Copyright and Disclaimer

Society For Biomaterials
Transactions of the 37th Annual Meeting
Volume XXXV

Published by:
Society For Biomaterials
15000 Commerce Parkway, Suite C
Mount Laurel, NJ 08054
(856)439-0826

Copyright © 2013
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.
©2012 Omnipress - All rights reserved.
# Table of Contents

## Oral

### CS1

#### Cardiovascular Biomaterials

1. **Long Term in vivo Study of Rapidly Degradable Synthetic Arterial Grafts**  
   R. A. Allen, University of Pittsburgh, Pittsburgh, PA  
   W. Wu, Qindu Hospital, Fourth Military Medical University, Xi'an, China  
   M. Yao, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania  
   D. Dutta, University of Pittsburgh School of Medicine and UPMC, Pittsburgh, Pennsylvania  
   X. Duan, University of Pittsburgh, Pittsburgh, Pennsylvania  
   T. N. Bachman, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania  
   H. C. Champion, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania  
   D. B. Stolz, University of Pittsburgh, Pittsburgh, Pennsylvania  
   A. M. Robertson, University of Pittsburgh, Pittsburgh, Pennsylvania  
   K. Kim, University of Pittsburgh School of Medicine and UPMC, Pittsburgh, Pennsylvania  
   J. S. Isenberg, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania  
   Y. Wang, University of Pittsburgh, Pittsburgh, Pennsylvania

2. **Bioactive anti-apoptotic coating: from 2D substrates to 3D commercial stent grafts for in vivo testing**  
   P. Lequoy, Ecole de Technologie Superieure, Montreal, QC, Canada  
   M. Sbai, Ecole de Technologie Superieure, Montreal, Quebec, Canada  
   B. Saoudi, Ecole Polytechnique de Montreal, Montreal, Quebec, Canada  
   A. Bertrand-Grenier, Universite de Montreal, Montreal, Quebec, Canada  
   M. Wertheimer, Ecole polytechnique de Montreal, Montreal, Quebec, Canada  
   G. Soulez, Universite de Montreal, Montreal, Quebec, Canada  
   S. Lerouge, Ecole de technologie superieure, Montreal, Quebec, Canada

3. **Catheter-deliverable, Thermal and pH Responsive Hydrogels for Delivery of Cardiac Progenitor Cells into Infarcted Hearts**  
   J. Guan, The Ohio State University, Columbus, OH

4. **Pro-angiogenic and Anti-inflammatory Biomaterial Therapies for Peripheral Artery Disease**  
   A. L. Zachman, Vanderbilt University, Nashville, TN  
   J. Ticker-Schwartz, Vanderbilt University, Nashville, Tennessee  
   F. Shen, Vanderbilt University, Nashville, Tennessee  
   S. Fitzpatrick, Vanderbilt University, Nashville, Tennessee  
   M. Skala, Vanderbilt University, Nashville, Tennessee  
   H. Sung, Vanderbilt University, Nashville, Tennessee
Stacked collagen film enabled engineered small vascular graft
Y. Kim, University of Texas at Arlington, Arlington, TX
S. Shah, University of Texas at Arlington, Arlington, Texas
J. Ahmed, University of Texas at Arlington, Arlington, Texas

Effects Of Electrical Stimulation and Insulin-like Growth Factor On Heart Cells Cultured On A Microfabricated Degradable Elastomer
H. Park, C.S. Draper Laboratory, Cambridge, MA
B. L. Larson, MIT, Cambridge, Massachusetts
M. E. Kolewe, MIT, Cambridge, Massachusetts
G. Vunjak-Novakovic, Columbia University, New York, New York
L. E. Freed, C.S. Draper Laboratory; MIT, Cambridge, Massachusetts

Mutli-Arm PEG Hydrogels Containing Collagen Sequence and Cell-Adhesive Sequence Support Enzyme Mediated Degradation and Endothelial Cell Proliferation
D. R. Jones, Case Western Reserve University, Cleveland Heights, OH

An Endothelium Simulating Multifunctional Nanomatrix for Drug Eluting Stents
H. Jun, University of Alabama at Birmingham, Birmingham, AL
A. Andukuri, University of Alabama at Birmingham, Birmingham, Alabama
Y. Sohn, Emory University, Atlanta, Georgia
Y. Yoon, Emory University, Atlanta, Georgia
B. Brott, University of Alabama at Birmingham, Birmingham, Alabama

Drug Delivery

Injectable Scaffolds with Degradable Calcium Alginate Beads as a Cell Delivery System for Tissue Repair
R. Guo, Vanderbilt University, Nashville, TN
C. L. Ward, United States Army Institute of Surgical Research, Fort Sam Houston, Texas
S. A. Guelcher, Vanderbilt University, Nashville, Tennessee

Novel Sugar–Glass Nanoparticles system for Biomolecules Stabilization and Delivery in Tissue Engineering Applications
j. Giri, Parffenbarg Research Center,, Gaithersburg, MD

A pro-healing polyHEMA scaffold as an antibiotic-releasing insert for a scleral bandage
A. Galperin, University of Washington, Seattle, WA
K. Smith, University of Washington, Seattle, Washington
J. Bryers, University of Washington, Seattle, Washington
T. Shen, University of Washington, Seattle, Washington
B. Ratner, University of Washington, Seattle, Washington

Sequential drug delivery - in vitro and in vivo
S. Sundararaj, University of Kentucky, Lexington, KY
M. Thomas, University of Kentucky, Lexington, Kentucky
M. Al-Sabbagh, University of Kentucky, Lexington, Kentucky
T. Dziubla, University of Kentucky, Lexington, Kentucky
D. Puleo, University of Kentucky, Lexington, Kentucky

Tunable Dual Growth Factor Delivery Using Multilayered Microparticles with Controllable Degradation Kinetics
X. Yu, University of Wisconsin-Madison, Madison, WI

Development of a pH-responsive hydrogel network for the oral delivery of human growth hormone
S. D. Steichen, The University of Texas at Austin, Austin, TX
N. Peppas, The University of Texas at Austin, Austin, Texas

Self-Assembled Micellar Complex Comprised of Green Tea Catechin Derivatives for Protein Drug Delivery
S. Tan, Institute of Bioengineering and Nanotechnology, Singapore, Singapore

Controlled Protein Release from Layer-by-Layer Coated Hydrogel Scaffolds for Nerve Repair
D. A. Lynam, Michigan State University, East Lansing, MI
D. Shahriari, Michigan State University, East Lansing, Michigan
P. Angart, Michigan State University, East Lansing, Michigan
K. Koffler, University of California-San Diego, La Jolla, California
C. Chan, Michigan State University, East Lansing, Michigan
P. Walton, Michigan State University, East Lansing, Michigan
M. Tuszynski, University of California-San Diego, La Jolla, California
J. Sakamoto, Michigan State University, East Lansing, Michigan

Surface Characterization and Modification

Nanofiber mediated osteoinduction through RhoA GTPase signaling
T. Ozdemir, The Pennsylvania State University, University Park, PA

Nonfouling and Functionalizable Hydrogels based on Polyampholyte Chemistries
M. T. Bernards, University of Missouri, Columbia, MO
M. Schroeder, University of Missouri, Columbia, Missouri
D. E. McGrath, University of Missouri, Columbia, Missouri
K. M. Zurick, University of Missouri, Columbia, Missouri

Studying the Synergistic Effect of Coatings and Nitric Oxide release on Platelet Adsorption
K. A. Amoako, University of Washington, Seattle, Seattle, WA

Surface Modification of a Poly(Glycolic-co-Lactic Acid) – Poly(DL-Lactide-co-Caprolactone) Small-Diameter Vascular Graft via CD34 Antibody Immobilization to Enhance Cell Attachment
A. J. Melchiorri, University of Maryland, College Park, MD
N. Hibino, Children's National Medical Center, District of Columbia, District of Columbia
J. P. Fisher, University of Maryland, College Park, Maryland

Migrating versus Stationary Applied Pressure Changes Lubricity of Hydrogel Surfaces
A. C. Dunn, University of Florida, Gainesville, FL
J. Uruena, University of Florida, Gainesville, Florida
T. E. Angelini, University of Florida, Gainesville, Florida
W. Sawyer, University of Florida, Gainesville, Florida

Controlled End-functionality of Thermoresponsive Polymer Brushes for Regulating Thermally Induced Surface Cell Adhesion Behavior
N. MATSUZAKA, Tokyo University of Science, Chiba, Japan
M. NAKAYAMA, Institute of Advanced Biomedical Engineering and Science, Tokyo Women's Medical
Biofunctional Thermo-Responsive Polymeric Surface with Micropatterns for Controlling Cell Attachment and Detachment
Y. Kumashiro, Tokyo Women's Medical University, Tokyo, Japan

Silicone Elastomers with Intrinsic Control of Surface Hydrophilicity
J. D. Goff, Gelest, Morrisville, PA
B. Arkles, Gelest, Morrisville, Pennsylvania

Tissue Engineering

Self-Assembly of Biomaterials for Bone Tissue Morphogenesis
N. J. Shah, Massachusetts Institute of Technology, Cambridge, MA
M. Hyder, Massachusetts Institute of Technology, Cambridge, Massachusetts
M. Spector, Massachusetts Institute of Technology, VA Boston Healthcare System, Brigham and Women's Hospital and Harvard Medical School, Boston, Massachusetts
P. T. Hammond, Massachusetts Institute of Technology, Cambridge, Massachusetts

Biofabrication of Innervated Muscle Tissue for Accelerated Restoration of Muscle Function
S. Lee, Wake Forest School of Medicine, Winston-Salem, NC

S1P Receptor Specific Drug Enhances Mandibular Defect Healing by Modulating Local Inflammation, Enhancing Neovascularization and Increasing Progenitor Cell Recruitment.
A. Das, University of Virginia, Charlottesville, VA
B. Hughley, University of Virginia, Charlottesville, Virginia
C. Segar, Gatech, Atlanta, Georgia
E. Botchwey, Gatech, Atlanta, Georgia

Long-term static culture and fatigue testing of a bi-continuous hydrogel-elastomer scaffold for nucleus pulposus repair
J. W. S. Hayami, Queen's University, Kingston, ON, Canada
B. G. Amsden, Queen's University, Kingston, Ontario, Canada
S. D. Waldman, Queen's University, Kingston, Ontario, Canada

Co-culture Separation and Assembly by Nanotopographical Persuasion of Cells
P. M. Reynolds, University of Glasgow, Glasgow, United Kingdom (Great Britain)
R. H. Pedersen, University of Glasgow, Glasgow, United Kingdom (Great Britain)
M. J. Dalby, University of Glasgow, Glasgow, United Kingdom (Great Britain)
M. O. Riehle, University of Glasgow, Glasgow, United Kingdom (Great Britain)
N. Gadegaard, University of Glasgow, Glasgow, United Kingdom (Great Britain)

3D Transdifferentiation of Human Mesenchymal Stem Cells into Hepatocyte-Like Cells Using Bioprinted Scaffolds
K. B. Chien, Northwestern University, Chicago, IL
A. E. Jakus, Northwestern University, Chicago, Illinois
Human ECM Particles as an Injectable Bulking Agent for Adipose Replacement
A. Young, University of California, San Diego, La Jolla, CA
T. McAllister, Cytograft, Inc, Novato, California
N. Dusserre, Cytograft, Inc, Novato, California
K. Christman, University of California, San Diego, La Jolla, California
N. L’Heureux, Cytograft, Inc., Novato, California

Fabrication of Vascularized 3D-Wound Healing Fibrous Tissues and Application for In Vitro Tumor Invasion Models
A. Nishiguchi, Osaka University, Osaka, Japan
M. Matsusaki, Osaka University, Osaka, Japan
M. Akashi, Osaka University, Osaka, Japan

CS2

Advances in Tissue Engineering Scaffolding

Spatial and Temporal Tuning of Synthetic Hydrogel Microenvironments for Promoting Neovascularization
G. Papavasiliou, Illinois Institute of Technology, Chicago, IL

Spatiotemporal Dissolved Oxygen Concentrations from a Nanofiber Cell Seeded Scaffold
D. T. Bowers, University of Virginia, Charlottesville, VA
E. Botchwey, Georgia Tech, Atlanta, Georgia

Visible light-mediated multi-scale thiol-ene hydrogels for 3D cell culture
H. Shih, Indiana University-Purdue University Indianapolis, Indianapolis, IN
A. K. Fraser, Indiana University-Purdue University Indianapolis, Indianapolis, Indiana
C. Lin, Indiana University-Purdue University Indianapolis, Indianapolis, Indiana

Photodegradable Microspheres as Templates for Model Alveoli Formation
K. J. R. Lewis, University of Colorado at Boulder, Boulder, CO
M. W. Tibbitt, University of Colorado at Boulder, Boulder, Colorado
K. S. Anseth, University of Colorado at Boulder, Boulder, Colorado

A Biomimetic PEG Hydrogel to Evaluate the Effects of a Vasculogenic Co-culture on Hepatocyte Bioactivity
S. J. Higbee, Rice University, Houston, TX
J. L. West, Duke University, Houston, Texas

Aligned Conducting Polymer Nanotubes for On-Demand Release of Nerve Growth Factor and Contact Guidance of Neurons
M. R. Abidian, Pennsylvania State University, State College, PA
G. Yang, Pennsylvania State University, State College, Pennsylvania

Design and Characterization of Porous Poly(Propylene Fumarate) Sleeve Scaffolds
M. O. Wang, University of Maryland College Park, College Park, MD
C. E. Vorwald, University of Maryland, College Park, Maryland
M. L. Dreher, Food and Drug Administration, Silver Spring, MD, Maryland
E. J. Mott, Case Western Reserve University, Cleveland, Ohio
D. Dean, Case Western Reserve University, Cleveland, Ohio
J. P. Fisher, University of Maryland, College Park, Maryland

Polycaprolactone Fumarate (PCLF) as a Backbone for Chondrocyte Attachment and Proliferation Augmented by Platelet Lysate
D. Bravo, Mayo Clinic, Rochester, MN
E. Wagner, Mayo Clinic, Rochester, Minnesota
D. Bravo, Mayo Clinic, Rochester, Minnesota
S. Chase, Mayo Clinic, Rochester, Minnesota
M. Dadsetan, Mayo Clinic, Rochester, Minnesota
S. Kakar, Mayo Clinic, Rochester, Minnesota
M. J. Yaszemski, Mayo Clinic, Rochester, Minnesota

Biomaterials for Modulating Immune and Inflammatory Processes

Modular B-cell and T-cell Epitope Assembly in a Peptide-based Vaccine
R. R. Pompano, University of Chicago, Chicago, IL
J. Chen, University of Chicago, Chicago, Illinois
E. A. Verbus, University of Chicago, Chicago, Illinois
A. S. Chong, University of Chicago, Chicago, Illinois
J. H. Collier, University of Chicago, Chicago, Illinois

Tunable T cell immunity towards a protein antigen using polymersomes versus solid-core nanoparticles
E. Scott, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland
A. Stano, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland
K. Dane, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland
M. A. Swartz, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland
J. A. Hubbell, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland

Finite Element Modeling of Strategies to Reduce the Foreign Body Response to Neural Electrodes Chronically Implanted in Brain Tissue
N. F. Nolta, University of Utah, Salt Lake City, UT
J. L. Skousen, University of Utah, Salt Lake City, Utah
M. B. Christensen, University of Utah, Salt Lake City, Utah
P. A. Tresco, University of Utah, Salt Lake City, Utah

Long Term Survival of PEGylated Murine Allogenic Islets using Short Course Immunomodulation
J. A. Giraldo, University of Miami, Miami, FL
R. D. Molano, University of Miami, Miami, Florida
H. R. Rengifo, University of Miami, Miami, Florida
C. Fortino, University of Miami, Miami, Florida
C. Ricordi, University of Miami, Miami, Florida
A. Pileggi, University of Miami, Miami, Florida
C. L. Stabler, University of Miami, Miami, Florida

A dendritic cell-targeting microparticle vaccine for treatment of Type 1 Diabetes
J. S. Lewis, University of Florida, Gainesville, FL
M. Carstens, University of Florida, Gainesville, Florida
Inflammation-responsive Hydrogel for Drug Delivery for Treatment of Ulcerative Colitis

S. Zhang, Massachusetts Institute of Technology, Cambridge, MA

Non-spherical Artificial Antigen Presenting Cells for Tumor Immunotherapy

J. C. Sunshine, Johns Hopkins School of Medicine, Baltimore, MD

Neutrophil extracellular traps on biomaterials?

C. Sperling, Leibniz-Institute of Polymer Research Dresden, Dresden, Germany

Ceramics and Composites in Bone Tissue Engineering and Drug Delivery

Effects of Hydroxyapatite-Coating vs. Hydrophilic Surface on Early Healing of Dental Implant in an Ovine Model

J. Lee, Zimmer Dental Inc., Carlsbad, CA

SiO2 and ZnO Dopants in 3D Printed TCP Scaffolds Enhances Osteogenesis and Angiogenesis in vivo

S. Bose, Washington State University, Pullman, WA

Fully Dense Nanocrystalline Hydroxyapatite as a Structural Material for Spinal Interbody Fusion

A. K. MacMillan, Pioneer Surgical Technology, Woburn, MA

Injectable Polymer/β-TCP Biocomposite Delivery Systems for rhBMP-2

A. D. Talley, Vanderbilt University, Nashville, TN
S. A. Guelcher, Vanderbilt University, Nashville, Tennessee

53  **Size Matters: Effects of PLGA-Microsphere Size in Injectable CPC/PLGA on Bone Formation**  
J. van den Beucken, Radboud University Nijmegen Medical Center, Nijmegen, Netherlands

54  **Evaluation of a Gentamicin-Loaded Hydroxyapatite/Chitin Bone Cement**  
H. A. Doty, University of Memphis, Memphis, TN  
R. Hay, Singapore General Hospital, Singapore, Singapore  
T. H. Ong, National Cancer Center, Singapore, Singapore  
H. M. Kam, National Cancer Center, Singapore, Singapore  
A. K. S. Yew, Singapore General Hospital, Singapore, Singapore  
C. M. Guo, Singapore General Hospital, Singapore, Singapore

55  **Strontium Doped Calcium Phosphate Coatings on Biodegradable Magnesium Alloys**  
S. S. Singh, University of Pittsburgh, Pittsburgh, PA  
A. Roy, University of Pittsburgh, Pittsburgh, Pennsylvania  
B. Lee, University of Pittsburgh, Pittsburgh, Pennsylvania  
P. N. Kumta, University of Pittsburgh, Pittsburgh, Pennsylvania

56  **Effect of Local Alendronate Delivery on In Vivo Osteogenesis From PCL Coated 3D Printed TCP Scaffolds**  
S. Bose, Washington State University, Pullman, WA  
S. Tarafder, Washington State University, Pullman, Washington

**Drug Delivery 2-Cancer**

57  **Sodium Citrate Stabilized Calcium Phosphate Nanoparticles for the Sustained Delivery of Cisplatin**  
E. E. Jacobs, University of Connecticut Health Center, Farmington, CT  
J. L. Woodman, University of Connecticut Health Center, Farmington, Connecticut  
L. T. Kuhn, University of Connecticut Health Center, Farmington, Connecticut

58  **A Novel In-Situ Forming Calcium Polyphosphate System for Anti-Cancer Drug Release**  
A. Momeni, School of Biomedical Engineering, Dalhousie University, Halifax, NS, Canada

59  **DEVELOPMENT OF A NOVEL TARGETED MICROPARTICLE DRUG DELIVERY SYSTEM FOR CANCER MEDICATION**  
C. E. Clark, Villanova University, Bryn Mawr, PA

60  **Mimicking Platelet-Cancer Cell Interactions for Targeted Drug Delivery in Metastatic Breast Cancer**  
C. Modery-Pawlowski, Case Western Reserve University, Cleveland, OH  
A. Master, Case Western Reserve University, Cleveland, Ohio  
V. Pan, Case Western Reserve University, Cleveland, Ohio  
G. P. Howard, Case Western Reserve University, Cleveland, Ohio  
A. Sen Gupta, Case Western Reserve University, Cleveland, Ohio

61  **Biomaterial-mediated cancer-specific DNA delivery to liver cell cultures using synthetic poly(beta-amino esters)**  
S. Y. Tzeng, Johns Hopkins University School of Medicine, Baltimore, MD  
L. J. Higgins, Johns Hopkins University School of Medicine, Baltimore, Maryland  
M. G. Pomper, Johns Hopkins University School of Medicine, Baltimore, Maryland
Molecular Farming and Engineering of a Filamentous Platform Technology to Deliver Therapies to Breast Cancer
K. L. Lee, Case Western Reserve University, Cleveland Heights, OH
S. Shukla, Case Western Reserve University, Cleveland, Ohio
K. L. Lozada, Case Western Reserve University, Cleveland, Ohio
R. A. Keri, Case Western Reserve University, Cleveland, Ohio
N. F. Steinmetz, Case Western Reserve University, Cleveland, Ohio

Design of a Drug Eluting Stent for treatment of pancreatic malignancy
L. Indolfi, Massachusetts Institute of Technology, Cambridge, MA
M. Ligorio, Massachusetts General Hospital, Boston, Massachusetts
D. Ting, Massachusetts General Hospital, Charlestown, Massachusetts
C. Ferrone, Massachusetts General Hospital, Boston, Massachusetts
J. W. Clark, Massachusetts General Hospital, Boston, Massachusetts
R. Langer, Massachusetts Institute of Technology, Cambridge, Massachusetts
E. R. Edelman, Massachusetts Institute of Technology, Cambridge, Massachusetts

Intrinsically radiopaque porous microspheres for improved transarterial chemoembolization
K. Saralidze, Maastricht University, Maastricht, Netherlands

Biocompatibility and degradation behavior of Mg-Sr alloy as temporary cardiovascular implants
M. Bornapour, McGill University, Montreal, QC, Canada
M. Cerruti, McGill University, Montreal, Québec, Canada
D. Shum-Tim, McGill University, Montreal, Québec, Canada
M. Pekguleryuz, McGill University, Montreal, Québec, Canada

Evaluation of Failure Mechanisms of Utah Electrode Arrays in Rat Cortex
M. B. Christensen, University of Utah, Salt Lake City, UT
N. F. Nolta, University of Utah, Salt Lake City, Utah
J. L. Skousen, University of Utah, Salt Lake City, Utah
P. A. Tresco, University of Utah, Salt Lake City, Utah

Histological and Clinical Evaluation of Failed Shoulder Surface Replacement Implants
S. Ajami, UCL, Stanmore, Middlesex, United Kingdom (Great Britain)
M. Coathup, UCL, Stanmore, Middlesex, United Kingdom (Great Britain)
R. Olley, UCL, Stanmore, Middlesex, United Kingdom (Great Britain)
C. Wek, UCL, Stanmore, Middlesex, United Kingdom (Great Britain)
B. Bonnaud, UCL, Stanmore, Middlesex, United Kingdom (Great Britain)
S. Alexander, Royal National Orthopaedic Hospital, Stanmore, Middlesex, United Kingdom (Great Britain)
S. Lambert, Royal National Orthopaedic Hospital, Stanmore, Middlesex, United Kingdom (Great Britain)
C. Kelly, The Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry, United Kingdom (Great Britain)
G. Blunn, UCL, Stanmore, Middlesex, United Kingdom (Great Britain)
Metal Bearing Surfaces in Total Joint Arthroplasty: Do different joints display similar damage modes?
F. Ansari, University of California, Berkeley, Berkeley, CA
E. Alvarez, Clemson University, Greenville, South Carolina
M. Harman, Clemson University, Clemson, South Carolina
L. Pruitt, University of California, Berkeley, Berkeley, California
M. Mayor, Dartmouth College, Hanover, New Hampshire
D. W. Van Citters, Dartmouth College, Hanover, New Hampshire

Investigating Keratin as a Biomimetic Coating for Percutaneous Device Applications
S. Jeyapalina, University of Utah, Salt Lake City, UT
M. Van Dyke, Virginia Polytechnic Institute and State University, Blacksburg, Virginia
A. Sampson, Virginia Polytechnic Institute and State University, Blacksburg, Virginia
D. H. Betz, University of Utah, Salt Lake City, Utah
R. D. Bloebaum, University of Utah, Salt Lake City, Utah

In vivo evaluation of device-associated inflammation using Positron Emission Tomography Imaging
J. Zhou, University of Texas at Arlington, Arlington, TX
G. Hao, University of Texas Southwestern Medical Center, Dallas, Texas
H. Tsai, University of Texas at Arlington, Arlington, Texas
Y. Tsai, University of Texas at Arlington, Arlington, Texas
D. W. Baker, University of Texas at Arlington, Arlington, Texas
X. Sun, University of Texas Southwestern Medical Center, Dallas, Texas
L. Tang, University of Texas at Arlington, Arlington, Texas

Proteins and Cells at Interfaces

Atomic Force Microscopy Study of Coagulation Factor XII Interaction with Factor XI Autoactivation on Hydrophilic and Hydrophobic Surfaces
L. Xu, Penn State College of Medicine, Hershey, PA
C. Siedlecki, Penn State College of Medicine, Hershey, Pennsylvania

Protein Adhesion to Various Monomer Blends
M. Rusin, Clemson University, Clemson, SC
Y. Mei, Clemson University, Charleston, South Carolina
D. Dean, Clemson University, Clemson, South Carolina

Elastomer Crosslink Density Affects Protein Adsorption and Conformation
M. C. Vyner, Queen's University, Kingston, ON, Canada
L. Liu, McMaster University, Hamilton, Ontario, Canada
H. D. Sheardown, McMaster University, Hamilton, Ontario, Canada
B. G. Amsden, Queen's University, Kingston, Ontario, Canada

Preparation and Characterization of Collagen Substrates for Protein Interactions Studies
D. G. Castner, University of Washington, Seattle, WA
E. H. Tronic, University of Washington, Seattle, Washington
R. Foster, University of Washington, Seattle, Washington
P. Koelsch, University of Washington, Seattle, Washington

Poly(trimethylene carbonate) Molecular Weight Affects Enzymatic Adsorption and Conformation, and Macrophage Behavior
Initial Cell Adhesion on RGD-immobilized Phospholipid Polymer Brush Layer with Different Molecular Mobility
Y. Inoue, The University of Tokyo, Tokyo, Japan
Y. Onodera, The University of Tokyo, Toyko, Japan
K. Ishihara, The University of Tokyo, Tokyo, Japan

Endothelial Cell Selective Surface for Modifying ePTFE Grafts
L. Dudash, Case Western Reserve University, Cleveland, OH
F. Kligman, Cleveland Clinic, Cleveland, Ohio
K. Kapalka, Case Western Reserve University, Cleveland, Ohio
K. Kottke-Marchant, Cleveland Clinic, Cleveland, Ohio
R. Marchant, Case Western Reserve University, Cleveland, Ohio

Interactions of Escherichia coli HM22 Biofilm with Electrochemically Active Commercially Pure Titanium Surface
J. Guo, Syracuse University, Syracuse, NY
J. L. Gilbert, Syracuse University, Syracuse, New York

CS3

Advances in Ophthalmic Biomaterials and Ocular Drug-Delivery

Enhanced Coated Hydrogel Device for Controlled Release of Drugs for Cataract Surgery
F. B. Karp, University of Washington, Seattle, WA
N. Geisler, University of Washington, Seattle, Washington
S. Garty, University of Washington, Seattle, Washington
T. T. Shen, University of Washington, Seattle, Washington
B. D. Ratner, University of Washington, Seattle, Washington

Sustained Release of Bevacizumab Using an Injectable, Degradable and Biocompatible Reverse Thermal Gel
B. M. Rauck, University of Pittsburgh, Pittsburgh, PA
C. Medina, University of Pittsburgh, Pittsburgh, Pennsylvania
T. R. Friberg, University of Pittsburgh, Pittsburgh, Pennsylvania
Y. Wang, University of Pittsburgh, Pittsburgh, Pennsylvania

Optimized Properties of Collagen Vitrigel Membranes for Ocular Repair and Regeneration Applications
X. Caldron-Colon, The Johns Hopkins University Applied Physics Laboratory, Laurel, MD
Z. Xia, The Johns Hopkins University Applied Physics Laboratory, Laurel, Maryland
J. L. Breidenich, The Johns Hopkins University Applied Physics Laboratory, Laurel, Maryland
D. Mulreany, The Whitaker Biomedical Engineering Institute at Johns Hopkins University School of Medicine, Baltimore, Maryland
Q. Guo, The Whitaker Biomedical Engineering Institute at Johns Hopkins University School of Medicine, Baltimore, Maryland
M. Uy, The Johns Hopkins University Applied Physics Laboratory, Laurel, Maryland
The Monthly Eye Drop: Development of a Long-term, Noninvasive Glaucoma Treatment System
M. V. Fedorchak, University of Pittsburgh, Pittsburgh, PA
A. Cugini, University of Pittsburgh, Pittsburgh, Pennsylvania
J. S. Schuman, University of Pittsburgh, Pittsburgh, Pennsylvania
S. R. Little, University of Pittsburgh, Pittsburgh, Pennsylvania

Extended Ocular Drug Delivery using Hyaluronic Acid-containing model Silicone Hydrogel Materials
M. Korogiannaki, McMaster University, Hamilton, ON, Canada

Evaluating the Relationship Between Transparent Hydrogel Chemistry and Dexamethasone Delivery
G. Guidi, McMaster University, Hamilton, ON, Canada

Nanogels for Sustained Ocular Delivery of Brimonidine for Treatment of Glaucoma
D. R. Janagam, University of Tennessee Health Science Center, Memphis, TN
L. Wu, University of Tennessee Health Science Center, Memphis, Tennessee
J. Zhang, Henan Eye Institute, Zhengzhou, China
T. Lowe, University of Tennessee Health Science Center, Memphis, Tennessee

Hyaluronic Acid-Based Hydrogels as Scaffolds for Stem Cells to Differentiate Into Neuronal Cells
K. Compton, University of Tennessee Health Science Center, Memphis, TN
L. Wu, University of Tennessee Health Science Center, Memphis, Tennessee
T. Lowe, University of Tennessee Health Science Center, Memphis, Tennessee

Advances in Polymeric Nano-/Microparticle Formulation Techniques

A New Green Route to Prepare Stimuli-responsive Hydrogel Particles: Integrating Epoxy Chemistry with Thermal Induced Phase Separation
W. He, University of Tennessee, Knoxville, Knoxville, TN
S. Tang, University of Tennessee, Knoxville, Knoxville, Tennessee
Z. Shi, University of Tennessee, Knoxville, Knoxville, Tennessee

Hydrogel-Nanoshell Composite Materials for Therapeutic Delivery
L. E. Strong, Duke University, Durham, NC
S. N. Dahotre, Duke University, Durham, North Carolina
J. L. West, Duke University, Durham, North Carolina

Preparation of Micrcogels Using Thiol-Ene “Click” Chemistry
A. K. Fraser, Indiana University Purdue University at Indianapolis, Indianapolis, IN
H. Shih, Indiana University Purdue University at Indianapolis, Indianapolis, Indiana
C. Lin, Indiana University Purdue University at Indianapolis, Indianapolis, Indiana
A Cell-targeted Photodynamic Nanomedicine Strategy for Head & Neck Cancers
A. M. Master, Case Western Reserve University, Cleveland, OH
A. Malamas, Case Western Reserve University, Cleveland, Ohio
R. Solanki, Case Western Reserve University, Cleveland, Ohio
D. M. Clausen, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania
J. L. Eiseman, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania
A. Sen Gupta, Case Western Reserve University, Cleveland, Ohio

Study on the Novel Drug Vehicle for Encapsulation of Hydrophobic Agent and MR Imaging
H. Chen, National Yang-Ming University, Taipei, Taiwan
T. Liu, National Yang-Ming University, Taipei, Taiwan

Modulation of Polymer/DNA Release from Poly(lactic-co-glycolic acid) Microspheres through Poly(ethylenimine) Modification and Loading Concentration
C. J. Needham, Rice University, Houston, TX
S. Shah, Rice University, Houston, Texas
F. Kasper, Rice University, Houston, Texas
A. G. Mikos, Rice University, Houston, Texas

Array of Biodegradable Microelements for Isolation and Implantation of Living, Adherent Cells
Y. Wang, University of North Carolina, Chapel Hill, Chapel Hill, NC

Preparation of Chitosan-Coated Magnetite Nanoparticles and Application for Immobilization of Laccase
E. Aksoy, Middle East Technical University, Ankara, Turkey
S. Aksoy, Gazi University, Ankara, Turkey
N. Kalkan, Gazi University, Ankara, Turkey
N. Hasirci, Middle East Technical University, Ankara, Turkey

Biologically Inspired Biomaterials Approaches for Cancer Research

A Biomimetic Hydrogel System to Study Tumor Angiogenesis
L. C. Roudsari, Duke University, Durham, NC
B. J. Gill, Rice University, Houston, Texas
D. L. Gibbons, The University of Texas MD Anderson Cancer Center, Houston, Texas
J. M. Kurie, The University of Texas MD Anderson Cancer Center, Houston, Texas
J. L. West, Duke University, Durham, North Carolina

Cancer-activated adipocytes and their role in extracellular matrix remodeling and angiogenesis
B. Seo, Cornell University, Ithaca, NY
J. Gonzalez, Cornell University, Ithaca, New York
S. Moore, Cornell University, Ithaca, New York
L. T. Vahdat, Weill Cornell Medical College, New York, New York
C. Fischbach, Cornell University, Ithaca, New York

Elucidating the Role of Microenvironmental Cues on Melanoma Drug Resistance
E. Y. Tokuda, The BioFrontiers Institute and the Howard Hughes Medical Institute, University of Colorado, Boulder, CO
J. L. Leight, The BioFrontiers Institute and the Howard Hughes Medical Institute, University of
Colorado, Boulder, Colorado
K. S. Anseth, The BioFrontiers Institute and the Howard Hughes Medical Institute, University of Colorado, Boulder, Colorado

100 Engineering extracellular matrix constructs to modulate endothelial cell secretion and its ability to control cancer.
J. L. Dreyfuss, Massachusetts Institute of Technology, Cambridge, MA

101 Combination of Pathogen-mimicking Polymer Particles and an Injectable, Synthetic Immune-Priming Center (sIPC) Significantly Enhances Cellular and Protective Immunity in Murine Models of Cancer
P. Pradhan, The University of Texas at Austin, Austin, TX

102 Engineered 3D matrices to study regulation of glioblastoma cell malignancy
S. Pedron, University of Illinois at Urbana-Champaign, Urbana, IL
E. Becka, University of Illinois at Urbana-Champaign, Urbana, Illinois
E. Roy, University of Illinois at Urbana-Champaign, Urbana, Illinois
B. Harley, University of Illinois at Urbana-Champaign, Urbana, Illinois

Biomaterials for Cardiac Repair

104 Extracellular matrix hydrogel as growth factor delivery system for prolonged release and enhanced effect of a novel engineered HGF mimic in a small animal model of myocardial infarction
S. Sonnenberg, University of California, San Diego, San Diego, CA

105 Sustained Release of SDF-1α Polypeptide Analogue from Hyaluronic Acid Hydrogels for Cardiac Repair
B. P. Purcell, University of Pennsylvania, Philadelphia, PA
J. W. MacArthur, Jr., University of Pennsylvania, Philadelphia, Pennsylvania
J. Y. Woo, University of Pennsylvania, Philadelphia, Pennsylvania
J. A. Burdick, University of Pennsylvania, Philadelphia, Pennsylvania

106 Injectable Poly(Vinyl Alcohol) Hydrogels for Cardiovascular Applications
G. J. Braithwaite, Cambridge Polymer Group, Boston, MA
T. Wilson-Hill, Cambridge Polymer Group, Boston, Massachusetts
J. Hung, Massachusetts General Hospital, Boston, Massachusetts

107 Examining the Influence of Injectable Hyaluronic Acid Hydrogels on Myocardial Infarct Repair using MRI
S. M. Dorsey, University of Pennsylvania, Philadelphia, PA
E. Tous, University of Pennsylvania, Philadelphia, Pennsylvania
J. R. McGarvey, University of Pennsylvania, Glenolden, Pennsylvania
J. F. Wenk, University of Kentucky, Lexington, Kentucky
J. H. Gorman, III, University of Pennsylvania, Glenolden, Pennsylvania
R. C. Gorman, University of Pennsylvania, Glenolden, Pennsylvania
J. A. Burdick, University of Pennsylvania, Philadelphia, Pennsylvania

108 Integration of Cysteine-rich angiogenic inducer 61 (CYR61) into collagen biomaterial promotes the therapeutic potential of circulating angiogenic cells
B. McNeill, University of Ottawa Heart Institute, Ottawa, ON, Canada
B. Vulesevic, University of Ottawa Heart Institute, Ottawa, Ontario, Canada
Hydrogels Designed to Provide Sustained, Stimuli-Responsive Release of Pro-Angiogenic Peptides
A. H. Van Hove, University of Rochester, Rochester, NY
D. Benoît, University of Rochester, Rochester, New York

Orthopaedic Biomaterials

In Vivo Remodeling of 45S5 Bioactive Glass/Polyurethane Biocomposites with Initial Bone-like Mechanical Properties
A. J. Harmata, Vanderbilt University, Nashville, TN
C. L. Ward, United States Army Institute of Surgical Research, Fort Sam Houston, Texas
K. J. Zienkiewicz, Vanderbilt University, Nashville, Tennessee
J. C. Wenke, United States Army Institute of Surgical Research, Fort Sam Houston, Texas
S. A. Guelcher, Vanderbilt University, Nashville, Tennessee

Polyvinyl alcohol-polyacrylic acid (PVA-PAA) hydrogels for osteochondral defect repair
D. Bichara, Massachusetts General Hospital, Boston, MA
H. Bodugoz-Senturk, Massachusetts General Hospital, Boston, Massachusetts
D. Ling, Massachusetts General Hospital, Boston, Massachusetts
E. Malchau, Massachusetts General Hospital, Boston, Maryland
C. Bragdon, Massachusetts General Hospital, Boston, Massachusetts
O. Muratoglu, Massachusetts General Hospital, Boston, Massachusetts

One Year Evaluation of a PCL-TCP Putty in an Ovine Critical Sized Metaphyseal Defect Model.
S. Woods, DePuy Synthes, West Chester, PA
A. Petticoffer, DePuy Synthes, West Chester, Pennsylvania
P. Patel, DePuy Synthes, West Chester, Pennsylvania
D. Arens, AO Research Institute, Davos, Switzerland

Ultrasound As a Physical Force for Enhanced Scaffold-Based Bone Repair
J. Veronick, University of Connecticut, Farmington, CT
Y. Khan, University of Connecticut, Farmington, Connecticut
B. Huey, University of Connecticut, Storrs, Connecticut
Y. Kutes, Institute of Materials Science, Storrs, Connecticut

Rapid vascularization and anastomosis of a large vascularized construct of collagen/β-TCP scaffold fabricated by template-casting and electrochemical detachment technique
Y. Kang, Stanford University, Stanford, CA
N. Mochizuki, University of Tsukuba, Tsukuba, Ibaraki, Japan
L. Ren, Lanzhou University, Lanzhou, Gansu, China
A. Khademhosseini, Harvard Medical School, Cambridge, Massachusetts
J. Fukuda, University of Tsukuba, Ibaraki, Japan
Y. Yang, Stanford University, Stanford, California

Biomechanical Evaluation of an Injectable and Biodegradable Copolymer P(PF-co-CL) in a Cadaveric Vertebral Body Defect Model
Z. Fang, Mayo Clinic, Rochester, MN
116 Novel Silk-Calcium Phosphate Ceramic Scaffolds for Bone Tissue Engineering
S. L. McNamara, Tufts University, Medford, MA
D. L. Kaplan, Tufts University, Medford, Massachusetts
T. J. Lo, Tufts University, Medford, Massachusetts

117 Investigation of Mesenchymal Stem Cell Phenotype and Function in an Allograft Cellular Bone Matrix
L. S. Brown, Stryker, Corp., Malvern, PA
M. M. Darmoc, Stryker, Corp., Malvern, Pennsylvania
T. D. Clineff, Stryker, Corp., Malvern, Pennsylvania

Patterning Microenvironments for Tissue Engineering and Morphogenesis

118 Micro-contact Printing of Viable Tissues via Geometrically Patterned Shape-Shifting Supports
O. O. Akintewe, University Of South Florida, Tampa, FL
S. J. DuPont, University Of South Florida, Tampa, Florida
R. G. Toomey, University Of South Florida, Tampa, Florida
N. D. Gallant, University Of South Florida, Tampa, Florida

119 Integrating Mechanical Cues and Biomolecular Patterns in a Collagen-Glycosaminoglycan Scaffold for Tendon-Bone Junction Repair
L. Mozdzen, University of Illinois at Champaign-Urbana, Champaign, IL

