Cardiomyocytes.....	741
<i>S. Cook, J. Twiddy, M. Daniele, J. Gluck</i>	
Development of Functional Cardiac Organoids in a Synthetic Hydrogel System.....	742
<i>Y. Song, Z. Ma</i>	
Oxygen-Generating Microparticles Increase Cardiac Contractility, Downregulate HIF-1 α Expression, and Mitigate Ischemic Injury	743
<i>K. Mandal, S. Sangabathuni, R. Haghniaz, M. Mecwan, W. Huang, S. Kawakita, V. Jacaud, M. Dokmeci, A. Khademhosseini</i>	
Blue-Light Mediated Photobiomodulation Induces Enhanced Osteogenesis in Saos-2 Cells	744
<i>M. Albaqami, A. Pourmostafa, M. Ahmad, V. Kishore</i>	
Micromagnetic Hydrogels to Generate Dynamic and Reversible Tissue Folding Patterns in Vitro	745
<i>A. Roy, Z. Zhang, A. Shi, A. Pena-Francesch, C. Loebel</i>	
Using Magnetic Fields to Control Fiber Alignment Within Static and Dynamic Hydrogels.....	746
<i>G. Schwarz, G. Jensen, J. Holloway</i>	
A Metabolic Labeling Approach for Developing Enhanced Tumor Exosome Vaccines	747
<i>R. Bhatta, D. Lee, J. Han, Y. Liu, Y. Bo, H. Wang</i>	
Cancer Immunotherapy by in Vivo Delivery of Cas9 Conjugate Nanocomplex.....	748
<i>J. Lee, Y. Kang, E. Oh, J. Jeong, K. Jung, H. Chung</i>	

Poly I:C Lipid Nanoparticles for Anti-Tumour Efficacy in Head and Neck Cancer	749
<i>V. Singh, L. Bhargava, T. Cole, A. Chernatynskaya, H. Yang</i>	
Biomaterial Niches for Modulating Anti-Tumor CD8+ T Cell Metabolism.....	750
<i>J. Choy, Y. Zhang, N. Livingston, C. Qiu, J. Schneck, H.-Q. Mao</i>	
Nanoparticle-Based Chimeric Antigen Receptor T Cell Therapy.....	751
<i>T.-Y. Shih, K. Cortes, Y. Gu, S. Adams, E. Bressler, W. Wong, M. Grinstaff</i>	
Tumor-Localizing Nanoparticles for Delivery of Immunomodulatory Protein Drugs	752
<i>Y. Gu, T.-Y. Shih, W. Wong, M. Grinstaff</i>	
Degradable Microscaffold Removal for Improving Therapeutic T Cell Quality.....	753
<i>M. Ochoa, N. Dwarshuis, K. Roy</i>	
Engineering PBAE Nanoparticles for Delivery of Immunological Signals into Meningioma Cancer Cells`	754
<i>J. Yang, J. Green</i>	
A Facile Metabolic Labeling Approach for Developing Enhanced Dendritic Cell Vaccines.....	755
<i>J. Han, R. Bhatta, H. Wang</i>	
A Natural Biomaterial Scaffold for Heart Valve Tissue Engineering	756
<i>J. Perez, F. Almeida-Gonzalez, J. O'Brien, C. Brougham</i>	
3D Printed Vascular Grafts with Ionic Dissolution Product Delivery and Heparin Release for Rapid Endothelialization.....	757
<i>S. Chen, L. Zheng, M. Wang</i>	
Engineered Antithrombogenic Completely Biological Small-Diameter Acellular Vascular Grafts	758
<i>W. He, Y. Tseng, E. Wang, R. Bischof, R. Guillory, J. Goldman, F. Zhao</i>	
Sustainable Synthetic Polymer for a More Hemocompatible and Durable Prosthetic Aortic Valve.....	759
<i>S. Melo, A. Pierrard, A. Aqil, B. Ditkowski, C. Detrembleur, C. Jerome, P. Lancellotti, C. Oury</i>	
Injectable Cardiac Extracellular Matrix-Derived Nanocomposite Hydrogel as Sustained Release System with Stromal Cell-Derived Factor-1 α for Cardiac Regeneration	760
<i>J. Xu, R. Shaik, L. Soto-Garcia, A. Taylor, H. Fu, K. Nguyen, J. Liao, G. Zhang, Y. Hong</i>	
Development of a Novel Drug-Loaded Fibrin-Based Nanoparticle Biomaterial for Improved Surgical Wound Healing.....	761
