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Animating Materials

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Con-current Oral Abstract Presentations Session 1

Dental Materials

Volume 1

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A. C. Deymier-Black[1], J. D. Almer[2], D. C. Dunand[1];
[1]Northwestern Univ., Evanston, IL, [2]Argonne Natl. Lab., Argonne, IL.

2 **Spectroscopic Characterization of Structural and Functional Properties of Dentin Adhesive with Buffering Capability**

P. Spencer, Q. Ye, J. Park, Z. Chen, A. Misra, J. Laurence;
Univ. of Kansas, Lawrence, KS.

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J. W. C. Cheung, J. Santerre;
Inst. of Biomaterials and BioMed. Engineering, Toronto, ON, CANADA.

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T-M. G. Chu[1], N. Khouja[1], G. Chahine[2], R. Kovacevic[2], M. Koike[3], T. Okabe[3];
[1]Indiana Univ. Sch. of Dentistry, Indianapolis, IN, [2]Southern Methodist Univ., Dallas, TX, [3]Baylor Coll. of Dentistry, Dallas, TX.

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A. L. Raines[1], N. Patel[1], R. Olivares-Navarrete[1], M. Dard[2], Z. Schwartz[1], B. D. Boyan[1];
[1]Georgia Inst. of Technology, Atlanta, GA, [2]Inst. Straumann, Basel, SWITZERLAND.

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J. Park[1], Z. Schwartz[1], R. Olivares-Navarrete[1], M. Dard[2], R. Tannenbaum[1], B. D. Boyan[1];
[1]Georgia Inst. of Technology, Atlanta, GA, [2]Inst. Straumann AG, Basel, SWITZERLAND.

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[1]Georgia Inst. of Technology, Atlanta, GA, [2]Georgia Inst. of Technology and Emory Univ., Atlanta, GA.

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[1]Stevens Inst. of Technology, Hoboken, NJ, [2]Univ. Med. Ctr. Groningen, Groningen, NETHERLANDS.

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[1]MedShape Solutions, Atlanta, GA, [2]The Georgia Inst. of Technology, Atlanta, GA.

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[1]Texas A&M Univ., College Station, TX, [2]Lawrence Livermore Natl. Lab., Livermore, CA, CA.

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[1]Reinnervate Ltd, County Durham, UNITED KINGDOM, [2]Durham Univ., Durham, UNITED KINGDOM.

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[1]Graduate Inst. of Clinical Med., Natl. Cheng Kung Univ., Tainan, TAIWAN, [2]Nano-Powder & Thin Film Technology Ctr., Industrial Technology Res. Inst., Tainan, TAIWAN.

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[1]Univ. of Cambridge, Cambridge, UNITED KINGDOM, [2]Sch. of Materials, Univ. of Manchester, Manchester, UNITED KINGDOM.

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[1]Politecnico Di Milano, Milano, ITALY, [2]Sch. of Pharmacy and Biomolecular Sci., Univ. of Brighton, Brighton, UNITED KINGDOM.

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H. McKellop[1], F-W. Shen[2], A. F. Senyurt[3], Y-S. Liao[3], Z. Lu[2], D. Warner[3];
[1]UCLA-Orthopaedic Hosp., Los Angeles, CA, [2]UCLA-orthopaedic Hosp., Los Angeles, CA, [3]DePuy Orthopaedics, Warsaw, IN.

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M. Kyomoto[1], T. Moro[2], K. Saiga[1], Y. Takatori[2], K. Ishihara[1];
[1]Dept. of Materials Engineering, The Univ. of Tokyo, Tokyo, JAPAN, [2]Div. for Joint Reconstruction, The Univ. of Tokyo, Tokyo, JAPAN.

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Rush Univ. Med. Ctr., Chicago, IL.

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J. J. Elsner[1], M. Shemesh[1], Y. Mezape[1], A. Shterling[1], E. Linder-Ganz[1], N. Eliaz[2];
[1]Active Implants Corp., Netanya, ISRAEL, [2]Sch. of Mechanical Engineering, Tel Aviv Univ., Tel-Aviv, ISRAEL.

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J. Park[1], G. von Maltzahn[2], E. Ruoslahti[3], S. N. Bhatia[2], M. J. Sailor[4];
[1]Korea Advanced Inst. of Sci. and Technology, Daejeon, KOREA, REPUBLIC OF, [2]Massachusetts Inst. of Technology, Cambridge, MA, [3]Sanford-Burnham Med. Res. Inst. at UCSB, Santa Barbara, CA, [4]Univ. of California, San Diego, La Jolla, CA.

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B. J. Gill[1], J. E. Saik[1], Z. H. Rizvi[2], D. L. Gibbons[2], J. M. Kurie[2], J. L. West[1];
[1]Rice Univ., Houston, TX, [2]M.D. Anderson Cancer Ctr., Houston, TX.

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W. Choi[1], J-Y. Kim[1], C. Kang[2], C. Byeon[3], Y. Kim[1], G. Tae[1];
[1]Gwangju Inst. of Sci. and Technology, Gwangju, KOREA, REPUBLIC OF, [2]Advanced Photonics Res. Inst., Gwangju Inst. of Sci. and Technology, Gwangju, KOREA, REPUBLIC OF, [3]Kyungpook Natl. Univ., Daegu, KOREA, REPUBLIC OF.

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[1]Indian Inst. of Technology - Kanpur, Kanpur, INDIA, [2]Indian Inst. of Sci., Bangalore, INDIA.

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T. T. Lee[1], E. A. Phelps[1], M. Wirkner[2], A. del Campo[2], A. Garcia[1];

[1]Georgia Institstute of Technology, Atlanta, GA, [2]Max-Planck-Inst. fur Polymerforschung, Mainz, GERMANY.

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M. W. Tibbitt[1], A. M. Kloxin[2], B. W. Han[1], K. S. Anseth[2];

[1]Univ. of Colorado, Boulder, CO, [2]Univ. of Colorado and Howard Hughes Med. Inst., Boulder, CO.

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Univ. of Freiburg, Freiburg, GERMANY.

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[1]MIT, Cambridge, MA, [2]McMaster Univ., Hamilton, ON, CANADA, [3]Univ. of Zaragoza, Zaragoza, SPAIN, [4]Children's Hosp. Boston, Harvard Med. Sch., Boston, MA.

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[1]Woodruff Sch. of Mechanical Engineering, Georgia Inst. of Technology, Atlanta, GA, [2]Wallace H. Coulter Dept. of BioMed. Engineering, Georgia Inst. of Technology, Atlanta, GA.

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[1]Univ. of Wisconsin - Madison, Madison, WI, [2]Univ. of Minnesota, Minneapolis, MN.

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[1]Univ. of California, Irvine, Irvine, CA, [2]Massachusetts Inst. of Technology, Cambridge, MA.

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[1]Univ. of Pittsburgh, Pittsburgh, PA, [2]Cornell Univ., Ithaca, NY.

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[1]Healionics, Seattle, WA, [2]Univ. Favaloro, Buenos Aires , ARGENTINA.

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[1]Active Implants Corp., Netanya, ISRAEL, [2]Sacro Cuore Don Calabria Hosp., Verona, ITALY, [3]Tel-Aviv Sourasky Med. Ctr., Tel-Aviv, ISRAEL, [4]Lenox Hill Hosp., New York, NY, [5]Duke Univ. Med. Ctr., Durham, NC.

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Abbott Vascular, Sunnyvale, CA.

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[1]Univ. of Michigan, Ann Arbor, MI, [2]Univ. of Wisconsin, Madison, WI.

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[1]The Methodist Hosp. Res. Inst., Houston, TX, [2]Rice Univ., Houston, TX, [3]The Univ. of Texas Hlth.Sci. Ctr. Houston, Houston, TX.

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[1]Charite Univ. Med. Ctr., Berlin, GERMANY, [2]Federal Inst. for Materials Res. and Testing, Berlin, GERMANY, [3]European Synchroton Facility, Grenoble, FRANCE.

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[1]Rice Univ., Houston, TX, [2]Baylor Coll. of Med., Houston, TX.

84 **Does Bone Marrow Aspirate Augment Bone Formation with a Hydroxyapatite Scaffold?**
M. J. Coathup[1], W-J. Lo[2], T. Edwards[1], G. W. Blunn[1];

[1]Univ. Coll. London, Stanmore, Middlesex, UNITED KINGDOM, [2]Orthogem Ltd, Nottingham, UNITED KINGDOM.

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[1]Virginia Commonwealth Univ., Richmond, VA, [2]Univ. of Colorado, Denver, Denver, CO, [3]Univ. of Nebraska Med. Ctr., Omaha, NE.

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Abbott Med. Optics, Santa Ana, CA.

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[1]Brigham Young Univ., Provo, UT, [2]CIBA VISION Global Res., Duluth, GA.

92 **Optical Transparency and In Vitro Biocompatibility of Recombinant Silk-Elastinlike Protein Polymer**
W. Teng[1], J. Cappello[2], X. Wu[1];
[1]Univ. of Arizona, Tucson, AZ, [2]Protein Polymer Technologies, Inc., San Diego, CA.

Biologically Derived Materials

93 **Efficacy Of An Injectable Dual Release Delivery System For Halting Perthes Disease**
Y. Zou[1], J. Horstmann[1], T. Milbrandt[2], V. Talwalkar[2], D. Puleo[1];
[1]Univ. of Kentucky, Lexington, KY, [2]Shriners Hosp. for Children, Lexington, KY.

94 **A Biologic Scaffold Composed of Skeletal Muscle Extracellular Matrix**
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Univ. of Pittsburgh, Pittsburgh, PA.

95 **Preparation of an Artificial Skin by Replication of Its Structure and Function Using Fibrillogenesis**
K. Nam, Y. Sakai, T. Kimura, A. Kishida;
Div. of Biofunctional Molecules, Inst. of Biomaterials and Bioengineering,, Tokyo, JAPAN.

96 **Incorporation of bFGF in an Injectable Pericardial Matrix Gel for Myocardial Tissue Engineering**
S. B. Seif-Naraghi, D. Horn, P. Schup-Magoffin, K. L. Christman;
UC San Diego, La Jolla, CA.

97 **Effect of Chemical and Enzymatic Crosslinking of Novel Porous Soy Protein Scaffolds on Human Mesenchymal Stem Cell Morphology and Growth**
K. B. Chien[1], R. N. Shah[2];
[1]Northwestern Univ., Evanston, IL, [2]Northwestern Univ., Chicago, IL.

98 **Towards Molecular Farming of a Human Elastin-like Polymer in Plants**
M. Martinuzzi[1], S. Marchetti[1], A. Bandiera[2], S. Fare[3], **M. Tanzi**[3];
[1]Università degli Studi di Udine, UDINE, ITALY, [2]Università degli studi di Trieste, TRIESTE, ITALY, [3]Politecnico di Milano, MILANO, ITALY.

99 **Dynamic Culturing of Bone Marrow Mesenchymal Stem Cells in Chitosan-Glycosaminoglycan Scaffolds for Heart Valve Tissue Engineering**
M. Z. Albanna[1], T. H. Bou-Akl[1], H. L. Walters, III[2], H. W. T. Matthew[1];
[1]Wayne State Univ., Detroit, MI, [2]Children's Hosp. of Michigan, Detroit, MI.

100 **Comparison of Three Methods of Derivation of a Biologic Scaffold Composed of Adipose Tissue Extracellular Matrix**
B. N. Brown[1], J. M. Freund[2], L. Han[2], J. P. Rubin[2], J. E. Reing[2], E. M. Jeffries[2], M. T. Wolf[2], S. Tottey[2], C. A. Barnes[3], B. D. Ratner[3], S. F. Badylak[2];
[1]Cornell Univ., Ithaca, NY, [2]Univ. of Pittsburgh, Pittsburgh, PA, [3]Univ. of Washington, Seattle, WA.

Biomaterials-based Therapies Exploiting Immunological Processes

101 **Controlled Release Formulations for Increasing Local Numbers of Regulatory T Cells**
S. Jhunjhunwala, G. Raimondi, E. Nichols, S. H. Thorne, A. W. Thomson, S. R. Little;
Univ. of Pittsburgh, Pittsburgh, PA.

102 **Local Liposomal Delivery of Anti-CD40 and CpG Stimulates an Anti-Tumor Response while Minimizing Systemic Side Effects**
B. Kwong, H. Liu, D. J. Irvine;
Massachusetts Inst. of Technology, Cambridge, MA.

103 **Self-Assembling Adjuvants That Raise Strong Antibody Responses Against Protein Antigens**
G. A. Hudalla, J. Modica, M. Mrksich, J. H. Collier;
Univ. of Chicago, Chicago, IL.

104 **A Novel RAFT Block Copolymer for Anti-Inflammatory Protein Delivery**
R. E. Whitmire, D. S. Wilson, N. Murthy, A. J. Garcia;
Georgia Inst. of Technology, Atlanta, GA.

105 **Encapsulation within Reductive Polymersomes Enhances the Adjuvant Effect of Gardiquimod on Murine Splenocytes**

E. A. Scott[1], A. Stano[1], P. Wanakule[2], M. Swartz[1], J. Hubbell[1];

[1]École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, SWITZERLAND, [2]The Univ. of Texas at Austin, Austin, TX.

106 **Targeted Activation of Antigen Presenting Cells with Mannose-Modified Polyanhydride Nanoparticles**

A. V. Chavez-Santoscoy, B. Carrillo-Conde, E-H. Song, Y. Phanse, A. Ramer-Tait, N. Pohl, M. Wannemuehler, B. Bellaire, B. Narasimhan;
Iowa State Univesity, Ames, IA.