120 Development and Characterization of a High-Throughput Screening Surface Combining Geometric and Nanotopographical Mechanical Cues to Investigate Cell-Surface Interactions
N. J. Steinmetz, University of Glasgow, Glasgow, United Kingdom (Great Britain)
M. J. Dalby, University of Glasgow, Glasgow, United Kingdom (Great Britain)
N. Gadegaard, University of Glasgow, Glasgow, United Kingdom (Great Britain)

121 Real-time Measurement of Intercellular Stresses in Cells Grown on Micropatterns
K. Suffoletto, SUNY Buffalo, Buffalo, NY

122 Application of rapid prototyping to high throughput screening of 3D dynamic environments
P. F. Costa, University of Minho, Guimarães, Portugal
C. Vaquette, Queensland University of Technology, Brisbane, Australia
C. Theodoropoulos, Queensland University of Technology, Brisbane, Australia
M. E. Gomes, University of Minho, Guimarães, Portugal
R. L. Reis, University of Minho, Guimarães, Portugal
D. W. Hutmacher, Queensland University of Technology, Brisbane, Australia

123 A Novel Endothelial Cell Scaffold for Small-Diameter Vascular Engineering
K. J. McHugh, Boston University; Schepens Eye Research Institute; The Charles Stark Draper Laboratory, Inc., Boston, MA
S. L. Tao, The Charles Stark Draper Laboratory, Inc.; CooperVision, Inc., Cambridge, Massachusetts
M. Saint-Geniez, Schepens Eye Research Institute; Harvard Medical School, Boston, Massachusetts

124 Effect of PGS-PCL Electrospun Fibers Orientation on Alignment and Proliferation of Human Umbilical Vein Endothelial Cells
A. Gaharwar, Massachusetts Institute of Technology, Cambridge, MA
M. Nikkhah, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, Massachusetts
S. Sant, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, Massachusetts
A. Patel, Brigham and Women's Hospital, Harvard Medical School, Cambridge, Massachusetts
S. Mihaila, Brigham and Women's Hospital, Harvard Medical School, Cambridge, Massachusetts
A. Khademhosseini, Brigham and Women's Hospital, Harvard Medical School, Cambridge, Massachusetts

3D Patterned Microenvironments Created through Assembly of Discrete Collagen-Chitosan Tissue Modules
D. J. Caldwell, University of Michigan, Ann Arbor, MI
D. J. Caldwell, University of Michigan, Ann Arbor, Michigan
R. R. Rao, University of Michigan, Ann Arbor, Michigan
J. P. Stegemann, University of Michigan, Ann Arbor, Michigan

CS4

Advances in Ophthalmic Biomaterials and Ocular Drug-Delivery2

126 Corneal Stromal Stem Cells Versus Corneal Fibroblasts in Generating Structurally Appropriate Corneal Stromal Tissue
J. Wu, University of Pittsburgh School of Medicine, Pittsburgh, PA
Y. Du, University of Pittsburgh School of Medicine, Pittsburgh, PA, Pennsylvania
J. L. Funderburgh, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania
W. R. Wagner, University of Pittsburgh, Pittsburgh, Pennsylvania

127 Engineered Basement Membranes for Regeneration of the Corneal Endothelium
A. W. Feinberg, Carnegie Mellon University, Pittsburgh, PA
R. N. Palchesko, Carnegie Mellon University, Pittsburgh, Pennsylvania
O. Creasey, University of Pittsburgh, Pittsburgh, Pennsylvania
J. L. Funerburgh, University of Pittsburgh, Pittsburgh, Pennsylvania

128 Chemical modification of hyaluronan: Improving hyaluronan as a wetting agent for contact lenses.
S. Paterson, McMaster University, Hamilton, ON, Canada

129 Phenylboronic Acid Modified Mucoadhesive Hydrogel Materials for Ophthalmic Drug delivery Applications
L. Liu, McMaster University, Canada, Hamilton, ON, Canada
H. D. Sheardown, McMaster University, Canada, Hamilton, Ontario, Canada

130 Poly(Ethylene Glycol)-Hyaluronic Acid Antioxidant Hydrogels for Prevention of Iatrogenic Cataracts
M. G. O'Toole, University of Louisville, Louisville, KY
R. M. Rostosky, University of Louisville, Louisville, Kentucky
T. H. Tezel, University of Louisville, Louisville, Kentucky
A. S. Gobin, University of Louisville, Louisville, Kentucky

131 Effect of E-Beam Sterilization on Optical and Rheological Properties of Some Viscoelastic Products
C. B. Hu, Abbott Medical Optics, Santa Ana, CA
H. Powell, Abbott Medical Optics, Santa Ana, California
Advances in Tissue Engineering Scaffolding

132 Gelatin methacrylate (GelMA) and agarose hydrogels as a smart platform for bioprinting biomimetic vascular networks in 3D tissue engineering constructs
L. E. Bertassoni, Center for Biomedical Engineering, Department of Medicine, Brigham and Women’s Hospital, Harvard Medical School; Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology; Faculty of Dentistry, University of Sydney, Aus, Cambridge, MA
M. Cecconi, 1. Center for Biomedical Engineering, Department of Medicine, Brigham and Women’s Hospital, Harvard Medical School; 2. Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, Massachusetts
P. H. Molin, 1. Center for Biomedical Engineering, Department of Medicine, Brigham and Women’s Hospital, Harvard Medical School; 2. Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, Massachusetts
E. S. Martinez-Martinez, 1. Center for Biomedical Engineering, Department of Medicine, Brigham and Women’s Hospital, Harvard Medical School; 2. Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, Massachusetts
M. Nikkhah, 1. Center for Biomedical Engineering, Department of Medicine, Brigham and Women’s Hospital, Harvard Medical School; 2. Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, Massachusetts
A. Khademhosseini, Center for Biomedical Engineering, Department of Medicine, Brigham and Women’s Hospital, Harvard Medical School; Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology; Wyss Institute for Biologically Inspired Engin, Cambridge, Massachusetts

133 Design and Analysis of Flexible Composite Scaffolds for Engineered Ear
T. M. Cervantes, Massachusetts General Hospital, Boston, MA
E. K. Bassett, Massachusetts General Hospital, Boston, Massachusetts
A. Kimura, Massachusetts General Hospital, Boston, Massachusetts
N. Roscioli, Kensey Nash Corporation, Exton, Pennsylvania
R. Gupta, Massachusetts General Hospital, Boston, Massachusetts
M. A. Randolph, Massachusetts General Hospital, Boston, Massachusetts
J. P. Vacanti, Massachusetts General Hospital, Boston, Massachusetts
I. Pomerantseva, Massachusetts General Hospital, Boston, Massachusetts
C. A. Sundback, Massachusetts General Hospital, Boston, Massachusetts

134 Controllably degradable self-assembling peptide materials for tissue engineering
Y. F. Tian, University of Chicago, Chicago, IL

135 Formation of Endothelial Cell Networks in Hydrogel Scaffolds Assembled from Modular Collagen-Fibrin Microenvironments
A. W. Peterson, University of Michigan, Ann Arbor, MI
A. W. Peterson, University of Michigan, Ann Arbor, Michigan
R. R. Rao, University of Michigan, Ann Arbor, Michigan
A. Y. Rioja, University of Michigan, Ann Arbor, Michigan
A. J. Putnam, University of Michigan, Ann Arbor, Michigan
J. P. Stegemann, University of Michigan, Ann Arbor, Michigan

136 Scaffold pore size controls chondrogenic differentiation of human mesenchymal stem cells and cartilage formation in vitro and in vivo
M. J. Gupte, University of Michigan, Ann Arbor, MI
Novel Porous Polycaprolactone Fumarate (PCLF) Scaffold for Adipocyte Derived Mesenchymal Stem Cell Engineering and Platelet Lysate Enhanced Ligament Differentiation

S. Chase, Mayo Clinic, Rochester, MN
E. R. Wagner, Mayo Clinic, Rochester, Minnesota
S. Chase, Mayo Clinic, Rochester, Minnesota
D. Bravo, Mayo Clinic, Rochester, Minnesota
M. Dadsetan, Mayo Clinic, Rochester, Minnesota
S. Kakar, Mayo Clinic, Rochester, Minnesota
M. Yaszemski, Mayo Clinic, Rochester, Minnesota

Benchtop Tissue Surrogates to Model Drug Uptake and Efficacy

Quantification of Ultrasound-Mediated Drug Delivery using an In Vitro Flow Chamber

J. L. Chen, University of Virginia, Charlottesville, VA
A. J. Dixon, University of Virginia, Charlottesville, Virginia
A. H. Dhanaliwala, University of Virginia, Charlottesville, Virginia
J. A. Hossack, University of Virginia, Charlottesville, Virginia

Engineering a Three-Dimensional In Vitro Model of Bone Sarcoma for Drug-Testing

L. Fong, Rice University, Houston, TX
S. Lamhamedi Cherradi, The University of Texas MD Anderson Cancer Center, Houston, Texas
E. Burdett, Rice University, Houston, Texas
V. Ramamoorthy, The University of Texas MD Anderson Cancer Center, Houston, Texas
A. Lazar, The University of Texas MD Anderson Cancer Center, Houston, Texas
K. Kasper, Rice University, Houston, Texas
M. Farach-Carson, Rice University, Houston, Texas
D. Vishwamitra, The University of Texas MD Anderson Cancer Center, Houston, Texas
E. Demicco, Mount Sinai Medical Center, New York, New York
B. Menegaz, The University of Texas MD Anderson Cancer Center, Houston, Texas
H. Amin, The University of Texas MD Anderson Cancer Center, Houston, Texas
J. Ludwig, The University of Texas MD Anderson Cancer Center, Houston, Texas
A. Mikos, Rice University, Houston, Texas

Electrospun Nanofiber-supported Collagen Films: in vitro Modeling of Epithelial and Endothelial Tissues

C. M. Neville, Massachusetts General Hospital, Boston, MA
K. M. Kulig, Massachusetts General Hospital, Boston, Massachusetts
S. Lauterbach, Ludwig-Maximilians-University, Munich, Germany
J. P. Vacanti, Massachusetts General Hospital, Boston, Massachusetts
C. R. Wittmer, Massachusetts General Hospital, Boston, Massachusetts
C. J. Neville, Stony Brook University, Stony Brook, New York

Decellularized Skeletal Muscle Extracellular Matrix as an in vitro Model for Intramuscular Drug Development

J. J. Wang, University of California, San Diego, La Jolla, CA
Biomaterial Microenvironment for Stem Cell-Based Cartilage and Intervertebral Disc Regeneration

Tunable Electrospun Hyaluronic Acid Scaffolds to Mimic the Microenvironment of Articular Cartilage
I. L. Kim, University of Pennsylvania, Philadelphia, PA
S. Khetan, University of Pennsylvania, Philadelphia, Pennsylvania
B. M. Baker, University of Pennsylvania, Philadelphia, Pennsylvania
C. S. Chen, University of Pennsylvania, Philadelphia, Pennsylvania
J. A. Burdick, University of Pennsylvania, Philadelphia, Pennsylvania

Striking The Balance Between Optimal Cell Response And Enhanced Tissue Repair In A 3D Multi-Layered Scaffold For Cartilage Repair
V. Barron, National University of Ireland, Galway, Galway, Ireland
M. Neary, National University of Ireland, Galway, Galway, Ireland
G. O'Malley, National University of Ireland, Galway, Galway, Ireland
N. Rooney, Proxy Biomedical, Galway, Ireland
F. Barry, National University of Ireland, Galway, Galway, Ireland
M. Murphy, National University of Ireland, Galway, Galway, Ireland

Covalently Tethered Transforming Growth Factor Beta-1 in PEG Hydrogels Expedites Cartilage ECM Production of Encapsulated Primary Chondrocytes.
B. V. Sridhar, University of Colorado, Denver, CO

Visible light inducible chitosan composite hydrogel containing collagen or chondroitin sulfate for cartilage tissue engineering
B. Choi, University of California, Los Angeles, Los Angeles, CA

Developing the Next Generation of Cardiovascular Devices - From Concept to Implantation (An Industry Perspective)

A Nanofibrous Self-Sealing Bioactive Hemodialysis Access Graft
S. G. Pathan, BioSurfaces Inc., Ashland, MA
D. W. Nelson, BioSurfaces Inc., Ashland, Massachusetts
S. M. Ali, BioSurfaces Inc., Ashland, Massachusetts
M. J. Bide, University of Rhode Island, Kingston, Rhode Island
L. M. Fitzgerald, BioSurfaces Inc., Ashland, Massachusetts
J. R. Araya, BioSurfaces Inc., Ashland, Massachusetts
T. E. Phaneuf, BioSurfaces Inc., Ashland, Massachusetts
M. A. Contreras, Beth Israel Deaconess Medical Center, Boston, Massachusetts
T. Phaneuf, BioSurfaces Inc., Ashland, Massachusetts
M. D. Phaneuf, BioSurfaces Inc., Ashland, Massachusetts

Novel polymer based Trans Catheter Aortic Valve Implant (TAVI)
A. Perera, Direct Flow Medical, Santa Rosa, CA

Bioabsorbable Stents Made by Rapid Fabrication System
G. Shi, 3D Biotek, LLC, North Brunswick, NJ
Synthesis and Analysis of Electrospun Suture for Localized Infection Prevention
D. W. Nelson, BioSurfaces, Inc., Ashland, MA
S. G. Pathan, BioSurfaces, Inc., Ashland, Massachusetts
M. J. Bide, University of Rhode Island, Kingston, Rhode Island
C. B. Meeks, BioSurfaces, Inc., Tufts University, Ashland, Massachusetts
M. A. Contreras, Beth Israel Deaconess Medical Center, Boston, Massachusetts
T. M. Phaneuf, BioSurfaces, Inc., Ashland, Massachusetts
M. D. Phaneuf, BioSurfaces, Inc., Ashland, Massachusetts

The Development of In Vitro Abrasion Test Method for Textile and Metal Components of Endovascular Stent Grafts
T. Yao, North Carolina State University, Raleigh, NC

Effects of Coating Methods and Solvents on the Deposition of Paclitaxel on Self-Assembled Monolayers Coated Stents
S. Lamichhane, The University of South Dakota, Sioux Falls, SD
A. Gallo, The University of South Dakota, Sioux Falls, South Dakota
G. Mani, The University of South Dakota, Sioux Falls, South Dakota

Translational Research in Nano-biomaterials

Combined Optical and Magnetic Resonance Imaging Enables Noninvasive Trafficking of Tissue Regeneration
H. Choi, Harvard Medical School, Boston, MA

Clinically Translated, Thermoplastic Biomaterial as Absorbable Scaffold for Functional Regeneration of Vascular, Dermal and Other Tissues: Biocoacervation of Purified Extracellular Matrix (ECM) Protein and Glycosaminoglycan
D. B. Masters, Gel-Del Technologies, Inc, St. Paul, MN
L. K. Hansen, WuXi AppTec, St. Paul, Minnesota
R. A. Meyer, Gel-Del Technologies, Inc., St. Paul, Minnesota

Biocompatibility Evaluation of Poly(N-isopropylacrylamide)-based Hydrogels for Craniofacial Bone Regeneration
T. N. Vo, Rice University, Houston, TX
A. K. Ekenseair, Rice University, Houston, Texas
P. Spicer, Rice University, Houston, Texas
B. M. Watson, Rice University, Houston, Texas
F. Kasper, Rice University, Houston, Texas
A. G. Mikos, Rice University, Houston, Texas

Transdermal Gelation of Hyaluronic acid Hydrogels with Gold Nanorods and Near-Infrared Light
W. M. Gramlich, University of Pennsylvania, Philadelphia, PA
J. L. Holloway, University of Pennsylvania, Philadelphia, Pennsylvania
R. Rai, University of Pennsylvania, Philadelphia, Pennsylvania
J. A. Burdick, University of Pennsylvania, Philadelphia, Pennsylvania

A Gold Nanoparticle-Based System to Monitor Mesenchymal Stem Cells Delivered via a PEGylated Fibrin Matrix for Ischemic Repair
L. M. Ricles, The University of Texas at Austin, Austin, TX
Prevention of Peritendinous Adhesions with Electrospun Poly(caprolactone)-graft-chitosan Nanofibrous Mats

S. Chen, Department of Chemical and Materials Engineering Chang Gung University, Kwei-Shan, Tao-Yuan, Taiwan 333, ROC, Tao-Yuan, Taiwan
C. Chen, Department of Chemical and Materials Engineering Chang Gung University, Kwei-Shan, Tao-Yuan, Taiwan 333, ROC, Tao-Yuan, Taiwan
J. Chen, Department of Chemical and Materials Engineering Chang Gung University, Kwei-Shan, Tao-Yuan, Taiwan 333, ROC, Tao-Yuan, Taiwan

Animal Models for Biomaterial and Medical Device Testing

Animal Model of Open Femur-Fracture Infection Using Noninvasive In Vivo Bioluminescence Imaging
B. Li, West Virginia University School of Medicine, Morgantown, WV
P. Farjo, West Virginia University, Morgantown, West Virginia
T. Hamza, West Virginia University, Morgantown, West Virginia

Tissue Response to Hydrogel Scaffolds Delivering Bone Morphogenetic Protein-2 for Bone Augmentation
L. A. Kinard, Rice University, Houston, TX
R. L. Dahlin, Rice University, Houston, Texas
A. M. Henslee, Rice University, Houston, Texas
P. P. Spicer, Rice University, Houston, Texas
C. Chu, Rice University, Houston, Texas
F. K. Kasper, Rice University, Houston, Texas
A. G. Mikos, Rice University, Houston, Texas

Projection Micro-StereoLithography (PmSL) Printed PDMS Substrates to Study Flap Revascularization in an Ischemic Mouse Model
K. N. Cicotte, University of New Mexico, Albuquerque, NM
P. G. McGuire, Department of Cell Biology and Physiology, Albuquerque, New Mexico
T. R. Howdieshell, University of New Mexico Health Science Center, Albuquerque, New Mexico
E. L. Hedberg-Dirk, University of New Mexico, Albuquerque, New Mexico

Post-Surgical Pain Management using Long Lasting Analgesic Release from Sol Gel Powder
T. Briggs, University of Pennsylvania, Philadelphia, PA
P. Ducheyne, University of Pennsylvania, Philadelphia, Pennsylvania
J. Garino, Orthopedic Surgery Lankenau Institute for Medical Research, Malvern, Pennsylvania

Staphylococcus epidermidis Vaccines against Biomaterial Associated Infections
L. Yan, University of Washington, Seattle, WA

Towards Understanding the Skin-Percutaneous Implant Integration with the Host Soft Tissue
Biomaterials Design and Tissue Engineering via Synthetic Biology

169  **Bacterial Virulence Proteins as Tools to Rewire Kinase Pathways in Immune Cells**  
**W. W. Wong, Boston University, Boston, MA**

170  **Development of Synthetic Platelets for Hemostatic Applications**  
**A. C. Brown, Georgia Institute of Technology, Atlanta, GA**  
S. Stabenfeldt, Arizona State University, Tempe, Arizona  
B. Ahn, Georgia Institute of Technology and Children’s Healthcare of Atlanta / Emory University School of Medicine, Atlanta, Georgia  
R. Hannan, Georgia Institute of Technology, Atlanta, Georgia  
K. Dhada, Georgia Institute of Technology, Atlanta, Georgia  
W. Lam, Georgia Institute of Technology and Children’s Healthcare of Atlanta / Emory University School of Medicine, Atlanta, Georgia  
A. Lyon, Georgia Institute of Technology, Atlanta, Georgia  
T. Barker, Georgia Institute of Technology and Emory University, Atlanta, Georgia

171  **Synthetic Biology-inspired Biohybrid Materials for Tissue Engineering and Inducible Drug Delivery**  
**W. Weber, University of Freiburg, Freiburg, Germany**

172  **Characterization of Modular Resilin-based Biomaterials with Tunable Mechanical Properties for Cartilage Engineering**  
**J. C. Liu, Purdue University, West Lafayette, IN**  
J. C. Liu, Purdue University, West Lafayette, Indiana  
R. Su, Purdue University, West Lafayette, Indiana

173  **Synthesis of thermo-responsive, protein reactive copolymer for cartilage tissue engineering**  
**A. Fathi, Jr., The University of Sydney, Sydney, Australia**
Development of a novel microfabricated cell-laden bioelastomer
N. Annabi, Harvard Medical School, Cambridge, MA
M. Afshar, Harvard Medical School, Cambridge, Massachusetts
K. Tsang, Harvard Medical School, Cambridge, Massachusetts
S. Mithieux, University of Sydney, Sydney, Australia
M. Nikkhah, Harvard Medical School, Cambridge, Massachusetts
A. S. Weiss, University of Sydney, Sydney, Australia
A. Khademhosseini, Harvard Medical School, Cambridge, Massachusetts

Dental / Craniofacial Materials

Design and Optimization of a Cell-Instructive Hydrogel for Dental Pulp Tissue Engineering
S. Prateepchinda, Columbia University, New York, NY
H. H. Lu, Columbia University, New York, New York
G. B. Hasselgren, Columbia University, New York, New York
D. Seliktar, Technion – Israel Institute of Technology, Haifa, Israel

Bone Regeneration using Bone Morphogenetic Protein-2 Loaded Tyrosine Polycarbonate Scaffolds
T. Guda, University of Texas at San Antonio, San Antonio, TX
P. Brown-Baer, United States Army Institute of Surgical Research, Fort Sam Houston, Texas
T. Silliman, United States Army Institute of Surgical Research, Fort Sam Houston, Texas
A. Darr, Rutgers, The State University of New Jersey, Piscataway, New Jersey
J. Kohn, Rutgers, The State University of New Jersey, Piscataway, New Jersey

In Vitro Evaluation of Inkjet 3D-Printed (3DP) Fe-Mn Biodegradable Metallic Scaffolds
D. Chou, University of Pittsburgh, Pittsburgh, PA
D. Hong, University of Pittsburgh, Pittsburgh, Pennsylvania
H. A. Kuhn, University of Pittsburgh, Pittsburgh, Pennsylvania
P. N. Kumta, University of Pittsburgh, Pittsburgh, Pennsylvania

Effect of Nanofiber Alignment on Human Periodontal Ligament Fibroblast Response
N. M. Lee, Columbia University, New York, NY
S. Kuznetsov, Columbia University Dental School, New York, New York
S. Eisig, Columbia University Dental School, NY, New York
H. H. Lu, Columbia University, New York, New York

A novel air-based non-thermal plasma (NTP) approach for the enhancement of Ti-6Al-4V dental implants
L. Witek, Oklahoma State University, Stillwater, OK
N. Tovar, New York University, New York, New York
C. Marin, UNIGRANRIO University-School of Health Sciences, Rio de Janeiro, Brazil
E. A. Bonafante, UNIGRANRIO University-School of Health Sciences, Rio de Janeiro, Brazil
R. Granato, UNIGRANRIO University-School of Health Sciences, Rio de Janeiro, Brazil
M. Suzuki, Tufts University School of Dental Medicine, Boston, Massachusetts
P. G. Coelho, New York University, New York, New York

Structure/Property of Model Dentin Adhesive Exposed to Wet Environments
P. Spencer, University of Kansa, Lawrence, KS
Q. Ye, University of Kansas, Lawrence, Kansas
R. Parthasarathy, University of Kansas, Lawrence, Kansas
Photo-polymerization Kinetics of Hydrophilic-rich Phase Mimic in Dentin Adhesive
Q. Ye, University of Kansas, Lawrence, KS
F. Abedin, University of Kansas, Lawrence, Kansas
P. Spencer, University of Kansas, Lawrence, Kansas
R. Parthasarathy, University of Kansas, Lawrence, Kansas
A. Misra, University of Kansas, Lawrence, Kansas
J. S. Laurence, University of Kansas, Lawrence, Kansas

Combination Use of Autologous Periodontal Ligament-derived Cell Sheets and Beta-tricalcium Phosphate Granules in Periodontal Defects in Humans
T. Iwata, Tokyo Women’s Medical University, Tokyo, Japan

Orthopaedic Biomaterials

Non-Degradable Porous Poly(Vinyl Alcohol) Hydrogels for Cartilage Tissue Engineering
H. Bodugoz-Senturk, Massachusetts General Hospital, Boston, MA
D. Bichara, Massachusetts General Hospital, Boston, Massachusetts
D. Ling, Massachusetts General Hospital, Boston, Massachusetts
C. Gupta, Massachusetts General Hospital, Boston, Massachusetts
M. Randolph, Massachusetts General Hospital, Boston, Massachusetts
O. Muratoglu, Massachusetts General Hospital, Boston, Massachusetts

The Influence of Cathodic Polarization and Simulated Inflammation on Titanium Alloy Electrochemistry
E. K. Brooks, University at Buffalo, Buffalo, NY
M. Ehrensberger, University at Buffalo, Buffalo, New York
M. Tobias, University at Buffalo, Buffalo, New York

Development of biodegradable ZK40, WX11, and WX41: Novel Mg based alloys for orthopedic applications
D. Hong, University of Pittsburgh, Pittsburgh, PA
D. Chou, University of Pittsburgh, Pittsburgh, Pennsylvania
P. Saha, University of Pittsburgh, Pittsburgh, Pennsylvania
O. Velikokhatnyi, University of Pittsburgh, Pittsburgh, Pennsylvania
P. N. Kumta, University of Pittsburgh, Pittsburgh, Pennsylvania

The Effect of Micro-textured CoCrMo-carbide Surfaces on the Attachment and Viability of Osteoblast-like MG63
S. J. L. Sullivan, University of Maryland, Baltimore County, Baltimore, MD
A. Au, Nutramax Laboratories, Inc., Edgewood, Maryland
M. Grzanna, Nutramax Laboratories, Inc., Edgewood, Maryland
T. Pham, University of Maryland, Baltimore County, Baltimore, Maryland
C. Frondoza, Nutramax Laboratories, Inc., Edgewood, Maryland
L. Topoleski, University of Maryland, Baltimore County, Baltimore, Maryland

The Effect of Processing Time, Temperature, and Methane Concentration on Micro-textured Ti6Al4V-carbide Surface Roughness Parameters
S. J. L. Sullivan, University of Maryland, Baltimore County, Baltimore, MD
L. Topoleski, University of Maryland, Baltimore County, Baltimore, Maryland

188 Reduced UHMWPE Wear Using Magnesia-Stabilized Zirconia Femoral Components in High Kinematics/High Load Knee Simulator Tests
M. E. Roy, Missouri Bone & Joint Research Foundation, St. Louis, MO
L. A. Whiteside, Missouri Bone & Joint Research Foundation; Signal Medical Corp., St. Louis, MO, St. Louis, Missouri
O. F. Noel, IV, Missouri Bone & Joint Research Foundation; Rocky Vista University College of Osteopathic Medicine, Parker, CO, St. Louis, Missouri

189 Vitamin E-Stabilized, Highly Cross-linked UHMWPE Implants: A Short-Term Retrieval Study
S. Rowell, Massachusetts General Hospital, Boston, MA
K. Wannomae, Massachusetts General Hospital, Boston, Massachusetts
O. Muratoglu, Massachusetts General Hospital, Boston, Massachusetts

190 Confined and Unconfined Creep: A Comparative Study of Swine Cartilage and PVA Hydrogels
D. Ling, Massachusetts General Hospital, Boston, MA
H. Bodugoz-Senturk, Massachusetts General Hospital, Boston, Massachusetts
C. Serrano, Massachusetts General Hospital, Boston, Massachusetts
O. Muratoglu, Massachusetts General Hospital, Boston, Massachusetts

Stem Cell-Biomaterial Interactions

192 A Comparative Study of the 2D versus 3D Presentation of Matrix Stiffness on Stem Cell Fate
M. Guvendiren, University of Pennsylvania, Philadelphia, PA
K. Sudhir, University of Pennsylvania, Philadelphia, Pennsylvania
J. A. Burdick, University of Pennsylvania, Philadelphia, Pennsylvania

193 Surface Properties Modulate Integrins, Pluripotent Markers, and Morphogens in Embryonic and Adult Stem Cells
R. Olivares-Navarrete, Georgia Institute of Technology, Atlanta, GA
C. A. Cundiff, Georgia Institute of Technology, Atlanta, Georgia
S. L. Hyzy, Georgia Institute of Technology, Atlanta, Georgia
M. T. Cook, Georgia Institute of Technology, Atlanta, Georgia
S. L. Stice, University of Georgia, Athens, Georgia
Z. Schwartz, Georgia Institute of Technology, Atlanta, Georgia
T. McDevitt, Georgia Institute of Technology, Atlanta, Georgia
B. D. Boyan, Georgia Institute of Technology, Atlanta, Georgia

194 Effect of Nanofiber Mineral Content on Human Mesenchymal Stem Cell Osteogenesis
S. D. Subramony, Columbia University, New York, NY
D. Qu, Columbia University, New York, New York
A. Su, Columbia University, New York, New York
J. P. Heisler, Columbia University, New York, New York
H. H. Lu, Columbia University, New York, New York

195 Comparative Evaluation of Hydrogels As a 3D Angiogenic Matrix for Adipose-Derived Stem Cells
E. Chung, The University of Texas at Austin, Austin, TX
J. A. Rytlewski, The University of Texas at Austin, Austin, Texas
A. G. Merchant, The University of Texas at Austin, Austin, Texas
Direct reprogramming of mouse fibroblasts to cardiomyocytes using Yamanaka factors on engineered hydrogels

D. L. Elbert, Washington University in St. Louis, St. Louis, MO
A. Smith, Washington University in St. Louis, St. Louis, Missouri
P. K. Nguyen, Washington University in St. Louis, St. Louis, Missouri
I. Efimov, Washington University in St. Louis, St. Louis, Missouri

Protein-based Biomaterials Accelerate Osteogenic Differentiation

Y. Kim, Purdue University, West Lafayette, IN
J. Liu, Purdue University, West Lafayette, Indiana

Surface Modification Strategies for Antimicrobial Medical Devices

A Surface Modification Platform on Eluting Medical Devices
C. Loose, Semprus BioSciences, Cambridge, MA
H. Wang, Semprus BioSciences, Cambridge, Massachusetts
R. Smith, Semprus BioSciences, Cambridge, Massachusetts
G. Brotske, Semprus BioSciences, Cambridge, Massachusetts
A. Cook, Semprus BioSciences, Cambridge, Massachusetts
Z. Zhang, Semprus BioSciences, Cambridge, Massachusetts

Local Delivery of D-Amino Acids Reduces Bacterial Burden in Contaminated Rat Segmental Defects

E. M. Prieto, Vanderbilt University, Nashville, TN
C. J. Sanchez, Jr., United States Army Institute of Surgical Research, Fort Sam Houston, Texas
C. A. Kruger, United States Army Institute of Surgical Research, Fort Sam Houston, Texas
K. J. Zienkiewicz, Vanderbilt University, Nashville, Tennessee
D. R. Romano, United States Army Institute of Surgical Research, Fort Sam Houston, Texas
K. S. Askers, United States Army Institute of Surgical Research, Fort Sam Houston, Texas
S. K. Hardy, United States Army Institute of Surgical Research, Fort Sam Houston, Texas
R. L. Woodbury, United States Army Institute of Surgical Research, Fort Sam Houston, Texas
S. A. Guelcher, Vanderbilt University, Nashville, Tennessee
J. C. Wenke, United States Army Institute of Surgical Research, Fort Sam Houston, Texas

Proximity and Cell Density Effects on the Killing Ability of Mg and MgTi Microparticles In-Vitro

J. Kim, Syracuse University, Syracuse, NY
J. L. Gilbert, Syracuse University, Syracuse, New York

Sol-gel silica controlled release thin film for inhibition of methicillin resistant staphylococcus aureus

S. Bhattacharyya, University of Pennsylvania, Philadelphia, PA

Nano-BaSO4 as a Novel Agent to Yield Antimicrobial Thermoplastics for Medical Tubing

G. E. Aniwene, II, Northeastern University, East Providence, RI
D. Stout, Brown University, Providence, Rhode Island
Z. Yan, Brown University, Providence, Rhode Island
T. J. Webster, Northeastern University, Boston, Massachusetts
B. C. LaBrec, Foster Biomedical Polymers and Compounds, Putnam, Connecticut
Silicone Based Nanocomposite for Treatment of Hydrocephalus
D. MISRA, UNIVERSITY OF LOUISIANA AT LAFAYETTE, LAFAYETTE, LAFAYETTE, NY

Long-term stability and effectiveness of antimicrobial coatings incorporating PSP-derived peptides
X. Chen, University of Minnesota, Minneapolis, MN
H. Hirt, University of Minnesota, Minneapolis, Minnesota
K. V. Holmberg, University of Minnesota, Minneapolis, Minnesota
S. Gorr, University of Minnesota, Minneapolis, Minnesota
C. Aparicio, University of Minnesota, Minneapolis, Minnesota

PCL (Col)/PVA (HA) coaxial electrospun nanofibers for controllable and sustained drug release
W. Song, Wayne state university, Detroit, MI

Bioinspired Smart Materials for Regenerative Medicine Applications

Novel conduits for Schwann Cell Induced Spinal Cord Repair
Y. Lee, University of Miami, Miami, FL
S. Wu, New Jersey Institute of Technology, Newark, New Jersey
I. Sidhu, New Jersey Institute of Technology, Newark, New Jersey
T. Livingston Arinzeh, New Jersey Institute of Technology, Newark, New Jersey
M. B. Bunge, University of Miami, Miami, Florida

Superporous Extracellular Matrix Mimics for On-demand Release of Growth Factors Based on Nucleic Acid Aptamers and Superporous Hydrogels
M. R. Battig, University of Connecticut, Storrs, CT
N. Chen, University of Connecticut, Storrs, Connecticut
Y. Wang, University of Connecticut, Storrs, Connecticut

Thrombin-responsive hydrogels with varied cleavage kinetics
C. Sperling, Leibniz-Institute of Polymer Research Dresden, Dresden, Germany
M. Rentsch, Leibniz-Institute of Polymer Research Dresden / Hochschule Zittau/Görlitz, Dresden, Germany
M. Tsurkan, Leibniz-Institute of Polymer Research Dresden, Dresden, Germany
U. Freudenberg, Leibniz-Institute of Polymer Research Dresden, Dresden, Germany
M. F. Maitz, Leibniz-Institute of Polymer Research Dresden, Dresden, Germany
C. Werner, Leibniz-Institute of Polymer Research Dresden, Dresden, Germany

Thermo-responsive citrate-based nanonets for tissue regeneration: effects of localized SDF-1 release
J. Yang, Northwestern University, Evanston, IL
J. Yang, Northwestern University, Evanston, Illinois
R. Hoshi, Northwestern University, Evanston, Illinois
K. Baler, Northwestern University, Evanston, Illinois
G. Ameer, Northwestern University, Evanston, Illinois
Novel Biomimetic Proteoglycans for Molecular Engineering of Degenerated Tissue
K. Prudnikova, Drexel University, Philadelphia, PA
S. Lightfoot Vidal, Drexel University, Philadelphia, Pennsylvania
E. Vresilovic, Pennsylvania State College of Medicine, Hershey, Pennsylvania
M. Marcolongo, Drexel University, Philadelphia, Pennsylvania

Protease Triggered Release of Macromolecules from MMP-sensitive Hyaluronic Acid Hydrogels
B. P. Purcell, University of Pennsylvania, Philadelphia, PA
M. Charati, University of Pennsylvania, Philadelphia, Pennsylvania
R. Wade, University of Pennsylvania, Philadelphia, Pennsylvania
J. A. Burdick, University of Pennsylvania, Philadelphia, Pennsylvania

Heparin functionalized thermoresponsive cell culture surfaces for regulating affinity interaction with basic fibroblast growth factor and enhancing cell sheet formation
J. Kobayashi, Tokyo Women's Medical University, Tokyo, Japan

Biomimetic Calcium Carbonate Concentric Microgrooves for Promoting MC3T3-E1 Cell Functions
S. Wang, The University of Tennessee, Knoxville, TN
X. Wu, The University of Tennessee, Knoxville, Tennessee

Biologically Derived Materials From Natural Resources

Cartilage Matrix Gels Promote Chondrogenesis of Human Mesenchymal Stem Cells
O. A. Burnsed, Georgia Institute of Technology, Atlanta, GA
R. Olivares-Navarrete, Georgia Institute of Technology, Atlanta, Georgia
S. L. Hyzy, Georgia Institute of Technology, Atlanta, Georgia
K. O. Marchand, Georgia Institute of Technology, Atlanta, Georgia
B. D. Boyan, Georgia Institute of Technology, Atlanta, Georgia
Z. Schwartz, Georgia Institute of Technology, Atlanta, Georgia

Engineering Vascularized Skin Flap with Decellularized Skin Flap Matrix Scaffold
L. Wang, UT MD Anderson Cancer Center, Houston, TX
Q. Zhang, UT MD Anderson Cancer Center, Houston, Texas
J. A. Johnson, UT MD Anderson Cancer Center, Houston, Texas
D. W. Chang, UT MD Anderson Cancer Center, Houston, Texas

Bioskiving: Bioinspired Fabrication of Nanostructures from Tissue Slices
Q. Xu, Tufts University, Medford, MA

Production of Recombinant Bacterial Collagens for Use as New Materials for Biomedical Applications
J. A. M. Ramshaw, CSIRO - Materials Science and Engineering, Clayton, Australia
Y. Y. Peng, CSIRO - Materials Science and Engineering, Clayton, Australia
V. Stoichevska, CSIRO - Materials Science and Engineering, Clayton, Australia
L. Howell, CSIRO - Materials Science and Engineering, Clayton, Australia
S. Madsen, CSIRO - Materials Science and Engineering, Clayton, Australia
G. Dumsday, CSIRO - Materials Science and Engineering, Clayton, Australia
J. Werkmeister, CSIRO - Materials Science and Engineering, Clayton, Australia

In vivo potential of functionally graded platelet lysates scaffolds for osteochondral repair
**V. E. Santo, University of Minho - 3B’s Research Group, Caldas das Taipas, Portugal**
A. R.C. Duarte, University of Minho - 3B's Research Group, Caldas das Taipas, Portugal
P. P. Carvalho, University of Minho, 3B’s Research Group, Caldas das Taipas, Portugal
J. F. Requicha, University of Minho, 3B’s Research Group, Caldas das Taipas, Portugal
C. A.A. Viegas, University of Trás-os-Montes e Alto Douro, Department of Veterinary Sciences, Vila Real, Portugal
I. R. Dias, University of Trás-os-Montes e Alto Douro, Department of Veterinary Sciences, Vila Real, Portugal
J. F. Mano, University of Minho, 3B’s Research Group, Caldas das Taipas, Portugal
M. E. Gomes, University of Minho, 3B’s Research Group, Caldas das Taipas, Portugal
R. L. Reis, University of Minho, 3B’s Research Group, Caldas das Taipas, Portugal

**Hyaluronic acid Hydrogels Synthesized by Thiol-ene Step Growth Polymerization**
**W. M. Gramlich, University of Pennsylvania, Philadelphia, PA**
J. A. Burdick, University of Pennsylvania, Philadelphia, Pennsylvania

**Biomaterial Strategies for Innervation, Nerve Repair and Integration**

**Chronic Blood Brain Barrier Breach Contributes to Intracortical Electrode Recording Failure**
**T. Saxena, Georgia Institute of Technology, Atlanta, GA**
L. Karumbaiah, Georgia Institute of Technology, Atlanta, Georgia
E. Gaupp, Georgia Institute of Technology, Atlanta, Georgia
K. Patil, garrett.stanley@bme.gatech.edu, Atlanta, Georgia
R. Patkar, Georgia Institute of Technology, Atlanta, Georgia
M. Betancur, Georgia Institute of Technology, Atlanta, Georgia
G. Stanley, Georgia Institute of Technology, Atlanta, Georgia
R. Bellamkonda, Georgia Institute of Technology, Atlanta, Georgia

**Mechanical Evaluation of an Ultrafast Degrading Polymer as a Temporary Coating for Neural Probes**
**J. Kohn, Rutgers - The State University of New Jersey, Piscataway, NJ**
S. Wang, Rutgers - The State University of New Jersey, Piscataway, New Jersey
J. Lo, Rutgers - The State University of New Jersey, Piscataway, New Jersey
S. Singh, Rutgers - The State University of New Jersey, Piscataway, New Jersey
J. Zahn, Rutgers - The State University of New Jersey, Piscataway, New Jersey
D. Shreiber, Rutgers - The State University of New Jersey, Piscataway, New Jersey

**Biomaterials and Electrode Strategies in Regenerative Peripheral Nerve Interfaces**
**N. B. Langhals, University of Michigan, Ann Arbor, MI**
J. V. Larson, University of Michigan, Ann Arbor, Michigan
T. A. Kung, University of Michigan, Ann Arbor, Michigan
K. B. Sugg, University of Michigan, Ann Arbor, Michigan
J. D. Moon, University of Michigan, Ann Arbor, Michigan
P. S. Cederna, University of Michigan, Ann Arbor, Michigan
M. G. Urbanchek, University of Michigan, Ann Arbor, Michigan