<i>N. Moiseiwitsch, N. Zwennes, A. Brown</i>	
Use of Contact Activation Inhibitors to Improve Thrombosis Outcomes on Nitinol Stents.....	762
<i>D. Anderson, N. Bates, M. Wallisch, J. Johnson, H. Vu, K. Jordan, E. Tucker, K. Nguyen, O. McCarty, J. Aslan, M. Hinds</i>	
Registration of Atomic Force Microscopy and Second Harmonic Generation Images for Biomechanical Property Study of Myocardium	763
<i>A. Baker, R. Fratus, L. Schmidt, T. Borg, B. Gao</i>	
Hierarchically Structured, Lubricant Infused, Flexible Substrates Prevent Biological Surface Fouling Under Static Dynamic Conditions.....	764
<i>N. Jarad, L. Ladouceur, K. Rachwalski, V. Bot, A. Shakeri, R. Maclachlan, S. Sakib, J. Weitz, E. Brown, L. Soleymani, T. Didar</i>	

Vasculogenesis in Particle-Based Gels	765
<i>N. Claxton, M. Luse, B. Isakson, C. Highley</i>	
3D Stereolithography Printed Self-Driven Microfluidic Platform for Dynamic Culture of Cardiovascular Tissue Models.....	766
<i>S. Natividad-Diaz, B. Joddar, A. Esparza, N. Jimenez</i>	
Deep Learning-Enabled Label-free On-chip Detection and Selective Extraction of Cell Aggregate-laden Hydrogel Microcapsules	767
<i>A. White, X. He</i>	
Encapsulation of Living Cells Using Ice Templating: Towards the Cryopreservation of Red Blood Cells in Absence of Toxic Cryoprotectants.....	768
<i>F. Fernandes, K. Qin, C. Helary</i>	
Characterization of PEG Hydrogel Properties and the Effect of Ligands on Chondrogenesis for Articular Cartilage Tissue Formation	769
<i>L. Damotta</i>	
Independently Tuning Mechanical Properties and Architecture by 3D Printing Different Polymer Molecular Weights.....	770
<i>J. Tolbert, T. French, C. Okpara, S. Lazarte, B. Krick, T. Gonzalez-Fernandez, L. Chow</i>	
Development of an Angiogenic Bioink for 3D Bioprinting of a Bone Substitute	771
<i>S. Ilanlou, E. Lehoux, I. Catelas</i>	
Overpacked Microgel Dispersions as Printable Colloidal Pastes	772
<i>L. Lyon, S. Pandit, A. Santich</i>	
Reinforced Gelatin-Methacrylate Hydrogels Containing Poly(lactic-co-glycolic Acid) Nanofiber Fragments for 3D Bioprinting	773
<i>Y.-G. Ko, O. Kwon</i>	
Injectable Hydrogel Rod for Long-Term Anti-angiogenic Protein Delivery to the Retina.....	774
<i>S. Lee, J. Song, H. Hong, S. Woo, K. Park</i>	
Effective mRNA Delivery by Condensation with Cationic Nanogels Incorporated into Liposomes	775
<i>N. Duskunovic, S. Im, J. Lee, H. Chung</i>	
MRNA Delivery Based on Linker-Stabilized Lipid Nanoparticles	776
<i>S. Im, H. Chung</i>	
Cas9 Conjugates for Target-Specific Delivery and Gene Editing in Cancer Cells	777
<i>S. Yang, H. Chung</i>	
Engineering Injectable Hydrogels with Programmable Vaccine Release Kinetics	778
<i>W. Shi, X. Ying, M. Finn</i>	
Development of Cartilage Penetrating Dendrimer for Osteoarthritis Treatment.....	779
<i>J. Park, B. Johnston, S. Douglas-Green, A. Grodzinsky, P. Hammond</i>	
UPA- Or ACP- mediated Polyamidoamine Dendrimer-based Targeted Drug Delivery System for Triple Negative Breast Cancer.....	780
<i>H.-Y. Chuang, D. Huang, H. Yang, Y.-W. Huang</i>	