107 **Targeted, Immunosuppressive Microparticles Modify Immune Cell Behavior For The Prevention Of Autoimmune Diabetes In Mice**

J. S. Lewis, M. Carstens, C. Q. Xia, M. J. Clare-Salzler, B. G. Keselowsky;
Univ. of Florida, Gainesville, FL.

108 **Lymph Node Injection of Adjuvant-loaded Microparticles Elicits Viral Vector-level T-cell Response Without Boosting**

C. M. Jewell, D. J. Irvine;
Massachusetts Inst. of Technology, Cambridge, MA.

Drug Delivery from Implant Surfaces

109 **Enhancing Bone Allograft Integration Through Local Delivery of Sphingosine 1-phosphate Receptor Targeted Drugs**

C. S. Huang, S. S. Tholpady, E. A. Botchwey;
Univ. of Virginia, Charlottesville, VA.

110 **Effect of Processing Methods on Drug Release Profiles of Anti-Restenotic Self-Assembled Monlayers**

S. E. Stoebner, G. Mani;
The Univ. of South Dakota, Sioux Falls, SD.

111 **CAP-Pluronic Film Based Multiple Drug Delivery System**

S. C. Sundararaj, M. V. Thomas, T. D. Dziubla, D. A. Puleo;
Univ. of Kentucky, Lexington, KY.

112 **Activated Adhesives for Delivery of Drug Impregnated Thin Films on Vascular Tissues**

E. B. Nguyen;
Nanyang Technological Univ., Singapore, SINGAPORE.

113 **The Influence of Crystalline PEG on Paclitaxel Drug Release in PEG/PLGA Thin Films**

C. L. Huang;
Nanyang Technological Univ., Singapore, SINGAPORE.

114 **Synthesis and Characterization of Poly (triethylene glycol methyl acrylate-co-α-tocopheryl acrylate): a Water Soluble Antioxidant Polymer Derivative to Enable Localized Neuroprotection**

Y. Cao, W. He;
Univ. of Tennessee, knoxville, TN.

115 **Sustained Protein Delivery from Coated Surgical Sutures**
J. Lee, Y. Lu, G. S. Baer, M. D. Markel, W. L. Murphy;
Univ. of Wisconsin, Madison, WI.

116 **Development of a Porous Poly-L-lactic Acid Dexamethasone Releasing Sleeve for Biosensor Design**
S. G. Vallejo-Heligon, W. M. Reichert;
Duke Univ., Durham, NC.

Con-current Rapid Fire Presentations 1 & 2

Polymeric Biomaterials - Synthesis, Characterization, Processing and Fabrication for Biomedical Applications

117 **Protein-Engineered Two-Component Physical Hydrogels for 3D Stem Cell Encapsulation and Transplantation**
W. Mulyasasmita;
Stanford Univ., Stanford, CA.

118 **A Biodegradable, Non-Thrombogenic Elastomeric Poly(Ester Urethane)Urea With Paclitaxel Release As A Drug Eluting Stent Coating**
Y. Hong, S-H. Ye, A. L. Pelinescu, W. R. Wagner;
Univ. of Pittsburgh, Pittsburgh, PA.

119 **In Vitro Osteocompatibility Studies of Polysaccharide Scaffolds for Bone Tissue Engineering**
U. S. Toti, J. Burns, M. Deng, C. T. Laurencin, **S. G. Kumbar**;
Univ. of Connecticut Hlth.Ctr., Farmington, CT.

120 **Developing Human Blood Outgrowth-Specific Terpolymer Biomaterials**
D. E. Heath, X. Wang, R. Shenkman, S. L. Cooper;
The Ohio State Univ., Columbus, OH.

121 **Synthesis and Characterization of Poly(Antioxidant β-amino Esters) for Delivery of Polyphenolic Antioxidants**
P. P. Wattamwar, D. Biswal, A. Lyvers, D. Cochran, J. Z. Hilt, T. D. Dziubla;
Univ. of Kentucky, Lexington, KY.

122 **A Degradable Poly(N-isopropyl acrylamide) Scaffold for Tissue Engineering Applications**
A. Galperin, T. J. Long, B. D. Ratner;
Univ. of Washington, Seattle, WA.

123 **Functionalized Surfactant Increases Mechanical Strength and Gentamicin Elution from Emulsified Antimicrobial Loaded Bone Cement**
C. Leon[1], A. McLaren[2], R. Miller[2], B. Vernon[1], **R. McLemore**[2];
[1]Arizona State Univ., Phoenix, AZ, [2]Banner Good Samaritan Orthopaedic Residency, Phoenix, AZ.

124 **Cell Adhesion to Alkyl Aminated Hydrogels and Coatings**
S. Rimmer[1], S. MacNeil[1], N. Fuklwood[2];
[1]Univ. of Sheffield, Sheffield, UNITED KINGDOM, [2]Univ. of Lancaster, Lancaster, UNITED KINGDOM.

125 **Synthesis of Zwitterionic Derivatives of Phosphorylcholine for Use in Contact Lenses and Biocompatible Coatings**
F. Raisin-Dadre[1], A. Rhodes[2], J. McKendrick[1], S. Sandhu[2];
[1]Univ. of Reading, Reading, UNITED KINGDOM, [2]BioInteractions Ltd., Reading, UNITED KINGDOM.

126 **Nitric Oxide Releasing Catheters for Newborns**
k. A. Amoako[1], C. Archangeli[2], T. Major[3], K. E. Cook[1], M. E. Meyerhoff[1], G. M. Annich[1], R. H.

Bartlett ;

[1]Univ. of Michigan, Ann Arbor, MI, [2]Univ. of Michigan Med. Sch., Ann Arbor, MI, [3]Univ. of Michigan, ECMO, Ann Arbor, MI.

Thin-film Surface Modification of Biomaterials - Applications in Medical Devices

127 **Carboxyl-Ebselen-Based Layer-by-Layer Coating for Nitric Oxide Generation**

W. Cai, M. E. Meyerhoff;
Univ. of Michigan, Ann Arbor, MI.

128 **Developing Novel PLA/CDHA Coatings for Tissue Engineering Applications via Electrospraying**

H. Zhou[1], S. B. Bhaduri[2];

[1]Dept. of Bioengineering,Univeristy of Toledo, Toledo, OH, [2]Dept. of Mechanical, Industry & Manufaturing Engineering, Dept. of Surgery, Univeristy of Toledo, Toledo, OH.

129 **Spiral Coated Guglielmi Detachable Coils for Intracranial Aneurysms: Optimizing Mechanical Properties with Biological Activity**

A. T. Suwarnasarn, I. Yuki, B. M. Wu;
Univ. of California Los Angeles, Los Angeles, CA.

130 **Anti-Apoptotic Bioactive Coatings Including Chondroitin Sulphate and Epidermal Growth Factor**

C. Charbonneau[1], J. Ruiz[2], M. R. Wertheimer[2], S. Lerouge[3];

[1]Université de Montréal, Montreal, QC, CANADA, [2]École Polytechnique, Montreal, QC, CANADA, [3]École de Technologie Supérieure, Montreal, QC, CANADA.

131 **Characterization Of A Silicon-Based Biomimetic Treatment To Improve The Osteointegration Of Titanium Alloy (Ti6Al4V)**

C. Della Valle, S. Baldelli, L. Donizetti, D. Pezzoli, G. Candiani, R. Chiesa;
Politecnico Di Milano, Milano, ITALY.

132 **Enhanced Bone Healing Of Titanium Surface With RGD Through Electrodeposited PEG**

T. Hanawa[1], J-W. Park[2], K. Kurashima[3], Y. Tsutsumi[1], H. Doi[1], N. Nomura[1], K. Noda[3];

[1]Tokyo Med. and Dental Univ., Tokyo, JAPAN, [2]Kyungpook Natl. Univ., Daegu, KOREA, REPUBLIC OF, [3]Shibaura Inst. of Technology, Tokyo, JAPAN.

133 **Polyurethane Modified with an Antithrombin-Heparin Complex (ATH) via PEO: Effect of PEO End Group on ATH Immobilization and Subsequent Antithrombin and Fibrinogen Binding**

K. N. Sask, L. R. Berry, A. K. C. Chan, J. L. Brash;
McMaster Univ., Hamilton, ON, CANADA.

134 **Enhanced Biocompatibility Of Co-Cr Alloy By Impregnating VEGF In Nano-Porous Coating Layer**

C-M. Han[1], E-J. Lee[1], H-E. Kim[1], J-H. Jang[2];

[1]Seoul Natl. Univ., Seoul, KOREA, REPUBLIC OF, [2]Inha Univ., Incheon, KOREA, REPUBLIC OF.

135 **Microstructure of Titania Nanorod Arrays and its Cell Attachment**

C. Ning;
Coll. of Materials Sci. and Engineering, South China Univ. of Technology, Guangzhou, CHINA.

136 **A Photo-sensitive Polymer Base-layer for Quick-Release of Multi-layer Films from Polymer Microneedle Arrays for Transcutaneous Vaccine Delivery**

P. C. DeMuth, Y. Min, P. T. Hammond, D. J. Irvine;
Massachusetts Inst. of Technology, Cambridge, MA.

Con-current Rapid Fire Presentations 3 & 4

Mechanical Characterization of Biomaterials

137 **Evaluating Mechanical Performance of Hydrogel Based Adhesives for Soft Tissue Applications**
B. Fleishman, J. Nagatomi, C. K. Webb;
Clemson Univ., Clemson, SC.

138 **Shape Memory Polymer Networks with Tailorable Toughness Under Physiological Conditions**
K. E. Smith[1], P. Trusty[2], K. Gall[2];
[1]Medshape Solutions, Inc, Atlanta, GA, [2]Georgia Inst. of Technology, Atlanta, GA.

139 **Role of Biomolecules on Cross-Ply Mechanics of the Annulus Fibrosus**
J. L. Isaacs[1], E. Vresilovic[2], M. Marcolongo[1];
[1]Drexel Univ., Philadelphia, PA, [2]Pennsylvania State Univ., Harrisburg, PA.

140 **Concurrent Visualization and Characterization of Single Cell Mechanical Properties**
S. T. Wood, S. Deitch, D. Dean;
Clemson Univ., Clemson, SC.

141 **The Effect of Oxidation Using Ferric Chloride on the Mechanical Response of Porcine Aortas**
B. Stephen, B. W. Davis, T. A. Good, L. D. T. Topoleski;
UMBC, Baltimore, MD.

142 **Effects of Cell-Cell and Cell-Matrix Interactions on Vascular Smooth Muscle Cell Mechanical Properties**
S. Deitch, D. Dean;
Clemson Univ., Clemson, SC.

143 **Viscous Behavior of Different Concentrations of Bovine Calf Serum Before and After Wear Testing**
G. Ettienne-Modeste, T. Topoleski;
UMBC, Baltimore, MD.

144 **Rheologically-Modified Absorbable Tissue Adhesives**
D. R. Ingram, K. J. Garcia, J. T. Corbett, M. S. Taylor, S. W. Shalaby;
Poly-Med, Inc., Anderson, SC.

145 **Effect of Plasticizers and Drug-Loading on the Properties of Drug Delivery Films**
C. L. Rabek, T. D. Dziubla, D. A. Puleo;
Univ. of Kentucky, Lexington, KY.

146 **Improvements on Wear Performance of Ultra-High Molecular Weight Polyethylene through Precise Temperature-Time Moulding Conditions**
Q. Wang[1], J. Wu[1], I. Khan[2];
[1]Durham Univ., Durham, UNITED KINGDOM, [2]Biomet UK Ltd, Swindon, UNITED KINGDOM.

Responsive Biomaterials and Therapeutic Scaffolds

147 **Highly-Branched Poly(N-isopropyl acrylamide) That is Responsive to Bacteria**
S. Rimmer, S. MacNeil, I. Douglas, L. Swanson, P. Sarker, J. Shepherd, J. Alonso Villanueva;
Univ. of Sheffield, Sheffield, UNITED KINGDOM.

148 **Enzymatically-Degradable Microgels for Pathophysiologically-Triggered Release of Therapeutic Agents**
P. Wanakule, A. Bergeron, K. Roy;
Univ. of Texas at Austin, Austin, TX.

149 **Responsive and Chemoselective Tissue-Specific Adhesive Materials**
N. Artzi, N. Oliva, S. Shitreet, M. Carcole, E. Edelman;
Massachusetts Inst. of Technology, Cambridge, MA.

150 **Linear And Star-Shaped Block Copolymers Of Hydrolytically Labile Polynipaam And PEG To Form Thermally Responsive Hydrogels: Synthesis, Characterization And Controlled Release**
Z. Ma;
Univ. of Pittsburgh, Pittsburgh, PA.

151 **Thermo-Responsive Poly-N-Isopropylacrylamide As An Adjuvant In Experimental Rheumatoid Arthritis**
A. K. Shakya;
Indian Inst. of Technology Kanpur, Kanpur, INDIA.

152 **Sol-Gel Process for Robocast Calcium Phosphate Scaffolds**
M. Houmard[1], Q. Fu[1], E. Saiz[2], A. P. Tomsia[1];
[1]Lawrence Berkeley Lab., Berkeley, CA, [2]Imperial Coll. London, London, UNITED KINGDOM.

153 **Sustained, Controlled Delivery of Oxygen from Hydrolytically Activated Silicone Scaffolds**
E. Pedraza, M. Coronel, C. Fraker, C. L. Stabler;
Univ. of Miami, Miami, FL.

154 **Fabrication and Characterization of Calcium Phosphate Mineralized Collagen-GAG Scaffolds**
D. Weisgerber, D. Kelkhoff, P. Rapp, R. Yapp, M. Insana, B. Harley;
Univ. of Illinois at Urbana-Champaign, Urbana, IL.

155 **Affinity Hydrogel for Controlling Protein Release via Intermolecular Hybridization**
Y. Wang, B. Soontornworajit, J. Zhou, M. Battig;
Univ. of Connecticut, Storrs, CT.

156 **Enhanced In Vivo Angiogenic Activity Of FGF-2 By A [Polycation:Heparin] Complex**
H. Chu, J. Gao, Y. Wang;
Univ. of Pittsburgh, Pittsburgh, PA.

Con-current Oral Abstract Presentations Session 4

Biomaterials and Technologies for Cell Manufacturing (Symposium)

157 **Synthetic Surfaces for Advanced Cell Culture**
A. Frutos;
Corning Life Sci., Corning, NY.