**Flexible and Kink-Resistant Braided Conduits for Peripheral Nerve Regeneration**
**B. A. Clements, Rutgers - The State University of New Jersey, Piscataway, NJ**
J. Bushman, Rutgers - The State University of New Jersey, Piscataway, New Jersey
S. Murthy, Rutgers - The State University of New Jersey, Piscataway, New Jersey
J. Kohn, Rutgers - The State University of New Jersey, Piscataway, New Jersey
Microchannel Scaffolds as Regenerative Peripheral Nerve Interfaces
A. Srinivasan, Georgia Institute of Technology, Atlanta, GA
A. Haque, Georgia Institute of Technology, Atlanta, Georgia
M. Tahilramani, Georgia Institute of Technology, Atlanta, Georgia
R. V. Bellamkonda, Georgia Institute of Technology, Atlanta, Georgia
G. B. Stanley, Georgia Institute of Technology, Atlanta, Georgia

SDF-1α-loaded Dextran Sulfate/Chitosan Nanoparticles As a Multi-pronged Approach to Enhance Neural Stem Cell Infiltration into Hydrogels for CNS Applications
T. Lim, Massachusetts Institute of Technology, Cambridge, MA
S. Rokkappanavar, Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts
M. Kurisawa, Institute of Bioengineering and Nanotechnology, Singapore, Singapore
M. Spector, Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts

Novel Rapidly-Gelling Injectable Chitosan Sponge to Promote Oligodendrocyte Progenitor Cells’ Differentiation
M. Mekhail, McGill, Montreal, QC, Canada
G. Almazan, McGill, Montreal, Québec, Canada
M. Tabrizian, McGill, Montreal, Québec, Canada

Enhancement of Astrocyte Migration Through Collagen-Genipin Gels in Response to Fibroblast Growth Factor-2
D. Macaya, Massachusetts Institute of Technology, Brookline, MA
K. Hayakawa, Massachusetts General Hospital, Charlestown, Massachusetts
K. Arai, Massachusetts General Hospital, charlestown, Massachusetts
M. Spector, VA Medical Center Boston, Massachusetts Institute of Technology, Jamaica Plain, Massachusetts

Drug Delivery for Inflammatory Diseases

Control of Mesenchymal Stem Cell Phenotype and Microenvironment through Intracellular Particles
J. A. Ankrum, MIT, Cambridge, MA
O. Faii, MIT, Cambridge, Massachusetts
O. Levy, MIT, Cambridge, Massachusetts
J. Karp, MIT, Cambridge, Massachusetts

Dual stimuli-responsive antioxidant nanoparticles based on polymeric prodrugs of vanillin
J. Kim, Department of BIN Fusion Tech. Chonbuk National University, Jeonju-si, Republic of Korea

Enhanced Intracellular Peptide Delivery with pH-responsive, Endosomolytic NanoPolyplexes to Prevent Intimal Hyperplasia in Human Saphenous Vein Grafts
B. C. Evans, Vanderbilt University, Nashville, TN
K. M. Hocking, Vanderbilt University, Nashville, Tennessee
C. M. Brophy, Vanderbilt Heart and Vascular Institute, Nashville, Tennessee
C. L. Duvall, Vanderbilt University, Nashville, Tennessee

Amphiphilic Nanoparticles as Molecular Therapeutics for Atherosclerosis
L. Petersen, Rutgers University, Piscataway, NJ
A. York, Rutgers University, Piscataway, New Jersey
S. Ahuja, Rutgers University, Piscataway, New Jersey
Biocompatible polymeric nanoparticles degrade and release cargo in response to biologically relevant levels of hydrogen peroxide

A. Almutairi, University of California, San Diego, La Jolla, CA
C. de Gracia Lux, University of California, San Diego, La Jolla, California
S. Joshi-Barr, University of California, San Diego, La Jolla, California
T. Nguyen, University of California, San Diego, La Jolla, California
E. Mahmoud, University of California, San Diego, La Jolla, California
N. Fomina, University of California, San Diego, La Jolla, California

Antioxidant nanoparticles for inhibition of inflammation-mediated rheumatoid arthritis
D. Cochran, University of Kentucky, Lexington, KY

Development of a Poly(lactic acid) Poly(ethylene glycol) Nanoparticle for Delivery of Vitamin D3 for Severe Asthmatics
N. K. Comolli, Villanova University, Villanova, PA
R. Lojek, Villanova University, Villanova, Pennsylvania
A. Banerjee, University of Pennsylvania, Philadelphia, Pennsylvania
R. Panettieri, Jr., University of Pennsylvania, Philadelphia, Pennsylvania

Antigen-Specific Immune Response of Microparticle Vaccine Containing CpG-ODN and Protein
Q. Wang, Baylor College of Medicine, Houston, TX
M. A. Barry, Baylor College of Medicine, Houston, Texas
M. Knight, Southwest Electronic Medical Research Institute, Houston, Texas
C. M. Beaumier, Baylor College of Medicine, Houston, Texas
M. J. Heffernan, Baylor College of Medicine, Houston, Texas

Role of Biological Factors in Osteoconduction and Bone Engineering

Electrospun Osteoconductive and Osteoinductive Bicomponent Scaffolds: Controlled Release of rhBMP-2 and Enhanced Biological Performance of Scaffolds
C. Wang, The University of Hong Kong, Hong Kong SAR, Hong Kong
M. Wang, The University of Hong Kong, Hong Kong SAR, Hong Kong

Bone Morphogenetic Protein 2 Induces an Inflammatory Profile in MSCs on Microstructured Titanium
S. L. Hyzy, Georgia Institute of Technology, Atlanta, GA
R. Olivares-Navarrete, Georgia Institute of Technology, Atlanta, Georgia
S. Orman, Georgia Institute of Technology, Atlanta, Georgia
B. D. Boyan, Georgia Institute of Technology, Atlanta, Georgia
Z. Schwartz, Georgia Institute of Technology, Atlanta, Georgia

Polydopamine-Coated PDMS-PCL Shape Memory Polymer Foams for Bone Regeneration
A. Jimenez-Vergara, Rensselaer Polytechnic Institute, Troy, NY
D. J. Munoz-Pinto, Rensselaer Polytechnic Institute, Troy, New York
D. Zhang, Texas A&M University, College Station, Texas
M. Grunlan, Texas A&M University, College Station, Texas
M. S. Hahn, Rensselaer Polytechnic Institute, Troy, New York

240 Sustained Bone Morphogenetic Protein 2 Delivery from Densified Titanium for the Hard Tissue Engineering
H. Jung, Department of Materials Science and Engineering, Seoul National University, Seoul, Republic of Korea
T. Jang, Seoul National Univ., Seoul, Republic of Korea
M. Kang, Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, Seoul, Republic of Korea
H. Park, Seoul National Univ., Seoul, Republic of Korea
H. Kim, Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, Seoul, Republic of Korea
Y. Estrin, Department of Materials Engineering, Monash University, Clayton, Australia, Clayton, Australia
Y. Koh, Korea Univ., Seoul, Republic of Korea

241 Molecule Release from Proteolytically Degradable Hyaluronic Acid Hydrogels for Improved Osteogenesis
J. L. Holloway, University of Pennsylvania, Philadelphia, PA
B. Purcell, University of Pennsylvania, Philadelphia, Pennsylvania
S. Khetan, University of Pennsylvania, Philadelphia, Pennsylvania
J. A. Burdick, University of Pennsylvania, Philadelphia, Pennsylvania

242 Enhanced Osteogenic Differentiation of Adipose-Derived Stem Cells in Growth Factor Presenting Gelatin Hydrogels
J. E. Samorezov, Case Western Reserve University, Cleveland, OH
E. Alsberg, Case Western Reserve University, Cleveland, Ohio

243 Bone Regenerative Capacity of rhBMP-2 Loaded Carboxymethylchitosan Microspheres in a Rat Calvarial Defect
B. Reves, University of Memphis, Memphis, TN
J. A. Jennings, University of Memphis, Memphis, Tennessee
P. Konofaos, University of Tennessee Health Science Center, Memphis, Tennessee
D. Petersen, University of Tennessee Health Science Center, Memphis, Tennessee
R. Wallace, University of Tennessee Health Science Center, Memphis, Tennessee
R. Smith, University of Tennessee Health Science Center, Memphis, Tennessee
T. Guda, University of Texas at San Antonio, San Antonio, Texas
M. Appleford, University of Texas at San Antonio, San Antonio, Texas
W. O. Haggard, University of Memphis, Memphis, Tennessee
J. D. Bumgardner, University of Memphis, Memphis, Tennessee

244 Controlling Secretion of VEGF from 3D Stem Cell Aggregates to Enhance Osteochondral Bone Regeneration
J. O. Blanchette, University of South Carolina, Columbia, SC
M. L. Skiles, University of South Carolina, Columbia, South Carolina
L. R. Rucker, University of South Carolina, Columbia, South Carolina
S. Sahai, University of South Carolina, Columbia, South Carolina

CS7
Hydrogels that Mimic Developmentally Relevant N-Cadherin Interactions Enhance MSC Chondrogenesis
L. Bian, the Chinese University of Hong Kong, Shatin, Hong Kong
M. Guvendiren, the University of Pennsylvania, Philadelphia, Pennsylvania
R. Mauck, the University of Pennsylvania, Philadelphia, Pennsylvania
J. A. Burdick, the University of Pennsylvania, Philadelphia, Pennsylvania

Multi-Compartment Collagen-Glycosaminoglycan Scaffolds for Engineering the Tendon-Bone Junction
S. R. Caliari, University of Illinois at Urbana-Champaign, Urbana, IL

Coil-tagging of Vascular Endothelial Growth Factor for Oriented and Tunable Biomaterials Functionalization
F. Murschel, Ecole Polytechnique de Montreal, Montreal, QC, Canada
B. Liberelle, Ecole Polytechnique de Montreal, Montreal, Quebec, Canada
G. St-Laurent, Biotechnology Research Institute, Montreal, Quebec, Canada
M. Jolicoeur, Ecole Polytechnique de Montreal, Montreal, Quebec, Canada
Y. Durocher, Biotechnology Research Institute, Montreal, Quebec, Canada
R. S. Hodges, University of Colorado, School of Medicine, Aurora, Colorado
G. De Crescenzo, Ecole Polytechnique de Montreal, Montreal, Quebec, Canada

Modulation of Endothelial Cell Response Through Surface Patterning of VEGF
A. S. C. Soon, University of California, Los Angeles, Los Angeles, CA
T. Segura, University of California, Los Angeles, Los Angeles, California

Designer growth factor gradients produced by microsphere-assembled scaffolds
D. L. Elbert, Washington University in St. Louis, St. Louis, MO
J. L. Roam, Washington University in St. Louis, St. Louis, Missouri
P. K. Nguyen, Washington University in St. Louis, St. Louis, Missouri

Manipulation of Protein Sequence and Functionalization to Enhance Cell Interactions with Bioactive Hydrogels
M. Browning, Texas A&M University, College Station, TX
B. Russell, Texas A&M Health Science Center, Houston, Texas
J. Rivera, Texas A&M Health Science Center, Houston, Texas
P. T. Luong, Texas A&M University, College Station, Texas
M. Hook, Texas A&M Health Science Center, Houston, Texas
E. Cosgriff-Hernandez, Texas A&M University, College Station, Texas

Engineering functional microparticles to fabricate instructive cell microenvironments
C. A. Custódio, 3B’s Research Group – Biomaterials, Biodegradables and Biomimetics, Caldas das Taipas-Guimarães, Portugal
V. E. Santo, 3B’s Research Group- Biomaterials, Biodegradables and Biomimetics, Caldas das Taipas-Guimarães, Portugal
M. M. E. Gomes, 3B’s Research Group-Biomaterials, Biodegradables and Biomimetics, Caldas das Taipas-Guimarães, Portugal
R. L. Reis, 3B’s Research Group- Biomaterials, Biodegradables and Biomimetics, Caldas das Taipas-Guimarães, Portugal
J. F. Mano, 3B’s Research Group-Biomaterials, Biodegradables and Biomimetics, Caldas das Taipas-Guimarães, Portugal

Biomimetic microenvironments for controlling morphogenesis of human pancreatic ductal...
epithelial cells
A. Raza, Indiana-University Purdue-University Indianapolis, Indianapolis, IN

Nanostructured Biomaterials and Porous Scaffolds

254 Synthesis Matrix Vesicles Modulate Mineralization Response of Human Osteoblast-like Cells
P. J. Chuang, Columbia University, New York, NY
T. O. Akinade, Columbia University, New York, New York
L. C. Kam, Columbia University, New York, New York
H. H. Lu, Columbia University, New York, New York

255 A bio-inspired hybrid nanosack for the delivery of pancreatic islets and FGF-2 to improve islet engraftment at the omentum site
H. Jun, University of Alabama at Birmingham, Birmingham, AL
P. Hwang, University of Alabama at Birmingham, Birmingham, Alabama
D. Lim, University of Alabama at Birmingham, Birmingham, Alabama
S. Gilbert, University of Alabama at Birmingham, Birmingham, Alabama
W. Cui, University of Alabama at Birmingham, Birmingham, Alabama
J. Corbett, Medical College of Wisconsin, Milwaukee, Wisconsin

256 Design of Short Synthetic β-sheet Forming Peptide Amphiphiles for Antimicrobial Applications
Z. Ong, Institute of Bioengineering and Nanotechnology, Singapore, Singapore
Y. Yang, Institute of Bioengineering and Nanotechnology, Singapore, Singapore

257 Biphasic Scaffolds for Bone Repair: Nanofiber-Permeated Pore Network for Enhanced Cell Population
C. S. Nelson, University of Connecticut Health Center, Farmington, CT
Y. Khan, University of Connecticut, Farmington, Connecticut
C. T. Laurencin, University Of Connecticut Health Center, Farmington, Connecticut

258 Polyethylene glycol-based Protein Nanocapsules for Functional Delivery of a Differentiation Transcription Factor
A. Biswas, University of California at Los Angeles, Los Angeles, CA
Y. Liu, University of California at Los Angeles, Los Angeles, California
G. Fan, University of California at Los Angeles, Los Angeles, California
Y. Tang, University of California at Los Angeles, Los Angeles, California

259 Precisely integrating multiple different protein ligands into supramolecular assemblies
G. A. Hudalla, University of Chicago, Chicago, IL
T. Sun, University of Chicago, Chicago, Illinois
J. H. Collier, University of Chicago, Chicago, Illinois

Orthopaedic Polymers

260 Thermoluminescence in UV- and X-Irradiated PEEK
D. Adhikari, University of Memphis, Memphis, TN
T. Riahinasab, University of Memphis, Memphis, Tennessee
B. Walters, University of Memphis, Memphis, Tennessee
R. Gnawali, University of Memphis, Memphis, Tennessee
Production and Characterization of Melt-Spun PEEK Fibers for Biomedical Applications
E. S. Ouellette, Syracuse University, Syracuse, NY
J. L. Gilbert, Syracuse University, Syracuse, New York

Injectable Lubricants for Prosthetic Joints
S. Lee, Technical University of Denmark, Kgs. Lyngby, Denmark

Mechanical and biological analysis of compression molded polyetheretherketone-titanium (PEEK-Ti) composites
H. Park, Department of Materials Science and Engineering, Seoul National University, Seoul, Republic of Korea
H. Jung, Department of Materials Science and Engineering, Seoul National University, Seoul, Republic of Korea
S. Kim, Seoul National University, Seoul, Republic of Korea
M. Kang, Department of Materials Science and Engineering, Seoul National University, Seoul, Republic of Korea
H. Kim, Department of Materials Science and Engineering, Seoul National University, Seoul, Republic of Korea
Y. Estrin, Department of Materials Engineering, Monash University, Clayton, Australia

Polymerized Biodegradable Cement to Replace Poly(Methyl Methacrylate) in Vertebral Compression Fracture Augmentation – a Biomechanical Evaluation
B. M. Schlossberg, Pioneer Surgical, Woburn, MA

Optimized Wear Resistance and Toughness of Vitamin E blended, High Temperature Melted and Radiation Cross-linked UHMWPE
B. Doshi, Massachusetts General Hospital, Boston, MA
E. Oral, Massachusetts General Hospital, Boston, Massachusetts
O. Muratoglu, Massachusetts General Hospital, Boston, Massachusetts

Vitamin E Does Not Elute Out of Vitamin E-Grafted Ultra High Molecular Weight Polyethylene
M. Guo, Zimmer Inc, Warsaw, IN
A. Rufner, Zimmer Inc, Warsaw, Indiana
D. Pletcher, Zimmer Inc, Warsaw, Indiana
O. Popoola, Zimmer Inc, Warsaw, Indiana
D. Yakimicki, Zimmer Inc, Warsaw, Indiana
J. Rufner, Zimmer Inc, Warsaw, Indiana

Oxidative Analysis of Retrieved Moderately Cross-linked UHMWPE Acetabular Bearings After 10 Years In Vivo
C. Reyes, Massachusetts General Hospital, Boston, MA
S. Rowell, Massachusetts General Hospital, Boston, Massachusetts
C. A. Engh, Jr., AORI, Alexandria, Virginia
R. Hopper, AORI, Alexandria, Virginia
O. Muratoglu, Massachusetts General Hospital, Boston, Massachusetts

Physical Parameters in the Design of Drug Delivery Systems
Geometry Matters: Cellular Uptake of Nanoscale Drug Carriers is Uniquely Dependent on
Particle Size and Shape
R. Agarwal, University of Texas at Austin, Austin, TX
V. Singh, University of Texas at Austin, Austin, Texas
P. Jurney, University of Texas at Austin, Austin, Texas
L. Shi, University of Texas at Austin, Austin, Texas
S. Sreenivasan, University of Texas at Austin, Austin, Texas
K. Roy, University of Texas at Austin, Austin, Texas

Mathematical Modeling of Bi-phasic Mixed Particle Drug Release from Nanoparticles
S. S. Hossain, The University of Texas at Austin, Austin, TX
S. Hossainy, Abbott Vascular, Santa Clara, California
D. Davalian, Abbott Vascular, Santa Clara, California

How Different Drugs Affect the Properties, Degradation, and Release Profiles of Drug Delivery Films
C. L. Rabek, University of Kentucky, Lexington, KY
T. D. Dziubla, University of Kentucky, Lexington, Kentucky
D. A. Puleo, University of Kentucky, Lexington, Kentucky

Injectable Hydrogels with Controlled Release of Covalently Incorporated Dexamethasone
D. Bezuidenhout, University of Cape Town, Cape Town, South Africa
N. H. Davies, University of Cape Town, Cape Town, South Africa
A. Oosthuysen, University of Cape Town, Cape Town, South Africa
P. Zilla, University of Cape Town, Cape Town, South Africa

Food-Associated Stimuli Enhance Barrier Properties of Mucus
H. Yildiz, Northeastern University, Boston, MA
R. L. Carrier, Northeastern University, Boston, Massachusetts

Effect of Processing Temperature on the Morphology and Drug-Release Characteristics of Elastin-Like Polypeptide - Collagen Composite Scaffolds
A. Janorkar, University of Mississippi Medical Center, Jackson, MS
N. Patel, University of Mississippi Medical Center, Jackson, Mississippi

The physical properties of particles dominate cellular uptake and subsequent influences on cell functions
Z. Mao, Zhejiang University, China, Hangzhou, China

Effect of Temperature and Size on Release of Calcein from eLiposomes
M. Javadi, Brigham Young University, Provo, UT

Surface Modification of Biomaterials for Local Therapy and Diagnostics
Multifunctional Drug-Delivery Nanoparticles for Elastic Matrix Stabilization and Repair in Aortic Aneurysms
B. Sivaraman, Cleveland Clinic, Cleveland, OH
A. Ramamurthi, Cleveland Clinic, Cleveland, Ohio

Magnetic Barcode Assay for Genetic Detection of Pathogens
M. Liong, Massachusetts General Hospital-Harvard Medical School, Charlestown, MA

Conducting Polymer Microcavities for Controlled Release of Antineoplastic Agents to Brain
**Tumors**

**P. Fattahi, Pennsylvania State University, State College, PA**
M. R. Abidian, Pennsylvania State University, University Park, Pennsylvania

**279**

**Co-Delivery of Paclitaxel and Nitric Oxide from Abluminal and Luminal Surfaces of a Coronary Stent**

A. Gallo, The University of South Dakota, Sioux Falls, SD

**280**

**Development of an in vitro Focal Neuronal Injury Platform With Simultaneous Neural Recording and Conducting Polymer/Graphene Oxide Nanocomposite-mediated Electrochemical Sensing**

C. L. Weaver, University of Pittsburgh, Pittsburgh, PA
N. R. Snyder, University of Pittsburgh, Pittsburgh, Pennsylvania
T. Cui, University of Pittsburgh, Pittsburgh, Pennsylvania

**281**

**Bio-Inspired Assembly for Surface Localization of Gadolinium to Improve Relaxivity of an MRI Contrast-Enhancing Liposome**

C. E. Smith, University of Illinois at Urbana-Champaign, Urbana, IL
H. Kong, University of Illinois at Urbana-Champaign, Urbana, Illinois

**282**

**CDK Inhibitor PD 0332991 Selectively Inhibits Lung Adenocarcinoma Cells Without Sacrificing Matrix Embedded Endothelial Cells Regulatory Effect on Tumor Proliferation**

G. L. A. Cunha, Massachusetts Institute of Technology, Cambridge, MA
A. Freiman, Massachusetts Institute of Technology, Cambridge, Massachusetts
L. Indolfi, Massachusetts Institute of Technology, Cambridge, Massachusetts
N. Artzi, Massachusetts Institute of Technology, Cambridge, Massachusetts
J. L. Dreyfuss, Universidade Federal de São Paulo, São Paulo, Brazil
E. R. Edelman, Massachusetts Institute of Technology, Cambridge, Massachusetts

**283**

**Use of Nanoparticles for Improving Enzyme Stability to Prolong Biosensor Functionality**

G. Zhang, Clemson University, Clemson, SC

**Wound Dressings That Do More Than Covering the Wounds**

**285**

**Effectively Inducing and Monitoring Adipose-derived Stem Cells-mediated Tissue Regeneration using a PEGylated Fibrin and Gold Nanoparticles**

E. Chung, The University of Texas at Austin, Austin, TX
R. S. Stowers, The University of Texas at Austin, Austin, Texas
S. Y. Nam, The University of Texas at Austin, Austin, Texas
M. A. Samano, The University of Texas at Austin, Austin, Texas
L. M. Ricles, The University of Texas at Austin, Austin, Texas
S. Y. Emelianov, The University of Texas at Austin, Austin, Texas
L. J. Suggs, The University of Texas at Austin, Austin, Texas

**286**

**Accelerated Re-epithelialization of Skin Wounds Using Epidermal Growth Factor Coacervate**

N. Johnson, University of Pittsburgh, Pittsburgh, PA
Y. Wang, University of Pittsburgh, Pittsburgh, Pennsylvania

**287**

**Multilayer films addressing bleeding and infection**

B. B. Hsu, Massachusetts Institute of Technology, Cambridge, MA
P. T. Hammond, Massachusetts Institute of Technology, Cambridge, Massachusetts
Electrospun Ultralow-fouling Poly(Sulfobetaine Methacrylate) for Nonadherent, Superabsorbent, Antimicrobial, and Reusable Wound Dressings
Q. Liu, University of Akron, Akron, OH
R. Lalani, University of Akron, Akron, Ohio
D. Kontoveros, University of Akron, Akron, Ohio
L. Liu, University of Akron, Akron, Ohio

Disease State Affects Tissue Microenvironment and Material Performance
N. Oliva, MIT, Cambridge, MA

Quick-Release Medical Tape
B. Laulicht, Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA
R. Langer, MIT, Cambridge, Massachusetts
J. Karp, Harvard/MIT, Cambridge, Massachusetts

Biofunctional Polymers for Gene Delivery

Enhancement of colloidal stability of cell signal-responsive gene carriers for disease cell-specific delivery
Y. Katayama, Faculty of Engineering, Kyushu University, Fukuoka, Japan
S. Kushio, Kyushu University, Fukuoka, Japan
C. Kim, Kyushu University, Fukuoka, Japan
T. Niidome, Faculty of Engineering, Kyushu University, Fukuoka, Japan
T. Mori, Faculty of Engineering, Kyushu University, Fukuoka, Japan

Novel Solution of Nucleic Acid Delivery for in-vivo Diagnosis: Self-assembled Nanopieces
H. Yu, Warren Alpert Medical School, Brown University, Providence, RI

Design of Dendrimer-Based System for Delivery of Therapeutic SiRNA for Treating Cardiac Disease
J. Liu, Georgia Institute of Technology, Atlanta, GA
C. Gu, Georgia Institution of Technology, Atlanta, Georgia
B. Cabigas, Emory University, Atlanta, Hawaii
K. Pendergrass, Emory University, Atlanta, Georgia
M. Brown, Emory University, Atlanta, Georgia
Y. Luo, Peking University, Beijing, China
M. Davis, Georgia Institute of Technology and Emory University, Atlanta, Georgia

The Development of Safe and Effective Polymeric Carriers for SiRNA Delivery
A. R. Shrivats, Carnegie Mellon University, Pittsburgh, PA
E. Hsu, Carnegie Mellon University, Pittsburgh, Pennsylvania
A. Watt, Carnegie Mellon University, Pittsburgh, Pennsylvania
S. McBride, Carnegie Mellon University, Pittsburgh, Pennsylvania
S. Liu, Carnegie Mellon University, Pittsburgh, Pennsylvania
P. Alvarez-Urena, Carnegie Mellon University, Pittsburgh, Pennsylvania
S. Averick, Carnegie Mellon University, Pittsburgh, Pennsylvania
H. Cho, Carnegie Mellon University, Pittsburgh, Pennsylvania
E. Paredes, Carnegie Mellon University, Pittsburgh, Pennsylvania
A Versatile Coiled-coil Tethering System for the Biofunctionalization of Recharged Gene Delivery Vectors
C. Fortier, Ecole Polytechnique de Montreal, Montreal, QC, Canada
B. Liberelle, Ecole Polytechnique de Montreal, Montreal, Québec, Canada
Y. Durocher, CNRC-NRC Montreal-Royalmount, Montreal, Québec, Canada
G. De Crescenzo, Ecole Polytechnique de Montreal, Montreal, Québec, Canada

Polysialic Acid-N-Trimethyl Chitosan Nanoparticles for Oligonucleotide Delivery
P. R. Wardwell, Syracuse University, Syracuse, NY
R. M. Iyer, Syracuse University, Syracuse, New York
P. N. Borer, Syracuse University, Syracuse, New York
M. McPike, Aptamatrix, Syracuse, New York
M. B. Forstner, Syracuse University, Syracuse, New York
R. A. Bader, Syracuse University, Syracuse, New York

Targeted Delivery of micro-RNA by Ephrin-A1 Conjugated Nanoliposomal Particles (NLP) for Malignant pleural Mesothelioma
H. Lee, University of Florida, Gainesville, FL

MicroRNA 29a Inhibitor Loaded Gelatin Nanofibers for Localized Gene Therapy
E. N. James, University of Connecticut Health Center, Middletown, CT
A. M. Delany, University of Connecticut Health Center, Farmington, Connecticut
L. S. Nair, University of Connecticut Health Center, Farmington, Connecticut

Cardiovascular Biomaterials

Peptide-grafted Poly(ethylene glycol) Hydrogels Support Endothelial Progenitor Cell Rolling and Adhesion Under Shear
W. Seeto, Auburn University, Auburn, AL
Y. Tian, Polytechnic Institute of New York University, Auburn, Alabama
E. A. Lipke, Auburn University, Auburn, Alabama

A non-toxic additive to introduce X-ray contrast into poly(lactic acid). Implications for transient medical implants such as bioreabsorbable coronary vascular scaffolds
Y. Wang, Maastricht University, Maastricht, Netherlands
L. H. Koole, Maastricht University, Maastricht, Netherlands

MSCs Enhanced Endothelial Regeneration and Reduced Fibrosis on Bioengineered Vascular Graft
W. Tan, University of Colorado, Boulder, CO

Small-Diameter Biodegradable Vascular Grafts Mechanical Characterization and Tissue Interactions
A. Melchiorri, University of Maryland, College Park, MD
Z. R. Brandes, University of Maryland, College Park, Maryland
N. Hibino, Children's National Medical Center, District of Columbia, District of Columbia
J. P. Fisher, University of Maryland, College Park, Maryland
Degradable polar hydrophobic ionic polyurethane promotes endothelial and wound healing phenotype of circulating angiogenic cells
E. S. Mathieu, University of Ottawa Heart Institute, Ottawa, ON, Canada

Aortic tissue-stent mechanical interaction in transcatheter aortic valve replacement
J. Mummert, University of Connecticut, Storrs, CT
E. Sirois, University of Connecticut, Storrs, Connecticut
W. Sun, University of Connecticut, Storrs, Connecticut

Introducing a polymeric device for the treatment of Abdominal Aortic Aneurysms: Design and in vitro performance
D. Cohn, The Hebrew University of Jerusalem, Jerusalem, Israel
A. Bloom, Hadassah University Medical Center, Jerusalem, Israel

Reconfigurable Biodegradable Shape-memory Elastomers using “click” Chemistry
S. Ninh, Carnegie Mellon University, Pittsburgh, PA
C. Bettinger, Carnegie Mellon University, Pittsburgh, Pennsylvania

Nanomaterials

Non-Invasive Diagnosis of Intracerebral Hemorrhage Using Iodinated Liposomal Nanocarriers
K. McNeeley, Georgia Institute of Technology, Atlanta, GA
K. McNeeley, Georgia Institute of Technology, Atlanta, Georgia
R. Bellamkonda, Georgia Institute of Technology, Atlanta, Georgia

Synthesis of Solid Lipid Nanoparticles and their Interaction with Skin
X. Calderon-Colon, The Johns Hopkins University Applied Physics Laboratory, Laurel, MD
M. W. Patchan, The Johns Hopkins University Applied Physics Laboratory, Laurel, Maryland
M. L. Theodore, The Johns Hopkins University Applied Physics Laboratory, Laurel, Maryland
H. T. Le, The Johns Hopkins University Applied Physics Laboratory, Laurel, Maryland
J. L. Sample, The Johns Hopkins University Applied Physics Laboratory, Laurel, Maryland
J. J. Benkoski, The Johns Hopkins University Applied Physics Laboratory, Laurel, Maryland
J. B. Patrone, The Johns Hopkins University Applied Physics Laboratory, Laurel, Maryland

Intracellular dynamics of oligopeptide-modified phospholipid polymer nanoparticles
K. ISHIHARA, The University of Tokyo, Tokyo, Japan

Surface Characterization of Functionalized Gold Nanoparticles
L. Gamble, University of Washington, Seattle, WA
A. Rafati, University of Washington, Seattle, Washington
S. D. Techane, University of Washington, Seattle, Washington
D. G. Castner, University of Washington, Seattle, Washington

Composite Biomaterials Active against Opportunistic Pathogens
M. D. Leonida, Fairleigh Dickinson University, Teaneck, NJ
A. Benzecry, Fairleigh Dickinson University, Teaneck, New Jersey
A. Suria, Fairleigh Dickinson University, Teaneck, New Jersey

Reduced Adhesion of Staphylococcus aureus to ZnO/PVC Nanocomposites
B. M. Geilich, Northeastern University, Brookline, MA
T. J. Webster, Northeastern University, Boston, Massachusetts
Cecropin-mellitin modified surfaces exhibit high antimicrobial activity and low cytotoxicity against human cells
M. B. Evangelista, BIOCANT - Technology Transfer Association and CNC - Center for Neuroscience and Cell Biology, Cantanhede, Portugal
A. Rai, Biocant - Parque Tecnologico de Cantanhede and CNC - Center for Neuroscience and Cell Biology, Cantanhede, Portugal
M. B. Evangelista, Biocant - Parque Tecnologico de Cantanhede and CNC - Center for Neuroscience and Cell Biology, Cantanhede, Portugal
S. Pinto, CNC - Center for Neuroscience and Cell Biology, Cantanhede, Portugal
L. S. Ferreira, Biocant - Parque Tecnologico de Cantanhede and CNC - Center for Neuroscience and Cell Biology, Cantanhede, Portugal

Multivalent Gd-DOTA Decorated Starlike Amphiphilic Dextran Micelles as Sensitive MRI Probes
H. Ai, Sichuan University, Chengdu, China
H. Su, Sichuan University, Chengdu, China
D. Li, Sichuan University, Chengdu, China
C. Wu, Sichuan University, Chengdu, China
C. Xia, Sichuan University, Chengdu, China
Q. Gong, Sichuan University, Chengdu, China
B. Song, Sichuan University, Chengdu, China

The Role of Antioxidants in Biomaterials

The Efficacy of Vitamin E and a Hindered Amine Light Stabilizer in stabilizing UHMWPE from Oxidation
A. Bellare, Brigham & Women's Hospital, Harvard Medical School, Boston, MA

Collagen and Elastin Binding Polyphenols Protect Scaffolds and Stem Cells from Diabetes-Related Complications
J. P. Chow, Clemson University, Clemson, SC

Extraction Analysis of Vitamin E-Grafted Polyethylene
S. Spiegelberg, Cambridge Polymer Group, Inc., Boston, MA
N. Turner, Cambridge Polymer Group, Boston, Massachusetts
T. Wilson-Hill, Cambridge Polymer Group, Boston, Massachusetts
D. Fletcher, Zimmer, Inc., Warsaw, Indiana
A. Rufner, Zimmer, Inc., Warsaw, Indiana

Antioxidant Cerium Oxide Nanoparticle Composite Hydrogels for Islet Encapsulation and Protection
J. D. Weaver, University of Miami, Miami, FL
C. L. Stabler, University of Miami, Miami, Florida

Reducing Lipid Absorption in Highly Crosslinked Grafted Vitamin E Polyethylene
D. Fletcher, Zimmer, Inc, Warsaw, IN
A. Rufner, Zimmer, Inc, Warsaw, Indiana

Microparticulate Formulations of Antioxidant Poly(β-Amino Ester) Polymers for Wound Healing Applications
N. M. Shah, University of Kentucky, Lexington, KY
Surface Characterization and Modification

322 Development of new toxin-adsorbing and hemocompatible surfaces as a step towards a miniaturized artificial kidney
J. H. Janssen, Maastricht University and INterface BIOmaterials BV, Geleen, Netherlands

323 Development of a Catheter-Deployable Device for the Capture of Rare Analytes in Blood
J. C. Sy, Massachusetts Institute of Technology, Cambridge, MA
J. Fernandez Esmerats, Massachusetts Institute of Technology, Cambridge, Massachusetts
A. E. Wisniowska, Massachusetts Institute of Technology, Cambridge, Massachusetts
J. M. Milwid, Massachusetts Institute of Technology, Cambridge, Massachusetts
M. J. Cima, Massachusetts Institute of Technology, Cambridge, Massachusetts

324 Bioactive coatings for vascular implants: a promising strategy using oriented tethering of EGF on chondroitin sulfate
P. Lequoy, Ecole de Technologie Supérieure, Montreal, QC, Canada
B. Liberelle, Ecole Polytechnique de Montreal, Montreal, Québec, Canada
C. Fortier, Ecole Polytechnique de Montreal, Montreal, Québec, Canada
G. De Crescenzo, Ecole Polytechnique de Montreal, Montreal, Québec, Canada
S. Lerouge, Ecole de Technologie Superieure, Montreal, Québec, Canada

325 Development of Viral Nanoparticle Networks and Hybrids for Enhanced Tumor Homing and Penetration
A. M. Wen, Case Western Reserve University, Cleveland, OH
N. F. Steinmetz, Case Western Reserve University, Cleveland, Ohio

326 Precisely Designed Thermo-responsive Polymer Brush Surface for Cell Separation
K. Nagase, Tokyo Women’s Medical University, Tokyo, Japan
A. Kimura, Waseda University, Tokyo, Japan
Y. Hatakeyama, Waseda University, Tokyo, Japan
T. Shimizu, Tokyo Women’s Medical University, Tokyo, Japan
K. Matsuura, Tokyo Women’s Medical University, Tokyo, Japan
M. Yamato, Tokyo Women’s Medical University, Tokyo, Japan
N. Takeda, Waseda University, Tokyo, Japan
T. Okano, Tokyo Women’s Medical University, Tokyo, Japan

327 Ultrathin Surface Coating of Thermoresponsive Block Copolymers for Fabricating Cell Sheets
M. Nakayama, Tokyo Women’s Medical University, Tokyo, Japan
Y. Kimura, Keio University, Tokyo, Japan
N. Yamada, Keio University, Tokyo, Japan
H. Kanazawa, Keio University, Tokyo, Japan
T. Okano, Tokyo Women’s Medical University, Tokyo, Japan

328 Robust Photolabile Physically Crosslinked Polymer Networks
C. Zhu, Carnegie Mellon University, Pittsburgh, PA
C. Bettinger, Carnegie Mellon University, Pittsburgh, Pennsylvania
Slippery When Wet: Gradient Surface Functionalization of Hydrogels for Lubricity Control
B. A. Krick, University of Florida, Gainesville, FL
A. A. Pitenis, University of Florida, Gainesville, Florida
A. C. Dunn, University of Florida, Gainesville, Florida
W. Sawyer, University of Florida, Gainesville, Florida

Tissue Engineering 2

Dose Response to TGF-β3 of Co-Cultured Chondrocytes and Mesenchymal Stem Cells on Porous Polymer Scaffolds
R. L. Dahlin, Rice University, Houston, TX
M. Ni, Rice University, Houston, Texas
V. V. Meretoja, Rice University, Houston, Texas
F. K. Kasper, Rice University, Houston, Texas
A. G. Mikos, Rice University, Houston, Texas

Heparin-containing Hydrogels for Sustained Release of Cathepsin Inhibitors for Treatment of Tendon Degeneration
S. P. Seto, Georgia Institute of Technology, Atlanta, GA
T. Miller, Georgia Institute of Technology, Atlanta, Georgia
Y. Qiu, Georgia Institute of Technology, Atlanta, Georgia
M. O. Platt, Georgia Institute of Technology, Atlanta, Georgia
J. S. Temenoff, Georgia Institute of Technology, Atlanta, Georgia

Effects of Ceramic Structural Properties on Chondrocyte Response
M. K. Boushell, Columbia University, New York, NY
R. Z. LeGeros, New York University, New York, New York
H. H. Lu, Columbia University, New York, New York

Cartilage Tissue Engineering with Silk Fibroin Scaffolds Fabricated by Indirect Additive Manufacturing Technology
V. Shyu, Chang Gung Memorial Hospital, Chang Gung University, College of Medicine, Taoyuan, Taiwan, Tao-Yuan, Taiwan

Co-electrospun Scaffolds with Gradients in Fiber Alignment and Chemistry for the Regeneration of Ligament-Bone Transitions
A. R. Whittington, Virginia Polytechnic Institute and State University, Blacksburg, VA
S. Samavedi, Virginia Polytechnic Institute and State University, Blacksburg, Virginia
P. Gaddam, Virginia Polytechnic Institute and State University, Blacksburg, Virginia
A. R. Whittington, Virginia Polytechnic Institute and State University, Blacksburg, Virginia
A. S. Goldstein, Virginia Polytechnic Institute and State University, Blacksburg, Virginia

Micropatterned co-cultures of endothelial cells and mesenchymal stem cells within gelatin methacrylate hydrogels
M. Nikkhah, Harvard Medical School, Cambridge, MA

Electrospun Bilayered Vascular Scaffolds for Engineering Small Diameter Blood Vessels
S. Lee, Wake Forest School of Medicine, Winston-Salem, NC

Novel Bioactive Coatings to Improve Allograft Incorporation Evaluated in eGFP Chimeric Rats
A. Das, University of Virginia, Charlottesville, VA
Tribocorrosion of Metallic Biomaterials

338  **Adverse Tissue Response to Corrosion and Products of Corrosion in CoCr Dual-Modular Neck Hip Protheses**
D. J. Hall, Rush University Medical Center, Chicago, IL  
R. M. Urban, Rush University Medical Center, Chicago, Illinois  
H. J. Cooper, Rush University Medical Center, Chicago, Illinois  
J. L. Wright, Rush University Medical Center, Chicago, Illinois  
E. L. Dahlmeier, Rush University Medical Center, Chicago, Illinois  
J. J. Jacobs, Rush University Medical Center, Chicago, Illinois