Novel Nanocapsule Drug Delivery Vehicle to Selectively Target Islet β -Cells.....	781
<i>J. Collins, K. Holcomb, H. Russ, A. Shilleh, N. Farnsworth</i>	

Engineering Desolvated Protein Nanoparticles for Increased Endosomal Escape of Protein Therapeutics	782
<i>S. Wimberley, J. Champion</i>	
Investigating Carrier Degradation and Drug Release Mechanisms of Metal-Organic Framework Nanoparticles.....	783
<i>M. Le Vuong, B. Lassalle-Kaiser, M. Fregnaux, A.-L. Rollet, C. Martineau-Corcos, R. Gref, M. Haouas</i>	
Preparation and Evaluation of an In-Situ Forming, Intratumorally Injectable, Click-cross-linked Hyaluronic Acid Hydrogel Depot.....	784
<i>H. Ju, M. Kim</i>	
Pirfenidone Delivery from Biocompatible Nanoparticle Hydrogel Emulsions for Attenuation of Joint Inflammation and Fibrosis	785
<i>R. Abdulhadi, M. Moran, A. Plaas, G. Papavasiliou</i>	
Drug Delivery from Complex Coacervate Encapsulated in Layered Microneedles.....	786
<i>N. Wright, T. Wu, Y. Wang</i>	
Utilizing Thiolyne Click Chemistry to Target Cancer Cells Using Folate Conjugated Liposomes.....	787
<i>T. Rehman, K. Bratlie, S. Mallapragada</i>	
Evaluating the Synergistic Effect of Various Ibuprofen Concentrations in Combination with Doxorubicin-Loaded Liposomes to Target Tumor-associated Macrophages.....	788
<i>T. Rehman, K. Bratlie, S. Mallapragada</i>	
Coacervate-Filled Lipid Vesicles for Protein Delivery	789
<i>C.-W. Yeh, Y. Wang</i>	
Loading Fluorescent Nanoparticles for an Improved Microbubble Theranostic	790
<i>M. Shirley, M. Wheatley</i>	
Dendrimer-Based Nanoparticles for Atherosclerosis Diagnosis and Therapy	791
<i>H. Kou, D. Huang, A. Chernatynskaya, J. Wu, H. Yang</i>	
Controlled β -Aminopropionitrile Using Electrospun Nanofibers Alters Matrisome Gene Expression and Promotes a Contractile Smooth Muscle Cell Phenotype in Rat Fistulas	792
<i>B. Applewhite, M. Rojas, Y. Wei, F. Andreopoulos, R. Vazquez-Padron</i>	
A First Principles Approach to Drug-Polymer Solution Formulation for Controlled Release.....	793
<i>E. Haque, J. Jimenez, Z. Hales, B. Laine</i>	
Shear Induced Collagen Fibril Alignment Using FRESH 3D Bioprinting	794
<i>N. Arun, A. Feinberg</i>	
Creation of 3D Collagen Substrate with Curved Shapes and Controlled Fiber Alignment	795
<i>M. Mansouri, I. Joshi, M. Goulet, A. Byerley, V. Abhyankar</i>	
Systematic Evaluation of Gelatin Bloom Strength on Gelatin Methacryloyl Hydrogel Properties	796
<i>S. Zambuto, E. Ferchichi, S. Zustiak, M. Oyen</i>	
Potential Modulation of Tissue Repair Via M2 Macrophage Subtypes in Vitro for Applications in Treatment of Stress Urinary Incontinence	797
<i>I. Isali, P. McClellan, T. Wong, S. Hijaz, D. Fletcher, T. Bonfield, J. Anderson, A. Hijaz, O. Akkus</i>	

Regulation of Matrix Metalloproteinase-9 and Tissue Inhibitor of Metalloproteinase-1 Via M2 Macrophage-Seeded Collagen Mesh	798
<i>I. Isali, P. McClellan, T. Wong, J. Anderson, O. Akkus, A. Hijaz</i>	
Development of Exosome Encapsulated Sulforaphane for Homotypic Targeting of Macrophages	799
<i>S. Patel, S. Chakravarthy, N. Revi, D. Bijukumar</i>	
Immunometabolism and Polylactide Stereochemistry: Reconciling a Decades-Long Controversy	800