158 **Purification and Differentiation of Adipose-derived Stem Cells Separated from Adipose Tissue by A Membrane Filtration Method**
A. Higuchi, C-W. Chuang, C-H. Wu, Sr.;
Natl. Central Univ., Taoyuan, TAIWAN.

159 **Hyaluronan Microcarriers for MSC Expansion and Cell Delivery**
S. Atzet;
Glycosan BioSystems, Salt Lake City, UT.

160 **NovaMatrix-3D™ - 3D Cell Culture and Formation of Multi-Cellular Structures in Alginate Foams**
T. Andersen, C. Markussen, H. Heier-Baardson, J. Melvik, M. Dornish;
NovaMatrix/FMC BioPolymer, Sandvika, NORWAY.

161 **Small Change of Environmental pH Within Near-Neutral Range Will Dramatically Change the Cell Adhesiveness on Chitosan Surface**
Y-H. Chen[1], I-J. Wang[2], T-H. Young[1];
[1]Inst. of Polymer Sci. and Engineering, Natl. Taiwan Univ., Taipei, TAIWAN, [2]Dept. of Ophthalmology, Natl. Taiwan Univ. Hosp., Taipei, TAIWAN.

Ceramics in Drug Delivery (Symposium)

162 **Calcium Phosphate Nanoparticles: Nanocrystalline Bone Substitution Materials and Carriers of Nucleic Acids into Cells**
M. Epple;
Univ. of Duisburg-Essen, Essen, GERMANY.

163 **Calcium Phosphate System in Sensing and Drug Delivery**
S. Bose, **S. Bose**;
Washington State Univ., Pullman, WA.

164 **Bone Response to New Generation of Nanocrystalline Calcium Sulfate Based Materials**
N. Tovar[1], H. Alexander[1], I. Chesnoiu-Matei[2], J. Ricci[3], S. S. Mamidwar[1];
[1]Orthogen LLC, Springfield, NJ, [2]NYU Coll. of Dentistry, New York, NY, [3]New York Univ. Coll. of Dentistry, New York, NY.

165 **Evaluation of Hollow HA Microspheres as a Device for Controlled Release of Proteins**
H. Fu, M. Rahaman, D. Day, R. Brown;
Missouri Univ. of Sci. and Technology, Rolla, MO.

166 **Combinatorial Screening of Osteoblast Response to 3D Nano-Composite Tissue Scaffolds Using Gradients and Arrays**

K. Chatterjee[1], L. Sun[2], L. C. Chow[2], M. F. Young[3], C. G. Simon, Jr.[1];
[1]Natl. Inst. of Standards and Technology, Gaithersburg, MD, [2]American Dental Association, Gaithersburg, MD, [3]NIH, Gaithersburg, MD.

Chemoselective Chemistry for Biomaterials (Symposium)

167 **Chemoselective Chemistry in Biomaterials: Examples and Overview**

J. Collier;
Univ. of Chicago, Chicago, IL.

168 **Chemoselective Chemistry of Catechol : N-Terminal Amine Specific Reaction in Peptide and Proteins**

I. Song, H. Lee, H. Lee;
Korea Advanced Inst. Of Sci. And Technology, Daejeon, KOREA, REPUBLIC OF.

169 **Copper-free Click Chemistries for the Synthesis of Modular Poly(ethylene glycol) (PEG) Scaffolds**

D. L. Elbert, P. K. Nguyen, C. G. Snyder;
Washington Univ., St. Louis, MO.

170 **Diels-Alder Crosslinked Hyaluronic Acid Hydrogels for Tissue Engineering**

C. M. Nimmo, S. C. Owen, M. S. Shoichet;
Univ. of Toronto, Toronto, ON, CANADA.

171 **Staudinger Ligation for Dual Crosslinking of Alginate Hydrogels**

K. Gattas-Asfura, C. Fraker, **C. L. Stabler**;
Univ. of Miami, Miami, FL.

172 **Poly(Ethylene Glycol)-Based Hydrogels *Via* Metal-Free Thiol-Acrylate Click Chemistry: *In Vivo* Biocompatibility and 3-D Organotypic Culture Studies**

Y. Fu[1], K. Xu[2], K. Kleinbeck[1], W. Johnson[3], C. Drifka[3], E. Joyce[3], S. Carpenter[3], W. J. Kao[4];
[1]Sch. of Pharmacy, Univ. of Wisconsin-Madison, Madison, WI, [2]Dept. of BioMed. Engineering, Zhejiang Univ., Hangzhou, CHINA, [3]Dept. of BioMed. Engineering, Univ. of Wisconsin-Madison, Madison, WI, [4]Sch. of Pharmacy, Dept. of BioMed. Engineering, Dept. of Surgery, Univ. of Wisconsin-Madison, Madison, WI.

Imaging Biomaterials

173 **Chronic Label-free Volumetric Photoacoustic Microscopy of Melanoma Cells in Three-Dimensionally Porous Scaffolds**

Y. Zhang, X. Cai, S-W. Choi, C. Kim, L. V. Wang, Y. Xia;
Washington Univ. in St. Louis, St. Louis, MO.

174 **The Zcorrectorgui For 3D ToF-SIMS Cell Analysis**

D. J. Graham, M. Robinson, D. G. Castner;
Univ. of Washington, Seattle, WA.

175 **Noninvasive Monitoring of Implant-Mediated Inflammatory Responses by Detecting**

Reactive Oxygen Species In Vivo
J. Zhou, Y-T. Tsai, H. Weng, L. Tang;
The Univ. Of Texas at Arlington, Arlington, TX.

176 **Development of Probe Free Mapping of Cell Viability in Hydrogels**
J. P. Dunkers, K. Chatterjee, C. G. Simon, Jr.;
NIST, Gaithersburg, MD.

177 **Interfacial Polymerization for the Amplified Labeling of Poorly Expressed Proteins**
B. J. Berron, C. N. Bowman;
Univ. of Colorado, Boulder, CO.

178 **Imaging Macrophage Activity in Vulnerable Atherosclerotic Plaques With Functionalized Iron Oxide Nanoparticles**
S. S. Yu[1], W. G. Jerome[2], D. A. Maron[3], J. H. Dickerson, III[1], T. D. Giorgio[1];
[1]Vanderbilt Univ., Nashville, TN, [2]Vanderbilt Univ. Med. Ctr., Nashville, TN, [3]Vanderbilt Heart & Vascular Inst., Nashville, TN.

Translational Research in Nano-biomaterials

179 **Development of Biodegradable Fluorescent Nanogels as a Theranostic System**
D. Gyawali, S. Zhou, Y. Zhang, J. Yang;
Univ. of Texas at Arlington, Arlington, TX.

180 **Hydrogel Coating of Nanoporous Particles for Enhanced Protein Stability and Controlled Intracellular Delivery**
E. De Rosa[1], D. Fan[2], C. Chiappini[1], X. Liu[1], M. Ferrari[1], E. Tasciotti[1];
[1]The Methodist Hosp. Res. Inst., Houston, TX, [2]The Univ. of Texas Hlth., Houston, TX.

181 **Self-Assembled Nanomaterials Elicit T Cell-dependent Immune Responses**
J. S. Rudra, T. Sun, K. C. Bird, M. D. Daniels, A. S. Chong, J. H. Collier;
Univ. of Chicago, Chicago, IL.

182 **Skin Cell Functionality on Titania Nanotube Arrays**
B. S. Smith;
Colorado State Univ., Fort Collins, CO.

183 **Mesoporous PLGA-Silicon Microparticles for the Treatment of Orthopedic Degenerative Disc Disease**
C. H. Loo, D. Fan, I. Yazdi, E. Tasciotti, M. Ferrari, B. K. Weiner;
The Methodist Hosp. Res. Inst., Houston, TX.

184 **Polyanhydride Nanoparticle Adjuvants for Anthrax Vaccine**
L. Petersen, Y. Phanse, A. Ramer-Tait, M. Wannemuehler, B. Narasimhan;
Iowa State Univ., Ames, IA.

Con-current Oral Abstract Presentations Session 5

Pluripotent Stem Cells in Engineered Microenvironments

185 **Synthetic Interfaces for the Long-term Self-Renewal of Human Embryonic Stem Cells**
E. F. Irwin, R. Gupta, D. Dashti, K. E. Healy;
UC Berkeley, Berkeley, CA.

186 **Modified Hyaluronic Acid Hydrogel for Maintaining Human Induced Pluripotent Stem Cells**
Y. Liu, A. Goldberg, **L. Kuhn**;
Univ. of Connecticut Hlth.Ctr., Farmington, CT.

187 **Synthetic Matrices for Long-Term Expansion of Pluripotent Human Embryonic Stem Cells**
C-W. Chang, D. A. Brafman, S. Varghese;
Univ. of California San Diego, La Jolla, CA.

188 **Hematopoietic Differentiation of Mouse ES cells in Bioreactor Cultures**
K. M. Fridley, I. Fernandez, R. Ambler, K. Roy;
The Univ. of Texas at Austin, Austin, TX.

189 **Immobilized Sonic Hedgehog Increases Mesodermal Commitment of Mouse Embryonic Stem Cells**
L. R. Geuss[1], G. Zhang[2], L. J. Suggs[1];
[1]Univ. of Texas at Austin, Austin, TX, [2]Univ. of Akron, Akron, OH.

190 **Combinatorial Design of Polymer Patch to Optimize Delivery and Differentiation of Embryonic Stem Cells onto Hypertrophic Myocardium**
M. K. Gupta, D. K. Jung, J. M. Walthall, R. Venkataraman, S. W. Crowder, S. S. Yu, C. L. Duvall, F. J. Baudenbacher, A. Hatzopoulos, H-J. Sung;
Vanderbilt Univ., Nashville, TN.

Responsive Biomaterials: Exploiting Biological Signals (Symposium)

191 **Biomimetic Drug Delivery Systems for Biologic Drugs**
P. S. Stayton, A. J. Convertine, G. Berguig, B. Ghosn, J. Wilson, S. Keller, A. Hoffman, M. Manganiello, B. Lundy;
Univ. of Washington, Seattle, WA.

192 **Endoprotease-Mediated Intracellular Protein Delivery**
A. Biswas, Z. Gu, M. Zhao, Y. Tang;
Univ. of California at Los Angeles, Los Angeles, CA.

193 **Intracellular Trafficking and Activity of Histone-Mimetic Gene Delivery Vehicles**
M. O. Sullivan, J. D. Larsen, M. J. Reilly;
Univ. of Delaware, Newark, DE.

194 **Engineering Cell-Triggered Release to Achieve Temporal Control**
T. Tokatlian[1], T. Segura[2];

[1]Univ. of California, Berkeley, Los Angeles, CA, [2]Univ. of California Berkeley, Los Angeles, CA.

195 **Synthetic Bioactuators for High Throughput Cell Massaging**
Y. Hwang, V. Neiman, C. Zhang, N. Sangaj, S. Varghese;
Univ. of California, San Diego, La Jolla, CA.

Self-Assembly in Cell & Tissue Engineering

196 **Injectable Pseudoplastic Hydrogels from a Dual-component Dock-and-Lock Self-Assembling Mechanism**
H. D. Lu, M. B. Charati, I. L. Kim, J. A. Burdick;
Univ. of Pennsylvania, Philadelphia, PA.

197 **Sequestering Proteoglycans from Serum Enhances Mesenchymal Stem Cell Proliferation and Osteogenic Differentiation**
G. A. Hudalla, W. L. Murphy;
Univ. of Wisconsin-Madison, Madison, WI.

198 **Modulating Viscoelasticity and Ligand Presentation in Self-Assembled Matrices via Peptide Intermixing**
J. Z. Gasiorowski, J. H. Collier;
Univ. of Chicago, Chicago, IL.

199 **Confluent and Aligned Growth of Endothelial Cells on Nanoparticle Arrays Through Focal Adhesion and Endocytitic Mechanisms**
P. L. Tran, J. R. Gamboa, K. E. McCracken, M. R. Riley, M. Slepian, J-Y. Yoon;
The Univ. of Arizona, Tucson, AZ.

200 **One-Step Construction of Thick Multilayered Tissues by Fabrication of Layer-by-layer Nanofilms onto Cell Surface**
A. Nishiguchi, H. Yoshida, M. Matsusaki, M. Akashi;
Osaka Univ., Suita, JAPAN.

201 **Self-Assembled Microgels for Cell Encapsulation**
Y. F. Tian, J. Devgun, J. H. Collier;
Univ. of Chicago, Chicago, IL.

Valves and Stents (Symposium)

202 **Evaluation of Emerging Technologies (Stents and Valves) in Animal Models: Biological Responses, Time Points and Beyond**
A. Groothuis;
CBSET, Inc., Lexington, MA.

203 **Standards by Example: Preclinical Safety of Bioresorbable Vascular Scaffolds (BVS) Based on the Abbott Vascular Experience**
L. E. L. Perkins[1], J. C. Powers[1], M. Kamberi[1], J. P. Oberhauser[1], N. Ramesh[1], D. V. Follett[1], R. Rapoza[1], R. Virmani[2];
[1]Abbott Vascular, Santa Clara, CA, [2]CVPath, Inst., Gaithersburg , MD.

204 **Native Endothelium Mimicking Nanomatrix for Drug Eluting Stent Applications**

A. Andukuri, C. Anakwenze, P. G. Anderson, B. C. Brott, H-W. Jun;
Univ. of Alabama at Birmingham, Birmingham, AL.

205 **Vena Cava Tissue as an Alternative to Pericardium in Percutaneous Heart Valves**

A. Munnelly, L. Cochrane, D. Tripi, **N. R. Vyavahare**;
Clemson Univ., Clemson, SC.

206 **A Novel Transcatheter Aortic Valve Prosthesis**

F. Heim[1], C. Marchand[1], B. Durand[1], N. Chakfe[2];
[1]LPMT, Mulhouse, FRANCE, [2]Hopitaux Univ. de Strasbourg, STRASBOURG, FRANCE.