339  **Prediction of Voltage Shifts During Fretting Corrosion of Titanium Alloy: Effect of Area, Impedance and Mechanics**
Y. Liu, Biomedical and Chemical Engineering Department, Syracuse Biomaterials Institute, Syracuse University, Syracuse, NY, Syracuse, NY  
S. Mali, Biomedical and Chemical Engineering Department, Syracuse Biomaterials Institute, Syracuse University, Syracuse, New York  
J. Gilbert, Biomedical and Chemical Engineering Department, Syracuse Biomaterials Institute, Syracuse University, Syracuse, New York

340  **Wear-corrosion Synergism under Fretting and Sliding Contacts in Hip Prosthesis**
M. T. Mathew, Rush University Medical Center, Chicago, IL

341  **Study of bio-tribocorrosion behavior of Ti6Al4V alloys colonized with osteoblastic-like cells for metal hip prosthesis**
M. J. C. Runa, University of Minho, Guimarães, Portugal  
M. H. R. Fernandes, University of Porto, Faculty of Dental Medicine, Porto, Portugal  
M. M. T. Mathew, Rush University Medical Center, Chicago, Illinois  
L. A. S. Rocha, University of Minho, Guimaraes, Portugal

342  **Fretting Corrosion Performance Test of Spinal Screw and Rod Constructs: Effect of Stainless Steel –Titanium Combination**
S. A. MALI, SYRACUSE UNIVERSITY, Syracuse, NY

343  **Tribocorrosion Behavior of Anodic Titanium Oxide Films and Assessment of Cell-Materials Interactions**
S. A. Alves, University of Minho, Guimaraes, Portugal  
R. Bayón, Fundación IK4-Tekniker, Eibar, Spain  
V. S. de Viteri, Fundación IK4-Tekniker, Eibar, Spain  
M. P. Garcia, Faculty of Dental Medicine of Porto University, Porto, Portugal  
A. Igartua, Fundación IK4-Tekniker, Eibar, Spain  
M. H. Fernandes, Faculty of Dental Medicine of Porto University, Porto, Portugal  
L. A. Rocha, University of Minho, Guimaraes, Portugal

344  **Quartz crystal mass monitoring to study tribofilm formation and retention in self-mating CoCrMo systems**
R. Pourzal, Rush University Medical Center, Chicago, IL
Hydroxyapatite Coated Porous Magnesium with for Biomedical Applications
M. Kang, Department of Materials Science and Engineering, Seoul National University, Seoul, Republic of Korea, Seoul, Republic of Korea

Biomaterial Strategies for Large-Area Bone Regeneration

Scaffold Optimization and Pre-Vascularization Strategies for Large-Area Bone Regeneration
A. R. Amini, University of Connecticut Health Center, Farmington, CT
C. T. Laurencin, University of Connecticut Health Center, Farmington, Connecticut
S. P. Nukavarapu, University of Connecticut Health Center, Farmington, Connecticut

Biomimetic Citrate-Presenting Osteoinductive Composites
R. T. Tran, The Pennsylvania State University, University Park, PA
C. Zhang, The University of Texas at Arlington, Arlington, Texas
B. Banik, The Pennsylvania State University, University Park, Pennsylvania
J. L. Brown, The Pennsylvania State University, University Park, Pennsylvania
J. Yang, The Pennsylvania State University, University Park, Pennsylvania

Development of Bioactive Glass Scaffolds for Segmental Bone Repair
M. N. Rahaman, Missouri University of Science and Technology, Rolla, MO

A novel magnesium-based bone substitutes: An alternative to autologous bone grafting to treat large bone defects
K. W. K. Yeung, The University of Hong Kong, Hong Kong, Hong Kong
K. H. M. Wong, The University of Hong Kong, Hong Kong, Hong Kong
P. K. Chu, City University of Hong Kong, Hong Kong, Hong Kong
K. D. K. Luk, The University of Hong Kong, Hong Kong, Hong Kong
K. M. C. Cheung, The University of Hong Kong, Hong Kong, Hong Kong

Tethered Epidermal Growth Factor delivery for the repair of large segmental bone defects
J. J. Rivera, Massachusetts Institute of Technology, Cambridge, MA
M. Rodrigues, University of Pittsburgh, Pittsburgh, Pennsylvania
V. Raut, Cleveland Clinic, Cleveland, Ohio
L. M. Alvarez, Massachusetts Institute of Technology, Cambridge, Massachusetts
L. Stockdale, Massachusetts Institute of Technology, Cambridge, Massachusetts
A. Nuschke, University of Pittsburgh, Pittsburgh, Pennsylvania
C. Boehm, Cleveland Clinic, Cleveland, Ohio
D. Stolz, University of Pittsburgh, Pittsburgh, Pennsylvania
A. Wells, University of Pittsburgh, Pittsburgh, Pennsylvania
G. F. Muschler, Cleveland Clinic, Cleveland, Ohio
L. Griffith, Massachusetts Institute of Technology, Cambridge, Massachusetts

Integrin-Specific Hydrogels for the Delivery of Human Mesenchymal Stem Cells in Bone Repair
A. Y. Cheng, Georgia Institute of Technology, Atlanta, GA
A. Shekaran, Georgia Institute of Technology, Atlanta, Georgia
A. J. Garcia, Georgia Institute of Technology, Atlanta, Georgia
Biomaterial-Mediated Delivery of Uncultured Rat Bone Marrow Mononuclear Cells and Culture-Expanded Mesenchymal Stem Cells for Large Bone Defect Healing
J. K. Wise, University of Michigan, Ann Arbor, MI
A. I. Alford, University of Michigan, Ann Arbor, Michigan
J. P. Stegemann, University of Michigan, Ann Arbor, Michigan

MSC Localization via Tissue Engineered Periosteum Mimetics Coordinates Remodeling of Bone Allografts
M. Hoffman, University of Rochester, Rochester, NY
C. Xie, University of Rochester, Rochester, New York
D. Benoit, University of Rochester, Rochester, New York

Biomaterials for Modulating Immune and Inflammatory Processes

Development of novel imaging probes for the detection of polarized macrophage subsets during foreign body reactions
D. W. Baker, University of Texas at Arlington, Coppell, TX
J. Zhou, University of Texas at Arlington, Arlington, Texas
Y. Tsai, University of Texas at Arlington, Arlington, Texas
K. Patty, University of Texas at Arlington, Arlington, Texas
H. Weng, University of Texas at Arlington, Arlington, Texas
E. N. Tang, University of Texas at Arlington, Arlington, Texas
L. Tang, University of Texas at Arlington, Arlington, Texas

The Immune Response to Xenogeneic Acellular Biologic Scaffold Materials
R. Londono, University of Pittsburgh, Pittsburgh, PA
T. J. Keane, University of Pittsburgh, Pittsburgh, Pennsylvania
B. M. Brown, University of Pittsburgh, Pittsburgh, Pennsylvania
M. T. Wolf, University of Pittsburgh, Pittsburgh, Pennsylvania
S. F. Badylak, University of Pittsburgh, Pittsburgh, Pennsylvania

Single dose polyanhydride nanoparticle-based vaccine safely induces both cellular and humoral immunity
S. Haughney, Iowa State University, Ames, IA
Y. Phanse, Iowa State University, Ames, Iowa
L. Petersen, Iowa State University, Ames, Iowa
A. Ramer-Tait, Iowa State University, Ames, Iowa
J. Hostetter, Iowa State University, Ames, Iowa
B. Narasimhan, Iowa State University, Ames, Iowa
M. Wannemuehler, Iowa State University, Ames, Iowa

Sphingosine 1-phosphate receptor three regulates implant arteriogenesis by recruitment and localization of anti-inflammatory monocytes to surrounding microvessels
A. O. Awojoodu, Georgia Institute of Technology, Atlanta, GA

Macrophage-Targeted Alginate Nanoparticles as a Non-Condensing Murine IL-10 Gene Delivery System for the Treatment of Experimental Arthritis
S. Jain, Northeastern University, Boston, MA
M. M. Amiji, Northeastern University, Boston, Massachusetts

The Influence of Keratin Biomaterial Treatment on Macrophage Phenotype in Spinal Cord Injury
B. Fearing, Wake Forest University Health Sciences, Winston-Salem, NC

Immunotherapy with Shear-thinning Injectable Hydrogels to Treat Obstructive Nephropathy
D. E. Soranno, Children's Hospital of Philadelphia, Philadelphia, PA
H. D. Lu, University of Pennsylvania, Philadelphia, Pennsylvania
J. A. Burdick, University of Pennsylvania, Philadelphia, Pennsylvania

Engineering Dendritic Cell Environments To Reduce Transplant Rejection By Induction Of Immune Tolerance.
S. Srinivasan, Georgia Institute of Technology, Atlanta, GA
G. Patel, Georgia Institute of Technology, Atlanta, Georgia
U. Goh, Georgia Institute of Technology, Atlanta, Georgia
J. E. Babensee, Georgia Institute of Technology, Atlanta, Georgia

Biomaterials in the Fourth Dimension – Controlling Temporal Properties

Dynamic Cell Culture on Shape Changing Micropatterns
K. A. Davis, Syracuse University, Syracuse, NY
J. H. Henderson, Syracuse University, Syracuse, New York

Shape-memory Cell Culture Surfaces with Dynamically Tunable Nanopatterns
M. Ebara, National Institute for Materials Science, Tsukuba, Japan
T. Aoyagi, National Institute for Materials Science, Tsukuba, Japan

Sequential Growth Factor Delivery within Fibrin Loaded Porous Degradable Hydrogels
B. Jiang, Illinois Institute of Technology, Chicago, IL
B. Akar, Illinois Institute of Technology, Chicago, Illinois
T. Waller, Illinois Institute of Technology, Chicago, Illinois
J. Larson, Illinois Institute of Technology, Chicago, Illinois
A. Appel, Illinois Institute of Technology, Chicago, Illinois
E. Brey, Illinois Institute of Technology, Chicago, Illinois

Fibrous Hyaluronic Acid Scaffolds with Engineered Degradation through MMP Sensitivity
R. Wade, University of Pennsylvania, Philadelphia, PA
J. A. Burdick, University of Pennsylvania, Philadelphia, Pennsylvania

Facile preparation of phododegradable hydrogel by photo-mediated crosslinking
C. Ki, Indiana University-Purdue University Indianapolis, Indianapolis, IN
H. Shih, Indiana University-Purdue University Indianapolis, Indianapolis, Indiana
C. Lin, Indiana University-Purdue University Indianapolis, Indianapolis, Indiana

Clickable, Photodegradable Cell Culture Scaffolds to Modulate Valvular Interstitial Cell Phenotype In Situ
C. M. Kirschner, University of Colorado, Boulder, CO
C. M. Kirschner, University of Colorado, Boulder, Colorado
D. L. Alge, University of Colorado, Boulder, Colorado
S. T. Gould, University of Colorado, Boulder, Colorado
K. S. Anseth, University of Colorado, Boulder, Colorado
Biomimetic Surfaces: From Multi-scale Fabrication Methods to Diagnostic, Therapeutic and Clinical Applications

369 Longitudinal Monitoring of Biomaterial-associated Inflammation and Bacterial Infection in a Minimally Invasive Fashion
S. Suri, Georgia Institute of Technology, Smyrna, GA
S. Selvam, Georgia Institute of Technology, Trivandrum, India
S. M. Lehman, Georgia Institute of Technology, Atlanta, Georgia
K. Reddie, Georgia Institute of Technology, Atlanta, Georgia
N. Murthy, University of California Berkeley, Berkeley, California
A. J. Garcia, Georgia Institute of Technology, Atlanta, Georgia

370 Biomimetic Mineralization of Acid Polysaccharide-based Hydrogels: Inspiration from Recent Findings about Organic/mineral Interface in Bone
C. Zhong, Sr., Cornell University, Ithaca NY, NY
C. Chu, Cornell University, Ithaca, New York

371 Polar Opposite Functions of the North American Porcupine Quill and Quill-mimetic Medical Devices
W. Cho, MIT, Cambridge, MA
J. Ankrum, MIT, Cambridge, Massachusetts
D. Guo, Brigham and Women's Hospital, Cambridge, Massachusetts
S. Chester, MIT, Cambridge, Massachusetts
S. Yang, Brigham and Women's Hospital, Cambridge, Massachusetts
A. Kashyap, Brigham and Women's Hospital, Cambridge, Massachusetts
G. Campbell, Brigham and Women's Hospital, Cambridge, Massachusetts
R. Wood, Harvard University, Cambridge, Massachusetts
R. Rijal, Brigham and Women's Hospital, Cambridge, Massachusetts
R. Karnik, MIT, Cambridge, Massachusetts
R. Langer, MIT, Cambridge, Massachusetts
J. Karp, Brigham and Women's Hospital, Cambridge, Massachusetts

372 Internal Stress in Biomimetic Coatings due to Cell-Material Interactions
L. Yang, The First Affiliated Hospital of Soochow University, Suzhou, China
L. Zhang, Brown University, Providence, Rhode Island
B. W. Sheldon, Brown University, Providence, Rhode Island
T. J. Webster, Brown University, Providence, Rhode Island

373 Specificity of Adsorption in a Prototype Whole Blood Affinity Therapy Device for Removal of Staphylococcus aureus
R. S. Ward, Exthera Medical Corporation, Berkeley, CA

374 Using Biomimetic Protein Micropatterns to Guide Mesenchymal Stem Cell Differentiation
A. Shukla, Rice University, Houston, TX
J. West, Duke University, Durham, North Carolina

375 Calcium Phosphate Composite as Stem Cells Delivery Vehicle for Bone Repair
J. Chang, ETEX Corporation, Cambridge, MA

376 Multifunctional Matrix Self-Assembled from Matrilin-3 and Rosette Nanotubes for Cartilage Repair
Y. Chen, Rhode Island Hospital/Alpert Medical School, Brown University, Providence, RI
Drug Delivery

377  **Hyaluronic Acid - Gold Nanoparticle/Interferon α Complex for Targeted Treatment of Hepatitis C Virus Infection**  
S. Hahn, Pohang University of Science and Technology (POSTECH), pohang, Republic of Korea  
M. Lee, POSTECH, Pohang, Republic of Korea  
J. Yang, POSTECH, pohang, Republic of Korea  
H. Jung, POSTECH, pohang, Republic of Korea  
W. Hur, The Catholic University, Seoul, Republic of Korea  
S. Yoon, The Catholic University, Seoul, Republic of Korea

378  **Evaluating Cellular Interactions of Polyanhydride Particles for Intracellular Delivery of Antibiotics**  
B. Narasimhan, Iowa State University, Ames, IA  
Y. Phanse, Iowa State University, Ames, Iowa  
P. A. Lueth, Iowa State University, Ames, Iowa  
A. E. Ramer-Tait, University of Nebraska–Lincoln, Lincoln, Nebraska  
B. R. Carrillo-Conde, University of Texas Austin, Austin, Texas  
B. Narasimhan, Iowa State University, Ames, Iowa  
M. J. Wannemuehler, Iowa State University, Ames, Iowa  
B. H. Bellaire, Iowa State University, Ames, Iowa

379  **Quantitative In vitro 3D Analysis of Nanomaterial Diffusion in a 3D-Atherosclerosis Model**  
P. Chetprayoon, Graduate School of Engineering, Osaka University, Osaka, Japan  
M. Matsusaki, Graduate School of Engineering, Osaka University, Osaka, Japan  
M. Akashi, Graduate School of Engineering, Osaka University, Osaka, Japan

380  **Understanding the Influence of Stent Design on Arterial Drug Distribution and Effect through Computational Modeling**  
R. A. Tzafriri, CBSET Inc, Lexington, MA  
E. R. Edelman, MIT, Cambridge, Massachusetts

381  **Surface Modification of Red Blood Cells Using Novel Plasma Membrane Anchors**  
S. Pandya, University of Texas at San Antonio, san antonio, TX  
M. Salinas, University of Texas at San Antonio, San Antonio, Texas  
E. Abdelaziz, University of Texas at San Antonio, san antonio, Texas  
G. Negrete, University of Texas at San Antonio, san antonio, Texas  
C. Agrawal, University of Texas at San Antonio, san antonio, Texas

382  **Polymeric Microparticles for Controlled Fibrolysis in Abdominal Aortic Aneurysms (AAAs)**  
B. Sivaraman, Cleveland Clinic Foundation, Cleveland, OH  
A. Sylvester, Case Western Reserve University & Cleveland Clinic, Cleveland, Ohio  
A. Ramamurthi, Cleveland Clinic, Cleveland, Ohio

383  **Controlled release of novel anti-biofilm agents from a poly (2-hydroxyethyl methacrylate) Scaffold for the treatment of medical device associated bacterial biofilm infections**  
h. ma, university of washington, Seattle, WA

384  **Synthesis of Antimicrobial Monomers Using Ciprofloxacin**  
Y. Delaviz, University of Toronto, Toronto, ON, Canada  
M. W. Laschuk, University of Toronto, Toronto, Ontario, Canada
Engineering Cells and Their Microenvironments

385  The Role of Cell Shape in Macrophage Polarization  
F. Y. N. McWhorter, University of California, Irvine, Irvine, CA

386  Cell Interaction Distance Modulates Chondrocyte Responses on Co-Cultured Scaffolds  
X. Zhang, Columbia University, New York, NY  
K. L. Moffat, Columbia University, New York, New York  
S. E. Gordon, Columbia University, New York, New York  
N. H. Goldhaber, Columbia University, New York, New York  
H. H. Lu, Columbia University, New York, New York

387  Microencapsulation of Beta Cell Spheroids for Treatment of Type 1 Diabetes  
X. Liu, Clemson University, Richmond, VA  
X. Wen, Virginia Commonwealth University, Richmond, Virginia

388  Integration of Microfabricated Channels and Self-assembled Microvasculature to Support Engineered Hepatic Tissue  
S. J. Higbee, Rice University, Houston, TX  
M. P. Cuchiara, Rice University, Houston, Texas  
J. L. West, Duke University, Houston, Texas

389  Phosphorylating apatite-specific peptide inhibits osteoblast mineralization  
J. Ramaswamy, University of Michigan Ann Arbor, Ann Arbor, MI  
H. Nam, University of Michigan Ann Arbor, Ann Arbor, Michigan  
N. E. Hatch, University of Michigan Ann Arbor, Ann Arbor, Michigan  
D. H. Kohn, University of Michigan, Ann Arbor, Michigan

390  Osteogenic differentiation of ASC and MSC in modular protein/ceramic microenvironments  
R. R. Rao, University of Michigan, Ann Arbor, MI  
R. R. Rao, University of Michigan, Ann Arbor, Michigan  
A. W. Peterson, University of Michigan, Ann Arbor, Michigan  
J. P. Stegemann, University of Michigan, Ann Arbor, Michigan

391  Cell Cycle Unification Based on Tuning of Cellular Environments Using Cytocompatible and Reversible Forming Phospholipid Polymeric Hydrogels  
H. Oda, The University of Tokyo, Tokyo, Japan  
T. Konno, The University of Tokyo, Tokyo, Japan  
K. Ishihara, The University of Tokyo, Tokyo, Japan

392  3D hydrogel fibers based system to design heterotypic bone vascularization approaches  
S. M. Mihaila, 3B's Research Group, Caldas das Taipas - Guimarães, Portugal  
E. G. Popa, 3B's Research Group, Caldas das Taipas - Guimarães, Portugal  
R. L. Reis, 3B's Research Group, Caldas das Taipas - Guimarães, Portugal  
A. P. Marques, 3B's Research Group, Caldas das Taipas - Guimarães, Portugal  
M. E. Gomes, 3B's Research Group, Caldas das Taipas - Guimarães, Portugal
Surgical Meshes - Recent Development and Application

393 Polypropylene Surgical Mesh Coated with Extracellular Matrix Mitigates the Host Foreign Body Response
M. T. Wolf, University of Pittsburgh, Pittsburgh, PA
M. T. Wolf, University of Pittsburgh, Pittsburgh, Pennsylvania
C. A. Carruthers, University of Pittsburgh, Pittsburgh, Pennsylvania
C. L. Dearth, University of Pittsburgh, Pittsburgh, Pennsylvania
P. M. Crapo, University of Pittsburgh, Pittsburgh, Pennsylvania
A. Huber, University of Pittsburgh, Pittsburgh, Pennsylvania
O. A. Burnsed, University of Pittsburgh, Pittsburgh, Pennsylvania
R. Londono, University of Pittsburgh, Pittsburgh, Pennsylvania
S. A. Johnson, University of Pittsburgh, Pittsburgh, Pennsylvania
K. A. Daly, University of Pittsburgh, Pittsburgh, Pennsylvania
E. C. Stahl, University of Pittsburgh, Pittsburgh, Pennsylvania
J. M. Freund, University of Pittsburgh, Pittsburgh, Pennsylvania
C. J. Medberry, University of Pittsburgh, Pittsburgh, Pennsylvania
L. E. Carey, University of Pittsburgh, Pittsburgh, Pennsylvania
A. Nieponice, University of Pittsburgh, Pittsburgh, Pennsylvania
N. J. Amoroso, University of Pittsburgh, Pittsburgh, Pennsylvania
S. F. Badylak, University of Pittsburgh, Pittsburgh, Pennsylvania

394 Development of Automated Loom for Woven Tissue Engineering Test Systems
J. Gilmore, Clemson University, Clemson, SC

395 Histological Evaluation of Abdominal Wall Defect Repair with a Novel Warp-Knit Mesh
S. Peniston, Poly-Med, Inc., Anderson, South Carolina
J. Corbett, Poly-Med, Inc., Anderson, South Carolina

396 Evaluation of a Polyamide-Gelatin Mesh seeded with Human Endometrial Mesenchymal Stem Cells for the repair of Pelvic Organ Prolapse
J. A. M. Ramshaw, CSIRO - Materials Science and Engineering, Clayton, Australia
D. Ulrich, Monash Institute of Medical Research, Clayton, Australia
S. L. Edwards, CSIRO - Materials Science and Engineering, Clayton, Australia
J. F. White, CSIRO - Materials Science and Engineering, Clayton, Australia
C. Su, CSIRO - Materials Science and Engineering, Clayton, Australia
K. Tan, Monash Institute of Medical Research, Clayton, Australia
A. Rosamilia, Monash University, Clayton, Australia
C. E. Gargett, Monash Institute of Medical Research, Clayton, Australia
J. A. Werkmeister, CSIRO - Materials Science and Engineering, Clayton, Australia

397 In Vitro Cellular Response to Surgical Mesh Materials Derived from Dermal ECM
K. M. Kulig, Massachusetts General Hospital, Boston, MA
X. Luo, Massachusetts General Hospital, Boston, Massachusetts
E. B. Finkelstein, Massachusetts General Hospital, Boston, Massachusetts
X. Liu, Kensey Nash Corporation, Exton, Pennsylvania
J. P. Vacanti, Massachusetts General Hospital, Boston, Massachusetts
S. Goldman, Kensey Nash Corporation, Exton, Pennsylvania
C. A. Sundback, Massachusetts General Hospital, Boston, Massachusetts
C. M. Neville, Massachusetts General Hospital, Boston, Massachusetts

398 Potential utility of woven flax fiber meshes in surgical repair of incisional hernias
S. A. A. Michel, Maastricht University, Maastricht, Netherlands
M. L. W. Knetsch, Maastricht University, Maastricht, Netherlands
D. G. Molin, Maastricht University, Maastricht, Netherlands
L. H. Koole, Maastricht University, Maastricht, Netherlands

Differentiation by FT-IR of Absorbable Polyesters Used in Production of Surgical Meshes

C. Culbreath, Poly-Med, Inc., Anderson, South Carolina
J. Corbett, Poly-Med, Inc., Anderson, South Carolina

In Vitro Degradation Property of Two Fully-Absorbable Poly(lactide-co-glycolide) Meshes

M. Deng, Johnson & Johnson Global Surgery Group, Somerville, NJ
M. Deng, Johnson & Johnson, Somerville, New Jersey
D. Burkley, Johnson & Johnson, Somerville, New Jersey
M. Xu, Johnson & Johnson, Somerville, New Jersey
S. Savidge, Johnson & Johnson, Somerville, New Jersey
I. Koyfman, Johnson & Johnson, Somerville, New Jersey
C. Yang, Johnson & Johnson, Somerville, New Jersey
Y. Li, Johnson & Johnson, Somerville, New Jersey

Poster

Advances in Ophthalmic Biomaterials and Ocular Drug-Delivery 1

β-Cyclodextrin-poly(β-amino ester) Nanoparticles as Drug Carriers to Treat Retinoblastoma

T. L. Lowe, University of Tennessee Health Science Center, Memphis, TN
L. Wu, University of Tennessee Health Science Center, memphis, Tennessee
D. R. Janagam, University of Tennessee Health Science Center, memphis, Tennessee
S. Jiang, University of Tennessee Health Science Center, memphis, Tennessee

Advances in Ophthalmic Biomaterials and Ocular Drug-Delivery 2

Development of a Biomimetic Vitreous Substitute

N. Ravi, V.A. Medical Center, St. Louis, MO
P. D. Hamilton, VA Medical Center, St. Louis, Missouri

Advances in Polymeric Nano-/Microparticle Formulation Techniques

Encapsulation of Cells by Microfluidics and Diffusive Michael-type Gelation of Synthetic Microgels

D. M. Headen, Georgia Institute of Technology, Atlanta, GA
G. Aubry, Georgia Institute of Technology, Atlanta, Georgia
H. Lu, Georgia Institute of Technology, Atlanta, Georgia
A. Garcia, Georgia Institute of Technology, Atlanta, Georgia

Polyion Complex-Coated Polymeric Micelles with Highly Stability as Cell-Specific Drug
Delivery Vehicles
Y. Ohya, Kansai University, Suita, Osaka, Japan
Y. Morimoto, Kansai University, Suita, Japan
A. Takahashi, Kansai University, Suita, Japan
A. Kuzuya, Kansai University, Suita, Japan
A. Maruyama, Kyushu University, Fukuoka, Japan

Advances in Tissue Engineering Scaffolding

404 Core-Shell Hollow Microfibers by Triaxial Electrospinning
A. Khalf, Oklahoma State University, Stillwater, OK
K. Singarapu, Oklahoma State University, Stillwater, Oklahoma
S. Madihally, Oklahoma State University, Stillwater, Oklahoma

405 Altering Fibrin Matrix Properties with pNIPAm Microgels for Wound Healing Applications
A. M. Douglas, Georgia Institute of Technology, Atlanta, GA

406 Composites of Elastin-Like Polypeptide, Collagen, and Bioglass: Mechanical and Cell Culture Properties
A. Janorkar, University of Mississippi Medical Center, Jackson, MS
T. Wheeler, University of Mississippi Medical Center, Jackson, Mississippi
N. Sbravati, University of Mississippi Medical Center, Jackson, Mississippi

407 Fabrication of Continuous PDMSstar-PEG Gradients for Osteochondral Regeneration
B. M. Bailey, Texas A&M University, College Station, TX
L. N. Nail, Texas A&M University, College Station, Texas
M. A. Grunlan, Texas A&M University, College Station, Texas

408 Novel (Poly)caprolactone (PCL) Scaffold Architecture for Tendon Tissue Engineering Applications
B. L. Banik, The Pennsylvania State University, State College, PA
J. L. Brown, The Pennsylvania State University, University Park, Pennsylvania

409 Dermal substitutes using electrospun silk fibroin nanofiber sponge
C. Park, Nano-Bio Regenerative Medical Institute, Hallym University, Chuncheon, Republic of Korea

410 Models to Predict the Resorption Rate of Bioresorbable Textile Scaffolds
C. R. Gajjar, North Carolina State University, Raleigh, NC
C. Li, North Carolina State University, Raleigh, North Carolina
S. Chung, Korea Institute of Science & Technology Evaluation & Planning, Seoul, Korea, Democratic People's Republic of
R. Payne, Tengion Inc., Winston-Salem, North Carolina
M. W. King, North Carolina State University, Raleigh, North Carolina

411 Tricomponent Fibrous Scaffolds with Dual Delivery of rhVEGF and rhBMP-2 for Bone Tissue Engineering
C. Wang, The University of Hong Kong, Hong Kong SAR, Hong Kong
M. Wang, The University of Hong Kong, Hong Kong SAR, Hong Kong

412 Bone Marrow Absorption and Retention using Capillary Action via Micro-Channel Structure
D. S. Oh, Columbia University, New York, NY
413 Bioactive Shape Memory Polymer Scaffolds for Bone Defect Repairs  
D. Zhang, Texas A&M University, College Station, TX  
O. J. George, Texas A&M University, College Station, Texas  
K. M. Petersen, Texas A&M University, College Station, Texas  
M. A. Grunlan, Texas A&M University, College Station, Texas

414 Devitalized Cell Derived Polymer/Extracellular Matrix Composite Scaffolds for Cartilage Regeneration  
E. J. Levorson, Rice University, Houston, TX  
O. Hu, Rice University, Houston, Texas  
F. Kasper, Rice University, Houston, Texas  
A. G. Mikos, Rice University, Houston, Texas

415 Self-assembling injectable peptide hydrogel for biomedical applications  
H. Huang, Kansas State University, Manhattan, KS  
X. Sun, Kansas State University, Manhattan, Kansas

416 Isolation of Electrophysiological Biosignal Utilizing Silicone and Xenogeneic Extracellular Matrix  
J. V. Larson, University of Michigan, Ann Arbor, MI  
T. A. Kung, University of Michigan, Ann Arbor, Michigan  
M. G. Urbanchek, University of Michigan, Ann Arbor, Michigan  
P. S. Cederna, University of Michigan, Ann Arbor, Michigan  
N. B. Langhals, University of Michigan, Ann Arbor, Michigan

417 Trilayered Design in Aortic Valve Tissue Engineering: A Polymeric Approach  
J. Liao, Mississippi State University, Mississippi State, MS  
J. Guan, Ohio State University, Columbus, Ohio

418 Differentiation of Mesenchymal Stem Cells on Polymeric Ligament Fascicle Substitute  
K. L. Lee, Rensselaer Polytechnic Institute, Troy, NY  
G. A. Ngai, Rensselaer Polytechnic Institute, Troy, New York  
S. C. Varghese, Rensselaer Polytechnic Institute, Troy, New York  
J. A. Cooper, Jr., Rensselaer Polytechnic Institute, Troy, New York

419 The effect of different sterilization techniques on material characteristics of a biodegradable nanocomposite polymer for use in tissue engineering purposes and its in-vitro and in-vivo biocompatibility  
L. Yildirimer, University College London, London, United Kingdom (Great Britain)

420 Shape-memory Activated Change in Scaffold Fiber Alignment Directs Stem Cell Morphology  
L. Tseng, Syracuse University, Syracuse Biomaterials Institute, Syracuse, NY

421 In Vitro Osteoblastic Differentiation on Bioactive Glass and Glass-ceramic Surfaces  
O. C. Alves, Ribeirao Preto Dental School, University of Sao Paulo, Ribeirao Preto (SP), Brazil  
F. S. Oliveira, Ribeirao Preto Dental School, University of Sao Paulo, Ribeirao Preto (SP), Brazil,
Ribeirão Preto, Brazil
E. D. Zanotto, Federal University of Sao Carlos, Sao Carlos (SP), Brazil, São Carlos, Brazil
O. Peitl, II, Federal University of Sao Carlos, Sao Carlos (SP), Brazil, São Carlos, Brazil
M. M. Beloti, Ribeirao Preto Dental School, University of Sao Paulo, Ribeirao Preto (SP), Brazil, Ribeirão Preto, Brazil
A. L. Rosa, Ribeirao Preto Dental School, University of Sao Paulo, Ribeirao Preto (SP), Brazil, Ribeirão Preto, Brazil
P. T. Oliveira, Ribeirao Preto Dental School, University of Sao Paulo, Ribeirao Preto (SP), Brazil, Ribeirão Preto, Brazil

Modular Biomaterial Systems for Rapid and Functional Vascularization
R. T. Annamalai, Wayne State University, Detroit, MI
D. R. Armant, Wayne State University, Detroit, Michigan
H. W. T. Matthew, Wayne State University, Detroit, Michigan

Decellularized Liver Tissue Based Hydrogel for Repair and Regeneration
R. E. Coronado, University of Texas Health Science Center San Antonio / University of Texas at San Antonio, San Antonio, TX

Poly(ε-caprolactone) Shape Memory Polymer for Filling Critical-Sized Defects
R. M. Baker, Syracuse University, Syracuse, NY
J. H. Henderson, Syracuse University, Syracuse, New York
P. T. Mather, Syracuse University, Syracuse, New York

The Development of Synthetic Polypeptide-Based Hydrogel Systems for Biomaterials
S. M. Morey, Massachusetts Institute of Technology, Medford, MA
A. M. Oelker, Massachusetts Institute of Technology, Cambridge, Massachusetts
L. G. Griffith, Massachusetts Institute of Technology, Cambridge, Massachusetts
P. T. Hammond, Massachusetts Institute of Technology, Cambridge, Massachusetts

Hyaluronan-Based Multi-Phasic Scaffolds for Osteochondral Tissue Regeneration
S. L. Fenn, University of Vermont, Burlington, VT
T. Miao, University of Vermont, Burlington, Vermont
R. A. Oldinski, University of Vermont, Burlington, Vermont

Comparison of Elastomeric Polymers for Bladder Regeneration
S. Sivaraman, Clemson university, Clemson, SC
N. Amoroso, University of Pittsburgh, Pittsburgh, Pennsylvania
W. Wagner, University of pittsburgh, Pittsburgh, Pennsylvania
S. Sant, University of Pittsburgh, Pittsburgh, Pennsylvania
J. Nagatomi, Clemson University, Clemson, South Carolina

Development and Characterization of a Novel Polycaprolactone Fumarate (PCLF) Scaffold Manufactured through a Sacrificial Molding Technique
S. C. Chase, Mayo Clinic, Rochester, MN
E. Wagner, Mayo Clinic, Rochester, Minnesota
D. Bravo, Mayo Clinic, Rochester, Minnesota
M. Dadsetan, Mayo Clinic, Rochester, Minnesota
S. Kakar, Mayo Clinic, Rochester, Minnesota
M. Yaszemski, Mayo Clinic, Rochester, Minnesota

Spatial control of drug delivery in multilayered poly(vinyl alcohol) scaffold for tissue regeneration
H. Tseng, Rice University, Houston, Texas
B. Grigoryan, Texas A&M University, College Station, Texas
R. M. Raphael, Rice University, Houston, Texas
T. C. Killian, Rice University, Houston, Texas
G. R. Souza, Nano3D Biosciences, Houston, Texas
K. J. Grande-Allen, Rice University, Houston, Texas

Synthesis of a Novel Injectable, ROS-degradable Tissue Engineering Scaffold
J. R. Martin, Vanderbilt University, Nashville, TN

Animal Models for Biomaterial and Medical Device Testing

Injectable Poly(N-isopropylacrylamide)-grafted HA and Chitosan Hydrogel as a Barrier for Prevention of Postoperative Abdominal Adhesion in Laparoscopic Surgery
C. Chen, Chang Gung University, Taoyuan, Taiwan, ROC, Tao-Yuan, Taiwan

Development of Pre-Clinical In Vivo Models to Assess the Efficacy of Antimicrobial Products to Reduce Device-Related Infections
L. K. Hansen, WuXi AppTec, Inc., St. Paul, MN
D. Johnson, WuXi AppTec, Inc., St. Paul, Minnesota
K. Jenkins, WuXi AppTec, Inc., St. Paul, Minnesota
C. Bauer, WuXi AppTec, Inc., St. Paul, Minnesota

Platelet activation in juvenile ovines implanted with the PediaFlow® 4th generation pediatric ventricular assist device
V. Shankarraman, University of Pittsburgh, Pittsburgh, PA
S. Olia, University of Pittsburgh, Pittsburgh, Pennsylvania
E. Kocyildirim, University of Pittsburgh, Pittsburgh, Pennsylvania
T. M. Maul, University of Pittsburgh, Pittsburgh, Pennsylvania
M. V. Kameneva, University of Pittsburgh, Pittsburgh, Pennsylvania
S. Snyder, LaunchPoint Technologies, Goleta, California
P. D. Wearden, University of Pittsburgh, Pittsburgh, Pennsylvania
H. S. Borovetz, University of Pittsburgh, Pittsburgh, Pennsylvania
W. R. Wagner, University of Pittsburgh, Pittsburgh, Pennsylvania

Evaluation of Magnesium Alloys for Use as Degradable Stents in a Rat Trachea Bypass Model
T. Gilbert, ACell, Columbia, MD

Anatomical Effects in the Development of a Delayed Wound Healing Model
K. A. Kentner, ACell, Inc., Columbia, MD
K. Stuart, ACell, Inc., Columbia, Maryland
K. Lam, Bridge PTS, San Antonio, Texas
C. Koeller, Bridge PTS, San Antonio, Texas
D. Ochoa, Bridge PTS, San Antonio, Texas
R. Patton, Bridge PTS, San Antonio, Texas
T. Laufenberg, Bridge PTS, San Antonio, Texas
C. Lewis, Bridge PTS, San Antonio, Texas
P. Attar, Bridge PTS, San Antonio, Texas
A. D. Janis, ACell, Inc., Columbia, Maryland
Benchtop Tissue Surrogates to Model Drug Uptake and Efficacy

The Development of Hydrogel Microwells for Perfused 3D Culture of Hepatocytes
J. Shepard, Massachusetts Institute of Technology, Cambridge, MA
V. Chan, University of Illinois at Urbana-Champaign, Urbana, Illinois
M. Rhoads, Massachusetts Institute of Technology, Cambridge, Massachusetts
M. Raredon, Massachusetts Institute of Technology, Cambridge, Massachusetts
R. Dyer, Massachusetts Institute of Technology, Cambridge, Massachusetts
P. Hammond, Massachusetts Institute of Technology, Cambridge, Massachusetts
R. Bashir, University of Illinois at Urbana-Champaign, Urbana, Illinois
L. Griffith, Massachusetts Institute of Technology, Cambridge, Massachusetts

Biofunctional Polymers for Gene Delivery

Hemocompatible pH-responsive polymeric nanoparticle for intravenous siRNA
C. E. Nelson, Vanderbilt University, Nashville, TN
J. R. Kintzing, Vanderbilt University, Nashville, Tennessee
J. M. Shannon, Vanderbilt University, Nashville, Tennessee
M. K. Gupta, Vanderbilt University, Nashville, Tennessee
C. L. Duvall, Vanderbilt University, Nashville, Tennessee

Lyophilized Poly(ethylene glycol-b-(dimethylaminoethyl methacrylate-co-butyl methacrylate))-DNA Nanoparticles for Nonviral Gene Therapy
E. J. Adolph, Vanderbilt University, Nashville, TN
C. E. Nelson, Vanderbilt University, Nashville, Tennessee
J. M. Shannon, Vanderbilt University, Nashville, Tennessee
C. L. Duvall, Vanderbilt University, Nashville, Tennessee
S. A. Guelcher, Vanderbilt University, Nashville, Tennessee

Transformation of Cationic Materials into Neutral Biocompatible Systems for siRNA Delivery: Property and Function Characterization
J. Liu, Georgia Institute of Technology, Atlanta, GA
J. Zhou, Peking University, Beijing, China
Y. Luo, Peking University, Beijing, China

Spider Silk Gene Delivery Systems for Intracellular Cell Targeting
O. Tokareva, Tufts University, Medford, MA
D. Glettig, Tufts University, Medford, Massachusetts
R. Abbott, Tufts University, Medford, Massachusetts
D. L. Kaplan, Tufts University, Medford, Massachusetts

Aptamer-Functionalized DNA Nanostructures for Targeted Antisense Delivery in Cancer
P. Charoenphol, University of Massachusetts - Amherst, Amherst, MA
H. Bermudez, University of Massachusetts - Amherst, Amherst, Massachusetts
Comb-shaped Cationic Polycarbonates for Gene Delivery and Antimicrobial Applications
Z. Ong, Institute of Bioengineering and Nanotechnology, Singapore, Singapore
D. J. Coady, IBM Almaden Research Centre, San Jose, California
J. L. Hedrick, IBM Almaden Research Centre, San Jose, California
Y. Yang, Institute of Bioengineering and Nanotechnology, Singapore, Singapore

Bioinspired Smart Materials for Regenerative Medicine Applications

Hyaluronic Acid-Catechol Hydrogel for Liver Tissue Engineering
J. Lee, Yonsei University, Seoul, Republic of Korea
J. Shin, Yonsei University, Seoul, Republic of Korea
C. Lee, Yonsei University, Seoul, Republic of Korea
S. Cho, Yonsei University, Seoul, Republic of Korea

Theoretical Piezoelectric Composite Model for Use in a Spinal Fusion Cage
L. Friis, University of Kansas, Lawrence, KS
N. E. Tobaben, University of Kansas, Lawrence, Kansas
J. P. Domann, University of Kansas, Lawrence, Kansas

Enzymatic Stability of Novel Biomimetic Aggrecan for Treatment of Tissue Degeneration
S. Lightfoot Vidal, Drexel University, Philadelphia, PA