<i>C. Maduka, C. Contag</i>	
High-Throughput Phenotypic Image Analysis of Porous Precision-Templated Scaffold Resident Cells	801
<i>N. Chan, B. Hwang, J. Bryers</i>	
PVC Tubing Results in Monocytic Insult on Neonatal Endothelial Cells: Role of Shear Stress	802
<i>H. Zhou, L. Tu, V. Nigam, C. Giachelli, M. Scatena</i>	
Comparison of the Host Response to Bard Soft Mesh and GalaFLEX Surgical Scaffold	803
<i>M. Therriault, M. Kulkarni, C. Skillen, B. Brown</i>	
Cytocompatibility of Electrospun Chitosan Membranes Treated with Decanoic Anhydride and Loaded with Biofilm Inhibitors and Bupivacaine	804
<i>T. Yusuf, Y. Dintakurthi, Z. Harrison, E. Montgomery, J. Jennings</i>	
Nitrodopamine PEGylated Iron Oxide Nanostars as Therapeutic Agents to Treat Cancer Via Magneto-Mechanical Actuation	805
<i>J. Cooper, M. Kanber, R. Moller, J. Beltran-Huarac</i>	
Light and Immunostimulant Mediated In-Situ Re-education of Tumor-associated Macrophages by Photosensitizer Conjugated Mannan Nanoparticles for Boosting Immuno-photodynamic Anti-metastasis Therapy	806
<i>S. Uthaman, S. Pillarisetti, I.-K. Park</i>	
CT Imaging of Gold-Loaded Polymersomes to Detect Glioblastoma	807
<i>I. Ray, J. Lavalla, E. Barnett, V. Kanduri, J. White, A. Alexander-Bryant, J. Larsen</i>	
Measuring Temporal Dynamics of Macrophage Polarization Using Bioluminescence to Determine Nanotherapeutic Efficacy	808
<i>C. Bilynsky, C. Brown, E. Wayne</i>	
A New Nanomembrane Strain Sensor Embedded Coronary Stent to Monitor In-Stent Restenosis	809
<i>Y. Chun, M. Elsisy, R. Herbert, W.-H. Yeo</i>	
Comprehensive Mechanical Performance Analysis of New Ultra-Thin Cobalt Chromium Coronary Stents	810
<i>M. Ibrahim, M. Elsisy, K. Nghiem, C. Kum, J. Cho, G. Jin, S. An, Y. Chun</i>	
A Surveillance System of Blood Flow for Vascular Grafts Using Textile Technologies	811
<i>X. Tang, M. King</i>	
Influence of Polyphosphodiester Having High Mineral Affinity on Differentiation of Bone Cells	812
<i>Y. Iwasaki, K. Kiyono, S. Mabuchi, A. Otaka</i>	
Printing the Intervertebral Disc: A Hyaluronan-Collagen Bioink Analogue of the Nucleus Pulposus	813
<i>G. Miklosic, S. De Oliveira, S. Grastilleur, C. Le Visage, C. Helary, S. Ferguson, M. D'Este</i>	

Multi-Component Symmetric Self-assemblies of a Collagen-mimetic Peptide Yield Hydrogels that Support Cell Growth.....	814
<i>J. Yang, A. Khalil, I. Tanrikulu, R. Jaenisch, R. Raines</i>	
Delivery of Bioactive siRNA Via LHRH-Targeting Fusogenic Peptide for the Treatment of Ovarian Cancer.....	815
<i>C. Coffin, T. Samec, K. Alatise, S. Gilmore, A. Hazelton, A. Alexander-Bryant</i>	
Development of a Multi-Functional Peptide for siRNA Delivery for Treatment of Glioblastoma Multiforme.....	816
<i>J. Boulos, J. Abadeer, T. Willis, K. Russi, A. Alexander-Bryant</i>	
Novel in Vitro Models for Studying Damaged Extracellular Matrices with Collagen Hybridization Peptides	817
<i>M. Longacre, D. Legarda, L. Bennink, M. Kirkness, D. Ammon</i>	
Characterizing Structural Properties of Self-Assembling Peptides for Glioblastoma Multiforme Drug Delivery.....	818
<i>M. Pitz, A. Alexander-Bryant</i>	