Con-current Oral Abstract Presentations Session 6

Biomimetic Materials for Tissue Engineering

207 **Patterned hMSC Differentiation in 3D Hydrogels Based on Network Structures**
S. Khetan, J. A. Burdick;
Univ. of Pennsylvania, Philadelphia, PA.

208 **A Modular, Hydroxyapatite-Binding Version of Vascular Endothelial Growth Factor**
J. Lee[1], A. J. Wagoner Johnson[2], W. L. Murphy[1];
[1]Univ. of Wisconsin, Madison, WI, [2]Univ. of Illinois, Urbana, IL.

209 **GFOGER Peptide-Modified Matrices Support Osteogenic Differentiation and Bone Formation**
A. Shekaran;
Georgia Inst. of Technology, Atlanta, GA.

210 **In Search of an Endothelial Cell Selective Surface for Modifying ePTFE Grafts**
L. Dudash[1], F. Kligman[2], K. Kapalka[1], K. Kottke-Marchant[2], R. Marchant[1];
[1]Case Western Reserve Univ., Cleveland, OH, [2]Cleveland Clinic, Cleveland, OH.

211 **Engineered PEG Hydrogels with Enhanced Proteolytic Degradation for Presentation of Angiogenic Signals**
J. Patterson, J. A. Hubbell;
Ecole Polytechnique Federale de Lausanne, Lausanne, SWITZERLAND.

212 **Composite Hydrogel-Ceramic Scaffold Optimization for the Regeneration of the Cartilage-Bone Interface**
M. K. Boushell, N. T. Khanarian, H. H. Lu;
Columbia Univ., New York, NY.

213 **Non-Invasive *In Vivo* Evaluation of 3-D Cell Proliferation in the *In Situ* Cross-Linkable Gelatin Hydrogels with Different Matrix Stiffness**
K. Park[1], D. Hwang[2], H. Shim[2], Y. Joung[1], H. Youn[2], D. Lee[2], K. Park[1];
[1]Ajou Univ., Suwon, KOREA, REPUBLIC OF, [2]Seoul Natl. Univ. Coll. of Med., Seoul, KOREA, REPUBLIC OF.

214 **Cell-Cell Communication Mimicry with PEG Hydrogels for Enhancing Beta-Cell Function**
C-C. Lin[1], K. S. Anseth[2];
[1]Indiana Univ.-Purdue Univ. at Indianapolis, Indianapolis, IN, [2]Univ. of Colorado at Boulder, Boulder, CO.

Cellular Responses to Biophysical Cues

215 **Substrate Rigidity Modulates EMT: Implications in Biomaterials-Associated Fibrosis**
A. C. Brown, V. F. Fiore, J. Chen, T. H. Barker;
Georgia Inst. of Technology, Atlanta, GA.

216 **Endothelial Cell -Substratum Interactions Control Monocyte Adhesion Through a Src and**

MCP-1 Mediated Pathway

L. Indolfi[1], A. B. Baker[2], E. R. Edelman[1];

[1]MIT, Cambridge, MA, [2]The Univ. of Texas at Austin, Austin, TX.

217 **Substrate Stiffness Affects Cardiomyocyte Action Potential**

J. G. Jacot, J. D. Myers;
Rice Univ., Houston, TX.

218 **Defining Matrix Composition to Promote *In Vitro* Growth and Expansion of Intestinal Organoids**

J. Su, K. Yan, C. J. Kuo, S. C. Heilshorn;
Stanford Univ., Stanford, CA.

219 **Adhesion Site Manipulation Using Multifaceted Micropatterned Surfaces Created with Laser Scanning Lithography**

J. H. Slater, J. L. West;
Rice Univ., Houston, TX.

220 **Controlled Reaggregation of Pancreatic ß-cells Promotes Viability and Functional Expression**

A. B. Bernard[1], C-C. Lin[2], K. S. Anseth[1];

[1]Univ. of Colorado, Boulder, CO, [2]Indiana Univ.-Purdue Univ. at Indianapolis, Indianapolis, IN.

221 **β1-integrin Cytoskeleton Signaling Regulates Sensory Neurons Response to Matrix Dimensionality**

A. S. Ribeiro[1], D. Hughes[1], S. Vargo[1], J. B. Leach[1], E. M. Powell[2];

[1]Univ. of Maryland Baltimore County, Baltimore, MD, [2]Univ. of Maryland Sch. of Med., Baltimore, MD.

222 **Controlling Cell Adhesion Through Dynamic Ligand Presentation**

A. Kourouklis, R. Lerum, H. Bermudez;
Univ. of Massachusetts, Amherst, MA.

Engineering Therapeutic Delivery from Biomaterial Scaffolds

223 **Novel Antibiotic-Eluting Wound Dressings: *In-Vitro* and *In-Vivo* Study and Engineering Aspects in the Dressing's Design**

J. J. Elsner[1], D. Egozi[2], Y. Ullman[2], I. Berdicevsky[3], A. Shefy-Peleg[1], M. Zilberman[1];

[1]Tel Aviv Univ., Ramat Aviv, ISRAEL, [2]2Dept of Plastic Surgery and Burn Unit, Rambam Med. Ctr., Haifa, ISRAEL, [3]Faculty of Med., Technion – Israel Inst. of Technology, Haifa, ISRAEL.

224 **Effect of PEG Modification on the Transport of Epidermal Growth Factor in the Stroke-Injured Brain**

Y. Wang, M. J. Cooke, C. M. Morshead, M. S. Shoichet;
Univ. of Toronto, Toronto, ON, CANADA.

225 **DNA Polyplex Loaded Hyaluronic Acid Hydrogel Scaffolds for Local Gene Transfer**

S. Gojgini, T. Tokatlian, Y. Lei, **T. Segura**;
Univ. of California Los Angeles, Los Angeles, CA.

226 **Nonviral Vector Delivery from T904/Fibrinogen Hydrogels**
J. Zhang, A. Sen, E. Cho, J. Lee, K. Webb;
Clemson Univ., Clemson, SC.

227 **"Smart," Sustained Local Delivery of siRNA from an Injectable Scaffold**
C. E. Nelson, M. K. Gupta, E. J. Adolph, S. A. Guelcher, C. L. Duvall;
Vanderbilt Univ., Nashville, TN.

228 **Promotion of Myocardial Repair by Dual Delivery of IGF-1 and HGF from Injectable Alginate Biomaterial**
E. Ruvinov[1], J. Leor[2], S. Cohen[1];
[1]Ben Gurion Univ. of the Negev, Beer Sheva, ISRAEL, [2]Neufeld Cardiac Res. Inst., Tel-Hashomer, ISRAEL.

229 **Heparin-Decorated, Hyaluronic Acid-Based Hydrogel Particles for the Controlled Release of Bone Morphogenetic Protein 2**
X. Xu, A. Jha, R. Duncan, X. Jia;
Univ. of Delaware, Newark, DE.

230 **Alginate Microsphere/Hyaluronic Acid Hydrogel Composites for Controlled Delivery of TGF-β3 to Enhance Encapsulated MSC Chondrogenesis**
L. Bian, D. Y. Zhai, J. A. Burdick;
Univ. of Pennsylvania, Philadelphia, PA.

Molecular Mechanisms Mediating Protein-Surface and Cell-Surface Interactions

231 **Time-Dependent Conformational Changes in Adsorbed Albumin and its Effect on Platelet Adhesion**
B. Sivaraman, R. Latour;
Clemson Univ., Clemson, SC.

232 **Estimation of Peptide-Surface Adsorption Free Energy for Material Surfaces Not Conducive to SPR and QCM using AFM**
A. A. Thyparambil, **Y. Wei**, R. A. Latour, Jr.;
Clemson Univ., Clemson, SC.

233 **Effect of Plasma Protein Adsorption on *In Vitro* Activation of Dendritic Cells by Polyanhydride Microparticles**
B. R. Carrillo-Conde, M. J. Wannemuehler, B. Narasimhan;
Iowa State Univ., Ames, IA.

234 **Integrin-Directed Modulation of Macrophage Response to Biomaterials**
T. Zaveri, J. Lewis, N. Dolgova, M. Clare-Salzler, B. Keselowsky;
Univ. of Florida, Gainesville, FL.

235 **Extracellular Matrix Proteins Mediate Osteogenic Differentiation of Human Mesenchymal Stem Cells on Phosphate Functionalized Gels Through Integrin Mediated Focal Adhesion Kinase Signaling**
N. R. Gandavarapu;
Univ. of Colorado, Boulder, Boulder, CO.

236 **Adsorption Does Not Enhance Exposure of the Fibrinogen Gamma Chain Dodecapeptide**
D. L. Elbert, V. Ovod, M. Flake, R. K. Bateman;
Washington Univ., St. Louis, MO.

237 **Broad Application of a Heptaglutamate Domain to Functionalize Hydroxyapatite-Containing Biomaterials**
B. K. Culpepper, A. A. Sawyer, S. L. Bellis;
Univ. of Alabama at Birmingham, Birmingham, AL.

238 **von Willebrand Function and Structure Is Different When Adsorbed to Different Synthetic Materials**
E. Hillenmeyer, R. Penkala, W. Thomas, D. G. Castner;
Univ. of Washington, Seattle, WA.

Scaffolds for Cardiovascular and Musculosketetal Organ Regeneration

239 **On-Demand Retrieval and Evaluation of MSCs Encapsulated in Enzymatically-Degradable PEG-Based Hydrogels**
P. J. Yang, J. S. Temenoff;
Georgia Inst. of Technology, Atlanta, GA.

240 **Relative Influence of Collagen Concentration Versus Substrate Modulus on MSC Fate Decisions**
S. Becerra-Bayona, D. Munoz-Pinto, M. S. Hahn;
Texas A&M Univ., College Station, TX.

241 **Evaluation of Multilayer Vascular Grafts Based on Collagen-Mimetic Hydrogels**
M. Browning, E. Cosgriff-Hernandez, M. Hahn, D. Dempsey, V. Guiza, B. Russell, M. Hook, F. Clubb, M. Miller, T. Fossum;
Texas A&M Univ., College Station, TX.

242 **Integration of Multiple Cell-Matrix Interactions into Alginate Scaffolds for Cardiac Tissue Regeneration**
Y. Sapir, O. Kryukov, S. Cohen;
Ben-Gurion Univ. of the Negev, Beer Sheva, ISRAEL.

243 **Fabrication of TiO2 Nano-Fiber Meshes by Electrospinning and Evaluation of Their Osteoblast Differentiation Potential**
R. A. Gittens[1], X. Wang[2], R. Song[1], Z. Schwartz[1], H. Chen[2], B. D. Boyan[1];
[1]Georgia Inst. of Technology, Atlanta, GA, [2]Peking Univ., Beijing, CHINA.

244 **Long-Term *In Vitro* Cytocompatibility of Hydrogel Nanocomposites as Injectable Bone Substitutes**
L. Zhang[1], H. Fenniri[2], T. J. Webster[3];
[1]The George Washington Univ., Washington, DC, [2]Univ. of Alberta, Edmonton, AB, CANADA, [3]Brown Univ., Providence, RI.

245 **Efficient Re-differentiation of De-differentiated Chondrocytes in Heparin-Based Hydrogel: *In-vitro* and *In-vivo* Study**
M. Kim;

Gwangju Inst. of Sci. and Technology, Gwangju, KOREA, REPUBLIC OF.

246 **Engineered Matrix Mimetics Support Assembly of Two Distinct Forms of Fibronectin Matrix**

D. C. Roy, D. C. Hocking;
Univ. of Rochester, Rochester, NY.

Con-current Oral Abstract Presentations Session 7

Biomaterials and Scaffolding for Neural Regeneration

247 **Bioactive Hydrogel Microspheres for Support and Delivery of Neural Stem Cell-Based Therapeutics**

C. L. Franco[1], N. Gorenkova[2], Z. Hassani[2], G. Akabawy[2], M. Modo[2], J. Price[2], J. L. West[1];
[1]Rice Univeristy, Houston, TX, [2]King's Coll., London, UNITED KINGDOM.

248 **Sustained Release of VEGF and Pleiotrophin Stimulates Nerve Regeneration Across Long Gap Peripheral Nerve Defects using a Biodegradable Nerve Guide**

S. Dash, A. Nguyen, A. Dawood, P. Lotfi, R. Tran, J. Yang, M. Romero-Ortega;
Univ. of Texas at Arlington, Arlington, TX.

249 **Development of a Bioactive Hydrogel Scaffold as a Simulated Niche for Investigating Neural Stem Cell Behavior In Vitro**

C. L. Franco, G. K. Lagoudas, J. L. West;
Rice Univeristy, Houston, TX.

250 **Decellularized Porcine Brain Matrix as a Cell Culture Platform and Tissue Engineering Scaffold**

J. A. DeQuach, S. H. Yuan, L. B. Goldstein, K. L. Christman;
Univ. of California, San Diego, La Jolla, CA.

251 **Biologic Scaffolds Derived from Mammalian CNS for Regenerative Medicine**

P. M. Crapo, S. Tottey, C. J. Medberry, S. F. Badylak;
Univ. of Pittsburgh, Pittsburgh, PA.

252 **Photo-Crosslinkable Chitosan Hydrogels for Neural Tissue Engineering**

C. Valmikinathan, V. J. Mukhatyar, R. V. Bellamkonda;
Georgia Inst. of Technology, Atlanta, GA.

253 **A 3-Dimensional, Engineered Astrocyte Tissue Construct for CNS Repair**

F. Meng, V. Hlady, P. A. Tresco;
Univ. of Utah, Salt Lake City, UT.

254 **Culturing De-Differentiated Schwann Cells on Fibrin Scaffolds Promotes Differentiation into Mature Schwann Cells**

N. J. Jesuraj, L. M. Marquardt, S. E. Sakiyama-Elbert;
Washington Univ. in St.Louis, St. louis, MO.

Tribocorrosion of Metallic Biomaterials

255 **Fretting-Corrosion of 316L SS: The Role of Albumin on the Corrosive Wear**

J. Geringer, J. Pellier;
ENSM-SE, Saint-Etienne, FRANCE.

256 **Instrumented Fretting Corrosion Analysis of CoCr/Ti and Ti/Ti Metallic Couples**

V. Swaminathan[1], B. Aboud[2], J. L. Gilbert[1];

[1]Syracuse Univ., Syracuse, NY, [2]Depuy Orthopedics, Warsaw, IN.