Enzymatic surface erosion of high-moduli polycarbonates based on natural phenols
S. D. Sommerfeld, Rutgers - The State University of New Jersey, Piscataway, NJ
Z. Zhang, Rutgers - The State University of New Jersey, Piscataway, New Jersey
M. Costache, Rutgers - The State University of New Jersey, Piscataway, New Jersey
J. Kohn, Rutgers - The State University of New Jersey, Piscataway, New Jersey

Growth Factor Delivery Systems that Mimic Natural Extracellular Matrix and Supply Biological Molecules in Bone Tissue Engineering
W. Swieszkowski, Sr., Warsaw University of Technology, Warsaw, Poland

Biological Responses to Surface Modification of Biomaterials

SLIPS Surface Treatment of Medical Devices that Prevents Blood Clot Formation in the Absence of Anticoagulants
D. C. Leslie, Harvard University, Boston, MA
A. Waterhouse, Harvard University, Boston, Massachusetts
A. L. Watters, Harvard University, Boston, Massachusetts
J. B. Berthet, Harvard University, Boston, Massachusetts
T. M. Valentin, Harvard University, Boston, Massachusetts
A. Hansen, Children's Hospital Boston, Boston, Massachusetts
A. Nedder, Children's Hospital Boston, Boston, Massachusetts
T. Wong, Harvard University, Cambridge, Massachusetts
P. Kim, Harvard University, Cambridge, Massachusetts
M. Super, Harvard University, Boston, Massachusetts
J. Aizenberg, Harvard University, Cambridge, Massachusetts
D. E. Ingber, Harvard University, Boston, Massachusetts

Mechanically-Stimulated Co-cultured Tissue-Specific Scaffolds for Tendon/Bone Interface
Engineering
J. O. Cooper, The University of Memphis, Memphis, TN
M. Goodhart, The University of Memphis, Memphis, Tennessee
J. D. Bumgardner, The University of Memphis, Memphis, Tennessee
W. O. Haggard, The University of Memphis, Memphis, Tennessee
J. A. Jennings, The University of Memphis, Memphis, Tennessee
In vivo Evaluation of an Endothelial Cell-Specific Biomimetic Peptide Fluorosurfactant Polymer Coating for Expanded Poly(tetrafluoroethylene) Vascular Grafts
J. Bastijanic, Case Western Reserve University, Cleveland, OH
L. Dudash, Case Western Reserve University, Cleveland, Ohio
F. Kligman, Cleveland Clinic Foundation, Cleveland, Ohio
M. T. Allemand, University Hospitals, Cleveland, Ohio
R. O. Lakin, University Hospitals, Cleveland, Ohio
B. A. Eslahpazir, University Hospitals, Cleveland, Ohio
V. S. Kashyap, University Hospitals, Cleveland, Ohio
K. Kottke-Marchant, Cleveland Clinic Foundation, Cleveland, Ohio
R. Marchant, Case Western Reserve University, Cleveland, Ohio

Innovative Injury versus Non-Injury Migration Assays
K. R. Ammann, University of Arizona, Tucson, AZ
K. J. DeCook, University of Arizona, Tucson, Arizona
P. L. Tran, University of Arizona, Tucson, Arizona
M. J. Slepian, University of Arizona, Tucson, Arizona

In Vitro Behavior of Human Osteoblastic Cells Cultured on Titanium Surfaces Modified by Oxidative Nanopatterning
K. F. B. Prado, Dental School of Ribeirão Preto, University of São Paulo, Ribeirão Preto, Brazil
F. Variola, University of Ottawa, Ottawa, Canada
M. R. W. Ferreira, Dental School of Ribeirão Preto, University of São Paulo, Ribeirão Preto, Brazil
R. R. Fernandes, Dental School of Ribeirão Preto, University of São Paulo, Ribeirão Preto, Brazil
F. G. Azevedo, Dental School of Ribeirão Preto, University of São Paulo, Ribeirão Preto, Brazil

Improved Osteoblast Response to UV-Irradiated Superhydrophilic PMMA/TiO2 Nanocomposites
M. Shayan, University of Pittsburgh, Pittsburgh, PA

Macrophage Interactions with Nanoporous Titanium Surfaces
M. B. Ariganello, Université de Montréal, Ottawa, ON, Canada

Surface Chemistry Modulation of Valvular Interstitial Cells
M. N. Rush, University of New Mexico, Albuquerque, NM
E. Esquivel, University of New Mexico, Albuquerque, New Mexico
E. L. Hedberg-Dirk, University of New Mexico, Albuquerque, New Mexico

Anti-fouling Medical Coatings Prepared with Amphiphilic PEG-Silanes
M. A. Grunlan, Texas A&M University, College Station, TX
M. L. Hawkins, Texas A&M University, College Station, Texas
M. A. Rufin, Texas A&M University, College Station, Texas
J. A. Gruetzner, Texas A&M University, College Station, Texas

The use of a library of industrial materials to determine the nature of substrate-dependent
performance of primary adherent human cells
M. Ni, Institute of Bioengineering and Nanotechnology, Singapore, Singapore

Decreasing bacterial colonization around the Intraosseous Transcutaneous Amputation Prosthesis without inducing cytotoxicity to fibroblasts using hydroxyapatite, silver and fibronectin
M. Chimutengwende-Gordon, Institute of Orthopaedics and Musculoskeletal Science, University College London, London, United Kingdom (Great Britain)
C. Pendegrass, Institute of Orthopaedics and Musculoskeletal Science, UCL, Stanmore, United Kingdom (Great Britain)
G. Blunn, Institute of Orthopaedics and Musculoskeletal Science, Stanmore, United Kingdom (Great Britain)

Octacalcium phosphate/gelatin composite: the effect of synthesis and crystal elongation on rabbit tibia bone repair
O. Suzuki, Tohoku University Graduate School of Dentistry, Sendai, Japan

Osteopontin Expression by Osteogenic Cells Cultured on Nanoporous Tiatanium
P. Adachi, Jr., University of Sao Paulo, Ribeirao Preto, Brazil
W. M. A. Maximiano, Jr., School of Dentistry of Ribeirao Preto, Ribeirao Preto, Brazil
A. L. Rosa, School of Dentistry of Ribeirao Preto, Ribeirao Preto, Brazil
A. Nanci, Université de Montréal, Montréal, Québec, Canada
P. T. Oliveira, School of Dentistry of Ribeirao Preto, Ribeirao Preto, Brazil

Amino Acid - Based Antifouling Poly (serine methacrylate)
Q. Liu, University of Akron, Akron, OH
A. Singh, University of Akron, Akron, Ohio
L. Liu, University of Akron, Akron, Ohio

Effect of protein adsorption on human osteoblast response to porous ferritic fibre networks
R. L. Spear, University of Cambridge, Cambridge, United Kingdom (Great Britain)
B. Srigengan, University of Cambridge, Cambridge, United Kingdom (Great Britain)
A. E. Markaki, University of Cambridge, Cambridge, United Kingdom (Great Britain)

Interaction of Endothelial and Smooth Muscle Cells with Paclitaxel-Immobilized Self Assembled Monolayers
S. Lamichhane, The University of South Dakota, Sioux Falls, SD
S. Lancaster, South Dakota Innovation Partners, Sioux Falls, South Dakota
E. Thiruppathi, The University of South Dakota, Sioux Falls, South Dakota
G. Mani, The University of South Dakota, Sioux Falls, South Dakota

Limits to the utilization of polydopamine coating with the example of flax fibers as a substrate
S. A. A. Michel, Maastricht University, Maastricht, Netherlands
M. L. W. Knetsch, Maastricht University, Maastricht, Netherlands
L. H. Koole, Maastricht University, Maastricht, Netherlands

Combined Treatment of a Tendon Gap with a Biomimetic Electrospun Scaffold, Stromal Cells and GDF5
R. James, University of Connecticut Health Center, Farmington, CT
Biologically Derived Materials From Natural Resources

465  Basic Properties of Starfish Bone and Its Phase Transformation Reaction in Phosphate Salt Solution
  A. Takeuchi, Shinshu University, Matsumoto, Japan
  D. Honda, Shinshu University, Matsumoto, Japan
  K. Ishikawa, Kyushu University, Fukuoka, Japan

466  Material Screening for Skeletal Muscle Regeneration
  B. E. Pollot, University of Texas at San Antonio, San Antonio, TX
  C. R. Rathbone, United States Army Institute of Surgical Research, Fort Sam Houston, Texas
  J. C. Wenke, US Army Institute of Surgical Research, Fort Sam Houston, Texas
  T. Guda, University of Texas at San Antonio, San Antonio, Texas

467  Comparison of Mechanical Response of Intact Artery and Isolated Arterial Elastin
  B. Stephen, University of Maryland Baltimore County, Baltimore, MD
  L. Topoleski, University of Maryland Baltimore County, Baltimore, Maryland

468  Guest-Host Assembly of Shear-Thinning Hyaluronic Acid Hydrogels
  C. B. Rodell, University of Pennsylvania, Philadelphia, PA
  J. A. Burdick, University of Pennsylvania, Philadelphia, Pennsylvania

469  Magnetically guided alignment of bio-nanofibers into ordered structures for controlling stem cell behaviors
  C. Mao, University of Oklahoma, Norman, OK

470  Design and Synthesis of an Adherent Artificial Pulmonary Pleura
  D. E. Wagner, University of Vermont, Burlington, VT
  R. A. Oldinski, University of Vermont, Burlington, Vermont
  N. R. Bonenfant, University of Vermont, Burlington, Vermont
  D. J. Weiss, University of Vermont, Burlington, Vermont

471  Promoting Chondrogenesis and Maintaining the Bioactivity of Proteins using a Biomimetic Material
  G. Portocarrero, New Jersey Institute of Technology, Hillside, NJ
  A. Molina, New Jersey Institute of Technology, Newark, New Jersey
  G. Collins, New Jersey Institute of Technology, Newark, New Jersey
  T. Arinzeh, New Jersey Institute of Technology, Newark, New Jersey

472  Thermally stable polylactide stereocomplex conjugated by bio-based compound at both initiating and terminal groups
  H. Ajiro, Osaka University, Suita, Japan
  T. H. Thi, Viet Tri University of Industry, Phu Tho, Viet Nam
  T. Fujiwara, The University of Memphis, Memphis, Tennessee
  M. Akashi, Osaka University, Suita, Japan

473  Biomimetic apatite-coated chitosan based scaffolds for bone regeneration
  H. Park, University of California, Los Angeles, Los Angeles, CA

474  Three-Dimensional Biomolecular Architectures for Characterizing Bacterial Sociomicrobiology
  J. B. Shear, University of Texas at Austin, Austin, TX
  J. Connell, University of Texas at Austin, Austin, Texas
M. Fitzpatrick, University of Texas at Austin, Austin, Texas
E. T. Ritschdorf, University of Texas at Austin, Austin, Texas
E. C. Spivey, University of Texas at Austin, Austin, Texas
M. Whiteley, University of Texas at Austin, Austin, Texas

DMSO Resistance of Hyaluronic Acid-Based Hydrophilic Coatings
J. Rosenman, Biocoat, Inc., Horsham, PA
E. Pervin, Biocoat, Inc., Horsham, Pennsylvania
J. Simon, Biocoat, Inc., Horsham, Pennsylvania

Chitosan Source Evaluation by Two Degradation Assessment Methods for a Local Delivery Device
K. Smith, The University of Memphis, Memphis, TN
A. Parker, The University of Memphis, Memphis, Tennessee
A. Jennings, The University of Memphis, Memphis, Tennessee
W. Haggard, The University of Memphis, Memphis, Tennessee

Naturally Derived Fatty Acid Biomaterials for Local Drug Delivery
K. M. Faucher, Atrium Medical Corporation, MAQUET GETINGE Group, Hudson, NH
N. Artzi, MIT, Cambridge, Massachusetts
T. Albergo, Atrium Medical Corporation, MAQUET GETINGE Group, Hudson, New Hampshire
J. Bienkiewicz, Atrium Medical Corporation, MAQUET GETINGE Group, Hudson, New Hampshire
S. Conroy, Atrium Medical Corporation, MAQUET GETINGE Group, Hudson, New Hampshire
A. Dale, Atrium Medical Corporation, MAQUET GETINGE Group, Hudson, New Hampshire
I. Kozlova, Atrium Medical Corporation, MAQUET GETINGE Group, Hudson, New Hampshire
E. R. Edelman, MIT, Cambridge, Massachusetts
P. Martakos, Atrium Medical Corporation, MAQUET GETINGE Group, Hudson, New Hampshire

Fabrication of a Bioinspired Cellulose-based Composite with Biocompatible Surface as a Potential Scaffold in Vascular Tissue Engineering
P. Pooyan, Georgia Institute of Technology, Atlanta, GA
L. P. Brewster, 1) Emory University School of Medicine; 2) Georgia Institute of Technology, Atlanta, Georgia
R. Tannenbaum, 1) University of Alabama at Birmingham; 2) Georgia Institute of Technology, Atlanta, Georgia
H. Garmestani, Georgia Institute of Technology, Atlanta, Georgia

Fabrication of Silk/Chitosan-based Hydrogels by Gamma Irradiation
P. Uttayarat, Thailand Institute of Nuclear Technology (Public Organization), Nakornnayok, Thailand

Crosslinked Hyaluronic Acid Hydrogel Networks Designed as Mechano-stimulators
P. S. Varde, Syracuse University, Syracuse, NY
J. M. Hasenwinkel, Syracuse University, Syracuse, New York

Peptide block copolymers to improve silk biomaterial/hard-tissue interfaces
R. Calabrese, Tufts University, Medford, MA
G. Qin, Tufts University, Medford, Massachusetts
D. L. Kaplan, Tufts University, Medford, Massachusetts

Two-layer silk tubular scaffolds for small diameter blood vessel regeneration
V. Catto, Politecnico di Milano, Milano, Italy
R. Elia, Tufts University, Medford, Massachusetts
M. Tanzi, Politecnico di Milano, Milano, Italy
G. Freddi, INNOVHUB - Stazioni Sperimentali per l'Industria - Divisione Stazione Sperimentale per la Seta, Milano, Italy
S. Farè, Politecnico di Milano, Milano, Italy
D. L. Kaplan, Tufts University, Medford, Massachusetts

483 A Comparative Study of Decellularized Extracellular Matrix Biomaterials from Different Sources
x. luo, Tongji Hospital, Huazhong University of Science and Technology, Wuhan, People's Republic of China, Wuhan, Hubei, China

484 Self-Deployable Current Source Fabricated From Edible Materials
Y. Kim, Carnegie Mellon University, Pittsburgh, PA
C. J. Bettinger, Carnegie Mellon University, Pittsburgh, Pennsylvania
S. Chun, Carnegie Mellon University, Pittsburgh, Pennsylvania
J. Whitacre, Carnegie Mellon University, Pittsburgh, Pennsylvania

910 Investigating the osteogenic potential of decellularized extracellular matrices derived from different tissues of origin
V. Z. Beachley, Johns Hopkins University, Baltimore, MD
M. Gibson, Johns Hopkins University, Baltimore, Maryland
J. Elisseeff, Johns Hopkins University, Baltimore, Maryland

911 Solution Structure of Poly-amido-saccharides
S. E. Stidham, Boston University, Boston, MA
S. L. Chin, Boston University, Boston, Massachusetts
E. L. Dane, Boston University, Boston, Massachusetts
M. W. Grinstaff, Boston University, Boston, Massachusetts

Biologically Inspired Biomaterials Approaches for Cancer Research

485 Biphasic Cell Responses on Laterally Mobile Films
A. P. Kourouklis, Umass, Amherst, MA
R. V. Lerum, Umass, Amherst, Massachusetts
H. Bermudez, Umass, Amherst, Massachusetts

486 Synergy of matrix stiffness and EGFR inhibition in apoptosis of pancreatic tumor cells in 3D
C. Lin, Indiana University-Purdue University at Indianapolis, Indianapolis, IN
C. Ki, Indiana University-Purdue University at Indianapolis, Indianapolis, Indiana

487 Stem cells as a photosensitizer carrier to attack cancer cells for photodynamic therapy of breast cancer
C. Mao, University of Oklahoma, Norman, OK

488 Matrix Rigidity Regulates Osteolytic Gene Expression in Oral Squamous Cell Carcinomas
J. M. Page, Vanderbilt University, Nashville, TN

489 Hyaluronic Acid Based Hydrogels with Tunable Properties for the Study of Breast Cancer
S. A. Fisher, University of Toronto, Toronto, ON, Canada
S. C. Owen, University of Toronto, Toronto, Ontario, Canada
M. S. Shoichet, University of Toronto, Toronto, Ontario, Canada
Biomaterial Strategies for Innervation, Nerve Repair and Integration

Multifunctional Alginate Scaffolds for Spinal Cord Repair
D. Shahriari, Michigan State University, East Lansing, MI
D. Lynam, Michigan State University, East Lansing, Michigan
K. Koffler, University of California, San Diego, La Jolla, California
C. Chan, Michigan State University, East Lansing, Michigan
M. Tuszynski, University of California, San Diego, La Jolla, California
J. Sakamoto, Michigan State University, East Lansing, Michigan

Potential Neural Interface Material Printed via Projection Micro-Stereolithography (PmSL)
K. N. Cicotte, University of New Mexico Sandia National Laboratories, Albuquerque, NM
S. Buerger, Sandia National Laboratories, Albuquerque, New Mexico
P. P. Lin, MD Anderson Cancer Center, Houston, Texas
G. Reece, MD Anderson Cancer Center, Houston, Texas
E. L. Hedberg-Dirk, University of New Mexico, Albuquerque, New Mexico
S. M. Dirk, Sandia National Laboratories, Albuquerque, New Mexico

Intracortical Electrodes of Different Material, Shape, Size and Tethering Induce Differential Inflammatory Responses that Significantly Impact Chronic Electrode Function.
L. Karumbaiah, Georgia Institute of Technology, Atlanta, GA
T. Saxena, Georgia Institute of Technology, Atlanta, Georgia
K. Patil, Georgia Institute of Technology, Atlanta, Georgia
R. Patkar, Georgia Institute of Technology, Atlanta, Georgia
M. Betancur, Georgia Institute of Technology, Atlanta, Georgia
G. B. Stanley, Georgia Institute of Technology, Atlanta, Georgia
R. V. Bellamkonda, Georgia Institute of Technology, Atlanta, Georgia

Controlled release of Chondroitinase ABC to the injured spinal cord
M. Pakulskia, University of Toronto, Toronto, ON, Canada

Decellularized Equine Sciatic Nerve Hydrogel for Peripheral Nerve Repair
S. T. LoPresti, University of Pittsburgh, Pittsburgh, PA

Basement Membrane-Polycaprolactone Blend Nanofibers as a Scaffold for Tissue Engineering
S. Lenz, University of Virginia, Charlottesville, VA
R. Neal, University of Virginia, Charlottesville, Virginia
D. Abebayehu, University of Virginia, Charlottesville, Virginia
B. Brooks, University of Virginia, Charlottesville, Virginia
R. C. Ogle, LifeNet Institute of Regenerative Medicine, Norfolk, Virginia
E. Botchwey, Georgia Institute of Technology, Atlanta, Georgia

Microspheres for sustained delivery of NEP1-40 and chondroitinase ABC for treatment of
spinal cord injury
T. Wilems, Washington University, St. Louis, MO
D. McCreedy, Washington University, St. Louis, Missouri
L. Marquardt, Washington University, St. Louis, Missouri
S. E. Sakiyama-Elbert, Washington University, St. Louis, Missouri

Decellularized Equine Sciatic Nerve as a Scaffold for Peripheral Nerve Repair
T. Prest, University of Pittsburgh, Pittsburgh, PA

Electrically Conductive Nerve Guidance Channel
Z. Zhang, Laval University, Quebec, QC, Canada
Z. Du, Laval University, Quebec, Québec, Canada

Photoreactive Interpenetrating Network with Tunable Stiffness as a Scaffold for Neurite Growth
P. Khoshakhlagh, Tulane University, New Orleans, LA
E. L. Horn-Ranney, Tulane University, New Orleans, Louisiana
M. J. Moore, Tulane University, New Orleans, Louisiana

Biomaterial Strategies for Large-Area Bone Regeneration

Effect of novel putty-like resorbable calcium alkali orthophosphate bone substitute cements designed for restoring contours in craniofacial surgery on bone formation and osteoblastic phenotype expression in vivo
C. Knabe, Philipps University Marburg, Marburg, Germany
G. Berger, Federal Institute for Materials Research and Testing, Berlin, Germany
R. Gildenharr, Federal Institute for Materials Research and Testing, Berlin, Germany
F. Dombrowski, Federal Institute for Materials Research and Testing, Berlin, Germany
K. Reiter, Philipps University Marburg, Marburg, Germany
A. Houshmand, Philipps University Marburg, Marburg, Germany
M. Stiller, Philipps University Marburg, Marburg, Germany

Vascular endothelial growth factor expression in posterolateral rabbit fusion: An evaluation of bone graft materials
F. V. Lamberti, Pioneer Surgical, Greenville, NC
W. R. Walsh, University of New South Wales, Sydney, Australia
R. A. Oliver, University of New South Wales, Sydney, Australia
Y. Yu, University of New South Wales, Sydney, Australia
B. Schlossberg, Pioneer Surgical, Woburn, Massachusetts

Fabrication of Customized Porous Hydroxyapatite (HA) implants for Bone Reconstruction
H. Jung, Department of Materials Science and Engineering, Seoul National University, Seoul, Republic of Korea
T. Jang, Department of Materials Science and Engineering, Seoul National University, Seoul, Republic of Korea
M. Kang, Department of Materials Science and Engineering, Seoul National University, Seoul, Republic of Korea
H. Kim, Department of Materials Science and Engineering, Seoul National University, Seoul, Republic of Korea
Y. Koh, Dental Laboratory Science and Engineering, Korea University, Seoul, Republic of Korea
Y. Estrin, Department of Materials Engineering, Monash University, Clayton, Australia
Sustained Bone Morphogenetic Protein 2 Delivery from Densified Titanium for the Bone Regeneration
H. Jung, Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, Seoul, Republic of Korea
M. Kang, Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, Seoul, Republic of Korea
H. Kim, Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, Seoul, Republic of Korea
Y. Estrin, Department of Materials Engineering, Monash University, Clayton, Australia, Clayton, Republic of Korea

Developing Polymer/Ceramic Scaffolds using a Factorial Design of Experiments and Response-surface Analysis
J. A. Minton, Miami University, Hamilton, OH
C. Janney, Miami University, Oxford, Ohio
C. Focke, Miami University, Oxford, Ohio
P. James, Miami University, Oxford, Ohio
A. Yousefi, Miami University, Oxford, Ohio

Comparison of beta-tricalcium phosphate foam made using Mg stabilizer and by heat treatment
K. Ishikawa, Kyushu University, Fukuoka, Japan
T. Nikaido, Kyushu University, Fukuoka, Japan
K. Tsuru, Kyushu University, Fukuoka, Japan

Effect of Calcium Phosphate Coatings and Bone Morphogenetic Protein (BMP)-2 on In Vivo Bone Regeneration using 3-dimensional Poly (propylene fumarate) Scaffolds in Rabbit Calvarial Model
M. Dadsetan, Mayo Clinic, Rochester, MN

Testing of a Bioactive, Moldable Bone Graft Substitute in an Infected, Critically-Sized Defect Model
M. Brown, University of Kentucky, Lexington, KY
Y. Zou, University of Kentucky, Lexington, Kentucky
R. Peyyala, University of Kentucky, Lexington, Kentucky
T. Milbrandt, University of Kentucky, Lexington, Kentucky
L. Cunningham, University of Kentucky, Lexington, Kentucky
T. Dziubla, University of Kentucky, Lexington, Kentucky
D. Puleo, University of Kentucky, Lexington, Kentucky

Performance of polymer + OCP composite scaffolds in the CSD rabbit calvaria model
O. Ortiz, Rutgers - The State University of New Jersey, Piscataway, NJ
R. Z. LeGeros, New York University, New York, New York
J. Kohn, Rutgers - The State University of New Jersey, Piscataway, New Jersey

Improving Transport Limitations of Tissue Engineered Bone Scaffolds
S. Tabbaa, Clemson University, Clemson, SC

The Effect of Wicking Fibers on Transport Properties of Tissue Engineered Scaffolds
S. Tabbaa, Clemson University, Clemson, SC

A Novel Approach to Engineer Vascularized Osteon-like Constructs for Cortical Bone Tissue Engineering
X. Chen, Stevens Institute of Technology, Hoboken, NJ
H. Wang, Stevens Institute of Technology, Hoboken, New Jersey

914 Surface Modified Chitosan Tissue Engineering Scaffolds for Biomimetic Periosteum on Cortical Bone Allografts
R. Romero, Colorado State University, Fort Collins, CO
M. J. Kipper, Colorado State University, Fort Collins, Colorado

Biomaterials and Medical Product Commercialization

511 A novel technique for micromotion measurement of unicompartmental tibial trays for design comparison
G. Yildirim, Pipeline Orthopedics, Cedar Knolls, NJ

N/A From Bench to Business: What Every Academic Should Consider Before Launching a Startup
M. Van Dyke, Virginia Polytechnic Institute and State University, Blacksburg, VA

915 Fabrication and Tissue Anchoring performance of Nylon and Polypropylene Barbed Surgical Sutures
H. Cong, North Carolina State University, Raleigh, NC
S. Roe, North Carolina State University, Raleigh, North Carolina
M. King, North Carolina State University, Raleigh, North Carolina
P. Mente, North Carolina State University, Raleigh, North Carolina
G. Ruff, 4Vilcom Circle, Chapel Hill, Raleigh, North Carolina

916 Reduction of Absorption Time for a Polydioxanone Homopolymer Using Polyethylene glycol

Biomaterials Design and Tissue Engineering via Synthetic Biology

513 Multiscale Organization of Nanofiber-based Structures: Nature Design, Bio-inspired Engineering and Future Directions
C. Zhong, Synthetic Biology Center, Massachusetts Institute of Technology, Cambridge, MA
T. K. Lu, Synthetic Biology Center, Massachusetts Institute of Technology, Cambridge, Massachusetts

Biomaterials Education

N/A Motivational Differences Between Bioengineering and Mechanical Engineering Students
A. N. Kirn, Clemson University, Clemson, SC
L. Benson, Clemson University, Clemson, South Carolina

515 Biomaterial Implant Design Competition for High School Students
A. C. Parker, The University of Memphis, Memphis, TN
J. M. Goodhart, The University of Memphis, Memphis, Tennessee
T. Phung, The University of Memphis, Memphis, Tennessee
J. Williams, The University of Memphis, Memphis, Tennessee
J. D. Bumgardner, The University of Memphis, Memphis, Tennessee
Alternative Methods to Determine Extractable Monomer Content of Polydioxanone (PDO)
J. Olbrich, Poly-Med, Inc., Anderson, South Carolina
J. Corbett, Poly-Med, Inc., Anderson, South Carolina

Integrating creative thinking into biomaterials education: A first year bioengineering seminar module to teach how to design musculoskeletal bioengineering systems for regenerative purposes
T. Ozdemir, The Pennsylvania State University, University Park, PA

Biomaterials for Cardiac Repair

Development of Electrospun Hyaluronic Acid Scaffolds Containing Multivalent Peptide Conjugates
N. A. Rode, UC Berkeley, Oakland, CA
N. C. Marks, UC Berkeley, Berkeley, California
K. E. Healy, UC Berkeley, Berkeley, California

Stem Cell Therapy in Heart Failure: Application Strategies for the CardioCel® Matrix
J. A. M. Ramshaw, CSIRO, Clayton, Australia
A. Vashi, CSIRO, Clayton, Australia
J. F. White, CSIRO, Clayton, Australia
K. M. McLean, CSIRO, Clayton, Australia
W. M. L. Neethling, University of Western Australia, Fremantle, Australia
J. A. Werkmeister, CSIRO, Clayton, Australia

Biomaterials for Modulating Immune and Inflammatory Processes

Distinct Local Macrophage Phenotypes Are Associated With Divergent Tissue Remodeling Outcomes Following Implantation of Biologic Scaffolds
B. N. Brown, McGowan Institute for Regenerative Medicine, Pittsburgh, PA
K. A. Kukla, Carnegie Mellon University, Pittsburgh, Pennsylvania
B. M. Sicari, McGowan Institute for Regenerative Medicine, Pittsburgh, Pennsylvania
N. J. Turner, McGowan Institute for Regenerative Medicine, Pittsburgh, Pennsylvania
L. Zhang, McGowan Institute for Regenerative Medicine, Pittsburgh, Pennsylvania
S. F. Badylak, McGowan Institute for Regenerative Medicine, Pittsburgh, Pennsylvania

How Estrogen Receptor Signaling Modulates the Response of Human Macrophages to Wear Particles
C. Li, Department of Orthopaedic Surgery, Stanford University School of Medicine, Stanford, CA
C. Nich, Department of Orthopaedic Surgery, Stanford University School of Medicine, Stanford, California
J. K. Antonios, Department of Orthopaedic Surgery, Stanford University School of Medicine, Stanford, California
Z. Yao, Department of Orthopaedic Surgery, Stanford University School of Medicine, Stanford, California
K. Kealoha-Steck, Department of Pathology, Stanford University School of Medicine, Stanford, California
M. Fontaine, Department of Pathology, Stanford University School of Medicine, Stanford, California
S. B. Goodman, Department of Orthopaedic Surgery, Stanford University School of Medicine, Stanford, California

521 Composition of Intraperitoneal Electrospun Conduits Influence Recruited Cell Phenotype and Matrix Synthesis
C. A. Bashur, Cleveland Clinic, Cleveland, OH
M. J. Eagleton, Cleveland Clinic, Cleveland, Ohio
A. Ramamurthi, Cleveland Clinic, Cleveland, Ohio

522 Bilateral regulation of human monocytes and matrix-encapsulated mesenchymal stromal/stem cells in vitro and in full-thickness cutaneous wounds
D. A. Cantu, University of Wisconsin-Madison, Madison, WI

523 Chitosan Particles Induce Human U937 Macrophages to Release Anti-Inflammatory Factors and Mesenchymal Stem Cell Chemokines Through Pathways Involving STAT-1
D. Fong, École Polytechnique de Montréal, Montréal, QC, Canada
M. B. Ariganello, École Polytechnique de Montréal, Montréal, Québec, Canada
J. Girard-Lauzière, École Polytechnique de Montréal, Montréal, Québec, Canada
C. D. Hoemann, École Polytechnique de Montréal, Montréal, Québec, Canada

524 Modulation of in vitro nitric oxide production in murine macrophages by immobilized and soluble glycosaminoglycans
G. Tan, Institute for Frontier Medical Sciences, Kyoto University, Kyoto, Japan
Y. Tabata, Institute for Frontier Medical Sciences, Kyoto University, Kyoto, Japan

525 Development of Controlled Drug-Releasing Constructs to Mediate Inflammation in an Islet Transplant Site
J. D. Weaver, University of Miami, Miami, FL
Y. Song, University of Miami, Miami, Florida
A. Pileggi, University of Miami, Miami, Florida
P. Buchwald, University of Miami, Miami, Florida
C. L. Stabler, University of Miami, Miami, Florida

526 Time Course of Macrophage Polarization in Response to Wear Particles in vitro
J. K. Antonios, Stanford University School of Medicine, Stanford, CA
C. Li, Stanford University School of Medicine, Stanford, California
Z. Yao, Stanford University School of Medicine, Stanford, California
A. J. Rao, Stanford University School of Medicine, Stanford, California
S. B. Goodman, Stanford University School of Medicine, Stanford, California

527 Vascularization for Bone Tissue Engineering through Modulation of Macrophage Behavior
K. L. Spiller, Columbia University, New York, NY
R. Anfang, Columbia University, New York, New York
J. Ng, Columbia University, New York, New York
K. Nakazawa, Columbia University, New York, New York
G. Vunjak-Novakovic, Columbia University, New York, New York

528 Polyanhydride particle vaccine platform enhances antigen-specific cytotoxic T cell responses
K. Ross, Iowa State University, Ames, IA
L. Huntimer, Iowa State University, Ames, Iowa
R. Darling, Iowa State University, Ames, Iowa
A. Ramer-Tait, Iowa State University, Ames, Iowa
Deposition and Persistence of Polyanhydride Nanoparticle Vaccines upon Intranasal Administration
K. Ross, Iowa State University, Ames, IA
S. Haughney, Iowa State University, Ames, Iowa
T. Brenza, Iowa State University, Ames, Iowa
L. Huntimer, Iowa State University, Ames, Iowa
P. Boggiaatto, Iowa State University, Ames, Iowa
M. Wannemuehler, Iowa State University, Ames, Iowa
B. Narasimhan, Iowa State University, Ames, Iowa

Humoral responses elicited by polyanhydride nanoparticle formulations are facilitated by enhanced CD4+ T cell helper cells
K. Ross, Iowa State University, Ames, IA
L. Huntimer, Iowa State University, Ames, Iowa
R. Darling, Iowa State University, Ames, Iowa
A. Ramer-Tait, Iowa State University, Ames, Iowa
B. Narasimhan, Iowa State University, Ames, Iowa
M. Wannemuehler, Iowa State University, Ames, Iowa

Polyanhydride Nanoparticle-based Influenza Vaccine Elicits Viral Neutralizing Titers and Enhances Cell-Mediated Immunity
K. Ross, Iowa State University, Ames, IA
L. Huntimer, Iowa State University, Ames, Iowa
W. Wu, Iowa State University, Ames, Iowa
S. Carpenter, Iowa State University, Ames, Iowa
B. Narasimhan, Iowa State University, Ames, Iowa
M. Wannemuehler, Iowa State University, Ames, Iowa

Enhancing Mechanical Properties of Fibrin Matrices for Wound Healing Applications through Optimized B-knob Engagement
K. C. Clause, Georgia Institute of Technology, Atlanta, GA

Investigation of interaction between the dynamic polymer surfaces and collagen molecules
K. Nam, Tokyo Medical and Dental University, Tokyo, Japan
J. Seo, Tokyo Medical and Dental University, Tokyo, Japan
T. Kimura, Tokyo Medical and Dental University, Tokyo, Japan
N. Yui, Tokyo Medical and Dental University, Tokyo, Japan
A. Kishida, Tokyo Medical and Dental University, Tokyo, Japan

Specific cytokines released by monocytes cultured on a degradable polyurethane (D-PHI) influence VSMC response
K. Battiston, University of Toronto, Toronto, ON, Canada
B. Ouyang, University of Toronto, Toronto, Ontario, Canada
R. Labow, University of Ottawa Heart Institute, Ottawa, Ontario, Canada
C. Simmons, University of Toronto, Toronto, Ontario, Canada
J. Santerre, University of Toronto, Toronto, Ontario, Canada

Cell-Specific ECM Down-Regulates the Inflammatory Response to Nervous System Implants
M. B. Christensen, University of Utah, Salt Lake City, UT
J. L. Skousen, University of Utah, Salt Lake City, Utah
536 Microstructured Immunoregulatory Scaffolds for Controlling Host-Biomaterial Interactions
N. Washburn, Carnegie Mellon University, Pittsburgh, PA
M. Ramadan, Carnegie Mellon University, Pittsburgh, Pennsylvania
T. Hinton, Carnegie Mellon University, Pittsburgh, Pennsylvania
A. Feinberg, Carnegie Mellon University, Pittsburgh, Pennsylvania

537 Polyanhydride nanoparticle vaccine platform delays tumor growth in an antigen specific model
R. Darling, Iowa State University, Ames, IA

538 Ultra Strong, Thermoresponsive Double-Network Hydrogels
R. Fei, Texas A&M University, Bryan, TX
M. A. Grunlan, Texas A&M University, College Station, Texas

539 Controlled Nitric Oxide Releasing Dendronized Poly(vinyl chloride) for Improving Biocompatibility of Implantable Devices
S. P. Hopkins, Michigan Technological University, Houghton, MI

540 Novel h9e Peptide Sequence for Medical Uses
T. L. Carter, Kansas State University, Manhattan, KS

541 Modulation of Host Response by Anti-inflammatory Drugs to Improve the Efficacy of Immuno-isolated Islets in Diabetes Therapy
T. T. Dang, Massachusetts Institute of Technology, Cambridge, MA
A. V. Thai, Massachusetts Institute of Technology, Cambridge, Massachusetts
J. Cohen, Joslin Diabetes Center, Boston, Massachusetts
J. E. Slosberg, Massachusetts Institute of Technology, Cambridge, Massachusetts
K. Siniakowicz, Joslin Diabetes Center, Boston, Massachusetts
J. C. Doloff, Massachusetts Institute of Technology, Cambridge, Massachusetts
M. Ma, Massachusetts Institute of Technology, Cambridge, Massachusetts
J. Hollister-Lock, Joslin Diabetes Center, Cambridge, Massachusetts
K. Tang, Massachusetts Institute of Technology, Cambridge, Massachusetts
Z. Gu, Massachusetts Institute of Technology, Cambridge, Massachusetts
H. Cheng, Massachusetts Institute of Technology, Cambridge, Massachusetts
G. C. Weir, Joslin Diabetes Center, Boston, Massachusetts
R. Langer, Massachusetts Institute of Technology, Cambridge, Massachusetts
D. G. Anderson, Massachusetts Institute of Technology, Cambridge, Massachusetts

542 Magnetic Resonance Imaging Tracking of Dendritic Cells Homing to the Draining Lymph Nodes in Mice
Y. Xu, Sichuan University, Chengdu, China
D. Wang, Sichuan University, Chengdu, China
Y. Liu, Sichuan University, Chengdu, China
C. Xia, West China Hospital, Sichun University, Chengdu, China
Q. Gong, West China Hospital, Sichuan University, Chengdu, China
B. Song, West China Hospital, Sichuan University, Chengdu, China
C. Wu, Sichuan University, Chengdu, China
G. Lin, Sichuan University, Chengdu, China
D. Li, Sichuan University, Chengdu, China
H. Ai, Sichuan University, Chengdu, China
Encapsulation of antigen in chitosan particles enhances activation and antigen specific response by antigen presenting cells
B. Koppolu, University of Arkansas, Fayetteville, AR
D. A. Zaharoff, University of Arkansas, Fayetteville, Arkansas

Transplantable Matrix Permits T Cell and Dendritic-Fusion Cell Interaction
K. M. Charoen, Boston University, Boston, MA
T. Konry, Shriners Childrens Hospitals, Boston, Massachusetts
S. Cohen, Ben Gurion University, Negev, Israel
D. Avigan, Beth Israel/Deaconess Medical Center, Boston, Massachusetts
M. Yarmush, Shriners Hospitals for Children, Boston, Massachusetts
M. W. Grinstaff, Boston University, Boston, Massachusetts

Biomaterials for Modulating Immune and Inflammatory Processes

Thermally stable self-adjuvanting vaccines via self-assembling peptides
T. Sun, University of Chicago, Chicago, IL

Biomaterials for Triggered Delivery to the Cytosol

Polycationic Hydrogel Nanoparticles for siRNA Delivery
D. C. Forbes, The University of Texas at Austin, Austin, TX
D. C. Forbes, The University of Texas at Austin, Austin, Texas
H. Frizzell, The University of Texas at Austin, Austin, Texas
B. Carrillo-Conde, The University of Texas at Austin, Austin, Texas
N. A. Peppas, The University of Texas at Austin, Austin, Texas

Redox Responsive Polymeric Nanocapsules for Protein Delivery
M. Zhao, University of California, Los Angeles, Los Angeles, CA
Y. Tang, University of California Los Angeles, Los Angeles, California

Ultrasonically Activated Delivery to the Cytosol using Acoustic Droplet Vaporization
W. G. Pitt, Brigham Young University, Provo, UT
J. R. Lattin, Brigham Young University, Provo, Utah
M. J. McRae, Brigham Young University, Provo, Utah
K. Moake, Brigham Young University, Provo, Utah

Biomaterials in Medical Device Recycling and Reprocessing

Toward a heat-curling polymeric needle designed for safe disposal
P. Yang, Syracuse University, Syracuse, NY
P. T. Mather, Syracuse University, Syracuse, New York

Study on the Antimicrobial Properties of a High Copper Content Zr-based Bulk Metallic Glass
W. He, The University of Tennessee, Knoxville, TN
L. Huang, The University of Tennessee, Knoxville, Tennessee
E. Fozo, The University of Tennessee, Knoxville, Tennessee
Biomaterials in the Fourth Dimension – Controlling Temporal Properties

550  Fabrication of a Light-Emitting Shape Memory Polymeric Web
A. H. Torbati, Syracuse University, Jamesville, NY

551  Controlled Guidance of Spinal Motor Axons through Synthetic Click Hydrogels
D. D. McKinnon, University of Colorado at Boulder, Boulder, CO