Mineral-Binding Peptide Reduces Effect of Ectopic Mineralization	819
<i>S. McGoldrick, H. Pan, Y. Mishina, D. Kohn</i>	
Evaluating Donor Cell Variability in Mineralized Collagen Scaffolds.....	820
<i>V. Kolliopoulos, A. Tiffany, B. Harley</i>	
Sex Differences in NF- κ B-targeted Therapy for Chronic Inflammatory Diseases in Preclinical Model	821
<i>M. Toya, J. Kushioka, H. Shen, N. Zhang, M. Tsubosaka, Q. Gao, X. Li, S. Chow, S. Goodman</i>	
Enhanced Inactivation of Pseudo-Particles Containing SARS-CoV-2 S Protein Using Magnetic Nanoparticles and an Alternating Magnetic Field	822
<i>P. Paul, K. Edmonds, K. Baldridge, D. Bhattacharyya, T. Dziubla, R. Dutch, J. Hilt</i>	
Glucose-Responsive Biomaterials from Diboronate Motifs with Increased Glucose Specificity	823
<i>S. Xian, Y. Xiang, M. Webber</i>	
Bioprinting Remotely-Controllable Ultrasound-Responsive Tissue Constructs for Cellular Manipulation	824
<i>M. Lowrey, H. Day, A. Vasquez, A. Tahayeri, K. Huyuh, L. Bertassoni, C. Schutt</i>	
Identification of Membrane Specific Protease Substrate Peptides for Localized Degradation	825
<i>Y. Wu, E. Pashuck</i>	
Digital Model of an in Vitro DC Electrical Stimulation Cell System.....	826
<i>J. Gamble, E. Friis</i>	
Bone-Targeted Nanoparticles Modulate Macrophage-mediated Fracture Healing.....	827
<i>B. Xiao, Y. Wang, M. Ackun-Farmmer, D. Benoit</i>	
Effect of Lipid Saturation and Cholesterol Concentration on Liposome Interaction with Fungal and Mammalian Cells	828
<i>R. Lamastro, K. Campbell, P. Gonzalez, T. Meng-Saccoccio, A. Shukla</i>	

Desmoplastic Pancreatic Adenocarcinoma Mimicking Hydrogels for Modelling 3D Cancer Spheroids.....	829
<i>M. Ermis, N. Falcone, N. De Barros, M. Mecwan, R. Haghniaz, A. Choroimi, M. Monirizad, Y. Zhu, A. Khademhosseini, J. Lee, H.-J. Kim</i>	
In Vitro Screening of Engineered Extracellular Matrices as Tissue Engineered Periosteum to Promote Allograft Healing	830
<i>A. March, Y. Li, Y. Lee, R. Choe, D. Benoit</i>	
Elucidating Mechanism of Action of Injectable Extracellular Matrix Hydrogel in a Model of Tongue Fibrosis	831
<i>E. Zelus, M. Alperin, A. Vahabzadeh-Hagh, K. Christman</i>	
In Vitro Evaluation of the Osteoinductive Potential of Chitosan Membranes Loaded with Raspberry Ketone	832
<i>M. Atwill, J. Bumgardner</i>	
Anisotropy and Stiffness of Tunable Collagen Scaffolds Drive Endothelial Inflammatory Phenotype, Myogenesis and Osteogenesis	833
<i>Y. Tan, K. Habing, K. Nakayama</i>	
Implantable Vascular Platform with Multi-Material Stent and Printed, Soft Sensors for Wireless Monitoring of Restenosis	834
<i>R. Herbert, W.-H. Yeo</i>	
3D-Printed Low-Profile and Mechanically Competent Bioresorbable Vascular Scaffolds	835
<i>Y. Ding, C. Sun, G. Ameer</i>	
Cell-Laden Bead Bath to Support Extrusion Bioprinting of Vascularized Constructs.....	836
<i>I. Zhang, N. Friend, E. Margolis, A. Putnam</i>	
Development and Testing of Combinatorial Biomaterials for Increased Biocompatibility	837
<i>C. Siedlecki, Y. Wu, K. Beita, C. Schmiedt, H. Handa, L.-C. Xu</i>	
Engineering Siloxane-Derived Lipid Nanoparticles for Tissue-Specific mRNA Therapeutics Delivery	838