257 **Toward a Better Understanding of Fretting-Crevice Corrosion of Titanium and Its Alloys**
P. Kovacs;
SynergEthics, Louisville, KY.

258 **Influence of the Presence of Biofilms on the Biotribocorrosion of Titanium**
L. A. Rocha[1], H. V. Cruz[1], M. Henriques[2], J-P. Celis[3];
[1]Univ. of Minho, Guimarães, PORTUGAL, [2]Univ. of Minho, Braga, PORTUGAL, [3]Katholieke Univ.it Leuven, Leuven, BELGIUM.

259 **Corrosion of Bioresorbable Magnesium Alloy (AZ91D) in pH-Buffered, Osteogenic Culture Medium**
M. T. Ehrensberger, M. Tobias, S. Daoust, G. Rudolph, C. Hein, S. Yang, L. Bone;
Univ. At Buffalo, Buffalo, NY.

260 **Tribocorrosion Behavior of a Low Carbon CoCrMo Alloy for Hip Joint Applications: Synergisms and Mechanisms**
M. Mathew Thoppil, C. Nagelli, M. Laurent, J. Jacobs, M. Wimmer;
Rush Univ. Med. Ctr., Chicago, IL.

261 **Study of Ion Release by Wear Debris Generated from Simulation Tests for Metal-on-Metal Orthopaedic Prostheses**
Y. Yan[1], A. Neville[2], J. Hesketh[2], D. Dowson[2];
[1]Univ. of Sci. and Technology Beijing, Beijing, CHINA, [2]Univ. of Leeds, Leeds, UNITED KINGDOM.

262 **Fretting Corrosion Performance Test for Spinal Screw and Rod Implants: Method Assessment**
S. A. Mali, J. Gilbert;
SYRACUSE Univ., SYRACUSE, NY.

Strategies to Promote Vascularization of Tissue Engineered Constructs (Symposium)

263 **Vascularizing Engineered Tissues for In Vivo and In Vitro Applications**
S. C. George;
Univ. of California, Irvine, Irvine, CA.

264 **Polyethylene Glycol Maleimide Hydrogels for Vascularization of Transplanted Pancreatic Islets**
E. A. Phelps[1], P. M. Thulé[2], A. B. Muir[3], A. J. García[1];
[1]Georgia Inst. of Technology, Atlanta, GA, [2]Atlanta VA Med. Ctr., Emory Univ. Sch. of Med., Atlanta, GA, [3]Children's Hlth. Care of Atlanta, Emory Univ. Sch. of Med., Atlanta, GA.

265 **Combined Delivery of Self-Assembling Peptide Nanofibers and Vascular Endothelial Growth Factor (VEGF) Creates an Intramyocardial Microenvironment for Post-Infarction Neovascularization**
Y-D. Lin[1], C-Y. Luo[2], M-L. Yeh[1], Y-C. Hsueh[3], M. L. Springer[4], P. C. H. Hsieh[5];
[1]Inst. of BioMed. Engineering, Natl. Cheng Kung Univ. & Hosp., Tainan, Taiwan, Tainan, TAIWAN,

Depart of Surgery, Natl. Cheng Kung Univ. & Hosp., Tainan, TAIWAN, Inst. of Basic Med., Natl. Cheng Kung Univ. & Hosp., Tainan, Taiwan, Tainan, TAIWAN, [4]Dept. of Med., Univ. of California–San Francisco, San Francisco, CA, [5]Inst. of Clinical Med. & Res. Ctr. of Clinical Med., Natl. Cheng Kung Univ. & Hosp., Tainan, TAIWAN.

266 **Covalently Bound VEGF to Bioengineered Surfaces can Phosphorylate VEGFR-2 but it is Not Internalized**

S. M. Anderson, M. Iruela-Arispe, **T. Segura**;
Univ. of California Los Angeles, Los Angeles, CA.

267 **Biomimetic Hydrogels with Immobilized EphrinA1 for Therapeutic Angiogenesis in Hydrogels**

J. E. Saik[1], D. J. Gould[1], M. E. Dickinson[2], J. L. West[1];
[1]Rice Univ., Houston, TX, [2]Baylor Coll. of Med., Houston, TX.

268 **Growth Factor Release from a Chemically Modified Elastomeric Poly(diol citrate) Scaffold Promotes Angiogenesis In Vivo**

M. I. Bury[1], N. J. Fuller[1], P. V. Hota[2], D. M. Kolhoff[3], N. Tapaskar[4], S. Salah[4], E. Y. Cheng[1], A. K. Sharma[5];
[1]Children's Mem. Hosp., Chicago, IL, [2]Univ. of Michigan, Ann Arbor, MI, [3]Loyola Univ. Med. Ctr., Maywood, IL, [4]Northwestern Univ., Evanston, IL, [5]Northwestern Univ. Feinberg Sch. of Med., Chicago, IL.

269 **Microvascular Network Formation and Integration Within Perfused Microfluidic Poly(ethylene glycol) Hydrogels**

M. P. Cuchiara, D. Gould, M. Dickinson, J. West;
Rice Univ., Houston, TX.

Surface Modification for Sensors and Diagnostics

270 **Molecular-Beacon-Conjugated PEG Nanohydrogels for Nucleic-Acid Detection**

X. Dai[1], M. Libera[1], S. A. E. Marras[2], W. Yang[2];
[1]Stevens Inst. of Technology, Hoboken, NJ, [2]Univ. of Med. and Dentistry of New Jersey, Newark, NJ.

271 **Modulating Glycan Surface Density Via a "Click" Conjugation Strategy**

F. Cheng[1], J. M. Kaplan[2], R. B. Andrade[2], **D. M. Ratner**[1];
[1]Univ. of Washington, Seattle, WA, [2]Temple Univ., Philadelphia, PA.

272 **Measuring the Orientation of Electrostatically Immobilized Horse Heart Cytochrome C by Time-of-Flight Secondary Ion Mass Spectroscopy and Sum Frequency Generation**

J. E. Baio[1], L. Pruzinsky[2], T. Weidner[1], D. G. Castner[1];
[1]Univ. of Washington, Seattle, WA, [2]Univ. of Connecticut, Storrs, CT.

273 **Target-Drift Prevention Treatment for Implantable Electrodes**

L. M. O'Connor[1], E. A. Repasky[2], A. E. Meyer[1], R. E. Baier[1];
[1]Univ. at Buffalo, Buffalo, NY, [2]Roswell Park Cancer Inst., Buffalo, NY.

274 **Electroactive Peptides via Phage Display for Biosensor Applications**
Y-W. Yeh, C-W. Liao, S. Kim, D. Norton, L. Gower;
Univ. of Florida, Gainesville, FL.

275 **Effect of Functionalization Method on the Sensing Performance of 3D Nanostructured Electrodes**
G. Zhang;
Clemson Univ., Clemson, SC.

276 **Electrospun Fiber Matrices for Implantable Glucose Sensors**
A. Koh, J. A. Nash, P. N. Coneski, D. A. Riccio, B. Sun, M. H. Schoenfisch;
Univ. of North Carolina at Chapel Hill, Chapel hill, NC.

277 **Zwitterionic Poly(Carboxybetaine) Hydrogels for Glucose Biosensors in Complex Media**
W. Yang, H. Xue, L. R. Carr, S. Jiang;
Univ. of Washington, Seattle, WA.

Tissue Engineering Scaffolds

278 **Development of Multigradient Hydrogels to Decode Extrinsic Regulation of Hematopoietic Stem Cell Fate**
B. Mahadik, T. Wheeler, P. Kenis, B. Harley;
Univ. of Illinois at Urbana Champaign, Urbana, IL.

279 **Biomaterial Induced Host Stem Cell Recruitment for *In Situ* Muscle Tissue Regeneration**
Y. Ju, J. Yoo, A. Atala, S. Lee;
Wake Forest Inst. for Regenerative Med., Winston-Salem, NC.

280 **Rapid Printing of Vascular Networks for Large-Scale 3D Tissue Culture**
J. S. Miller, M. T. Yang, D-H. Nguyen, E. Toro, B. Baker, R. Chaturvedi, D. Cohen, X. Yu, C. S. Chen;
Univ. of Pennsylvania, Philadelphia, PA.

281 **Fabrication and Testing Of Vascular Grafts with Biomimetic Microstructure That Match the Compliance of Natural Blood Vessels**
V. Z. Beachley, X. Wen;
Clemson, Charleston, SC.

282 **Increased Mature Elastin Synthesis in Arterial Constructs Based on Elastomeric Scaffolds**
K. Lee, Y. Wang;
Univ. of Pittsburgh, Pittsburgh, PA.

283 **In Vivo Hyaline Cartilage Regeneration Without Cell Transplantation**
W. S. Vanden Berg-Foels, Y. Qiu, Q. Kang, X. Wen;
Clemson Univ., Charleston, SC.

284 **Tuning Mechanical and Structural Properties of Fibrin with Fibrin Knob Peptides**
S. E. Stabenfeldt, M. J. Gourley, N. Aboujamous, A. S. C. Soon, T. H. Barker;
Georgia Inst. of Technology / Emory Univ., Atlanta, GA.

285 **Biofunctionalizing Devitalized Bone Allografts through Polymer-Mediated Growth Factor Delivery**

F. Sharmin, D. Adams, J. Lieberman, **Y. Khan**;
Univ. of Connecticut Hlth.Ctr., Farmington, CT.

Con-current Oral Abstract Presentations Session 8

Cancer Drug Delivery

286 **Photo-Targeted Nanoparticles**
T. Dvir;
MIT, Cambridge, MA.

287 ***In situ* Polymerization of a PEG Monomer from the C-Terminus of an Intein Fusion Protein Significantly Improves Pharmacokinetics and Tumor Accumulation**
W. Gao, A. Chilkoti;
Duke Univ., Durham, NC.

288 **Non-Viral Gene Therapy for Glioblastoma Multiforme**
S. Y. Tzeng[1], E. Martinez[2], A. Quinones-Hinojosa[3], J. J. Green[1];
[1]Johns Hopkins Univ., Baltimore, MD, [2]St. Edward's Univ., Austin, TX, [3]Johns Hopkins Univ. Sch. of Med., Baltimore, MD.

289 **Characterizing pH-Responsive Nanoparticles for Treatment of Mesothelioma Malignancies**
A. H. Colby[1], K. V. Zubris[1], A. P. Griset[1], Y. L. Colson[2], M. W. Grinstaff[1];
[1]Boston Univ., Boston, MA, [2]Brigham and Women's Hosp., Boston, MA.

290 **The Role of Varying PLGA Molecular Weight Blends Drug Release and Phase Inversion**
L. Solorio, Jr.[1], A. Olear[1], J. Hamilton[2], T. Krupka[1], R. Patel[1], A. Exner[1];
[1]Case Western Reserve Univ., Cleveland, OH, [2]Johns Hopkins Univ., Baltimore, MD.

291 **EGFR-Targeted Pc4-Loaded Micelles for Photodynamic Therapy of Cancer**
A. M. Master, N. L. Oleinick, A. Sen Gupta;
Case Western Reserve Univ., Cleveland, OH.

Ceramics in Orthopaedic and Dental Applications

292 ***In vitro* Dissolution of Plasma Sprayed HA Coatings of Varying Crystallinity per ASTM F1926**
B. P. Ginn, W. Tong;
DePuy Orthopaedics, Warsaw, IN.

293 **3D Interconnected Calcium Phosphate Scaffold for Bone Tissue Engineering: Enhancement of Mechanical and Biological Properties**
S. Tarafder, S. Bose;
Washington State Univ., Pullman, WA.

294 **Release of Bioactive Molecules from a Moldable Calcium Sulfate Bone Graft Substitute**
M. E. Brown, Y. Zou, K. Novak, T. Dziubla, D. Puleo;
Univ. of Kentucky, Lexington, KY.

295 **Strontium and Magnesium Oxide Doped Nanoscale Hydroxyapatite coatings on Titanium Using rf Induction Plasma Spray for load bearing implants**
S. Bose;

Washington State Univ., Pullman, WA.

296 **Calcium Phosphate Coatings Enhance Stability of B-Tricalcium Phosphate Biomaterials and Serve as Templates for Binding and Release of Growth Factors**
D. Suarez-Gonzalez, J. Lee, R. Vanderby, Jr., W. L. Murphy;
Universtity of Wisconsin- Madison, Madison, WI.

297 **Improvement of Osteointegration of Titanium Implant by Incorporation of PTH into Biomimetic CaP Coating**
X. Yu[1], **M. Wei**[1], L. Wang[2], X. Jiang[2], D. W. Rowe[2];
[1]Inst. of Materials Sci., Storrs, CT, [2]Dept. of Reconstructive Sci., Sch. of Dental Med., Univ. of Connecticut Hlth. Ctr., Farmington, CT.

Novel Approaches to Cellular Therapies

298 **A Biomaterials Approach for Programming Cell Fate**
J. A. Ankrum;
Harvard-MIT, Cambridge, MA.

299 **Rational Design of a Platelet-Mimetic Hemostatically Active Nanoconstruct**
M. Ravikumar, T. Wang, C. Modery, **A. Sen Gupta**;
Case Western Reserve Univ., Cleveland, OH.

300 **Fabrication and Characterization of Neurospheres with Novel Method for Suppression of Immune Response in Vivo**
X. Li[1], X. Liu[1], L. Roudsari[1], J. Morgan[2], N. Zhang[1], X. Wen[1];
[1]Clemson Univ., Charleston, SC, [2]Brown Univ., Providence, RI.