552  Characterization of Dynamic Shape-Memory (Meth)Acrylate Networks for Tissue Engineering Applications
E. Hewett, Georgia Institute of Technology, Atlanta, GA
K. Smith, MedShape Solutions, Inc., Atlanta, Georgia
K. Gall, Georgia Institute of Technology, Atlanta, Georgia
Z. Schwartz, Georgia Institute of Technology, Atlanta, Georgia
B. D. Boyan, Georgia Institute of Technology, Atlanta, Georgia

553  Smart Supramolecular Hydrogels encapsulated Bioengineered Stem Cells for Cancer Therapy
J. Yeom, POSTECH, Pohang, Republic of Korea
S. Kim, POSTECH, Pohang, Republic of Korea
H. Jung, POSTECH, Pohang, Republic of Korea
H. Namgung, POSTECH, Pohang, Republic of Korea
J. Yang, POSTECH, Pohang, Republic of Korea
K. Kim, POSTECH, Pohang, Republic of Korea
Y. Sung, POSTECH, Pohang, Republic of Korea
S. Hahn, POSTECH, Pohang, Republic of Korea

554  Signal-processing Biomaterials
K. Jakobus, University of Freiburg, Freiburg, Germany
W. Weber, University of Freiburg, Freiburg, Germany

555  Gellan gum-based Spongy-like Hydrogels depict improved Cellular Performance
L. P. da Silva, University of Minho (Portugal), Guimarães, Portugal
M. T. Cerqueira, University of Minho, Guimarães, Portugal
R. A. Sousa, University of Minho, Guimarães, Portugal
A. P. Marques, University of Minho, Guimarães, Portugal
V. M. Correlo, University of Minho, Guimarães, Portugal
R. L. Reis, University of Minho, Guimarães, Portugal

556  Smart Nanofiber Webs for “On-off” Release of Cells and Drugs
M. Ebara, National Institute for Materials Science, Tsukuba, Japan
T. Aoyagi, National Institute for Materials Science, Tsukuba, Japan

557  A Novel Platform for On Demand Delivery of Multiple Proteins
N. Mokarram, Georgia Institute of Technology and Emory University, Atlanta, GA
A. Merchant, Georgia Institute of Technology and Emory University, Atlanta, Georgia
R. Bellamkonda, Georgia Institute of Technology and Emory University, Atlanta, Georgia

558  Dynamic Photo-Tunable Gels to Modulate Matrix Stiffness
R. S. Stowers, The University of Texas at Austin, Austin, TX
C. L. Davis, The University of Texas at Austin, Austin, Texas
B. Han, The University of Texas at Austin, Austin, Texas
L. J. Suggs, The University of Texas at Austin, Austin, Texas

Shape-memory Surfaces facilitate Time-dependent Observation of Cell Functions
K. Uto, National Institute for Materials Science (NIMS), Tsukuba, Japan
M. Ebara, National Institute for Materials Science (NIMS), Tsukuba, Japan
T. Aoyagi, National Institute for Materials Science (NIMS), Tsukuba, Japan

Biomaterials to Decode Cell-Cell Signaling

Hydrogel-based Platforms for Co-Culture and On-Demand Cell Retrieval of Human Mesenchymal Stem Cells
T. E. Rinker, Georgia Institute of Technology and Emory University, Atlanta, GA
T. M. Hammoudi, Georgia Institute of Technology and Emory University, Atlanta, Georgia
H. Lu, Georgia Institute of Technology, Atlanta, Georgia
J. S. Temenoff, Georgia Institute of Technology and Emory University, Atlanta, Georgia

Biomimetic Surfaces: From Multi-scale Fabrication Methods to Diagnostic, Therapeutic and Clinical Applications

Vascularized Biomaterials for Rapid Soft-Stiff Transitions in Medical Devices
A. Balasubramanian, Carnegie Mellon University, Pittsburgh, PA
C. Bettinger, Carnegie Mellon University, Pittsburgh, Pennsylvania

Reinforcement of Calcium Phosphate Cement Using Silk Fibroin (SF) and Self-assembled SF-Hydroxyapatite Complex
B. Li, Soochow University, Suzhou, Jiangsu Province, China

Clickable PEG nanogel coatings compared to PEG/BSA nanogels: synergy between PEG and BSA contributes to ultralow protein adsorption as assessed by single molecule fluorescence
D. L. Elbert, Washington University in St. Louis, St. Louis, MO
C. D. Donahoe, Washington University in St. Louis, St. Louis, Missouri

Mucin Layers as Biomimetic Coating for Polymeric Biomaterials
S. Lee, Technical University of Denmark, Kgs. Lyngby, Denmark

Cardiovascular Biomaterials

Design, Preparation and in vitro Assay of a Novel Endothelial Progenitor Cell Capturing Vascular Prosthesis
B. Li, Laval University, Quebec City, QC, Canada
Z. Zhang, Laval University, Quebec, Québec, Canada
X. Xie, Sichuan University, Chengdu, China
Y. Zhong, Sichuan University, Chengdu, China
R. Guidoin, Laval University, Quebec, Québec, Canada
Y. Douville, Laval University, Québec, Québec, Canada

pH neutralization and inflammation prevention by RA and PLLA-grafted magnesium
hydroxide nanoparticles
D. Han, Korea Institute of Science and technology, Seoul, Republic of Korea

Improvement of Interfacial Adhesion by ATRP and Stereocomplex for Drug-Eluting Stents
D. Han, Korea Institute of Science and Technology, Seoul, Republic of Korea

Optimization and characterization of a new injectable radiopaque chitosan-based embolizing hydrogel for endovascular therapies
F. Zehtabi, École de technologie supérieure, Montreal, QC, Canada

Characterization and Optimization of Nanoliposomes to Deliver 17β-Estradiol
K. Bowey, McGill University, Montreal, QC, Canada
I. Cloutier, Montreal Heart Institute, Montreal, Québec, Canada
J. Tanguay, Montreal Heart Institute, Montreal, Québec, Canada
M. Tabrizian, McGill University, Montreal, Québec, Canada

Superior in vivo biocompatibility of a hydrophilic polymer coated prosthetic vascular graft
M. L. W. Knetsch, Maastricht University, Maastricht, Netherlands

Hyaluronic Acid Enhancement of Polyethylene for Cardiovascular Applications
N. Lewis, Colorado State University, Fort Collins, CO

Functionalization of Nonwoven Poly(Ethylene Terephthalate) Structures Designed as Compliant Small-Diameter Vascular Grafts
S. Noel, Ecole Polytechnique de Montreal, Montréal, QC, Canada
B. Liberelle, Ecole Polytechnique de Montréal, Montréal, Québec, Canada
A. Yogi, National Research Council Canada, Ottawa, Ontario, Canada
M. J. Moreno, National Research Council Canada, Ottawa, Ontario, Canada
M. N. Bureau, National Research Council Canada, Boucherville, Québec, Canada
L. Robitaille, National Research Council Canada, Boucherville, Québec, Canada
G. De Crescenzo, Ecole Polytechnique de Montréal, Montréal, Québec, Canada

Functional macromolecules for simple surface modification of a biodegradable magnesium alloy to reduce thrombogenicity and improve corrosion resistance
S. Ye, University of Pittsburgh, Pittsburgh, PA
V. Shankarraman, University of Pittsburgh, Pittsburgh, Pennsylvania
Y. Jang, North Carolina A&T State University, Greensboro, North Carolina
H. Sakaguchi, Toray Co Ltd, Pittsburgh, Pennsylvania
Y. Yun, North Carolina A&T State University, Greensboro, North Carolina
W. R. Wagner, University of Pittsburgh, Pittsburgh, Pennsylvania

Impact of Age on Bovine Pericardial Composition and Mechanics
T. J. Tod, Edwards Lifesciences, Irvine, CA
J. R. Yamada, Edwards Lifesciences, Irvine, California
J. A. Benton, Edwards Lifesciences, Irvine, California

Fabrication and Mechanical Evaluation of Bicomponent PET/Silk Small Diameter Arterial Prostheses
X. Yang, Key Lab of Textile Science and Technology, College of Textiles, Donghua University, Shanghai, 201620, China
College of Textiles, North Carolina State University, Raleigh 27695, USA, Raleigh, NC
L. Wang, Key Lab of Textile Science and Technology, College of Textiles, Donghua University, Shanghai, 201620, China, Shanghai, China
Synthesis of Polycarbonate Urethanes with Functional Poly(ethylene glycol) Side Chains Intended for Bioconjugation
X. Xie, Sichuan University, Chengdu, China
Q. Fu, Sichuan University, Chengdu, China
Y. Zhong, Sichuan University, Chengdu, China
Z. Zhang, Université Laval, Quebec City, Québec, Canada
Y. Xu, Sichuan University, Chengdu, China

Development of a Shape Memory Patch for Minimally Invasive Repair of Vascular Rupture
T. Boire, Vanderbilt University, Nashville, TN

Cardiac Lead Retrieval Analysis: Insulation Degradation Hinders Long Term Performance
M. Tohfafarosh, Drexel University, Philadelphia, PA
A. Sevit, Drexel University, Philadelphia, Pennsylvania
J. Patel, Exponent Inc., Philadelpbia, Pennsylvania
A. Greenspon, Thomas Jefferson University Hospital, Philadelphia, Pennsylvania
J. M. Prutkin, University of Washington, Seattle, Washington
S. Kurtz, Drexel University, Philadelphia, Pennsylvania

Ceramics and Composites in Bone Tissue Engineering and Drug Delivery

Bilayered Calcium Sulfate Space-Making Composites with Multiple Drug Delivery Capabilities
B. R. Orellana, University of Kentucky, Lexington, KY
M. V. Thomas, University of Kentucky, Lexington, Kentucky
J. Z. Hilt, University of Kentucky, Lexington, Kentucky
D. Puleo, University of Kentucky, Lexington, Kentucky

Fabrication of Customized Porous Hydroxyapatite (HA) implants for Osteotomy
H. Jung, Department of Materials Science and Engineering, Seoul National University, Seoul, Republic of Korea
T. Jang, Department of Materials Science and Engineering, Seoul National University, Department of Materials Science and Engineering, Seoul National University, Republic of Korea
M. Kang, Department of Materials Science and Engineering, Seoul National University, Department of Materials Science and Engineering, Seoul National University, Republic of Korea
S. Kim, Seoul National Univ., seoul, Republic of Korea
H. Kim, Department of Materials Science and Engineering, Seoul National University, Department of Materials Science and Engineering, Seoul National University, Republic of Korea
Y. Koh, Department of Materials Science and Engineering, Seoul National University, bDepartment of Dental Laboratory Science and Engineering, Korea University, Republic of Korea
Y. Estrin, Department of Materials Engineering, Monash University, Clayton, Australia, cDepartment of Materials Engineering, Monash University, Clayton, Australia, Republic of Korea

Cell Growth on a Gradient Calcium Polyphosphate Scaffold in a Perfusion Bioreactor
L. Chen, Wayne State University, Detroit, MI
Injectable pectin-hydroxyapatite biocomposites for minimally-invasive bone surgery
M. Tanzi, Politecnico di Milano, Milano, Italy

Synthesis and Characterization of Amorphous Magnesium Phosphate: A Novel Bone Cement Precursor
N. Ostrowski, University of Pittsburgh, Pittsburgh, PA
B. Lee, University of Pittsburgh, Pittsburgh, Pennsylvania
N. Enick, University of Pittsburgh, Pittsburgh, Pennsylvania
A. Roy, University of Pittsburgh, Pittsburgh, Pennsylvania
P. N. Kumta, University of Pittsburgh, Pittsburgh, Pennsylvania

Comparative Properties of Gelatin/Synthetic Bone Mineral Composite and Bovine Bone
R. Z. LeGeros, New York University, New York, NY
S. Saraswat, New York University, New York, New York
P. Khanna, New York University, New York, New York
D. Mijares, New York University, New York, New York
J. Dai, New York University, New York, New York

Effect of silica doping on microstructural and biological properties of brushite cements
S. Bose, Washington State University, Pullman, WA
S. Vahabzadeh, Washington State University, Pullman, Washington
M. Roy, Washington state university, Pull, Washington
A. Bandyopadhyay, Washington state university, Pullman, Washington

A Biomimetic Collagen-apatite Scaffold with Unique Multi-level Lamellar Structure for Bone Tissue Engineering
Z. Xia, University of Connecticut, Coventry, CT
M. Wei, University of Connecticut, Storrs, Connecticut

Dental / Craniofacial Materials

Antimicrobial and Mechanical Properties of Bioactive Glass Reinforced Dental Composites
D. Khvostenko, Oregon State University, Corvallis, OR
J. Kruzic, Oregon State University, Corvallis, Oregon
J. Ferracane, Oregon Health and Science University, Portland, Oregon
J. Mitchell, Oregon Health and Science University, Portland, Oregon

Development of mandibular reconstruction device made of titanium fiber scaffold
M. Hirota, Yokohama City University Graduate School of Medicine, Yokohama, Japan

Effect of Seeding Density on Human Dental Pulp Cell Response in Polyethylene Glycol-Fibrinogen Hydrogel
S. Prateepchinda, Columbia University, New York, NY
H. H. Lu, Columbia University, New York, New York
G. B. Hasselgren, Columbia University, New York, New York
D. Seliktar, Technion – Israel Institute of Technology, Haifa, Israel

Antibiotic-loaded Porous Poly(methyl methacrylate) for Space Maintenance and Local Drug Delivery
S. R. Shah, Rice University, Houston, TX
S. Shah, Rice University, Houston, Texas
Three-Dimensionally Printed b-Tri-Calcium Phosphate/Hydroxyapatite-Bone Morphogenic Protein Scaffolds for Long Bone Regeneration

N. M. Tovar, New York University College of Dentistry, New York, NY
M. Sobieraj, Hospital for Joint Diseases, New York University Langone Medical Center, New York, New York
L. Witek, Oklahoma State University, Stillwater, Oklahoma
J. Smay, Oklahoma State University, Stillwater, Oklahoma
P. G. Coelho, New York University College of Dentistry, New York, New York

Developing the Next Generation of Cardiovascular Devices - From Concept to Implantation (An Industry Perspective)

Factors Affecting Distal Tip Stiffness of Pacemaker and Defibrillator Leads
D. Walsh, U.S. Food and Drug Administration, Silver Spring, MD
B. Stephen, U.S. Food and Drug Administration, Silver Spring, Maryland
L. Topoleski, University of Maryland Baltimore County, Baltimore, Maryland
O. Vesnovsky, U.S. Food and Drug Administration, Silver Spring, Maryland
N. Duraiswamy, U.S. Food and Drug Administration, Silver Spring, MD, Maryland

Delivery of Vitamin-C (L-Ascorbic Acid) from Coronary Stent Material Surfaces
E. Thiruppathi, The University of South Dakota, Sioux Falls, SD
S. Kakade, The university of South Dakota, Sioux Falls, South Dakota
G. Mani, The university of South Dakota, Sioux Falls, South Dakota

A Nanofibrous Bioactive Vascular Graft for Small Vessel Reconstruction
M. D. Phaneuf, BioSurfaces, Inc., Ashland, MA
S. G. Pathan, BioSurfaces, Inc., Ashland, Massachusetts
S. M. Ali, BioSurfaces, Inc., Ashland, Massachusetts
M. J. Bide, University of Rhode Island, Kingston, Rhode Island
D. W. Nelson, BioSurfaces, Inc., Ashland, Massachusetts
J. R. Araya, Northeastern University, Boston, Massachusetts
T. E. Phaneuf, BioSurfaces, Inc., Ashland, Massachusetts
T. M. Phaneuf, BioSurfaces, Inc., Ashland, Massachusetts
F. W. LoGerfo, Beth Israel Deaconess Medical Center, Boston, Massachusetts
M. A. Contreras, Beth Israel Deaconess Medical, Boston, Massachusetts

A Novel Nitric Oxide-eluting Nanocomposite Polymer for Cardiovascular Applications
N. Naghavi, University College London (UCL), London, United Kingdom (Great Britain)

Evaluation of Various Materials for Tip Penetration of Pacemaker and Defibrillator Leads
D. Walsh, U.S. Food and Drug Administration, Silver Spring, MD
B. Stephen, U.S. Food and Drug Administration, Silver Spring, Maryland
N. Duraiswamy, U.S. Food and Drug Administration, Silver Spring, Maryland
O. Vesnovsky, U.S. Food and Drug Administration, Silver Spring, Maryland
L. Topoleski, University of Maryland, Baltimore County, Baltimore, Maryland
Development, Analysis, and Design of Heart Valve Biomaterials - The State of The Art

593  **Cell Injection Initiates the Recellularization Process in Decellularized Porcine Aortic Valve Scaffolds**  
D. B. Spoon, Mayo Clinic, Rochester, MN  
B. J. Tefft, Mayo Clinic, Rochester, Minnesota  
K. Coffman, Mayo Clinic, Rochester, Minnesota  
S. Pan, Mayo Clinic, Rochester, Minnesota  
D. Taylor, Texas Heart Institute, Houston, Texas  
A. Lerman, Mayo Clinic, Rochester, Minnesota  
R. D. Simari, Mayo Clinic, Rochester, Minnesota

594  **Textile Heart Valve Prosthesis: Early In Vitro Fatigue Performances**  
F. HEIM, Laboratoire de Physique et Mecanique Textiles, MULHOUSE, France

595  **Valve Epithelial-to-Mesenchymal Transition is Enhanced on Composite Collagen-Hyaluronic Acid Hydrogels**  
M. Sewell-Loftin, Vanderbilt University, Nashville, TN  
D. DeLaughter, Vanderbilt University, nashville, Tennessee  
J. Barnett, Vanderbilt, Nashville, Tennessee  
W. Merryman, Vanderbilt, nashville, Tennessee

596  **A NOVEL MODEL FOR HEART VALVE BIOMATERIAL FATIGUE RESPONSE**  
M. S. Sacks, University of Texas at Austin, Austin, TX  
W. Zhang, University of Texas at Austin, Austin, Texas

597  **Fabrication of Advanced Poly(ethylene glycol) Diacrylate Hydrogels for Heart Valve Tissue Engineering**  
X. Zhang, Rice University, Houston, TX  
B. Xu, Rice University, Houston, Texas  
H. Tseng, Rice University, Houston, Texas  
M. L. Cuchiara, Duke University, Durham, North Carolina  
J. L. West, Duke University, Durham, North Carolina  
J. K. Grande-Allen, Rice University, Houston, Texas

Drug Delivery

598  **Nanoparticle-based Platform Enables Increased Intracellular Antibiotic Delivery and Killing of Brucella**  
B. H. Bellaire, Iowa State University, Ames, IA  
Y. Phanse, Iowa State University, Ames, Iowa  
P. Lueth, Iowa State University, Ames, Iowa  
B. Narasimhan, Iowa State University, Ames, Iowa

599  **Liposomal Delivery of FTY720 Modulates Inflammatory Response in Macrophages**  
C. E. Segar, Georgia Institute of Technology and Emory University, Atlanta, GA  
E. Botchwey, Georgia Institute of Technology and Emory University, Atlanta, Georgia

600  **Antimicrobial Effectiveness of a Triclosan Coated Warp-Knit Mesh**  
In vitro Studies of Silica Xerogels for Controlled, Sustained Gene Delivery  
H. Qu, University of Pennsylvania, Philadelphia, PA

Effects of Ionic Dissolution Products of Bioceramics on the Structure and Bioactivity of Doxorubicin  
H. Pacheco, University of North Carolina at Charlotte, Charlotte, NC  
I. Nesmloeva, University of North Carolina at Charlotte, Charlotte, North Carolina  
D. Dréau, UNC Charlotte, Charlotte, North Carolina  
A. El-Ghannam, UNC Charlotte, Charlotte, North Carolina

Administration Methods for Injectable Systems Involving Precipitation Mechanics  
K. Gray, Poly-Med, Inc., Anderson, South Carolina  
D. Ingram, Poly-Med, Inc., Anderson, South Carolina  
S. Taylor, Poly-Med, Inc., Anderson, South Carolina  
J. Corbett, Poly-Med, Inc., Anderson, South Carolina

Increased Efficacy of Doxorubicin Delivery with Phytosterol Nanoassemblies  
K. R. Fath, Queens College - City University of New York, Flushing, NY  
S. H. Frayne, Fordham University, Bronx, New York  
N. Nakatsuka, Fordham University, Bronx, New York  
I. Kandinov, Queens College -- City University of New York, Flushing, New York  
B. J. Cohen, Queens College -- City University of New York, Flushing, New York  
I. A. Banerjee, Fordham University, Bronx, New York

MaSp2 based recombinant spider silk particles: processing of a new drug delivery vesicles  
K. Kazmierska, Adam Micwiekicz University, Poznan, Poland  
E. Felcyn, Greater Poland Cancer Centre, Poznan, Poland  
A. Florczak, Adam Mickiewicz University, Poznan, Poland  
M. Nowacka, Poznan University of Technology, Poznan, Poland  
A. Mackiewicz, Poznan University of Medical Sciences, Poznan, Poland  
H. Dams-Kozlowska, Greater Poland Cancer Centre, Poznan, Poland

Smart Transdermal Vaccine Delivery Systems Using Hyaluronic Acid Derivatives  
K. Kim, Massachusetts General Hospital, Cambridge, MA  
H. Kim, Pohang University of Science and Technology, Pohang, Republic of Korea  
S. Yun, Massachusetts General Hospital, Cambridge, Massachusetts  
S. Hahn, Pohang University of Science and Technology, Pohang, Republic of Korea

Heteromultivalent Ligand Modification to Enhance Specific Bioactivity of Vascular Nanomedicine Platforms  
L. L. Tian, Case Western Reserve University, Cleveland, OH  
C. Modery, Case Western University Reserve, Cleveland, Ohio  
G. Kaur, Case Western Reserve University, Cleveland, Ohio  
V. Pan, Case Western Reserve University, Cleveland, Ohio  
T. Wong, Case Western Reserve University, Cleveland, Ohio  
M. Ravikumar, Case Western Reserve University, Cleveland, Ohio  
A. Sen Gupta, Case Western Reserve University, Cleveland, Ohio

Surface Hybridization of Macrophages with Dendrimer via Copper-Free Click Chemistry
L. Xu, Virginia Commonwealth University, RICHMOND, VA

Correlating Akt Signaling Molecule Activation to Cytocompatibility of Photo initiators
L. Xu, Virginia Commonwealth University, RICHMOND, VA

Doped Hallyosite Nanotubes as a Drug Delivery Tool for Anti-Cancer Treatment
L. Sun, Louisiana Tech University, Ruston, LA
D. Mills, Louisiana Tech University, Ruston, Louisiana

Drug delivery system by micro-encapsulation of a radio-protective inclusion complex
L. A. Heinrich, Sr., marcotech oHG, Muenster, Germany
B. Pajaziti, Jr., Westphalian Wilhelms University Muenster, Muenster, Germany
R. Roziev, Sr., medbiopharm Ltd., Obninsk, Kaluga Region, Russian Federation

Effectiveness of Anti-biofilm Agents against Staphylococcus aureus biofilms
M. Brown, University of Kentucky, Lexington, KY
G. Huerta, University of Kentucky, Lexington, Kentucky
T. Fields, University of Kentucky, Lexington, Kentucky
R. Peyyala, University of Kentucky, Lexington, Kentucky
T. Milbrandt, University of Kentucky, Lexington, Kentucky
T. Dziubla, University of Kentucky, Lexington, Kentucky
D. Puleo, University of Kentucky, Lexington, Kentucky

Drug-Eluting Microarrays
M. R. Carstens, University of Florida, Gainesville, FL
B. G. Keselowsky, University of Florida, Gainesville, Florida

Controlled Release of Antimicrobial Surrogate Can Be Imaged Over 7 Days In Vivo.
M. Giers, Arizona State University, Tempe, AZ

Soybean based Absorbable Polymers for Cancer Prevention
N. Srivastava, Bezwada Biomedical, LLC, Hillsborough, NJ

In Situ Forming Drug Delivery Scaffold for Treating Avascular Necrosis of the Femoral Head
P. Fisher, University of Kentucky, Lexington, KY
D. A. Puleo, University of Kentucky, Lexington, Kentucky
J. Z. Hilt, University of Kentucky, Lexington, Kentucky
T. A. Milbrandt, University of Kentucky, Lexington, Kentucky

Structural Analysis of Unimer Nanoparticles Composed of Hydrophobized Poly (amino acid) s
and Their Potential Application as Drug Carriers
P. Piyapakorn, Graduate School of Engineering, Osaka University, Japan, Osaka, Japan
T. Akagi, Graduate School of Engineering, Osaka University, Osaka, Japan
M. Akashi, Graduate School of Engineering, Osaka University, Osaka, Japan

Combinatorial Cationic Lipid-like Nanoparticles for Efficient Intracellular Cytotoxic Protein Delivery
Q. Xu, Tufts University, Medford, MA

Resorbable Temperature- Responsive Hydrogels Are Biocompatible Controlled Release Vehicles
R. McLemore, Banner Good Samaritan Medical Center, Phoenix, AZ
Acid-responsive micelle-forming polymers as new anticancer therapeutics
S. Park, Department of BIN Fusion Technology, Jeonju, Republic of Korea

Photo-cross-linkable chitosan-lactide hydrogels for growth factor delivery: Development and in vitro characterization
S. Kim, Stanford University, Palo Alto, CA
Y. Kang, Stanford University, Stanford, California
A. Mercado-Pagan, Stanford University, Stanford, California
Y. Yang, Stanford University, Stanford, California

Analysis of Molecular Weight Growth and Degradation of a Simvastatin Polymeric Prodrug
T. Asafo-Adjei, University of Kentucky, Lexington, KY
D. A. Puleo, University of Kentucky, Lexington, Kentucky
T. D. Dziubla, University of Kentucky, Lexington, Kentucky

Modulation of microRNAs for Treatment of Glioblastoma Multiforme
Y. Yin, Worcester Polytechnic Institute, Worcester, MA
D. Rassias, Worcester Polytechnic Institute, Worcester, Massachusetts
A. Jain, Worcester Polytechnic Institute, Worcester, Massachusetts

Co-delivery of chemo drug and siRNA using layer-by-layer nanoparticles for triple negative breast cancer treatment
Z. Deng, MIT, Cambridge, MA
S. Morton, MIT, Cambridge, Massachusetts
P. Hammond, MIT, Cambridge, Massachusetts

Hyperbranched Polyester Hydrogels with Controlled Drug Release and Cell Adhesion Properties
A. K. Gaharwar, Massachusetts Institute of Technology, Cambridge, MA
H. Zhang, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, Massachusetts
A. Patel, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, Massachusetts
S. Mihaila, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, Massachusetts
G. Iviglia, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, Massachusetts
S. Mukundan, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, Massachusetts
H. Bae, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, Massachusetts
H. Yang, University of Science and Technology, Anhui, China, China
A. Khademhosseini, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, Massachusetts

An injectable nanodelivery system for prolonged release of the local anesthetic lidocaine
I. K. Yazdi, The Methodist Hospital Research Institute, Houston, TX
S. Khaled, The Methodist Hospital Research Institute, Houston, Texas
J. Van Eps, The Methodist Hospital, Houston, Texas
J. Fernandez-Moure, The Methodist Hospital, Houston, Texas
N. Taghipour, The Methodist Hospital Research Institute, Houston, Texas
J. Martinez, The Methodist Hospital Research Institute, Houston, Texas
S. Haddix, The Methodist Hospital Research Institute, Houston, Texas
E. Tasciotti, The Methodist Hospital Research Institute, Houston, Texas

Controlled sequential release of multi-agents from layer-by-layer films for surface delivery applications
J. Min, Massachusetts Institute of Technology, Cambridge, MA
A Novel HA-based Micelle Material as a Potent Delivery System
T. Teng, Industrial Technology Research Institute, Hsinchu, Taiwan

Polymer Nanoparticles for Delivery of Multiple Therapeutic Agents and their Effects on Glioma Growth
A. S. Ediriwickrema, Yale University, New Haven, CT
J. Zhou, Yale University, New Haven, Connecticut
M. Saltzman, Yale University, New Haven, Connecticut

Highly efficient siRNA delivery method by self-assembled RNA microsponges
D. Han, University of Seoul, Seoul, Republic of Korea
J. Lee, University of Seoul, Seoul, Republic of Korea

Characterization of UV-Responsive Expansile Nanoparticles
A. Colby, Boston University, Boston, MA

Cisplatin-Loaded Biodegradable Nanofiber Meshes for Treating Malignant Pleural Mesothelioma
J. A. Kaplan, Boston University, Newton, MA
R. Yonekura, Boston University, Boston, Massachusetts
Y. L. Colson, Brigham and Women’s Hospital, Boston, Massachusetts
M. W. Grinstaff, Boston University, Boston, Massachusetts

Sustained Release of Functional Antibiotics From a Keratin Hydrogel
S. Tomblyn, KeraNetics, LLC, Winston-Salem, NC
H. Meng, Miami University, Oxford, Ohio
M. Ellenburg, KeraNetics, LLC, Winston-Salem, North Carolina
L. Burnett, KeraNetics, LLC, Winston-Salem, North Carolina
J. Saul, Miami University, Oxford, Ohio

An Implantable Intraperitoneal Drug Delivery Device for the Treatment of Advanced Ovarian Cancer
H. Ye, Massachusetts Institute of Technology, Cambridge, MA
L. Tanenbaum, Massachusetts Institute of Technology, Cambridge, Massachusetts
M. Del Carmen, Massachusetts General Hospital, Boston, Massachusetts
M. Birrer, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts
M. J. Cima, Massachusetts Institute of Technology, Cambridge, Massachusetts

Drug Delivery for Inflammatory Diseases

Delivery of acetylsalicylic acid to dendritic cells using degradable microparticles
E. Bracho-Sanchez, University of Florida, Gainesville, FL
J. L. Lewis, University of Florida, Gainesville, Florida
B. G. Keselowsky, University of Florida, Gainesville, Florida

Anti-inflammatory biocompatible dexamethasone-loaded porous microparticles for acute lung injury
D. Jeong, Department of BIN Fusion Chonbuk national University ,, Jeongu, Republic of Korea

Hyaluronic Acid-Gold Nanoparticle-Tocilizumab Complex for the Treatment of Rheumatoid Arthritis
Efficacy of Three Antibiotic Loaded Polymer Coatings for Bone Screws
Z. Hartsell, University of Memphis, Memphis, TN
A. Hoban, University of Memphis, Memphis, Tennessee
J. Bumgardner, University of Memphis, Memphis, Tennessee
H. Courtney, Veterans Affairs Medical Center and University of Tennessee Health Science Center, Memphis, Tennessee
M. Gosney, Smith & Nephew, Memphis, Tennessee
W. Haggard, University of Memphis, Memphis, Tennessee

Antimicrobial and Bioactive Composite Scaffolds for Bone Tissue Engineering
N. HASIRCI, Middle East Technical University, ANKARA, Turkey
A. E. Aksoy, Middle East Technical University, Ankara, Turkey
V. HASIRCI, Middle East Technical University, Ankara, Turkey

Drug Delivery2-Cancer
Targeting and Treating Bone Metastases Using Layer-by-Layer Functionalized Nanoparticles
S. Morton, Massachusetts Institute of Technology, Cambridge, MA

Engineering Cells and Their Microenvironments
Directing Stem Cell Fate in 3D through Cell Inert and Adhesive Diblock Copolymer Domains
A. J. Engler, UC San Diego, La Jolla, CA
P. Viswanathan, The University of Sheffield, Sheffield, United Kingdom (Great Britain)
S. Chirasatitsin, UC San Diego, La Jolla, California
K. Ngamkham, The University of Sheffield, Sheffield, United Kingdom (Great Britain)
G. Battaglia, The University of Sheffield, Sheffield, United Kingdom (Great Britain)

A Multicellular 3D Heterospheroid Liver Tumor Model for Anti-Cancer Drug Testing
D. S. Yip, New Jersey Institute of Technology (NJIT), Newark, NJ

Effect of Cell Ratio on Osteoclast and Osteoblast Differentiation in a Ceramic Bone Substitute System
D. T. Nguyen, Clemson University, Central, SC
K. J. L. Burg, Clemson University, Clemson, South Carolina

Ischemic Preconditioning to Enhance Osteogenic-Angiogenic Coupling
J. Blanchette, University of South Carolina, Columbia, SC
S. Sahai, University of South Carolina, Columbia, South Carolina
A. Williams, University of South Carolina, Columbia, South Carolina
M. Skiles, University of South Carolina, Columbia, South Carolina
B. Hanna, University of South Carolina, Columbia, South Carolina

Bioactivity of a multivalent cell membrane binder in 3D spheroid culture: effects of RGD-
dendrimer conjugate on cell proliferation, expression and aggregation
L. Jiang, College of Engineering, Peking University, China, Beijing, China
Y. Luo, College of Engineering, Peking University, China, Beijing, China

Immobilization of ephrinB2 in an orientation-regulated manner on the surface of hydrogels with different elasticities
M. Yamamoto, Kyoto University, Kyoto, Japan
H. Toda, Kyoto University, Kyoto, Japan
Y. Tabata, Kyoto University, Kyoto, Japan

Protection and Functionalization of Cell Surfaces Using Nano-Barrier Films
M. Matsusaki, Osaka University, Osaka, Japan
T. Yoshikai, Osaka University, Osaka, Japan
A. Matsuzawa, Mitsubishi Paper Mills Limited, Kyoto, Japan
M. Akashi, Osaka University, Osaka, Japan

"Co-endocytic" delivery of proteins via artificial receptor/ligand interaction on cell surface
T. Mori, Kyushu University, Fukuoka, Japan

Time Course, Spatial Distribution, and Patterns of Spontaneous Spiking Activity of Chick Forebrain Neuronal Network Cultured on Microelectrode Array Platform
Z. Gao, Clemson University, Clemson, SC

Synthetic extracellular matrix for investigating 3D vascular network formation
M. P. Schwartz, University of Wisconsin-Madison, Madison, WI
J. Zhang, Morgridge Institute for Research, Madison, Wisconsin
Z. Hou, Morgridge Institute for Research, Madison, Wisconsin
D. G. Belair, University of Wisconsin-Madison, Madison, Wisconsin
A. W. Xie, University of Wisconsin-Madison, Madison, Wisconsin
M. R. Zanotelli, University of Wisconsin-Madison, Madison, Wisconsin
E. H. Nguyen, University of Wisconsin-Madison, Madison, Wisconsin
J. A. Thomson, Morgridge Institute for Research, University of Wisconsin-Madison, University of California-Santa Barbara, Madison, Wisconsin
W. L. Murphy, University of Wisconsin-Madison, Madison, Wisconsin

Transient Expression of Neurogenin-2 through Nanoparticles Enhances Neuronal Differentiation of Human Embryonic Stem Cell-Derived Neural Progenitors
X. Li, Johns Hopkins University, Baltimore, MD

Directing Neural Stem Cell Recruitment: Crosstalk Signaling Between ECM and SDF-1α
S. Stabenfeldt, Arizona State University, Tempe, AZ
C. P. Addington, Arizona State University, Tempe, Arizona
C. Pauken, Arizona State University, Tempe, Arizona
M. R. Caplan, Arizona State University, Tempe, Arizona

Engineering Instructive Cues Biomaterials

Expression of Sonic Hedgehog in Non-Diabetic Wounds Treated with Poly(Methacrylic Acid-co-Methyl Methacrylate)
A. Lisovsky, University of Toronto, Toronto, ON, Canada
M. V. Sefton, University of Toronto, Toronto, Ontario, Canada
Synergistic Effect of Silicon and Calcium Ions on Osteogenic Differentiation of Human Adipose Stem Cells
A. I. Rodrigues, 3Bs Research Group, University of Minho, Portugal, Caldas das Taipas - Guimarães, Portugal
M. B. Oliveira, 3Bs Research Group, Caldas das Taipas - Guimarães, Portugal
J. F. Mano, 3Bs Research Group, Caldas das Taipas - Guimarães, Portugal
M. E. Gomes, 3Bs Research Group, Caldas das Taipas - Guimarães, Portugal
I. B. Leonor, 3Bs Research Group, Caldas das Taipas - Guimarães, Portugal
R. L. Reis, 3Bs Research Group, Caldas das Taipas - Guimarães, Portugal

Vesicle Trafficking as a Mechanism to Sense and Respond to Nanofiber Architecture
A. M. Higgins, The Pennsylvania State University, University Park, PA

Developing Grafted Poly(γ-propargyl L-glutamate) as a Platform to Present Nano-Clustered Extracellular Cues
C. M. Chopko, Massachusetts Institute of Technology, Cambridge, MA
J. Valdez, Massachusetts Institute of Technology, Cambridge, Massachusetts
P. Hammond, Massachusetts Institute of Technology, Cambridge, Massachusetts
L. Griffith, Massachusetts Institute of Technology, Cambridge, Massachusetts

Heterogeneous polymer surfaces with organized collagen layers influence preosteoblasts behavior
C. Dupont-Gillain, Université catholique de Louvain, Louvain-la-Neuve, Belgium
E. Zuyderhoff, Université catholique de Louvain, Louvain-la-Neuve, Belgium

Cellular Orientation Control Using Microcontact Printing and Mechanical Conditioning for Tissue Engineered Blood Vessels for Atherosclerosis
E. L. Lee, Boston University, Boston, MA
H. H. Bendre, Boston University, Boston, Massachusetts
J. Y. Wong, Boston University, Boston, Massachusetts

Combinatorial Screening of Cell Response to Surface Chemistry Gradient on a Soft Biomaterial
G. Mohan, University of South Florida, Tampa, FL
N. D. Gallant, University of South Florida, Tampa, Florida

Development of hydrogels functionalized with cell adhesive peptide and growth factors for control of endothelial cell activities for therapeutic angiogenesis
H. Shin, Hanyang University, Seoul, Republic of Korea

N/A

Microengineered Hydrogels for Directing Mesenchymal Stem Cell Fate
K. A. Kilian, University of Illinois at Urbana-Champaign, Urbana, IL

Isotropic and Directed hMSCs Migration Within a Three-dimensional, Peptide-Functionalized PEG Hydrogel
K. A. Kyburz, BioFrontiers Institute, University of Colorado, Boulder, CO
J. A. Young, University of Colorado, Boulder, Colorado
K. S. Anseth, BioFrontiers Institute and the Howard Hughes Medical Institute, University of Colorado, Boulder, Colorado

Films of varying methacrylic acid content modulate gene expression in dTHP1 and endothelial cells
L. A. Wells, University of Toronto, Toronto, ON, Canada
M. S. Valic, University of Toronto, Toronto, Ontario, Canada
M. V. Sefton, University of Toronto, Toronto, Ontario, Canada

Epithelial cyst phenotype is modulated by synthetic hydrogel elastic properties and adhesive ligand density
N. O. Enemchukwu, Georgia Institute of Technology, Atlanta, GA
A. J. Garcia, Georgia Institute of Technology, Atlanta, Georgia

Functionalized fibronectin and RGD Titanium alloy surfaces used for Intraosseous Transcutaneous Amputation Prostheses in vitro
R. P. Dowling, University College London, Stanmore, United Kingdom (Great Britain)
C. J. Pendeggrass, University College London, Stanmore, United Kingdom (Great Britain)
G. W. Blunn, University College London, Stanmore, United Kingdom (Great Britain)

Development of In Situ Crosslinked Electrospun Gelatin Scaffolds
R. M. Nezarati, Texas A&M University, College Station, TX
C. M. Radzicki, Texas A&M University, College Station, Texas
E. Cosgriff-Hernandez, Texas A&M University, College Station, Texas

An Engineered Inert Matrix for In-Vitro Maintenance of Cancer Stem Cells
S. K. Sarvestani, University of South Carolina, Columbia, SC
X. Yang, University of South Carolina, Columbia, South Carolina
E. Jabbari, University of South Carolina, Columbia, South Carolina

Design and Characterization of Porous MMP-sensitive Synthetic Hydrogels by Gelatin Leaching for Neovascularization Applications
S. Sokic, Illinois Institute of Technology, Chicago, IL
M. Christenson, Illinois Institute of Technology, Chicago, Illinois
J. Larson, Illinois Institute of Technology, Chicago, Illinois
G. Papavasiliou, Illinois Institute of Technology, Chicago, Illinois

Decellularized Tissue Extracellular Matrices: a Potential Source of Biomaterials for Tissue Engineering
Y. S. Takeda, Tufts University, Medford, MA
Q. Xu, Tufts University, Medford, Massachusetts

Top-Down Synthesis of Versatile Polyaspartamide Linkers for Single-step Protein Conjugation to Materials
C. Cha, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, MA
J. Jeong, University of Illinois, Urbana, Illinois
H. Kong, University of Illinois, Urbana, Illinois

How Do Polymeric Implants Fail?