<i>L. Xue, G. Zhao, N. Gong, X. Han, S. Shepherd, C. Warzecha, R. El-Mayta, M. Alameh, L. Wang, D. Weissman, A. Vaughan, J. Wilson, M. Mitchell</i>	
Targeting the Protease-Activated Receptor-2 (PAR ₂) with Nanotherapeutics to Reduce Oral Cancer Pain.....	839
<i>D. Bhansali, T. Nguyen, C. Peach, T. Li, K. Inoue, R. Tonello, D. Jensen, N. Bunnett, B. Schmidt, K. Leong</i>	
Dual Responsive Nanoparticles for Precision Therapy of Rheumatoid Arthritis	840
<i>G. Erensoy, L. Menges, T. Sellden, A. Stubelius</i>	
Host-Modified Hydrogels Enable Sustained Release Through Engineered Biomolecule Avidity	841
<i>A. D'Elia, C. Rodell</i>	
A Local Release, Reloadable Antibiotic Delivery Device Manages Biofilm Hardware-Related Infection Better than Clinical Standards.....	842
<i>R. Falconer, W. Kay, C. Hunt, J. Adams, A. Miller, K. Hysten, T. Smith, L. Nehring, B. Kawaguchi, R. Epperson, B. Barnum, N. Ashton, D. Williams</i>	
Tissue-Reactive Drugs Enable Materials-free Local Depots.....	843
<i>R. Chinthapatla, S. Pandit, B. Neumann-Rivera, S. Palvai, N. Massaro, J. Pierce, Y. Brudno</i>	

Uricase Functionalized Hydrogel for the Localized Treatment of Gout.....	844
<i>M. Fuchs, G. Hudalla, B. Keselowsky</i>	
Tunable Gelatin Methacrylate Polyethylene Glycol Hydrogels for Cell Mechanosensing Applications.....	845
<i>E. Ferchichi, S. Zustiak</i>	
Fibronectin's EDA Region Mechanoregulates Matrix Microarchitecture During Wound Healing	846
<i>J. Patten, M. Kegel, F. Ahmed, P. Halligan, K. Wang</i>	
Spatial Confinement Modulates Macrophage Response in Microporous Scaffolds.....	847
<i>A. Arnedo, Y. Liu, L. Riley, E. Caston, T. Miley, M. Schneider, T. Segura</i>	
The Influence of Hyaluronic Acid Properties on Natural Killer Cell Function in an Engineered Hydrogel System	848
<i>S. Lightsey, M. Temples, B. Kaufman, T. Conklin, B. Sharma</i>	
Atomic Vacancy Rich 2D Nanoparticles Drive Mitochondrial Biogenesis and Bioenergetics.....	849
<i>K. Singh, J. Soukar, M. Zulkifli, I. Singh, V. Gohil, A. Gaharwar</i>	
Co-Assembled Peptide-Protein Granules for Cytosolic Protein Delivery	850
<i>S. Herrera, R. Liu, J. Simonovich, G. Hudalla, B. Keselowsky</i>	
Optogenetically-Controlled Bacterial Persistence	851
<i>Y. Dhaouadi, D. Ren</i>	
Ionizable Lipid Nanoparticles with Integrated Immune Checkpoint Inhibition for mRNA CART Cell Engineering.....	852
<i>A. Hamilton, M. Mitchell</i>	
Antigen-Decorated Liposomal Hydrogels for Robust and Durable Protection Against SARS-CoV-2 Infections.....	853
<i>J. Baillet, J. Klich, B. Ou, S. Lecommandoux, E. Appel</i>	
IL-12-Based Cytokine Factories Modulate Tumor Microenvironment to Eradicate Pancreatic Tumors in Mice and Are Well Tolerated in Non-human Primates	854
<i>A. Nash, S. Aghlara-Fotovat, B. Castillo, A. Hernandez, P. Rios, S. Ghan, I. Joshi, D. Isa, J. Oberholzer, O. Veisoh</i>	
Development of Shrink Wrapped Endothelial Tubule Segments for Tissue Vascularization	855
<i>S. Sathyakumar, R. Palchesko, J. Bliley, A. Feinberg</i>	
Fibrous Topographical Cues Govern Tenogenic Vs. Chondrogenic Fate Switch	856
<i>R. Kent III, M. Jewett, D. Matera, A. Shikanov, B. Baker</i>	

Author Index