301 **The Response of Rheumatoid Arthritis Synovial Fibroblasts to Therapeutic Ultrasound in 2D and 3D Culture**
C. A. Close[1], G. K. Lewis, Jr.[2], R. A. Bader[1];
[1]Syracuse Univ., Syracuse, NY, [2]Cornell Univ., Ithaca, NY.

302 **Injectable and Moldable Chitosan-Collagen Microbead Formulations for Bone Repair**
L. Wang, R. Rao, J. Stegemann;
Univ. of Michigan, Ann Arbor, MI.

303 **Bioinert Polymeric MRI Contrast Agent for *In Vivo* Living Endothelial Progenitor Cell Tracking in Rat Ischemia Model**
T. Yamaoka;
Natl. Cerebral and Cardiovascular Ctr. Res. Inst., Suita, JAPAN.

Spatially Patterned Biomaterials for Tissue Engineering

304 **3D Tri-Culture of Mesenchymal Stem Cells with Osteoblasts and Adipocytes Differentially Regulates Gene Expression Towards Each Lineage**
T. M. Hammoudi, N. C. Bloodworth, H. Lu, J. S. Temenoff;
Georgia Inst. of Technology, Atlanta, GA.

305 **Image Guided 3D Patterning of Hydrogels to Recapitulate Microvascular Structures**

J. C. Hoffmann[1], J. C. Culver[2], R. A. Poche[2], M. E. Dickinson[2], J. L. West[1];
[1]Rice Univ., Houston, TX, [2]Baylor Coll. of Med., Houston, TX.

306 **Investigating the Effect of ECM Proteins on Substrate-Mediated Virus Gene Delivery**

K. I. McConnell, J. H. Slater, J. L. West, J. Suh;
Rice Univ., Houston, TX.

307 **Photoreversible Patterning of Biomolecules Within 3D Click Gels**

C. A. DeForest[1], K. S. Anseth[2];
[1]Univeristy of Colorado, Boulder, CO, [2]Univeristy of Colorado and the Howard Hughes Med. Inst., Boulder, CO.

308 **Magnetically Assisted Pattering for the Biofabrication of Branched Vascular Structures**

B. R. Whatley[1], J. Morgan[2], X. Wen[1];
[1]Clemson Univ., Charleston, SC, [2]Brown Univ., Providence, RI.

309 **3D Biomaterial Scaffolds Exhibiting a Tunable Negative Poisson's Ratio**

P. Soman[1], J. Lee[1], D. Fozdar[2], L-H. Han[2], S. Chen[1];
[1]Univ. of California, San Diego, San Diego, Ca, [2]Univ. of Texas, Austin, Austin, Tx.

Con-current Oral Abstract Presentations Session 9

Alternative Platforms for Pharmacologic Administration

310 **Characterization of Hepatocytes Cultured on Micropatterned Agarose Scaffolds Crosslinked with Collagen**

A. Y. Au[1], J. M. Hasenwinkel[2], C. G. Frondoza[1];
[1]Nutramax Lab., Inc., Edgewood, MD, [2]Syracuse Univ., Syracuse, NY.

311 **In-Vitro Release of a Non-Steroidal Anti-Inflammatory from Daily Wear Therapeutic Contact Lenses**

A. Tieppo, K. M. Pate, M. E. Byrne;
Biomimetic & Biohybrid Materials, BioMed. Devices, and Drug Delivery Lab., Dept. of Chemical Engineering, Auburn Univ., Auburn, AL.

312 **Doxorubicin-Filled Radiopaque Microspheres for Improved Chemo-Embolization of Hepatocellular Carcinomas.**

M. L. W. Knetsch, K. Saralidze, C. Mostert, R. van Berkel, L. H. Koole;
Maastricht Univ., Maastricht, NETHERLANDS.

313 **Absorbable Synthetic Bone Wax for the Localized Delivery of Therapeutic Agents**

K. D. Gray, Jr., J. M. Olbrich, M. S. Taylor, J. T. Corbett, W. S. W. Shalaby, S. W. Shalaby;
Poly-Med, Inc., Anderson, SC.

314 **Platelet-Targeted Nanoconstructs for Site-Specific Drug Delivery in Vascular Disease**

C. Modery, M. Ravikumar, A. Sen Gupta PhD;
Case Western Reserve Univ., Cleveland, OH.

315 **Surface Modification of Stent Material Using Self-Assembled Monolayers for Sustained Delivery of Paclitaxel**

G. Mani;
Univ. of South Dakota, Sioux Falls, SD.

316 **Injectable, Environmentally-Responsive Microspheres for Growth Factor Delivery**

T. W. Franklin-Ford, W. L. Murphy;
Univ. of Wisconsin-Madison, Madison, WI.

317 **Triggered Molecule Release from Light-Responsive Polymer/Nanorod Composites**

K. C. Hribar, J. A. Burdick;
Univ. of Pennsylvania, Philadelphia, PA.

Biomaterial Stem Cell Interactions

318 **Combinatorial 3D Hydrogels for Stem Cell Niche Optimization towards Bone Differentiation**

F. Yang, M. Nii, G. Imanbayev;
Stanford Univ., Stanford, CA.

319 **Spatially Controlled Mechanics Modulate Stem Cells in Sequentially Crosslinked Macroporous Hydrogels**

R. A. Marklein, J. A. Burdick;

Univ. of Pennsylvania, Philadelphia, PA.

320 **Laminin-Based Nanofibers to Replace Feeder Layers for Embryonic Stem Cell Culture**
T. Wang, R. A. Neal, E. A. Botchwey;
Univ. of Virginia, Charlottesville, VA.

321 **Synthetic Peptide Surfaces for Maintenance and Expansion of Human Embryonic Stem Cells**
R. Gupta, L. E. Little, D. V. Schaffer, K. E. Healy;
Univ. of California, Berkeley, CA.

322 **Characterization of Growth Factor Release and Bioactivity in Electrospun Polymer-Ceramic Composites**
T. Briggs, T. L. Arinzeh;
New Jersey Inst. of Technology, Newark, NJ.

323 **Sequestration of Endogenous TGF-ß for Directed Differentiation of Mesenchyal Stem Cells**
S. B. Anderson, K. S. Anseth;
Howard Hughes Med. Inst., Univ. of Colorado, Boulder, CO.

324 **A Multilayer Hydrogel of Unique Material Compositions Direct a Single Progenitor Cell Population into Zonally Organized and Mechanically Relevant Articular Cartilage**
L. H. Nguyen, N. Saxena, K. Roy;
Univ. of Texas at Austin, Austin, TX.

325 **Multiplex Biomaterial Matrix Cues Modulate Cancerous Progression of Adult Stem Cells**
S. W. Crowder, A. L. Zachman, Y. Liang, H-J. Sung;
Vanderbilt Univ., Nashville, TN.

Polymeric Biomaterials - Synthesis, Characterization, Processing and Fabrication for Biomedical Applications

326 **Combinatorial, High-Throughput Synthesis of Core-shell Nanoparticles for siRNA Delivery**
D. J. Siegwart, K. Whitehead, S. Jiang, M. Ma, H. Cheng, G. Sahay, A. Vegas, P. Fenton, K. Love, C. Levins, R. Langer, D. Anderson;
Massachusetts Inst. of Technology, Cambridge, MA.

327 **A Cross-linking Polymer System for Cerebral Aneurysm Embolization: Formulation, Characterization, and Testing**
C. Riley[1], W. Bichard[2], M. C. Preul[2], B. L. Vernon[1];
[1]Arizona State Univ., Tempe, AZ, [2]Barrow Neurological Inst., Phoenix, AZ.

328 ***In Situ* Forming Poly(Ethylene Glycol)-Based Hydrogels *Via* Metal-Free Tiol-Maleimide Click Chemistry**
Y. Fu[1], W. J. Kao[2];
[1]Sch. of Pharmacy, Madison, WI, [2]Sch. of Pharmacy, Dept. of BioMed. Engineering, Dept. of Surgery, Madison, WI.

329 **Highly Tunable Degradable Elastomers for Medical Applications**
M. Nunes-Pereira[1], D. Sarkar[1], S. Mureli[1], S. Lawes[1], L. Ferreira[2], J. M. Karp[1];
[1]Brigham's and Women Hosp., Harvard Med. Sch., Cambridge, MA, [2]Biocant and Ctr. for NeuroSci. and Cell Biology, Univ. of Coimbra, Coimbra, PORTUGAL.

330 **Triple Shape Memory Polymers Based on Self-Complimentary Hydrogen**
T. Ware;
The Univ. of Texas at Dallas, Richardson, TX.

331 Novel Polymeric Materials for Light-Triggered Release

N. Fomina, C. McFearin, M. Sermsakdi, A. Almutairi

332 **Novel Polyisobutylene-Based Nanocomposites as Promising Biomaterials**
G. Lim[1], S. Porosky[1], Q. Wang[1], M. M. Evancho-Chapman[2], S. P. Schmidt[2], J. E. Puskas[1];
[1]Dept. of Polymer Sci., Akron, OH, [2]Summa Hlth.System, Akron, OH.

333 **The Effect of Moisture on the Physical Properties of Polyurethane Shape Memory Polymer Foams**
Y-J. Yu[1], K. Hearon[1], T. S. Wilson[2], D. J. Maitland[1];
[1]TEXAS A&M Univ., 3120 TAMU College Station, TX, [2]Lawrence Livermore Natl. Lab., Livermore, CA.

The Art of Falling Apart: Exploiting Biomaterial Degradation

334 **Does Crystallinity Affect Polymer Degradation Rates?**
S. Lyu, J. Zhang, B. pudil, D. Untereker;
Medtronic Inc, Minneapolis, MN.

335 **Tunable Degradation and *In Vivo* Imaging of Poly(β-amino ester) Networks for Controlled Release Applications**
D. Safranski[1], D. Weiss[2], J. Clark[2], W. R. Taylor[2], K. Gall[1];
[1]Georgia Inst. of Technology, Atlanta, GA, [2]Emory Univ., Atlanta, GA.

336 **Degradation Impacts Chondrocyte Matrix Production in Dynamically Loaded Poly(ethylene glycol)-based Hydrogels**
J. J. Roberts, G. D. Nicodemus, E. C. Greenwald, S. J. Bryant;
Univ. of Colorado at Boulder, Boulder, CO.

337 **Cytocompatiliby and Optimization of Cardiomyocytes on Poly Lactic-Co-Glycolic Acid Carbon Nanofiber Materials**
D. A. Stout, J. Yoo, T. J. Webster;
Brown Univ., Providence, RI.

338 **Degradable Elastin-Based Biomaterials as Scaffolds for Multilayered, Aligned Myoblasts**
D. Sengupta, S. Heilshorn;
Stanford Univ., Stanford, CA.

339 **Influence of Injectable Hyaluronic Acid Hydrogel Degradation Behavior on Myocardial Infarct Repair**
E. Tous, J. L. Ifkovits, K. Koomalsingh, J. H. Gorman, R. C. Gorman, J. A. Burdick;
Univ. of Pennsylvania, Philadelphia, PA.

340 **Biodegradable Metal Technologies for Cardiovascular Stent Application**
C. Z. Deng[1], J. D. Edick[1], P. G. Edelman[1], T. Scheuermann[2];

Boston Scientific, Maple Grove, MN, Boston Scientific, Munich, GERMANY.

341 **Enzyme-Sensitive Glues Allow for Sequential Separation & Recovery of Viable Cell Populations after 3D Co-Culture**

N. C. Bloodworth, T. M. Hammoudi, P. J. Yang, H. Lu, J. S. Temenoff;
Georgia Inst. of Technology, Atlanta, GA.

Poster Sessions

Advances in Ophthalmic Biomaterials

342 **Biocompatible and Autoclavable Hydrophilic Coatings for IOL Inserters**
W. Lee, K. Miyoshi, D. Nair, I-H. Loh;
AST Products, Inc., Billerica, MA.

343 **Enzymatically crosslinked Tetronic-Tyramine Hydrogels for Injectable Intraocular Lens**
H. Lee, G. Tae, Y. Kim;
Gwangju Inst. of Sci. and Technology, Gwangju, KOREA, REPUBLIC OF.

344 **Characterization of a Monofunctional Siloxane M_1EDS_6TMS using GC/MS and GPC-MALDI-TOF MS to Help Understand Structure/Property Relationships**
P. T. Papagelis;
Bausch and Lomb, Rochester, NY.

Biomaterials and Scaffolding for Neural Regeneration

345 **A Novel Microchannel-Scaffold Electrode Array for Peripheral Nerve Interfacing**
A. Srinivasan, L. Guo, R. V. Bellamkonda;
Georgia Inst. of Technology, Atlanta, GA.

346 **Injectable Gelatin-Hydroxyphenylpropionic Hydrogels with Tunable Crosslinking for Supporting and Influencing Adult Neural Progenitor Cells**
T. Lim[1], D. Macaya[1], P. Elias[1], W. Toh[2], M. Kurisawa[3], M. Spector[4];
[1]MIT, Cambridge, MA, [2]VA Boston Hlth.care System, Boston, MA, [3]Inst. of Bioengineering and Nanotechnology, Singapore, SINGAPORE, [4]Harvard Med. Sch., Boston, MA.

347 **In Vivo Analysis Of Poly(N-Isopropylacrylamide)-Poly(Ethylene Glycol) Branched Copolymer As An Injectable Scaffold For Local Delivery Of Neurotrophins And Cellular Transplants**
L. Conova[1], J. Vernengo[2], Y. Jin[3], T. Himes[3], B. Neuhuber[3], I. Fischer[3], A. Lowman[1];
[1]Drexel Univ., Philadelphia, PA, [2]Rowan Univ., Glassboro, NJ, [3]Drexel Coll. of Med., Philadelphia, PA.

348 **Enhanced Nerve Cell Proliferation and Differentiation Using Polyethylene Glycol Diacrylate-based Hydrogels Grafted with Photo-polymerizable Poly-L-Lysine**
L. Cai, **S. Wang**;
The Univ. of Tennessee Knoxville, Knoxville, TN.