Clinical Implications of Crosslinked UHMWPE Implants with Stress Concentrations: A Retrievals Analysis
F. Ansari, University of California, Berkeley, Berkeley, CA
E. Patten, University of California, Berkeley, Berkeley, California
J. Chang, University of California, Berkeley, Berkeley, California
S. Chou, University of California, Berkeley, Berkeley, California
A. Mehdizadeh, University of California, Berkeley, Berkeley, California
M. Kury, University of California, Berkeley, Berkeley, California
J. I. Huddleston III, Stanford University Medical Center, Redwood City, California
B. A. Jewett, Slocum Center for Orthopedics & Sports Medicine, Eugene, Oregon
D. Mickelson, University of Washington, Seattle, Washington
H. Kim, University of California, San Francisco, San Francisco, California
M. Ries, University of California, San Francisco, San Francisco, California
L. Pruitt, University of California, Berkeley, Berkeley, California

657 Bearing Surface Damage Analysis of Coupled Total Shoulder Replacement Retrievals
L. Malito, University of California, Berkeley, Berkeley, CA
F. Ansari, University of California, Berkeley, Berkeley, California
A. Mehdizadeh, University of California, Berkeley, Berkeley, California
J. Koller, University of California, Berkeley, Berkeley, California
S. G. Gunther, Martha Jefferson Hospital, Charlottesville, Virginia
T. Norris, San Francisco Shoulder, Elbow & Hand Clinic, San Francisco, California
M. Ries, University of California, San Francisco, San Francisco, California
L. Pruitt, University of California, Berkeley, Berkeley, California

658 Load Dependent Creep Behavior & Its Relationship to Crystallinity in Absorbable Materials
M. L. Dreher, FDA/CDRH, Silver Spring, MD

Hydrogels for Cellular Transplantation in the Central Nervous System

659 Cell-Seeded Injectable Gelatin-Hydroxyphenylpropionic Acid Hydrogel for the Regeneration of Retina
S. Rokkappanavar, Harvard Medical School, Jamaica Plain, MA
T. Lim, Harvard-MIT Division of Health Sciences and Technology, Jamaica Plain, Massachusetts
J. Chen, Massachusetts Eye and Ear Infirmary, Boston, Massachusetts
M. Kurisawa, Institute of Bioengineering and Nanotechnology, Singapore, Singapore
M. Spector, Harvard Medical School, Jamaica Plain, Massachusetts

Image Analysis in Implant Pathology Investigation

660 X-ray Phase Contrast Imaging of Hydrogels for Tissue Engineering
A. A. Appel, Illinois Institute of Technology, Chicago, IL
A. B. Garson, III, Washington University in St. Louis, St. Louis, Missouri
B. Jiang, Illinois Institute of Technology, Chicago, Illinois
A. Zysk, Illinois Institute of Technology, Chicago, Illinois
M. O. Wang, University of Maryland, College Park, Maryland
B. B. Nguyen, University of Maryland, College Park, Maryland
E. C. Opara, Wake Forest Institute for Regenerative Medicine, Winston-Salem, North Carolina
J. Fisher, University of Maryland, College Park, Maryland
M. A. Anastasio, Washington University in St. Louis, St. Louis, Missouri
E. Brey, Illinois Institute of Technology, Chicago, Illinois

661 Long-Term Wear Analysis of Retrieved Medially-Pivoting TKA Inserts
W. C. Clem, Wright Medical Technology, Inc., Arlington, TN

Implant Pathology
Decoy Protein Delivery from Titanium Implants
M. Keeney, Stanford University, Stanford, CA
Z. Yao, Stanford University, Stanford, California
K. Egashira, Kyushu University, Fukuoka, Japan
S. B. Goodman, Stanford University, Stanford, California
F. Yang, Stanford University, Stanford, California

Orthopaedic Wear Particle Disease and NFκB Signaling
Z. Yao, Stanford University School of Medicine, Stanford, CA
M. Keeney, Stanford University School of Medicine, Stanford, California
J. K. Antonios, Stanford University School of Medicine, Stanford, California
C. Li, Stanford University School of Medicine, Stanford, California
R. L. Smith, Stanford University School of Medicine, Stanford, California
F. Yang, Stanford University School of Medicine, Stanford, California
K. Egashira, Kyushu University, Fukuoka, Japan
S. B. Goodman, Stanford University School of Medicine, Stanford, California

Magnetic Capture of Endothelial Cells to Vascular Stents Within An Externally Applied Magnetic Field
B. J. Tefft, Mayo Clinic, Rochester, MN
S. Uthamaraj, Mayo Clinic, Rochester, Minnesota
J. Y. Gooden, Mayo Clinic, Rochester, Minnesota
J. J. Harburn, Durham University, Stockton, United Kingdom (Great Britain)
M. Klabusay, St. Anne's University Hospital, Brno, Czech Republic
D. R. Holmes, Jr., Mayo Clinic, Rochester, Minnesota
R. D. Simari, Mayo Clinic, Rochester, Minnesota
D. Dragomir-Daescu, Mayo Clinic, Rochester, Minnesota
G. S. Sandhu, Mayo Clinic, Rochester, Minnesota

Longevity of Implant-Associated Infectious Biofilms
A. M. Tatara, Rice University, Houston, TX
F. K. Kasper, Rice University, Houston, Texas
A. G. Mikos, Rice University, Houston, Texas

Hippocampal Neurogenesis is Down-Regulated in Animals with Small-Scale Nervous System Implants
M. B. Christensen, University of Utah, Salt Lake City, UT
B. D. Winslow, University of Utah, Salt Lake City, Utah
A. E. Higgins, University of Utah, Salt Lake City, Utah
P. A. Tresco, University of Utah, Salt Lake City, Utah

Nanomaterials

Intracellular Behavior of Biodegradable Dextran-graft-oligo(lactide) Nanogels Collapsing under Reductive Condition in Cytosol for Efficient Cellular Drug Delivery
A. Takahashi, Kansai University, Suita, Osaka, Japan
A. Kuzuya, Kansai University, Suita, Osaka, Japan
Y. OHYA, Kansai University, Suita, Osaka, Japan

Graphene coated substrates for cell attachment and proliferation
A. Aryaei, university of Toledo, Toledo, OH
A. Jayatissa, University of Toledo, Toledo, Ohio
M. Gautam, University of Toledo, Toledo, Ohio
A. Jayasuriya, University of Toledo, Toledo, Ohio

666  Engineering thermo-responsive nano-shells  
D. Cohn, The Hebrew University of Jerusalem, Jerusalem, Israel

667  Nanotechnology-derived catheters for reduced inflammation and infection  
L. Liu, Northeastern University, Boston, MA, Boston, MA

668  Brazilian Spider Silk Protein Masp2 Production in E.coli System with Synthetic Biology  
V. A. Michalczechen-Lacerda, University of Brasilia, Brasilia, Brazil
V. A. Michalczechen-Lacerda, University of Brasilia, Brasilia, Brazil
O. Tokareva, Tufts University, Medford, Massachusetts
G. R. Vianna, Embrapa Genetics Resources and Biotechnology, Brasilia, Brazil
A. M. Murad, Embrapa Genetics Resources and Biotechnology, Brasilia, Brazil
D. L. Kaplan, Tufts University, Medford, Massachusetts
E. L. Rech, Embrapa Genetics Resources and Biotechnology, Brasilia, Brazil

669  Preparation of Positively and Negatively Charged Nanogels Using Oligolactide-grafted Polysaccharides and Their Polyion Complex Formation  
Y. Yano, Kansai university, Suita, Osaka, Japan
A. Furuhata, Kansai University, Suita, Japan
A. Takahashi, Kansai University, Suita, Japan
A. Kuzuya, Kansai University, Suita, Japan
Y. Ohya, Kansai University, Suita, Japan

938  The micro/nano-sized bioactive glasses and their cytological behaviours  
C. Mao, South China University of Technology, Gainesville, FL

939  Efficacy of Novel Active Targeting Dendrimer for Paclitaxel Delivery to Breast Cancer Cells  
A. Satsangi, University of Texas at San Antonio, Helotes, TX
J. L. Ong, University of Texas at San Antonio, San Antonio, Texas
S. Roy, University of Texas Health Science Center at San Antonio, San Antonio, Texas
R. Vadlamudhi, University of Texas Health Science Center at San Antonio, San Antonio, Texas

Nanostructured Biomaterials and Porous Scaffolds

670  Micro- to Nano-patterned Titanium Improves and Guides In Vitro Adhesion of Bone Marrow Stromal Cells  
A. F. Cipriano, University of California, Riverside, Riverside, CA
N. De Howitt, University of California, Riverside, Riverside, California
S. C. Gott, University of California, Riverside, Riverside, California
M. P. Rao, University of California, Riverside, Riverside, California
H. H. Liu, University of California, Riverside, Riverside, California

671  Posterolateral Fusion in a New Zealand White Rabbit Model  
B. M. Schlossberg, Pioneer Surgical, woburn, MA

672  Design of surfaces with mechanical nanoheterogeneities for a better control of cell-material interactions  
C. Dupont-Gillain, Université catholique de Louvain, Louvain-la-Neuve, Belgium
S. Degand, Université catholique de Louvain, Louvain-la-Neuve, Belgium

Synthesis and Characterization of Antiepileptic Nanomedicine for Transbuccal Delivery
D. C. Aduba, Jr., Virginia Commonwealth University, Richmond, VA
O. Y. Zolotarskaya, Virginia Commonwealth University, Richmond, Virginia
G. Bowlin, Virginia Commonwealth University, Richmond, Virginia
H. Yang, Virginia Commonwealth University, Richmond, Virginia

Microfabricated Nanoporous Gold electrodes for Triggered Drug Release
E. Seker, University of California, Davis, Davis, CA
C. A. R. Chapman, University of California, Davis, Davis, California

Composite Chitosan/Silk Fibroin Nanofibers for Osteogenic Differentiation of Human Mesenchymal Stem Cells
G. Lai, Department of Chemical and Materials Engineering, Chang Gung University, Tao-Yuan, Taiwan
J. Chen, Department of Chemical and Materials Engineering, Chang Gung University, Tao-Yuan, Taiwan

Injectable Nano-hybrid Scaffold for Biopharmaceuticals Delivery and Tissue Engineering
H. Tan, Nanjing University of Science and Technology, Nanjing, China

Controlling the porosity of electrospun PCL scaffold by Simultaneous Salt releasing Method
J. Lee, Nano-Bio Regenerative Medical Institute, Hallym University, Chuncheon, Republic of Korea

Bioskiving: Fabrication of Tendon-derived Collagen Nerve Guidance Materials
K. A. Alberti, Tufts University, Medford, MA
Q. Xu, Tufts University, Medford, Massachusetts

Rosette nanotube composites for cartilage applications
L. Sun, Northeastern University, Boston, MA

Femtosecond Laser-Patterned Nanopore Arrays for Spatio-Temporal Control of Bioactive Molecule Release
L. H. Hofmeister, Vanderbilt University, Nashville, TN
A. Zachman, Vanderbilt University, Nashville, Tennessee
L. Costa, University of Tennessee Space Institute, Tullahoma, Tennessee
T. Boire, Vanderbilt, Nashville, Tennessee
W. Hofmeister, University of Tennessee Space Institute, Tullahoma, Tennessee
H. Sung, Vanderbilt University, Nashville, Tennessee

Poly (ethylene glycol)-poly(3,4- ethylenedioxythiophene):poly (styrenesulfonate) Hydrogel Nanofibers for Sensitive Detection of Glucose
M. Abidian, Pennsylvania State University, University Park, PA
G. B. Kim, Pennsylvania State University, State College, Pennsylvania

Response of chitosan/PCL nanofibers with airway epithelial cells
N. Bhattarai, North Carolina A&T State University, Greensboro, NC

On the Use of Dexamethasone Loaded Liposomes to Induce the Osteogenic Differentiation of Human Mesenchymal Stem Cells
N. S. Monteiro, 3B´s Research Group – Biomaterials, Biodegradables and Biomimetics,
Guimaraes, Portugal

684 Release of Bioactive Agent from Liposomes Immobilized on Electrospun Nanofibers Targeting Tissue Engineering Applications
N. S. Monteiro, 3B’s Research Group – Biomaterials, Biodegradables and Biomimetics, Guimaraes, Portugal

685 Directional Cell Migration Induced by Electrospun Silk Nanofibers
P. Uttayarat, Thailand Institute of Nuclear Technology (Public Organization), Nakornnayok, Thailand

N/A Nanofiber-based Wound Dressings for Controlled Release of Hydrophilic Drugs
V. Leung, University of British Columbia, Richmond, BC, Canada

687 Hydrogel Composites Containing Carbon Nanobrushes as an Effective Biomaterial for Tissue Regeneration
W. H. Marks, Harvard University, Cambridge, MA
S. C. Yang, University of Rhode Island, Kingston, Rhode Island
G. W. Dombi, University of Rhode Island, Kingston, Rhode Island
S. K. Bhatia, Harvard University, Cambridge, Massachusetts

N/A Multi-drug delivery system based on injectable hyaluronic acid-liposome hybrid hydrogel
X. Yang, Uppsala University, Uppsala, Sweden

689 Bundle Structure Gel Formation Using the Co-flow Microfluidic Device
Y. Takahashi, The University of Tokyo., Tokyo, Japan
N. Kato, Utsunomiya University, Utsunomiya, Japan
Y. T. Matsunaga, The University of Tokyo, Tokyo, Japan

940 Structural, Mechanical and In Vitro Characterization of Plasma-Coated Electrospun Nanofiber Scaffolds for Vascular Graft Applications
H. Savoji, 1- École Polytechnique de Montréal, 2- Laboratory of Endovascular Biomaterials (LBeV), Research Centre, Centre Hospitalier de l’Université de Montréal (CRCHUM), Montreal, QC, Canada
A. Hadjizadeh, École Polytechnique de Montréal, Montreal, Québec, Canada
M. Maire, Laboratory of Endovascular Biomaterials (LBeV), Research Centre, Centre Hospitalier de l’Université de Montréal (CRCHUM), Montreal, Montreal, Québec, Canada
S. Lerouge, 1- École de Technologie Supérieure, 2- Laboratory of Endovascular Biomaterials (LBeV), Research Centre, Centre Hospitalier de l’Université de Montréal (CRCHUM), Montreal, Québec, Canada
A. Ajji, École Polytechnique de Montréal, Montreal, Québec, Canada
M. R. Wertheimer, École Polytechnique de Montréal, Montreal, Québec, Canada

941 Degradation of Ultrasound Contrast Agents Embedded in a Tissue Phantom
S. Gleeson, Case Western Reserve University, Cleveland, OH
L. Solorio, Case Western Reserve University, Cleveland, Ohio
A. A. Exner, Case Western Reserve University, Cleveland, Ohio

New and Improved Biomaterials Used in Ophthalmology

690 Ocular Biocompatibility of a SIBS-based Glaucoma Drainage Tube
Y. P. Kato, InnFocus Inc, Miami, FL
Surface-Modified Silicone Contact Lenses from Interfacial Design to Clinical Evaluation
Z. Zhang, Semprus BioSciences, Cambridge, MA
J. Li, Semprus BioSciences, Cambridge, Massachusetts
H. Wang, Semprus BioSciences, Cambridge, Massachusetts
D. Donahue, Semprus BioSciences, Cambridge, Massachusetts
C. Loose, Semprus BioSciences, Cambridge, Massachusetts
A. Cook, Semprus BioSciences, Cambridge, Massachusetts

Poly(ethylene glycol) based Diels-Alder hydrogels for biomedical applications
A. Goepferich, University of Regensburg, Regensburg, Germany

Orthopaedic Biomaterials

Nanoclay Enriched Electrospun Polycaprolactone Scaffolds for Bone Tissue Engineering
A. Gaharwar, Massachusetts Institute of Technology, Cambridge, MA
S. Mukundan, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, Massachusetts
A. Patel, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, Massachusetts
S. Mihaila, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, Massachusetts
A. Dolatshahi-Pirouz, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, Massachusetts
E. Karaca, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, Massachusetts
K. Ragaranjan, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, Massachusetts
A. Khademhosseini, Brigham and Women’s Hospital, Harvard Medical School, Cambridge, Massachusetts

Clinical Relevance of ISO 18192-1 Spinal Disc Wear Parameters to the PCM Cervical Disc System
A. W. L. Turner, NuVasive, Inc., San Diego, CA

Fretting Corrosion Analysis of Ti-Mo-Zr-Fe (TMZF) and Gas Atomized Dispersion Strengthened Co-Cr-Mo (GADS) Alloys Under Shot Peened, and Shot Peened, Cleaned and Passive Conditions
A. J. Ferrel, Syracuse University, Syracuse, NY

Surface Cross-linking of Vitamin E Blended UHMWPE by Low Energy Irradiation
A. Neils, Massachusetts General Hospital, Boston, MA
J. Ward, Massachusetts General Hospital, Boston, Massachusetts
B. Doshi, Massachusetts General Hospital, Boston, Massachusetts
E. Oral, Massachusetts General Hospital, Boston, Massachusetts
O. Muratoglu, Massachusetts General Hospital, Boston, Massachusetts

The initial concentration of vitamin E in irradiated UHMWPE affects vitamin E grafting
A. Neils, Massachusetts General Hospital, Boston, MA
E. Oral, Massachusetts General Hospital, Boston, Massachusetts
O. Muratoglu, Massachusetts General Hospital, Boston, Massachusetts

Fabrication of Crosslinked Carboxymethylchitosan Microspheres and Their Incorporation Into Composite Scaffolds for Enhanced Bone Regeneration
B. Reves, University of Memphis, Germantown, TN
J. A. Jennings, University of Memphis, Memphis, Tennessee
J. D. Bumgardner, University of Memphis, Memphis, Tennessee
Strength and Friction Characteristics of a Porous Structured Titanium Biomaterial
B. S. Mitchell, Pipeline Orthopedics, cedar knolls, NJ
D. F. Swarts, Pipeline Orthopedics, cedar knolls, New Jersey

Diffusion of Vitamin E in Radiation Cross-linked UHMWPE using Homogenization under Pressure
B. Doshi, Massachusetts General Hospital, Boston, MA
E. Oral, Massachusetts General Hospital, Boston, Massachusetts
O. Muratoglu, Massachusetts General Hospital, Boston, Massachusetts

Bioactivity of Amorphous Bioactive Glass and Glass-Ceramic in Simulated Body Fluid
C. S. Lewis, Bio2 Technologies, Woburn, MA
J. Krevolin, Bio2 Technologies, Woburn, Massachusetts

0243-000037107107Novel Porous Titanium Implants Demonstrate Bone Ingrowth In A Rabbit Model
C. Ngo, Stryker Orthopaedics, Mahwah, NJ
R. Zhang, Stryker Orthopedics, Mahwah, New Jersey
M. Poggie, Stryker Orthopaedics, Mahwah, New Jersey
G. Kulesha, Stryker Orthopaedics, Mahwah, New Jersey
J. Muth, Stryker Orthopaedics, Mahwah, New Jersey
C. Aponte, Stryker Orthopaedics, Mahwah, New Jersey
S. Coyle, Stryker Orthopaedics, Mahwah, New Jersey
N. Dong, Stryker Orthopaedics, Mahwah, New Jersey

Surface Crosslinking of Vitamin E Blended UHMWPE via Spatial Extraction of Vitamin E Through High Temperature Processing
C. Gupta, Massachusetts General Hospital, Boston, MA
E. Oral, Massachusetts General Hospital, Boston, Massachusetts
O. Muratoglu, Massachusetts General Hospital, Boston, Massachusetts

Poly(vinyl alcohol)-poly(2-acrylamido-2-methyl-1-propane sulfonic acid) hydrogels as a synthetic cartilage material
C. Serrano, Massachusetts General Hospital, Boston, MA
H. Bodugoz-Senturk, Massachusetts General Hospital, Boston, Massachusetts
O. Muratoglu, Massachusetts General Hospital, Boston, Massachusetts

Physical and Mechanical Characteristics of a Porous Structured Titanium Biomaterial
D. F. Swarts, Pipeline Orthopedics, Cedar Knolls, NJ

Osseointegration Effect of BMP-2 on Dental Implants: A 3-6 Week In Vivo Study
D. Y. Yoo, New York University College of Dentistry, New York, NY
C. Marin, Universidade Federal de Santa Catarina, Florianopolis, Brazil
R. Jimbo, Malmo University, Malmo, Sweden
R. Anchieta, New York University College of Dentistry, New York, New York
L. Machado, New York University College of Dentistry, New York, New York
F. Guastaldi, New York University College of Dentistry, New York, New York
N. Tovar, New York University College of Dentistry, New York, New York
P. G. Coelho, New York University College of Dentistry, New York, New York

Vitamin-E highly crosslinked UHMWPE wear particles induce less osteolysis compared to virgin UHMWPE in murine calvarial bone model
Bond Quality and Corrosion Properties of Titanium Foam on Cobalt Chrome Substrates
D. Scholvin, Wright Medical Technology, Inc., Arlington, TN
J. P. Moseley, Wright Medical Technology, Inc., Arlington, Tennessee
D. Linton, Wright Medical Technology, Inc., Arlington, Tennessee

Effect of Irradiation on the Strength and Lubricity of PVA-PAA Hydrogels for Cartilage Repair
D. Ling, Massachusetts General Hospital, Boston, MA
H. Bodugoz-Senturk, Massachusetts General Hospital, Boston, Massachusetts
H. Kluk, Massachusetts General Hospital, Boston, Massachusetts
O. Muratoglu, Massachusetts General Hospital, Boston, Massachusetts

A New Technique for Surface Cross-linked UHMWPE by Diffusion of Peroxides
E. Oral, Massachusetts General Hospital, Boston, MA
R. Gul, Massachusetts General Hospital, Boston, Massachusetts
O. Muratoglu, Massachusetts General Hospital, Boston, Massachusetts

Oxidation Resistant Peroxide Crosslinked UHMWPE
E. Oral, Massachusetts General Hospital, Boston, MA
R. Gul, Massachusetts General Hospital, Boston, Massachusetts
O. Muratoglu, Massachusetts General Hospital, Boston, Massachusetts

Coefficient of Friction for Porous Metal Structures Against Cortical Bone
G. Gupta, Biomet, Warsaw, IN
K. McKlain, Biomet, Warsaw, Indiana

Novel Microwave Assisted Route for Preparing Monetite Bone Cement with No Heat Generation
H. Zhou, The University of Toledo, Toledo, OH
S. B. Bhaduri, The University of Toledo, Toledo, Ohio
T. J. F. Luchini, The University of Toledo, Toledo, Ohio
A. K. Agawal, The University of Toledo, Toledo, Ohio
V. K. Goel, The University of Toledo, Toledo, Ohio

Fabrication of Customized Porous Hydroxyapatite (HA) implants for Orthopaedic Application
H. Jung, Department of Materials Science and Engineering, Seoul National University, Seoul, Republic of Korea
T. Jang, Department of Materials Science and Engineering, Seoul National University, Seoul, Republic of Korea
M. Kang, Department of Materials Science and Engineering, Seoul, Republic of Korea
H. Kim, Department of Materials Science and Engineering, Seoul National University, Seoul, Republic of Korea
Y. Koh, Department of Materials Science and Engineering, Seoul National University, Seoul, Republic of Korea
Y. Estrin, Department of Materials Engineering, Monash Univers, Seoul, Australia
Impact Strength Correlates with Fatigue Strength of Irradiated Vitamin E/UHMWPE Blends
J. Ward, Massachusetts General Hospital, Boston, MA
B. Doshi, Massachusetts General Hospital, Boston, Massachusetts
E. Oral, Massachusetts General Hospital, Boston, Massachusetts
O. Muratoglu, Massachusetts General Hospital, Boston, Massachusetts

Magnesium ions facilitate integrin alpha-2 and alpha-3-mediated proliferation and partially promotes differentiation in hBMSCs
K. Lee, Asan Medical Center, Seoul, Republic of Korea

Engineering the Rate of Degradation of Polyester Scaffolds for Bone Tissue Engineering
K. N. Cicotte, University of New Mexico, Albuquerque, NM
S. M. Dirk, Sandia National Laboratories, Albuquerque, New Mexico
E. L. Hedberg-Dirk, University of New Mexico, Albuquerque, New Mexico

A Co-Polymer of Chitosan and Dextran Coating on Ti6Al4V for Orthopedic Applications
L. Actis, The University of Texas at San Antonio, San Antonio, TX
A. Srinivasan, The University of Texas at San Antonio, San Antonio, Texas
A. Ramasubramanian, The University of Texas at San Antonio, San Antonio, Texas
J. L. Ong, The University of Texas at San Antonio, San Antonio, Texas

A Clinically Relevant Oxidation Model for UHMWPE and its Comparison to Retrievals
M. Fung, Massachusetts General Hospital, Boston, MA
O. Muratoglu, Massachusetts General Hospital, Boston, Massachusetts
S. Rowell, Massachusetts General Hospital, Boston, Massachusetts
A. Neils, Massachusetts General Hospital, Boston, Massachusetts
E. Oral, Massachusetts General Hospital, Boston, Massachusetts

Bioactive PEEK
S. Ajami, UCL, University College London, STANMORE, MIDDLESEX, United Kingdom (Great Britain)
M. Coathup, UCL, Stanmore, Middlesex, United Kingdom (Great Britain)
A. McCabe, Accentus, Oxfordshire, United Kingdom (Great Britain)
J. Shawcross, Accentus, Oxfordshire, United Kingdom (Great Britain)
P. Agg, Accentus, Oxfordshire, United Kingdom (Great Britain)
G. Blunn, UCL, Stanmore, Middlesex, United Kingdom (Great Britain)

Injectable, Bioactive Two-solution Bone Cements (η-TSBC) with Strontium Substituted Hydroxyapatite Microspheres
S. Jariwala, Syracuse University, Syracuse, NY
J. Hasenwinkel, Syracuse University, Syracuse, New York

The Effect of Silica-substitution, Sintering and Particle Size on Bone Healing of Apatite Granules
S. Woods, DePuy Synthes, West Chester, PA
A. Petticoffer, DePuy Synthes, West Chester, Pennsylvania
D. Arens, AO Research Institute, Davos, Switzerland

Wear Rates of Ultra High Molecular Weight Polyethylene (UHMWPE) uncorrelated to Contact Area
S. A. Woods, DePuy Orthopaedics, Warsaw, IN

Comparative Handling, Intrusion and Antibiotic Elution Characteristics of a New, High
**Viscosity Bone Cement**

S. He, Stryker Co, Mahwah, NJ
S. He, Stryker Co, Mahwah, New Jersey
H. Mulvihill, Stryker Co, Limerick, Ireland
Y. Bogatch, Stryker Co, Mahwah, New Jersey
E. O’Grandy, Stryker Co, Limerick, Ireland
D. McQueen, Kansas Orthopaedic Center, Wichita, Kansas

Cell-mediated degradable hydrogels tailored to adult cells for cartilage tissue engineering

S. C. Skaalure, University of Colorado, Boulder, CO
S. J. Bryant, University of Colorado, Boulder, Colorado

A Comparison of Small Punch Results on Aged Highly Crosslinked UHMWPE

S. Spiegelberg, Cambridge Polymer Group, Boston, MA
C. Segura, Cambridge Polymer Group, Boston, Massachusetts
M. Peiserich, Zimmer, Inc., Warsaw, Indiana
A. Rufner, Zimmer, Inc., Warsaw, Indiana

Radiation-Induced Radicals in Polyaryletheretherketone (PEEK)

T. Riahinasab, University of Memphis, Memphis, TN
B. Walters, University of Memphis, Memphis, Tennessee
M. S. Jahan, University of Memphis, Memphis, Tennessee

Real-time Monitoring of Hardening of Nanosilica Sol containing DCPA Cements in an ESEM

H. Zhou, The University of Toledo, Toledo, OH
H. Zhou, The University of Toledo, Toledo, Ohio
S. Bhaduri, The University of Toledo, Toledo, Ohio
T. J. F. Luchini, The university of toledo, Findlay, Ohio

Effect of UHMWPE Patellar Component Thickness on Quadriceps Tendon Force Following Total Knee Arthroplasty

X. Xie, Clemson University, Clemson, SC
J. DesJardins, Clemson University, Clemson, South Carolina
H. Yao, Clemson University, Charleston, South Carolina
L. Thompson, Clemson University, Clemson, South Carolina
F. Voss, University of South Carolina, School of Medicine, Columbia, South Carolina
M. LaBerge, Clemson University, Clemson, South Carolina

Porous polyurethane scaffold for facilitating healing in critical sized bone defect

Y. Lui, The University of Hong Kong, Hong Kong, Hong Kong
W. Ip, The University of Hong Kong, Hong Kong, Hong Kong

Reducing Cytotoxicity of Injectable Poly(propylene-co-caprolactone) Copolymers for Bone Tissue Engineering

Z. Fang, Mayo Clinic, Rochester, MN

Comparison of the Fixation Strength of PEEK and Composite Knotless Instability Anchors

M. Hawkins, Stryker Orthopaedics, Mahwah, NJ
J. Spalazzi, Stryker Orthopaedics, Mahwah, New Jersey

Enhanced Bioactivity of PEEK by Accelerated Neutral Atom Beam Technique

M. H. Maxwell, Exogenesis Corporation, Billerica, MA
S. Kirkpatrick, Exogenesis Corporation, Billerica, Massachusetts
A Biomechanical Study to Compare an All-Suture Anchor to a Composite Suture Anchor in Sheep Cadaver Humeri
J. N. Bair, IMDS Discovery Research, Logan, UT
R. E. Olsen, IMDS Discovery Research, Logan, Utah
J. Pugsley, IMDS Discovery Research, Logan, Utah
K. Pilgeram, Stryker Orthopaedics, San Jose, California

Biomechanical Testing of Soft Tissue Allografts Sterilized Using Two Different Methods
M. Hawkins, Stryker Joint Preservation, Mahwah, NJ
C. Kevin, University of Colorado - Denver, Aurora, Colorado
T. Baldini, University of Colorado - Denver, Aurora, Colorado
E. McCarty, University of Colorado - Denver, Aurora, Colorado

Comparison of Silicated–Apatite and β-TCP Granules in a Critical Size Bone Defect Model
A. C. Petticoffer, Depuy Synthes, West Chester, PA
S. A. Woods, Depuy Synthes, West Chester, Pennsylvania
M. Fulmer, Depuy Synthes, West Chester, Pennsylvania
R. Harten, Depuy Synthes, West Chester, Pennsylvania

Cationic, Multifunctional Dendrimers for Treatment of Osteoarthritis
B. G. Cooper, Boston University, Boston, MA
M. W. Grinstaff, Boston University, Boston, Massachusetts
C. Ghobril, Boston University, Boston, Massachusetts

Contrast Enhanced Computed Tomography of Equine Joint Cartilage Demonstrates Consistent Imaging Relationships Across Joint Surfaces
R. Stewart, Boston University, Allston, MA
B. Nelson, Colorado State University, Fort Collins, Colorado
H. Lusic, Boston University, Boston, Massachusetts
B. Snyder, Center for Advanced Orthopaedic Studies, Beth Israel Deaconess Medical Center, Boston, Massachusetts
L. Goodrich, Colorado State University, Fort Collins, Colorado
M. Grinstaff, Boston University, Boston, Massachusetts

Engineering a Muscle Mimetic Extracellular Matrix Biomaterial
S. Hurd, University of Arkansas, Fayetteville, AR
B. Kasukonis, University of Arkansas, Fayetteville, Arkansas
K. Cherry, University of Arkansas, Fayetteville, Arkansas
S. Ahmadi, University of Arkansas for Medical Sciences, Little Rock, Arkansas
J. Wolchok, University of Arkansas, Fayetteville, Arkansas

Fabrication and Characterization of Poly(para-phenylene) for use as a Porous Scaffold Biomaterial
C. P. Frick, University of Wyoming, Laramie, WY
A. L. DiRienzo, University of Wyoming, Laramie, Wyoming
C. M. Yakacki, University of Colorado at Denver, Denver, Colorado
D. L. Safranski, MedShape Solutions, Inc., Atlanta, Georgia

Degradation and characterization of porous constructs for craniofacial space maintenance and antibiotic delivery
Patterning Microenvironments for Tissue Engineering and Morphogenesis

732 Biomechanics of Cell Sheets Based Arterial Tissue using a Novel Force Sensor
D. E. Backman, Boston University, Boston, MA
J. Y. Wong, Boston University, Boston, Massachusetts

733 Orthogonal Photo-reactive Hydrogel of Tunable Stiffness for In Vitro Guided Neurite Growth
E. L. Horn-Ranney, Tulane University, New Orleans, LA
P. Khoshaklhaegh, Tulane University, New Orleans, Louisiana
M. J. Moore, Tulane University, New Orleans, Louisiana

734 Two-Dimensional Micropatterns of Self-Assembled Poly(N-isopropylacrylamide) Microgels for Adhesion, Alignment, and Temperature-induced Detachment of NIH 3T3 Fibroblast Cells
H. Tsai, University of Rochester, Rochester, NY
K. Vats, University of Rochester, Rochester, New York
M. Z. Yates, University of Rochester, Rochester, New York
D. S. W. Benoit, University of Rochester, Rochester, New York

735 Bioengineering a tendon-like substitute: adult stem cell behavior in aligned fibrous scaffolds and stimulating culturing environments
M. T. Rodrigues, 3B's Research Group - University of Minho, Caldelas das Taipas - Guimarães, Portugal

736 A Contour-Based Approach Enables Individual Cell Identification for Cell-Material Analyses
M. E. Brasch, Syracuse University, Syracuse, NY
R. M. Baker, Syracuse University, Syracuse, New York
L. Manning, Syracuse University, Syracuse, New York
J. H. Henderson, Syracuse University, Syracuse, New York

737 Biomimetic substrate-dependent myogenic commitment of iPSC-derived cells
N. Hwang, Seoul National University, Seoul, Republic of Korea
E. Lee, Seoul National University, Seoul, Republic of Korea

953 Cell Motility and Persistence Controlled by Topography of Cell Culture Substrates
W. Tong, City University of Hong Kong, Hong Kong, Hong Kong
Q. Tand, City University of Hong Kong, Hong Kong, Hong Kong
S. Peng, City University of Hong Kong, Hong Kong, Hong Kong
S. Pang, City University of Hong Kong, Hong Kong, Hong Kong
Y. Lam, City University of Hong Kong, Hong Kong, Hong Kong

954 Selective cell patterning on photoactive electrospun meshes
J. S. Hersey, Boston University, Boston, MA
M. W. Grinstaff, Boston University, Boston, Massachusetts

955 Effects of Blocking Cell-Cell and Cell-Matrix Interactions on Cardiac Cell Mechanical Properties
A. Desai, Clemson University, Clemson, SC
S. Deitch, Clemson University, Clemson, South Carolina
D. Dean, Clemson University, Clemson, South Carolina
Physical Parameters in the Design of Drug Delivery Systems

738  Injectable Multiblock P(PF-co-CL) Copolymer and Dual Drug Delivery for Treatment of Bone Defects
M. Dadsetan, Mayo Clinic, Rochester, MN

956  Injectable and Degradable Sulfated Hyaluronic Acid Hydrogels for Sustained Protein Delivery
V. Chuo, University of Pennsylvania, Philadelphia, PA
B. Purcell, University of Pennsylvania, Philadelphia, Pennsylvania
S. M. Dorsey, University of Pennsylvania, Philadelphia, Pennsylvania
J. A. Burdick, University of Pennsylvania, Philadelphia, Pennsylvania

Proteins and Cells at Interfaces

739  Quantification of the Influence of Protein-Protein Interactions on Adsorbed Protein Structure and Bioactivity
A. A. Thyparambil, Clemson University, Clemson, SC
Y. Wei, Clemson University, Clemson, South Carolina
R. A. Latour, Clemson University, Clemson, South Carolina

740  Collection of prostaglandin E2 and leukotriene B4 from implanted microdialysis probes
A. Diaz-Perez, University of Arkansas, Fayetteville, AR

741  Directing Macrophage Polarization with Microdialysis Probe Implants: Perfusion Fluid and IL-4 Effects
G. Bajpai, University of Arkansas, Fayetteville, AR

742  Interaction Forces Related to Protein Adsorption on Polymer Brush Surfaces
S. Sakata, The University of Tokyo, Tokyo, Japan
Y. Inoue, The University of Tokyo, Tokyo, Japan
K. Ishihara, The University of Tokyo, Tokyo, Japan

743  Recovering functionalities of deficient mucus with a polyethylene glycol-lectin conjugate
T. Crouzier, Massachusetts Institute of Technology, Cambridge, MA
K. Ribbeck, MIT, Cambridge, Massachusetts

744  Development of Tuned Interfacial Force Field Parameters in CHARMM for the Accurate Molecular Dynamics Simulation of Peptide Adsorption on Biomaterial Surfaces
T. Abramyan, Clemson University, Clemson, SC
J. A. Snyder, Clemson University, Clemson, South Carolina
J. A. Yancey, Clemson University, Clemson, South Carolina
S. J. Stuart, Clemson University, Clemson, South Carolina
R. A. Latour, Clemson University, Clemson, South Carolina

Role of Biological Factors in Osteoconduction and Bone Engineering

745  Synergistic effect of sustained release growth factors from PLGA microspheres and
dynamic bioreactor flow on hMSC osteogenic differentiation in alginate scaffolds
B. B. Nguyen, University of Maryland, College Park, MD
G. Della Porta, Università di Salerno, Fisciano, SA, Italy
E. Reverchon, Università di Salerno, Fisciano (Sa), Italy
J. P. Fisher, University of Maryland, College Park, Maryland

Surface modified PLLA as drug delivery scaffold for bone regeneration
M. Bosetti, Università del Piemonte Orientale "A. Avogadro", Novara, Italy

Influence of Bone Morphogenetic Protein-7 Encapsulated and Coated Chitosan Microparticles on Osteoblasts Proliferation and Differentiation
V. P. R. Mantripragada, The University of Toledo, Toledo, OH

Stem Cell-Biomaterial Interactions

Stable Feeder- and Xeno-free Surfaces for Long-term Growth of Undifferentiated Human Embryonic Stem Cells
A. R. DiIenno, Massachusetts Institute of Technology, Cambridge, MA
A. M. Coclite, Massachusetts Institute of Technology, Cambridge, Massachusetts
J. R. Millman, Massachusetts Institute of Technology, Cambridge, Massachusetts
J. Tan, Massachusetts Institute of Technology, Cambridge, Massachusetts
C. K. Colton, Massachusetts Institute of Technology, Cambridge, Massachusetts
K. K. Gleason, Massachusetts Institute of Technology, Cambridge, Massachusetts

Elucidating the role of integrin α5 in mediating the therapeutic potency of circulating angiogenic cells cultured on collagen matrix
B. Vulesevic, University of Ottawa Heart Institute, Ottawa, ON, Canada
B. McNeill, University of Ottawa Heart Institute, Ottawa, Ontario, Canada
M. Ruel, University of Ottawa Heart Institute, Ottawa, Ontario, Canada
E. J. Suuronen, University of Ottawa Heart Institute, Ottawa, Ontario, Canada

Functional roles of microRNA 489 and 148b in hMSCs osteogenesis depend on microenvironment elasticity.
K. Yang, University of Colorado, Boulder, Boulder, CO
K. S. Anseth, University of Colorado, Boulder, Boulder, Colorado

Differentiation of Human Bone Marrow Mesenchymal Stem Cells on Decellularized Extracellular Matrix Materials
D. M. Hoganson, Washington University in St. Louis, St. Louis, MO
A. M. Meppelink, Massachusetts General Hospital, Boston, Massachusetts
C. J. Hinkel, Washington University in St. Louis, St. Louis, Missouri
S. M. Goldman, DSM Biomedical, Exton, Pennsylvania
S. Liu, DSM Biomedical, Exton, Pennsylvania
J. P. Gaut, Washington University in St. Louis, St. Louis, Missouri
J. P. Vacanti, Massachusetts General Hospital, Boston, Massachusetts

Biphasic Peptide Amphiphile Nanomatrix Scaffold for Enhanced Osteogenic Response
H. Jun, University of Alabama at Birmingham, Birmingham, AL
J. Vines, University of Alabama at Birmingham, Birmingham, Alabama
D. Patel, University of Alabama at Birmingham, Birmingham, Alabama
J. Anderson, University of Alabama at Birmingham, Birmingham, Alabama
S. Gilbert, University of Alabama at Birmingham, Birmingham, Alabama
The Effect of Fiber Size on the Neuronal Differentiation of Mouse Embryonic Stem Cells
J. M. Holzwarth, University of Michigan, Ann Arbor, MI

The Potential of Tissue Engineering in Maxillofacial Reconstruction Following Oral Cancer Treatment
J. Shaul, Clemson University, Central, SC

Novel Sugar-Glass Nanoparticles system for Biomolecules Stabilization and Delivery in Tissue Engineering Applications
J. Giri, Parffenbarg Research Center, Gaithersburg, MD

Modified PEGDA Hydrogels to Promote Mesenchymal Stem Cell Adhesion In Vitro
K. M. Ferlin, University of Maryland, College Park, MD
M. E. Prendergast, University of Maryland, College Park, Maryland
D. S. Kaplan, Food and Drug Administration, Silver Spring, Maryland
J. P. Fisher, University of Maryland, College Park, Maryland

Effect of Titanium Nanotopography on Mesenchymal Stem Cell Fate
M. M. Beloti, School of Dentistry of Ribeirao Preto - University of Sao Paulo, Ribeirao Preto, Brazil
R. B. Kato, School of Dentistry of Ribeirao Preto, University of Sao Paulo, Ribeirao Preto, Brazil
F. S. de Oliveira, School of Dentistry of Ribeirao Preto, University of Sao Paulo, Ribeirao Preto, Brazil
M. Q. Hassan, School of Dentistry, University of Alabama at Birmingham, Birmingham, Alabama
P. T. de Oliveira, School of Dentistry of Ribeirao Preto, University of Sao Paulo, Ribeirao Preto, Brazil
A. L. Rosa, School of Dentistry of Ribeirao Preto, University of Sao Paulo, Ribeirao Preto, Brazil

Differentiation of Adipose Derived Stem Cells on Nanofibrous Collagen and Elastin Matrices
M. J. Springer, University of Florida, Gainesville, FL
J. Allen, University of Florida, Gainesville, Florida

Multifunctional Scaffold for the Delivery of Neural Stem Cells to Promote Regeneration after Traumatic Brain Injury
N. B. Skop, University of Medicine and Dentistry of New Jersey and New Jersey Institute of Technology, Newark, NJ
C. H. Cho, New Jersey Institute of Technology, Newark, New Jersey
S. W. Levison, University of Medicine and Dentistry of New Jersey, Newark, New Jersey

Modulation of Cell Behaviour using Self–Assembled Binary Colloidal Crystals
P. Wang, Industrial Research Institute Swinburne (IRIS), Swinburne University of Technology, Hawthorn VIC, Australia

Viability and Function of Induced Pluripotent Stem (IPS) Cell-Derived Hepatocytes on Bioprinted Gelatin Scaffolds
R. N. Shah, Northwestern University, Chicago, IL
A. Rutz, Northwestern University, Chicago, Illinois
A. Jakus, Northwestern University, Chicago, Illinois
K. Chien, Northwestern University, Chicago, Illinois

The Effects of Mechanical Stimulation on Controlling and Maintaining Marrow Stromal Cell
Differentiation into Vascular Smooth Muscle Cells
R. Yao, Boston University, Watertown, MA

Patterned Polyethylene glycol Coatings for Peptide Presentation and Cellular Adhesion
S. K. Schmitt, University of Wisconsin - Madison, Madison, WI
D. J. Ciancio, University of Wisconsin-Madison, Madison, Wisconsin
W. L. Murphy, University of Wisconsin - Madison, Madison, Wisconsin
P. Gopalan, University of Wisconsin - Madison, Madison, Wisconsin

Functional analysis of zinc finger and BTB domain containing 16 (ZBTB16) during osteoblastic differentiation of periodontal ligament-derived human multipotent mesenchymal stromal cells
S. Onizuka, Section of Periodontology, Department of Hard Tissue Engineering, Graduate School, Tokyo Medical and Dental University, Tokyo, Japan

Engineered Collagen-Glycosaminoglycan Scaffold Arrays for Understanding Regulators of MSC Fate
S. R. Caliari, University of Illinois at Urbana-Champaign, Urbana, IL

Effect of Surface Chemistry on Stem Cell Response in 2-D vs. 3-D Cell Culture Niches
S. Sarkar, National Institute of Standards and Technology, Gaithersburg, MD
C. G. Simon, Jr., National Institute of Standards and Technology, Gaithersburg, Maryland
R. I. Lock, National Institute of Standards and Technology, Gaithersburg, Maryland
J. P. Dunkers, National Institute of Standards and Technology, Gaithersburg, Maryland

Supplemental Magnesium Ions Altered Human Embryonic Stem Cell Morphology while Retaining Pluripotency
T. Nguyen, University of California, Riverside, Moreno Valley, CA
C. Liew, University of California, Riverside, Riverside, California
H. Liu, University of California, Riverside, Riverside, California

Stem Cell-Based Meniscus Tissue Engineering Using a Hydrogel Form of Decellularized Matrix
X. Yuan, Columbia University, New York, NY
D. E. Arkonac, Columbia University, New York, New York
G. Vunjak-Novakovic, Columbia University, New York, New York

Formation of Embryoid Bodies with Controlled Sizes and Maintained Pluripotency in Three-Dimensional Alginate Inverse Opal Scaffolds
Y. Zhang, Georgia Institute of Technology, Atlanta, GA
Y. Xia, Georgia Institute of Technology, Atlanta, Georgia

GHK-Modified Alginate Hydrogels Enhance VEGF Secretion by Mesenchymal Stem Cells
K. Leach, UC Davis, Davis, CA
M. Hughbanks, UC Davis, Davis, California

Surface Characterization and Modification

Surface Characterization of Nano-Features Induced by a Low Temperature Oxidation Method
A. Cheng, Georgia Institute of Technology, Atlanta, GA
Enzymatic pH Control enables Spatially Controlled CaP Deposition onto Micropatterned Surfaces
A. W. G. Nijhuis, Radboud University Nijmegen Medical Center, Nijmegen, Netherlands

An Approach for Assessing Scaffold Hydrophobicity
D. Munoz-Pinto, Rensselaer Polytechnic Institute, Troy, NY
B. Grigoryan, Texas A&M University, College Station, Texas
M. Grunlan, Texas A&M University, College Station, Texas
M. S. Hahn, Rensselaer Polytechnic Institute, Troy, New York

Surface Functionalization of Cobalt-Chromium Alloy Using Phosphoric and Phosphonoacetic Acids
E. Thiruppathi, The University of South Dakota, Sioux Falls, SD
J. Peacock, The University of South Dakota, Sioux Falls, South Dakota
G. Mani, The University of South Dakota, Sioux Falls, South Dakota

Surface roughness properties of a micro-textured carbide-coated CoCrMo implant alloy during wear
G. Ettienne-Modeste, University of Maryland, Baltimore County, Nottingham, MD

Surface modification of poly(D,L-lactic acid) scaffolds for orthopedic applications: a non-destructive route via diazonium chemistry
H. Mahjoubi, McGill University, Montreal, QC, Canada
M. Cerruti, McGill University, Montreal, Québec, Canada

Nano-structured surface modification on Ti alloy by electron cyclotron resonance plasma oxidation
H. Masumoto, Tohoku University, Sendai, Japan

Inorganic/Organic Coating Layer to Induce Apatite Formation in DPBS
I. Lee, Yonsei University, Seoul, Republic of Korea

Preparation and Characterization of Functional Polypyrrole Particles
J. Mao, Centre de recherché du CHU de Québec, Université Laval, Québec City, QC, Canada

Versatile surface modification of biomaterials using biocompatible and photoreactive phospholipid polymers
K. Fukazawawa, The University of Tokyo, Tokyo, Japan

Flexible Polyetherimide-Silica Hybrid Xerogel Coating on Magnesium
M. Kang, Department of Materials Science and Engineering, Seoul National University, Seoul, Republic of Korea

QCM-D as an useful tool for the combined immobilization of cell adhesion peptide and growth factor on biomaterial surfaces.
P. Thalla, École de technologie supérieure (ÉTS), Montreal, QC, Canada

Tricalcium phosphate embedded poly(vinylidene fluoride) coating on magnesium for biomedical applications
S. Kim, WCU Hybrid Materials Program, Department of Materials Science and Engineering, Seoul National University, Seoul, Korea., Seoul, Republic of Korea
H. Park, WCU Hybrid Materials Program, Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, Seoul, Republic of Korea
Evaluate the Level of Adhesion and Optimizing Thermal Bonding between Nitinol Wire and Thermoplastic Polymer films
S. Navada, College of Textiles, North Carolina State University, Raleigh, NC

Regulating Smooth Muscle Cells on Poly(ethylene glycol)-grafted Poly(epsilon-caprolactone) Networks
S. Wang, The University of Tennessee, Knoxville, TN
X. Liu, The University of Tennessee, Knoxville, Tennessee

Versatile surface functionalization of inorganic materials with cyclic phosphoesters
Y. Iwasaki, Kansai University, Osaka, Japan
Y. Yamamoto, Kansai University, Osaka, Japan
T. Shimomura, Kansai University, Osaka, Japan

Facile method of preparing of temperature-responsive cell culture surface by using photoinitiator immobilized polystyrene surfaces
Y. AKIYAMA, Tokyo Women’s Medical University, Tokyo, Japan

Shear Stress-dependent Cell Detachment from Temperature-responsive Cell Culture Surfaces in Microfluidic Device
Z. Tang, Institute of Advanced Biomedical Engineering and Science, TWIns, Tokyo Women’s Medical University, Tokyo, Japan
Z. Tang, Institute of Advanced Biomedical Engineering and Science, TWIns, Tokyo Women’s Medical University, Tokyo, Japan
Y. Akiyama, Institute of Advanced Biomedical Engineering and Science, TWIns, Tokyo Women’s Medical University, Tokyo, Japan
K. Itoga, Institute of Advanced Biomedical Engineering and Science, TWIns, Tokyo Women’s Medical University, Tokyo, Japan
J. Kobayashi, Institute of Advanced Biomedical Engineering and Science, TWIns, Tokyo Women’s Medical University, Tokyo, Japan
T. Okano, Institute of Advanced Biomedical Engineering and Science, TWIns, Tokyo Women’s Medical University, Tokyo, Japan

Microporous Ti implant compact coated with hydroxyapatite produced by electrode-discharge-sintering and electrostatic-spray-deposition
Y. Jo, Sejong University, Seoul, Republic of Korea
W. Lee, Sejong University, Seoul, Republic of Korea
S. Cheon, Sejong University, Seoul, Republic of Korea
Y. Jo, Sejong University, Seoul, Republic of Korea
Y. Kim, Wonkwang Health Science University, Jeonbuk, Republic of Korea

Surface Micromechanical Testing Methods for Contact Lenses: Indentation, Friction and Dehydration
J. L. Gilbert, Syracuse University, Syracuse, NY
E. A. Lewis, Syracuse University, Syracuse, New York
Surface Functionalization of Nanomaterials for Therapy and Diagnostics

Angiotensin II-functionalized Quantum Dot Interactions with Cells
A. Goepferich, University of Regensburg, Regensburg, Germany

Modifying the Surface Chemistry of pH-Responsive Expansile Nanoparticles for Altered Circulation, Targeting and Efficacy Towards Cancer
M. Stolzoff, Boston University, Boston, MA
A. H. Colby, Boston University, Boston, Massachusetts
C. Ghobril, Boston University, Boston, Massachusetts
J. S. Hersey, Boston University, Boston, Massachusetts
Y. L. Colson, Brigham and Women's Hospital, Boston, Massachusetts
T. M. Porter, Boston University, Boston, Massachusetts
M. W. Grinstaff, Boston University, Boston, Massachusetts

Surface Modification of Biomaterials for Local Therapy and Diagnostics

Targeted Inhibition of HIV-1 Utilizing a Bioengineered Nanofibrous Polyester Material
J. Araya, Northeastern University, Ashland, MA
L. Fitzgerald, Biosurfaces, Inc., Ashland, Massachusetts
T. Phaneuf, Biosurfaces, Inc., Ashland, Massachusetts
S. Pathan, Biosurfaces, Inc., Ashland, Massachusetts
D. Nelson, Biosurfaces, Inc., Ashland, Massachusetts
D. Thoresen, Saint Michael's College, Ashland, Massachusetts
M. Bide, University of Rhode Island, Ashland, Massachusetts
T. Phaneuf, Biosurfaces, Inc., Ashland, Massachusetts
M. Phaneuf, Biosurfaces, Inc., Ashland, Massachusetts

Functionalized polyanhydride nanoparticles preserve protein stability and activate antigen presenting cells
J. E. Vela Ramirez, Iowa State University, Ames, IA
R. Roychoudhury, Indiana University, Bloomington, Indiana
H. Habte, Iowa State University, Ames, Iowa
M. Cho, Iowa State University, Ames, Iowa
N. Pohl, Indiana University, Bloomington, Indiana
M. Wannemuehler, Iowa State University, Ames, Iowa
B. Narasimhan, Iowa State University, Ames, Iowa

Selective Deposition of Conductive Polymer Films Using Agarose Stamps
E. E. Richards, The Pennsylvania State University, University Park, PA
N. Madduri, The Pennsylvania State University, University Park, Pennsylvania
M. R. Abidjan, The Pennsylvania State University, University Park, Pennsylvania
S. Majd, The Pennsylvania State University, University Park, Pennsylvania
793 Mechanical Properties of Triclosan Containing Sol-gel Thin Films on Titanium Alloy
H. Qu, University of Pennsylvania, Philadelphia, PA

794 A Strongly Adherent, Biocompatible, Efficacious Antimicrobial Coating for Orthopedic Implants
M. A. Schallenberger, Bacterin International, Inc., Belgrade, MT

795 Lower critical solution temperature of copolymers of N-vinyl-2-caprolactam and its derivative: effects of pH and polymer compositions
S. Tang, University of Tennessee, Knoxville, Knoxville, TN
Y. Cao, University of Tennessee, Knoxville, Tennessee
S. Goddard, University of Tennessee, Knoxville, Knoxville, Tennessee
W. He, University of Tennessee, Knoxville, Knoxville, Tennessee

Surface Modification Strategies for Antimicrobial Medical Devices

N/A Comparison of Commercially Available Wound Drains in a Bacterial Migration Assay and Agar Infection Model
D. X. Denty, Bacterin International Inc., Belgrade, MT
M. A. Schallenberger, Bacterin international Inc., Belgrade, Montana
T. R. Meyer, Bacterin International Inc., Belgrade, Montana

797 A Thermodynamic Approach to Engineering Antifouling Surfaces
J. T. Decker, University of Florida, Gainesville, FL
C. M. Kirschner, University of Florida, Boulder, Colorado
C. Long, University of Florida, Gainesville, Florida
J. Finlay, University of Birmingham, Birmingham, United Kingdom (Great Britain)
M. Callow, University of Birmingham, Birmingham, United Kingdom (Great Britain)
J. Callow, University of Birmingham, Birmingham, United Kingdom (Great Britain)
A. Brennan, University of Florida, Gainesville, Florida

798 Fabricating antibacterial paper towels through the use of selenium nanoparticles
Q. Wang, Northeastern University, Boston, MA

Surgical Meshes - Recent Development and Application

799 A Preliminary Study on Effects of Cyclic Loading and In Vitro Degradation on Mesh Porosity
M. Deng, Johnson & Johnson Global Surgery Group, Somerville, NJ
V. Zhou, Johnson & Johnson, Somerville, New Jersey
E. Vailhe, Johnson & Johnson, Somerville, New Jersey
J. Flint, Johnson & Johnson, Somerville, New Jersey
M. Deng, Johnson & Johnson, Somerville, New Jersey

The Role of Antioxidants in Biomaterials

803 Electron Beam Warm Irradiation Improves Oxidative Resistance and Grafting of Blended Vitamin E Polyethylene
D. Pletcher, Zimmer, Inc., Warsaw, IN  
M. Guo, Zimmer, Inc., Warsaw, Indiana  
A. Rufner, Zimmer, Inc., Warsaw, Indiana

Effects of Natural Antioxidants on Polyethylene Radicals in UHMWPE  
M. S. Jahan, University of Memphis, Memphis, TN  
B. Walters, University of Memphis, Memphis, Tennessee  
A. Ali, AgResearch Ltd., Christchurch, New Zealand  
A. Ghosh, AgResearch Ltd., Christchurch, New Zealand

Effect of Vitamin C on the Growth of Endothelial Cells for Stent and Vascular Graft Applications  
S. Kakade, The University of South Dakota, Sioux Falls, SD  
G. Mani, The University of South Dakota, Sioux Falls, South Dakota

Evaluation of Oxidation Induction Time as a Tool for Characterization of AO Content  
M. A. Ross, DePuy Synthes Joint Reconstruction, Warsaw, IN  
V. S. Narayan, DePuy Synthes Joint Reconstruction, Warsaw, Indiana

### Tissue Engineering

Enzymatic Treatment of Minced Porcine Cartilage Improves Cellular Outgrowth and GAG Production in 3D in vitro Cultures  
A. J. McNally, Exactech, Inc., Gainesville, FL  
C. Chapman, Exactech, Inc., Gainesville, Florida  
K. Sly, Exactech, Inc., Gainesville, Florida  
S. Lin, Exactech, Inc., Gainesville, Florida

The Effect of Adding a Hydrogel Porogen into a Poly(lactic-co-glycolic acid) Scaffold  
A. Clark, University of Kentucky, Lexington, KY

Electrospinning of Chitosan and its Correlation with Degree of Deacetylation and Rheological Property  
A. Nandgaonkar, North Carolina State University, Raleigh, NC  
W. Krause, North Carolina State University, Raleigh, North Carolina

Enhanced cell proliferation on controlled pore size of chitosan nanofibers mat  
B. Gu, Korea Institute of Radiological and Medical Science, Seoul, Republic of Korea  
S. Park, Korea Institute of Radiological and Medical Science, Seoul, Republic of Korea  
M. Kim, Korea Institute of Radiological and Medical Science, Seoul, Republic of Korea  
C. Kim, Korea Institute of Radiological and Medical Science, Seoul, Republic of Korea

Scaffold-mediated REST siRNA delivery of mussel-inspired nanofibers induces neuronal differentiation of stem cells  
C. Sing Yian, Nanyang Technological University, Singapore, Singapore  
P. Rujitanaroj, Nanyang Technological University, Singapore, Singapore  
W. Low, Nanyang Technological University, Singapore, Singapore  
K. Jinghao, Northwestern University, Evanston, Illinois  
L. Dong-Keun, Northwestern University, Evanston, Illinois  
P. B. Messersmith, Northwestern University, Evanston, Illinois

Surface Modification of Poly(ε-caprolactone) Scaffolds Fabricated via Selective Laser
Sintering for Cartilage Regeneration in Craniofacial Surgery
C. Chen, Department of Chemical and Materials Engineering, Chang Gung University, Tao-Yuan 33302, Taiwan, ROC, Tao-Yuan, Taiwan

Liquified Capsules Encapsulating Microparticles to Provide Cell Adhesion Sites Enhance Cellular Functions
C. R. Correia, 3B’s Research Group - Biomaterials, Biodegradables and Biomimetics, University of Minho, Guimarães, Portugal
R. L. Reis, 3B’s Research Group – Biomaterials, Biodegradables and Biomimetics, University of Minho, Guimarães, Portugal
J. F. Mano, 3B’s Research Group – Biomaterials, Biodegradables and Biomimetics, University of Minho, Guimarães, Portugal

Poly(butylene succinate) and poly(3-hydroxybutyrate-co-3-hydroxyvalerate) blend nanofibers for skin tissue engineering
D. Sundaramurthi, SASTRA University, Thanjavur, India
U. Krishnan, SASTRA University, Thanjavur, India
S. Sethuraman, SASTRA University, Thanjavur, India

Gelatin-based Hydrogels as Potential Cellular Delivery Systems for Cardiac Tissue Engineering
G. Camci-Unal, Harvard Medical School, Cambridge, MA
N. Alemdar, Harvard Medical School, Cambridge, Massachusetts
A. Khademhosseini, Harvard Medical School, Cambridge, Massachusetts

Fabrication of Anisotropic Cell Sheets for Designing Well-organized Myotube Assembly
H. Takahashi, Tokyo Women’s Medical University, Tokyo, Japan

Co-culture of Human Gingival Fibroblasts and Vascular Endothelial Cells in a Perfused Degradable/Polar/Hydrophobic/Ionic Polyurethane (D-PHI)
J. W. C. Cheung, University of Toronto, Toronto, ON, Canada
C. A. G. McCulloch, University of Toronto, Toronto, Ontario, Canada
J. Santerre, University of Toronto, Toronto, Ontario, Canada

Development of Interconnected PolyHIPEs for Injectable Bone Grafts
J. L. Robinson, Texas A&M University, College Station, TX
R. S. Moglia, Texas A&M University, College Station, Texas
M. C. Stuebben, Texas A&M University, College Station, Texas
M. A. P. McEnery, Texas A&M University, College Station, Texas
E. Cosgriff-Hernandez, Texas A&M University, College Station, Texas

Effects of Low Oxygen Tension during Expansion on Chondrogenic Potential of Osteoarthritis Chondrocytes
J. Wang, Syracuse Biomaterials Institute and the Department of Biomedical and Chemical Engineering, Syracuse University, Syracuse, NY
K. Davis, Syracuse Biomaterials Institute and the Department of Biomedical and Chemical Engineering Syracuse University, Syracuse, New York
J. Henderson, Syracuse Biomaterials Institute and the Department of Biomedical and Chemical Engineering Syracuse University, Syracuse, New York

Tyrosine-Derived Polycarbonates to Treat a Rabbit Critical-Sized Segmental Bone Defect
J. Kim, Hongik University, Sejong, Republic of Korea
Nanocomposite Bone Scaffolds Based on Biodegradable Polymers and Hydroxyapatite
M. Dadsetan, Mayo Clinic, College of Medicine, Rochester MN; Paracelsus Medical University, Salzburg, Austria, Rochester, MN

Decellularized Human Vocal Fold as a Scaffold for Laryngeal Tissue Engineering
J. R. Tse, University of California, Los Angeles, Cerritos, CA
J. L. Long, University of California, Los Angeles, Los Angeles, California

Tissue Engineered Model of the Inner Neural Retina
K. E. Kador, Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, Miami, FL
P. Venugopalan, Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, Miami, Florida
R. B. Montero, University of Miami, Coral Gables, Florida
J. Hertz, Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, Miami, Florida
E. Lavik, Case Western Reserve University, Cleveland, Ohio
F. Andreopoulos, University of Miami, Coral Gables, Florida
J. L. Goldberg, Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, Miami, Florida

hMSC and Fibroblast Dispersion Cultures in Chitosan-based Injectable Hydrogels for Cartilage Regeneration
K. J. Walker, Oklahoma State University, Stillwater, OK
S. V. Madihally, Oklahoma State University, Stillwater, Oklahoma

In Situ Crosslinkable Gelatin Hydrogel for Ex Vivo Organ Culture of Cardiac Tissue
K. Park, Ajou University, Suwon, Republic of Korea
K. Park, Ajou University, Suwon, Republic of Korea
Y. Lee, Ajou University, Suwon, Republic of Korea
J. Son, Ajou University, Suwon, Republic of Korea
Y. Yang, Inje University School of Medicine, Busan, Republic of Korea

Preparation and characterization of soft tissue-polymer complex for percutaneous device
K. Nam, Tokyo Medical and Dental University, Tokyo, Japan
R. Matsushima, Tokyo Medical and Dental University, Tokyo, Japan
Y. Shimatsu, Tokyo Medical and Dental University, Tokyo, Japan
T. Kimura, Tokyo Medical and Dental University, Tokyo, Japan
T. Fujisato, Osaka Institute of Technology, Osaka, Japan
A. Kishida, Tokyo Medical and Dental University, Tokyo, Japan

Smooth Muscle Cell Migration in 3D Biomimetic Poly(ethylene glycol) Hydrogels
L. Lin, Case Western Reserve University, Cleveland Heights, OH
J. Zhu, Case Western Reserve University, Cleveland, Ohio
K. Kottke-Marchant, Cleveland Clinic, Cleveland, Ohio
R. Marchant, Case Western Reserve University, Cleveland, Ohio

Responses of Vascular Endothelial Cells to Photo-embossed Topography on Polymer Films and Fibers
L. Qiu, Institute of Bioengineering, Queen Mary, University of London, London, United Kingdom, London, United Kingdom (Great Britain)

Pre-vascularized Gellan Gum-Hyaluronic Acid Spongy-like Hydrogels improve Skin wound healing
A new technique for Development of perfusable multilayered blood vessel-like structures on Microfluidic Chip

M. Hasan, Harvard Medical School, Cambridge, MA
G. Jeong, Harvard Medical School, Cambridge, Massachusetts

Processing and Storage Effects on Poly(ethylene glycol) Hydrogel Mechanical Properties and Bioactivity

P. Luong, Texas A&M University, College Station, TX
M. Browning, Texas A&M University, College Station, Texas
R. Bixler, Texas A&M University, College Station, Texas
E. Cosgriff-Hernandez, Texas A&M University, College Station, Texas

Designing Degradable Microporous Bacterial Cellulose Scaffolds and its Biomimetic Composites for Bone and Cartilage Tissue Engineering

P. Favi, University of Tennessee - Knoxville, Knoxville, TN

Structural and Compositional Changes of Porcine Articular Cartilage After Partial Enzymatic Digestion

P. Lee, Exactech Taiwan, Hsinchu, Taiwan
C. Chen, Exactech Taiwan, Hsinchu, Taiwan
K. Sly, Exactech Inc., Gainesville, Florida
S. Lin, Exactech Inc., Gainesville, Florida

Development of poly(3-hydroxybutyrate-co-3-hydroxyvalerate) nanofibrous scaffold for esophageal tissue engineering

P. Kuppan, SASTRA University, Thanjavur, India
S. Sethuraman, SASTRA University, Thanjavur, India
U. Krishnan, SASTRA University, Thanjavur, India

Mechanical properties of stem cells from different sources during vascular smooth muscle cell differentiation

R. Chen, Clemson University, Clemson, SC
D. Dean, Clemson University, Clemson, South Carolina

Combination Delivery of Small RNAs Enhances Muscle Regeneration

S. Lee, Wake Forest School of Medicine, Winston-Salem, NC
N. Kim, Wake Forest School of Medicine, Winston-Salem, North Carolina

Host Stem Cell Mobilization for In Situ Muscle Tissue Regeneration

S. Lee, Wake Forest School of Medicine, Winston-Salem, NC

Biomechanics and Bioresorbable Material Study toward Pelvic Organ Prolapse Corrective Mesh Design
Structural Deformation Studies of Scaffolds and Method for Non-Invasively Monitoring Tissue Growth
S. Madihally, Oklahoma State University, Stillwater, OK
J. Podichetty Thribhuvan, Oklahoma State University, Stillwater, Oklahoma

Enhancing Segmental Defect Regeneration through a Thrombopoietic Agent
T. G. Chu, Indiana University School of Dentistry, Indianapolis, IN

Preparation and Characterization of Porcine Esophageal Extracellular Matrix
T. Keane, University of Pittsburgh, Pittsburgh, PA
R. Londono, University of Pittsburgh, Pittsburgh, Pennsylvania
R. Carey, University of Pennsylvania, Pittsburgh, Pennsylvania
J. Reing, University of Pittsburgh, Pittsburgh, Pennsylvania
S. F. Badyak, University of Pittsburgh, Pittsburgh, Pennsylvania

Platelet-Derived Growth Factor Stimulated Migration of Bone Marrow Mesenchymal Stem Cells into an Injectable Gelatin-Hydroxyphenylpropionic Acid Hydrogel
W. Niu, VA Boston Healthcare System, Brigham and Women's Hospital, Boston, MA

Conductive Fabrics for Electrically Stimulated Cell Culture
Y. Wang, Laval University, Quebec, QC, Canada
M. Rouabhia, Laval University, Quebec, Quebec, Canada
Z. Zhang, Laval University, Quebec, Quebec, Canada

Rapid Formation of Engineered Microvasculatures Using Microfluidic Techniques
Y. T. Matsunaga, The University of Tokyo, Tokyo, Japan
N. Brandenberg, The University of Tokyo, Tokyo, Japan
I. Matsuda, The University of Tokyo, Tokyo, Japan
M. Umezu, Waseda University, Tokyo, Japan
Y. Okubo, The University of Tokyo, Tokyo, Japan

In Situ Forming Gelatin-Based Bioadhesive and Sprayable Hydrogels for Skin Regeneration
Y. Lee, Ajou University, Suwon, Republic of Korea
J. Bae, Ajou University, Suwon, Republic of Korea
K. Park, Ajou University, Suwon, Republic of Korea

Minimally Invasive Spine Fracture Risk Prediction Based on QCT and Image Analysis
Z. Fang, Mayo Clinic, Rochester, MN

Small diameter acellular vascular grafts with integrin a4b1 positive cell-caputuring surface
T. YAMAOKA, National Cerebral and Cardiovascular Center Research Institute, Suita, Japan
S. Somekawa, National Cerebral and Cardiovascular Center Research Institute, Suita, Japan
N. Kobayashi, National Cerebral and Cardiovascular Center Research Institute, Suita, Japan
Y. Hirano, Kansai University, Suita, Japan
N. Mihashi, National Cerebral and Cardiovascular Center Research Institute, Suita, Japan
T. Sakuma, National Cerebral and Cardiovascular Center Research Institute, Suita, Japan
T. Moritan, Suzuka University of Medical Science, Suzuka, Japan
Y. Kimura, Kyoto Institute of Technology, Kyoto, Japan
T. Fujisato, Osaka Institute of Technology, Osaka, Japan
A. Mahara, National Cerebral and Cardiovascular Center Research Institute, Suita, Japan

Translational Research in Nano-biomaterials

Histologic and Histomorphometric Analysis of Two Graft Materials in a Non-instrumented Canine Interspinous Spinal Fusion Model
A. S. Ismailoglu, NuVasive Inc., San Diego, CA
H. Yuan, University of Twente, Enschede, Netherlands
F. Vizesi, NuVasive Inc., San Diego, California
X. Luo, University of Twente, Enschede, Netherlands
J. de Bruijn, University of Twente, Enschede, Netherlands
E. Erbe, NuVasive Inc., San Diego, California

Characterization of Porcine Vascular Tissue and Gold Nanoparticles as a Vascular Graft Material
A. M. Ostdiek, University of Missouri, Columbia, MO
S. Grant, University of Missouri, Columbia, Missouri

Carbon Nanotube-Polyimide Composite Microneedles for Rapid Transdermal Drug Delivery
B. J. Lyon, California Institute of Technology, Pasadena, CA
A. Aria, California Institute of Technology, Pasadena, California
M. Gharib, California Institute of Technology, Pasadena, California

Nanosilver Surfaces for Improved Understanding of Biocompatibility and Antibacterial Efficacy of Medical Device Coatings
E. M. Sussman, U.S. Food and Drug Administration, Silver Spring, MD
B. J. Casey, U.S. Food and Drug Administration, Silver Spring, Maryland
J. Zheng, U.S. Food and Drug Administration, Silver Spring, Maryland
B. J. Dair, U.S. Food and Drug Administration, Silver Spring, Maryland
D. V. Patwardhan, U.S. Food and Drug Administration, Silver Spring, Maryland
Microwave Assisted Synthesis of Alkaline Earth Phosphates Nanospheres
H. Zhou, The University of Toledo, Toledo, OH
S. B. Bhaduri, The University of Toledo, Toledo, Ohio
T. J. F. Luchini, The University of Toledo, Toledo, Ohio

Microwave Assisted Alkaline Earth Phosphate Biomimetic Coating Deposition on Implants
H. Zhou, The University of Toledo, Toledo, OH
V. K. Goel, University of Toledo, Toledo, Ohio
S. B. Bhaduri, The University of Toledo, Toledo, Ohio

Auricular Reconstruction with a Novel Nanocomposite Scaffold
L. Nayyer, University College London (UCL), London, United Kingdom (Great Britain)

Fabrication of Novel Polylactic Acid/Amorphous Magnesium Phosphate Bionanocomposite Fibers for Tissue Engineering Applications via Electrospinning
M. Nabiyouni, University of Toledo, Toledo, OH

Regulation of Human Tendon Fibroblast Response by Fiber Diameter of Electrospun Polymer Scaffolds
N. M. Lee, Columbia University, New York, NY
C. Erisken, Columbia University, New York, New York
W. N. Levine, Columbia University, New York, New York
H. H. Lu, Columbia University, New York, New York

Nano-grafts for Anterior Cruciate Ligament Reconstruction
S. E. Smith, University of Missouri, Columbia, MO
S. Grant, University of Missouri, Columbia, Missouri
R. White, University of Missouri, Columbia, Missouri

Factors Affecting the Performance of Metal Components in Artificial Hips
O. Vesnovsky, U.S. Food and Drug Administration, Silver Spring, MD
N. P. Anderson, U.S. Food and Drug Administration, Silver Spring, Maryland
M. A. Di Prima, U.S. Food and Drug Administration, Silver Spring, Maryland
C. A. Engh, Jr., Anderson Orthopaedic Institute, Alexandria, Virginia
L. W. Grossman, U.S. Food and Drug Administration, Silver Spring, Maryland
R. Hopper, Anderson Orthopaedic Institute, Alexandria, Virginia
B. Stephen, U.S. Food and Drug Administration, Silver Spring, Maryland
L. Topoleski, University of Maryland Baltimore County, Baltimore, Maryland

Development of Vancomycin-Linked Poly(β-amino ester) Hydrogels
A. Vasilakes, University of Kentucky, Lexington, KY
D. Puleo, University of Kentucky, Lexington, Kentucky
J. Hilt, University of Kentucky, Lexington, Kentucky
T. Dziubla, University of Kentucky, Lexington, Kentucky

Dynamic Biomaterials for Healing Chronic Wounds
**Multivalent Sonic Hedgehog-Hyaluronic Acid Conjugates for Enhanced Neovascularization During Diabetic Wound Healing**

B. W. Han, University of California, Berkeley, Berkeley, CA
W. Jackson, University of California, Berkeley, Berkeley, California
H. Layman, University of California, San Francisco, San Francisco, California
N. A. Rode, University of California, Berkeley, Berkeley, California
D. Dashti, University of California, Berkeley, Berkeley, California
A. Conway, University of California, Berkeley, Berkeley, California
N. Boudreau, University of California, San Francisco, San Francisco, California
D. Schaffer, University of California, Berkeley, Berkeley, California
K. E. Healy, University of California, Berkeley, Berkeley, California

**Decellularized Extracellular Matrix Microparticles Support Fibroblast Growth and are a Vehicle for Cellular Delivery in a Model of Anastomosis Healing**

D. Hoganson, Washington University in St. Louis, St. Louis, MO
G. E. Owens, California Institute of Technology, Pasadena, California
E. K. Bassett, Massachusetts General Hospital, Boston, Massachusetts
A. M. Meppelink, Massachusetts General Hospital, Boston, Massachusetts
C. Bowley, DSM Biomedical, Exton, Pennsylvania
C. J. Hinkel, Washington University in St. Louis, St. Louis, Missouri
E. B. Finkelstein, Syracuse University, Syracuse, New York
S. M. Goldman, DSM Biomedical, Exton, Pennsylvania
J. P. Vacanti, Massachusetts General Hospital, Boston, Massachusetts

**Development of Supercritical CO2-Treated Human Amniotic Membrane Combined with Adipose Derived Stem Cells for Wound Treatment**

J. Wehmeyer, U.S. Army Institute of Surgical Research, Fort Sam Houston, TX

**Development of modified collagen films containing red propolis extracts to wound healing application**

J. C. Cardoso, Universidade Tiradentes, Watertown, MA

**Controlling the Delivery of Vascular Endothelial Growth Factor and Platelet Derived Growth Factor**

L. Kelly, University of Sheffield, Sheffield, United Kingdom (Great Britain)
L. Platt, University of Sheffield, Sheffield, United Kingdom (Great Britain)
S. MacNeil, University of Sheffield, Sheffield, United Kingdom (Great Britain)
P. Genever, University of York, York, United Kingdom (Great Britain)
S. Rimmer, University of Sheffield, Sheffield, United Kingdom (Great Britain)

**AnastomoSEAL – Biopolymeric patches for the treatment of colorectal anastomosis**

M. Dornish, FMC BioPolymer AS, Sandvika, Norway
S. Paolelkt, University of Trieste, Trieste, Italy
N. Bouvy, University of Maastricht, Maastricht, Netherlands
M. Bosco, SIGEA SRL, Trieste, Italy
M. Foulc, RESCOLL, Pessac, France
W. Fediuk, I.E. "IMPULS", Gdansk, Poland

**Absorbable Polyurethanes for Wound Healing Applications**
N. Srivastava, Bezwada Biomedical, LLC, Hillsborough, NJ

Factors Associated with the Ideal Donor Site Dressing for Burn Patients after Split-Thickness Skin Grafting
R. Jindani, North Carolina State University, Raleigh, NC

Development of Mucoadhesive Films with Increased Residence Time for Treatment of Local Disorders
S. k. RADMINENI, University Of Kentucky, Lexington, KY, KY

Layer-by-Layer Delivery of siRNA
S. Castleberry, Massachusetts Institute of Technology, Cambridge, MA
P. Hammond, Massachusetts Institute of Technology, Cambridge, Massachusetts

Wound healing processes using Punica granatum Linn extracts incorporated in collagen based films
W. A. Araujo, Universidade Tiradentes, Watertown, MA

Antibacterial microfilm dressing with silver-nanoparticles promotes healing of contaminated excisional wounds
A. Agarwal, Imbed Biosciences Inc, Madison, WI
T. B. Nelson, Imbed Biosciences, Inc, Madison, Wisconsin
P. R. Kierski, University of Wisconsin-Madison, Madison, Wisconsin
M. Budianto, University of Wisconsin-Madison, Madison, Wisconsin
C. J. Murphy, University of California, Davis, Davis, California
M. J. Schurr, University of Colorado, Denver, Aurora, Colorado
C. J. Czuprynski, University of Wisconsin-Madison, Madison, Wisconsin
N. L. Abbott, University of Wisconsin-Madison, Madison, Wisconsin
J. F. McAnulty, University of Wisconsin-Madison, Madison, Wisconsin

Evaluating Performance of Hydrogel-Based Adhesives for Soft Tissue Applications
L. Sanders, Clemson University, Clemson, SC

Use of Tryptophan to Prevent Pseudomonas aeruginosa Biofilm Growth on Wound Dressings
K. S. Brandenburg, University of Wisconsin-Madison, Madison, WI
J. F. McAnulty, University of Wisconsin-Madison, Madison, Wisconsin
N. L. Abbott, University of Wisconsin-Madison, Madison, Wisconsin
C. J. Murphy, University of California-Davis, Davis, California
M. J. Schurr, University of Colorado-Denver, Aurora, Colorado
N. Shah, University of California-Davis, Davis, California
A. Agarwal, Imbed Biosciences Inc, Madison, Wisconsin
C. J. Czuprynski, University of Wisconsin-Madison, Madison, Wisconsin

Dendritic Hydrogels as Portable Systems for Hemostasis of Abdominal and Extremity Wounds
C. Ghobril, Boston University, Boston, MA
A. Nazarian, Beth Israel Deaconess Medical Center, Boston, Massachusetts
E. Rodriguez, Beth Israel Deaconess Medical Center, Boston, Massachusetts
M. Grinstaff, Boston University, Boston, Massachusetts
Plenary Papers

968 Biomaterials and Biotechnology: From the Discovery of the First Angiogenesis Inhibitors to the Development of Controlled Drug Delivery Systems and the Foundation of Tissue Engineering
R. Langer, Massachusetts Institute of Technology
D. H. Koch, Massachusetts Institute of Technology

969 Technology, Service and Bucking Convention: A Prescription for a Rewarding Biomaterials Career
A. J. Coury, Coury Consulting Services, Boston, Massachusetts

970 The Regenerative Engineering Future: The Role of Biomaterials
C. T. Laurencin, University of Connecticut

971 Mechnikov, the Macrophage and the Man: James Anderson, Macrophages & Biomaterials and New Results on Macrophage Phenotypes
B. D. Ratners, University of Washington

972 New Perspectives on Biocompatibility Pathways
D. Williams, Wake Forest Institute of Regenerative Medicine, Winston-Salem, NC

973 In Vivo Glucose Sensors Modeled as a "Source-sink, Heterogeneous Matrix" Transport Problem: Is That All There Is?
M. T. Novak, Duke University, Durham, NC
F. Yuan, Duke University, Durham, NC
W. M. Reichert, Duke University, Durham, NC

974 Mussel-Inspired Catechol Biomaterials for Surgical Repair and Drug Delivery
P. B. Messersmith, Northwestern University, Evanston, IL

975 Bio-Inspired Materials for the Treatment of Arterial Disease
E. L. Chaikof, Johnson and Johnson Professor of Surgery, Harvard
S. R. Weiner, Beth Israel Deaconess Medical Center

976 Biomimetic Approaches for Regeneration
P. X. Ma, University of Michigan

977 Osteogenic Differentiation of Mesenchymal Stem Cells on Demineralized and Devitalized Biodegradable Polymer and Extracellular Matrix Hybrid Constructs
R. A. Thibault, Rice University, Houston, TX
A. G. Mikos, Rice University, Houston, TX
F. K. Kasper, Rice University, Houston, TX