349 **Topographical Cues Accelerate Endogenous Regeneration Of Long Peripheral Nerve Gaps**
V. Mukhatyar, I. Clements, A. Srinivasan, R. Huber, A. Mehta, S. Rudra, R. Bellamkonda;
Georgia Inst. of Technology, Atlanta, GA.

350 **Astrocyte and Glial Restricted Precursor Derived Biomaterials as Coatings for Chronically Implanted CNS Devices**
J. L. Skousen, P. A. Tresco;
Univ. of Utah, Salt Lake City, UT.

351 **Amphiphilic Polyanhydride Films for Tissue Engineering**
L. Petersen, J. Oh, D. Sakaguchi, S. Mallapragada, B. Narasimhan;
Iowa State Univ., Ames, IA.

352 **Thermo-Responsive Artificial Extracellular Matrix Protein For Nerve Regeneration**
S. Kakinoi, T. Yamaoka;
Natl. Cerebral and Cardiovascular Ctr. Res. Inst., Osaka, JAPAN.

353 **Aligned Laminin-Polycaprolactone Blends Promote Regeneration in Tibial Nerve Defect Model**
R. A. Neal[1], S. S. Tholpady[1], A. Das[1], R. C. Ogle[2], E. A. Botchwey[1];
[1]Univ. of Virginia, Charlottesville, VA, [2]LifeNet Regenerative Med. Inst., Norfolk, VA.

354 **Electric Field Enhances Axon Length and Directionality of Dorsal Root Ganglia Embedded in Hydrogel on a Conductive Polypyrrole Substrate**
H. T. Nguyen, C. E. Schmidt;
Dept. of BioMed. Engineering, Austin, TX.

355 **Bio-Functionalized Electro-Responsive Polymeric Nanowire Templates Facilitating Neural Stem Cell Proliferation and Differentiation**
S. Bechara, K. Popat;
Colorado State Univ., Ft Collins, CO.

356 **An Injectable Collagen-Genipin Gel for the Treatment of Spinal Cord Injury**
D. Macaya[1], K. Shu[1], M. Spector[2];
[1]Massachusetts Inst. of Technology, Cambridge, MA, [2]VA Boston Hlth.care System, Boston, MA.

357 **Astrocyte Reactivity to Neural Implant with Porous Silicon Backbone Support**
E. S. Ereifej, J. Yang, M-C. Cheng, P. J. VandeVord;
Wayne State Univ., Detroit, MI.

358 **New Flexible Elastomer Nerve Conduit for Peripheral Nerve Injury Repair**
W. Choy[1], R. Tran[2], K. Yeung[1], J. Yang[2], W. Ip[1];
[1]The Univ. of Hong Kong, Hong Kong SAR, HONG KONG, [2]The Univ. of Texas at Arlington, Arlington, TX.

359 **An Electrospun Scaffold Composed of Basal Lamina Proteins for Use in Neural Tissue Repair**
R. L. Miller, P. J. VandeVord;
Wayne State Univ., Detroit, MI.

360 **Neurite Growth in PEG Gels: Effect of Mechanical Stiffness and Laminin Concentration**
L. Marquardt, R. K. Willits;
Saint Louis Univ., St. Louis, MO.

Animal Models for Biomaterial and Medical Device Testing

361 **Biomaterial Screening for Lymphatic Regeneration**
E. M. Brown, U. Mendez, M. Roberts;
Michigan Technological Univ., Houghton, MI.

362 **Evaluation of Bone Substitutes and Gene Expression Pattern in a Tibia Defect Model in the**

Rat

C. Ganz[1], W. Xu[1], S. Lenz[2], D. Koczan[3], T. Gerber[1];
[1]Insitute of Physics, Rostock, GERMANY, [2]Dept. of Oral, Maxillofacial and Plastic Surgery, Rostock, GERMANY, [3]Inst. of Immunology, Rostock, GERMANY.

363 **Small Animal Model to Measure Collagen Deposition Using a Knit Construct: A Preliminary Study**

S. J. Peniston[1], J. T. Corbett[1], K. J. L. Burg[2], S. W. Shalaby[1];
[1]Poly-Med, Inc., Anderson, SC, [2]Clemson Univ., Clemson, SC.

364 **Toxicity Study of Recombinant Human Platelet-Derived Growth Factor-BB Hydrated Bovine Type I Collagen in Decorated Femur Model in Rabbits---a Safety Study Model for Rotator Cuff Repair**

Y. Liu, J. Ratliff, V. Shah, Y. Zhou, H. Kestler, S. E. Lynch, D. Aguiar;
BioMimetic Therapeutics, Inc, Franklin, TN.

365 **PEEK Versus Trabecular Metal Implants for Cervical Spinal Fusion in a Goat Model**

S. K. Sinclair[1], G. Konz[2], J. Dawson[2], R. D. Bloebaum[1];
[1]Univ. of Utah, Salt Lake City, UT, [2]Zimmer Spine, Inc., Minneapolis, MN.

366 **Platelet Activation in Juvenile Ovines Implanted With the Levitronix Pedivas Ventricular Assist Device**

V. Shankarraman[1], C. A. Johnson, Jr.[1], T. M. Maul[1], J. Marks[2], K. Dasse[2], W. R. Wagner[1];
[1]Univ. of Pittsburgh, Pittsburgh, PA, [2]Levitronix, Waltham, MA.

The Art of Falling Apart: Exploiting Biomaterial Degradation

367 ***In vitro* Degradation Study of Poly(L-lactide)-Based Fibers using Dynamic Mechanical Analysis**

N. D. Belcheva, R. Shah, O. Fabien, D. Beers, A. Hadba;
Covidien, North Haven, CT.

368 **Development of an Absorbable Synthetic Bone Wax**

K. D. Gray, M. S. Taylor, J. T. Corbett, W. S. W. Shalaby, S. W. Shalaby;
Poly-Med, Inc., Anderson, SC.

369 **Hydrolytic Degradation of Electrospun Polycaprolactone and Polyglycolide Copolymer Blends**

A. S. Chung[1], H. Hwang[1], P. Zuk[1], D. R. McAllister[2], B. M. Wu[1];
[1]Univ. of California at Los Angeles, Los Angeles, CA, [2]Dept. of Veteran Affairs, Los Angeles, CA.

370 **Modulation of Degradation Profile in Biphasic Polymer Systems**

M. S. Taylor, B. P. Baum, D. E. Linden, S. J. Peniston, K. A. Carpenter, S. W. Shalaby;
Poly-Med, Inc., Anderson, SC.

371 **Platelet-Rich Plasma: An Autologous Agent for MSC Migration, Proliferation, Delivery, and Cryopreservation for Regenerative Medicine**

M. B. Murphy[1], R. M. Buchanan[1], D. Blashki[2], I. K. Yazdi[1], P. J. Simmons[2], E. Tasciotti[1];
[1]The Methodist Hosp. Res. Inst., Houston, TX, [2]The Univ. of Texas Hlth.Sci. Ctr. at Houston,

Houston, TX.

372 **Effects Of Crosslinking Density On Viability And Maintenance Of Human Embryonic Stem Cell-Derived Cardiomyocytes In Elastin-Like Hydrogels**
C. Chung, M. Marchand, B. L. Pruitt, S. C. Heilshorn;
Stanford Univ., Stanford, CA.

373 **Stiffness Modulates Chondrogenic and Osteogenic Differentiation of Human Mesenchymal Stem Cells**
R. Olivares-Navarrete, K. Smith, S. L. Hyzy, D. Haithcock, K. Gall, B. D. Boyan, Z. Schwartz;
Georgia Inst. of Technology, Atlanta, GA.

374 **Bioengineering of the Embryonic Cardiovascular Progenitor Cell Niche Using Electrospun Nanofibrous Scaffolds**
J. M. Gluck, R. J. Shemin, S. Heydarkhan-Hagvall;
Univ. of California, Los Angeles, Los Angeles, CA.

375 **Directing Neuronal Differentiation Via Neurochemical Release From Carbon Nanotube-doped Conducting Polymers**
C. L. Weaver, X. T. Cui;
Univ. of Pittsburgh, Pittsburgh, PA.

376 **A Collagen-Based Matrix that Enhances Cardiac and Skeletal Myogenesis in Mouse Embryonic Stem Cells**
D. Ebadi;
Univ. of Ottawa, Ottawa, ON, CANADA.

377 **Nanofiber Scaffolds Induce Morphological Changes in hBMSCs Critical for Osteogenic Differentiation**
C. K. Tison, G. Kumar, C. G. Simon, Jr.;
Natl. Inst. of Standards and Technology, Gaithersburg, MD.

378 **Mesenchymal Progenitor Cell Recruitment by Selective Activation**
M. Tinius, E. Botchwey

379 **Biomimetic Thymic Niche for Generating Functional, Antigen-Specific T Cells from Stem Cells: Quantitative Control of Notch and T Cell Receptor Signaling Through Biomaterials**
M. Kim[1], J. Lin[2], M. Mendoza[1], K. Roy[1];
[1]Univ. of Texas at Austin, Austin, TX, [2]XBiotech, Austin, TX.

380 **Fatty Acid-Loaded Chitosan-Gelatin Beads for Adipose Tissue Engineering**
C. Gomillion, **K. Burg**;
Clemson Univ., Clemson, SC.

381 **Heparin Hydrogels Promote Mineralization of Encapsulated Mesenchymal Stem Cells in Coculture with Osteoblasts**
S. P. Seto, R. C. Adams, J. S. Temenoff;
Georgia Inst. of Technology, Atlanta, GA.

382 **Hydrolytically Degradable Poly(Ethylene Glycol)-Laminin Hydrogel Scaffolds for Neural Progenitor Cell Delivery**

A. S. Ribeiro, D. Hughes, H. Gaifem, S. P. Zustiak, J. B. Leach;
Univ. of Maryland Baltimore County, Baltimore, MD.

383 **Hydrogel Nanofiber Stiffness Influences Mesenchymal Stem Cell Spreading and Vascular Differentiation in 3D Matrix**
K. A. Wingate, D. Scott, W. Bonani, W. Tan, S. Bryant;
Univ. of Colorado, Boulder, Boulder, CO.

384 **Self-assembling hMSC Sheets Incorporating Degradable Polymer Microspheres for Cartilage Tissue Engineering**
L. D. Solorio, C. D. Dhami, A. Whitney, E. Alsberg;
Case Western Reserve Univ., Cleveland, OH.

385 **Investigation of Pore Size Effect on Adipose Stem Cell Differentiations Using a Pore Size Gradient Scaffold**
T. Kim[1], S. Oh[1], E. Kwon[2], J. Lee[2], **J. Lee**[1];
[1]Hannam Univ., Daejeon, KOREA, REPUBLIC OF, [2]Catholic Univ., Seoul St. Mary's Hosp., Seoul, KOREA, REPUBLIC OF.

386 **Cardiac Commitment on Compliant Polymeric Substrata**
C. LeBlon, S. Jedlicka;
Lehigh Univ., Bethlehem, PA.

387 **Development of Bioactive Poly(ethylene glycol) (PEG) Hydrogels to Promote Expansion of Hematopoietic Stem Cells and Maintain their Potency**
M. L. Rowland[1], O. A. Banda[1], S. Coskun[2], K. K. Hirschi[2], J. L. West[1];
[1]Rice Univ., Houston, TX, [2]Baylor Coll. of Med., Houston, TX.

388 **Preparation of Functional Silicate-substituted Hydroxyapatite and Its *in vitro* Investigation of Mechanism for Promoting Bone Formation**
Z. Qiu, C. Chen, J. Liu, J. Wang, S. Zhang;
Huazhong Univ. of Sci. and Technology, Wuhan, CHINA.

389 **Independently Tunable Matrix Elasticity and Cell Shape for Directed Mesenchymal Stem Cell Differentiation**
B. J. Gill, J. L. West;
Rice Univ., Houston, TX.

390 **Material-Based Cues that Influence Mesenchymal Stem Cell Differentiation to Cartilage**
J. N. Renner, J. C. Liu;
Purdue Univ., West Lafayette, IN.

391 **Graphite Oxide Nanoparticles Larger than 20nm in Diameter are Biocompatible with Mouse Embryonic Stem Cells**
I-N. E. Wang, J. T. Robinson, G. Do, G. Hong, D. R. Gould, H. Dai, P. Yang;
Stanford Univ., Stanford, CA.

392 **Behavior of Dental Pulp Stem Cells on Polyvinyl Alcohol/Halloysite Nanotube Electrospun Nanofibrous Scaffolds**
W. Zhou[1], A. Elsayed[1], A. Rabie[1], R. Liao[2], B. Guo[2];
[1]Faculty of Dentistry, The Unversity of Hong Kong, Hong Kong, HONG KONG, [2]South China Univ. of

Technology, Guangzhou, CHINA.

393 **Creation Of A Collagen Scaffold Integrating Mesenchymal Stem Cells And Microencapsulated Peptides For Use In Wound Healing.**
K. B. Moore, W. Zhang, J. Potts;
Univ. of South Carolina, Columbia, SC.

394 **Osteogenesis, Adipogenesis, and Myogenesis of Rat Mesenchymal Stem Cells on The Nanogrooved Surfaces**
P-Y. Wang;
Natl. Taiwan Univ., Taipei, TAIWAN.

395 **Biphasic Calcium Phosphate Bioceramics Modulate Stem Cells and Pre-Osteoblasts` Phenotype**
S. E. Lobo, R. Glickman, D. N. Levy, L. Terracio, R. Z. LeGeros;
New York Univ., New York, NY.

396 **Single Cell PCR Study of Rat Mesenchymal Stem Cells Cocultured With Cardiomyocytes**
Q. Liu[1], Z. Ma[2], L. Wei[3], Y. Wang[1], B. Xu[4], X. Guo[4], B. Gao[2];
[1]BioMed. Res. & Develop Ctr., Guangzhou, CHINA, [2]Bioengineering Dept., Clemson, SC, [3]Ctr. for BioMed. Materials and Tissue Engineering, Academy for Advanced Interdisciplinary Studies, Peking Univ., Beijing, CHINA, [4]Grandhope Biotech Co., Ltd., Guangzhou, CHINA.

397 **Biomaterial Systems to Assess the Influence of Cell-Matrix Interactions on Hematopoietic Stem Cells**
J. Choi, B. Harley;
Univ. of Illinois at Urbana-Champaign, Urbana, IL.

398 **Placenta Stem Cells Differentiation onto PU foams**
S. Bertoldi[1], S. Fare'[1], D. Rossi[2], H. J. Haugen[3], O. Parolini[2], M. Tanzi[1];
[1]Politecnico di Milano, Milano, ITALY, [2]Centro di Ricerca E. Menni Fondazione Poliambulanza, Brescia, ITALY, [3]Univ. of Oslo, Oslo, NORWAY.

399 **Control of Mesenchymal Stem Cell Chondrogenesis in Micromass and on Collagen Scaffolds by Autocrine Transglutaminases**
S. Shanmugasundaram, M. Nurminskaya;
Univ. of Maryland-Sch. of Med., Baltimore, MD.

400 **The Effects of rhPDGF-BB Alone and Combination with rhBMP-2 to Promote the Osteogenic Differentiation of Human Mesenchymal Stem Cells**
J. Kim;
Carnegie Mellon Univ., Pittsburgh, PA.

401 **Surface Phosphorylation for Polyelectrolyte Complex of Chitosan and Its Sulfonated Derivative: Surface Analysis, Blood Compatibility and Adipose Derived Stem Cell Contact Properties**
H-Y. Yeh, **J-C. Lin**;
Natl. Cheng Kung Univ., Tainan, TAIWAN.

402 **Gradient Cell Density Formation and Adipogenic Differentiation of Mesenchymal Stem Cells on a Micropattened Surface**

N. Kawazoe, H. Lu, T. Tateishi, G. Chen;
Natl. Inst. for Materials Sci., Tsukuba, JAPAN.

403 **Protein and Polyphenols Contaminants of Sodium Alginates and Their Effect on Viability of Mesenchymal Stem Cells Derived from Human Umbilical Cord**
U. Kandalam, A. I. Cabel, H. Omidian, S. K. McCarthy, E. J. Stelnicki;
Nova Southeastern Univ., Fort lauderdale, FL.

404 **Human Mesenchymal Stem Cell Proliferation as a Function of Scaffold Position in a Tubular Perfusion System**
E. M. Geibel, A. B. Yeatts, J. P. Fisher;
Univ. of Maryland, College Park, MD.

405 **Poly(Ethylene Glycol) Microsphere-Encapsulated Pluripotent Stem Cells: Control Of Microsphere Size For Cardiac Differentiation**
S. S. Chang, B. A. Williams, E. A. Lipke;
Auburn Univ., Auburn, AL.

Cellular Responses to Biophysical Cues

406 **Flow Perfusion Bioreactor for Bone and Cartilage Tissue Engineering**
V. V. Meretoja, R. L. Dahlin, K. F. Kasper, A. G. Mikos;
Rice Univ., Houston, TX.

407 **Effect of Focal Adhesion Spatial Distribution on Cell-Substrate Adhesion Strength**
K. Elineni, N. D. Gallant;
Univ. of South Florida, Tampa, FL.

408 **Cardiomyocyte Response to Ultra Stiff Hydrogel Substrates**
S. L. Hume, S. J. Bryant;
Univ. of Colorado at Boulder, Boulder, CO.

409 **Endothelial Cell Attachment and Shear Response on Biomimetic Polymer Coated Vascular Grafts**
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[1]Case Western Reserve Univ., Cleveland, OH, [2]Cleveland Clinic, Cleveland, OH.

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411 **Regulation of Smooth Muscle Cell Behavior on Novel Biodegradable Elastomeric Substrates with Controllable Stiffness**
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412 **Development of a Collagen-GAG Scaffold Microarray for High-Throughput Analysis of Cell Fate Decisions**
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413 **Understanding Osteoblast Responses on Stiff Nanotopographies Through Experiments and Computational Simulations**

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414 **Differential Response of Staphylococci and Osteoblasts to Varying Titanium Surface Roughness**

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[1]Stevens Inst. of Technology, Hoboken, NJ, [2]Stryker Orthopaedics, Mahwah, NJ.

415 **Role of Integrin Subunits in Osteoblast Maturation on Microstructured Surfaces with Different Chemistries**

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[1]Georgia Inst. of Technology, Atlanta, GA, [2]Univ. Natl. Autonoma de Mexico, Mexico City, MEXICO, [3]Inst. Straumann, Basel, SWITZERLAND.

416 **Organization and Differentiation of Retinal Progenitor Cells on Microfabricated Poly(e-caprolactone) Thin Films**

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417 **Matrix Modulus Influences the Development of Breast Acini and Ducts in 3D Cultures**

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[1]Inst. for biological interfaces of engineering, Clemson, SC, [2]Cellular and Molecular Biology Div., Dept. of Biology, Univ. of North Carolina, Charlotte, NC.

418 **Imparting Physical Load to Synthetic Extracellular Matrices Using Ultrasound**

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420 **Cell Regulation by Ion-Beam Induced Nanostructures**

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[1]Clemson Univ., Clemson, SC, [2]Tougaloo Coll., Tougaloo, MS.

428 **Active Endothelial Targeting Antioxidant Nanoparticles for the Suppression of Vascular Oxidative Stress**
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431 **Osteoblast Response to Protein Adsorption to 3D Polymer Scaffolds Through Pre-Ageing in Cell Medium**
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435 **Uniform Beads with Controllable Pore Sizes for Biomedical Applications**
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[1]Washington Univ. in St. Louis, St. Louis, MO, [2]Natl. Tsing Hua Univ., Hsinchu, TAIWAN.

436 **Do Differentiated Osteoblasts and Allogeneic Mesenchymal Stromal Cells Augment Bone Formation?**
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437 **Injectable Alginate Microcapsule/Polyurethane Composite Scaffolds for Cell Therapy**
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[1]Univ. of Wisconsin - Madison, Madison, WI, [2]Univ. of Minnesota, Minneapolis, MN.

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[1]Joanneum Research, Graz, AUSTRIA, [2]Grenoble Inst. of Technology, Grenoble, FRANCE, [3]Polish Academy of Sci. - Inst. of Metallurgy and Material Sci., Krakow, POLAND, [4]Jagiellonian Univ. Med. Coll., Dept. of Med., Krakow, POLAND.

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[1]BioSurfaces Inc., Ashland, MA, [2]Univ. of Rhode Island, Kingston, RI, [3]Beth Israel Deaconess Med. Ctr., Boston, MA.

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[1]BioSurfaces, Inc., Ashland, MA, [2]Univ. of Rhode Island, Kingston, RI.

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458 **Effect of Daily Living Activities on the Stability on Pertrochanteric Fracture Fixation Devices**

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459 **Engineering a Cell-Adhesive and Biodegradable Hydrogel for Smooth Muscle Cell Attachment and Growth**

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[1]Case Western Reserve Univ., Cleveland, OH, [2]Pathology and Lab. Med. Inst., Cleveland Clinic, Cleveland, OH.

460 **Dense Collagen/Chitosan Hybrid Gels as Scaffolds for Cartilage Tissue Engineering**

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461 **Effect of 3D Scaffold Structure on Osteogenic Differentiation of Human Bone Marrow Stromal Cells**

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[1]Natl. Inst. for standards and technology, Gaithersburg, MD, [2]Natl. Inst. of Health/NIDCR, Bethesda, MD.

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468 **Adhesive Peptides Modified with Long Spacers Encourage Human Corneal Epithelial Cell Attachment and Spreading**
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[1]Centro de Investigación Científica de Yucatán AC, Mérida, MEXICO, [2]Dept. of Bioengineering, Univ. of California at Berkeley, Berkeley, CA, [3]UCSF Med. Ctr., Long Hosp., San Francisco, CA, [4]Laboratorio de Biología Celular, Centro de Investigaciones Regionales “Dr. Hideyo Noguchi”, Univ. Autónoma de Yucatán, Mérida, MEXICO, [5]Dept. of Bioengineering & Dept. of Material Sci. and Engineering, Univ. of California at Berkeley, Berkeley, CA.

472 **In Vitro Biomineralization of Carbon Nanotube/Hidroxyapatite Composites Obtained By Electrodeposition Process**
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Sr. , E. J. Corat, Sr. ;

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473 **In Vitro Osseogenesis at the Bone-Implant Interface Under Cyclic Tensile and Compressive Strains**

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474 **Porous Titanium Scaffolds with Controlled Pore Size by Combination of Freeze Casting and Space Holder Methods**

S. Kim[1], H. Jung[1], S. Yook[1], H. Kim[1], Y. Koh[2];

[1]Seoul Natl. Univ., Seoul, KOREA, REPUBLIC OF, [2]Korea Univ., Seoul, KOREA, REPUBLIC OF.

475 **Porous Poly(-caprolactone)/Hydroxyapatite Scaffold with Highly Aligned Pore Structure using Unidirectional Freeze Drying**

W-Y. Choi[1], J-H. Lee[1], Y. Jin[1], H-E. Kim[1], Y-H. Koh[2];

[1]Seoul Natl. Univ., Seoul, KOREA, REPUBLIC OF, [2]Korea Univ., Seoul, KOREA, REPUBLIC OF.

476 **Porous Calcium Phosphate (CaP) Scaffolds with a Core/Shell Structure Using Indirect Solid Freeform Fabrication (ISFF)**

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[1]Seoul Natl. Univ., Seoul, KOREA, REPUBLIC OF, [2]Korea Univ., Seoul, KOREA, REPUBLIC OF.

477 **Recombinant Silk-Elastinlike Protein Polymer as an Ocular Drug Delivery System**

W. Teng[1], J. Cappello[2], X. Wu[1];

[1]Univ. of Arizona, Tucson, AZ, [2]Protein Polymer Technologies, Inc., San Diego, CA.

478 **Apatite Coated MWCNT Provide a Biomimetic Surface for the Culture of Osteogenic Cells**

O. Emohare[1], I. Kinloch[2], N. Rushton[1];

[1]Univ. of Cambridge, Cambridge, UNITED KINGDOM, [2]Sch. of Materials, Univ. of Manchester, Manchester, UNITED KINGDOM.

479 **Porous Titanium Scaffolds by Dynamic Freeze Casting for Bone Tissue Engineering**

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480 **Porous Polyurethane Composites as Scaffolds for Bone Regeneration: Comparison between Micro- and Nano- Sized Hydroxyapatite Fillers**

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481 **Elastic Matrix Regeneration in Collagen-Rich Tissues Require Elastogenic Induction of Cells**

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[1]Clemson Univ./ Cleveland Clinic, Cleveland, OH, [2]Cleveland Clinic, Cleveland, OH.

482 **Combined Effects of Physical and Biochemical Stimuli on HUVECs *In Vitro*: A Multilayer Film Study**

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483 **Production of Porous Poly(ε-caprolactone)/Silica Hybrid Membranes with Patterned Surface Pores**

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[1]Korea Univ., Seoul, KOREA, REPUBLIC OF, [2]Seoul Natl. Univ., Seoul, KOREA, REPUBLIC OF.

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485 **Quantification of Topologic characters and Prime Proteins of Esophageal Basement Membrane for Scaffold Design in Tissue Engineering**

Y. Zhu[1], J. Fang[2];

[1]Ningbo Univ., Ningbo, CHINA, [2]Ningbo Univ. of Technology, Ningbo, CHINA.

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486 **Tunable Electrospun Hyaluronic Acid Scaffolds to Mimic the Microenvironment and Structure of Articular Cartilage**

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487 **Bioactive Glass Scaffolds for Repair and Regeneration of Load-bearing Bone Defects**

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[1]Lawrence Berkeley Natl. Lab., Berkeley, CA, [2]Imperial Coll. London, London, UNITED KINGDOM.

488 **Oxidation for Enhanced Degradation of Hydrogels Formed From Photocrosslinkable Alginate**

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489 **Electrospun Gelatin Scaffolds with Biological and Architectural Cues Direct Cell Proliferation and Alignment**

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490 **NIST Reference Material Scaffolds Characterized for Cell Response**

C. G. Simon, Jr., J. M. Coles;
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491 **Biofabrication of a Lamellar Elastic Scaffold for Intervertebral Disc Regeneration**

B. R. Whatley[1], Y. Qiu[1], B. Damon[2], J. Kuo[1], X. Wen[1];

[1]Clemson Univ., Charleston, SC, [2]Med. Univ. of South Carolina, Charleston, SC.

492 **Fabrication of Electrospun 3D Scaffolds That Mimic Cortical Bone**

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493 **Preparation of Funnel-Like Collagen Porous Scaffolds and Application for Cartilage Tissue Engineering**

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494 **Immobilization of bFGF on Heparinized Thermoresponsive Cell Culture Surface for Enhancing Cell Growth**
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496 **Effect of Scaffold Morphology on the Proliferation and Colonization of Seeded Chondrocytes**
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497 **Composite Mesh Incorporating Biointegrative Reticulated Elastomeric Matrix for Hernia Repair**
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498 **Development of a Bead Manipulator Module for a Biofabricator**
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499 **PC12 Behavior in Modular Poly(Ethylene Glycol) Scaffolds: Effects of Stiffness and Protein Concentration**
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Saint Louis Univ., St. Louis, MO.

500 **Biomolecules Immobilization on Microfabricated Functional Hydrogels**
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501 **Characterization of Membrane Materials and Membrane Coatings for Bioreactor Units of Bioartificial Kidneys**
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502 **Isotropic and Anisotropic Cryogel Matrices for Cartilage Tissue Engineering**
A. Tripathi, A. Kumar;
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503 **Synthesis and Characterization of Composite Biodegradable Hydrogel Systems for Controlled Pore Opening**
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504 **Cell Infiltration and Growth in a Low Density, Uncompressed Three-Dimensional Electrospun Nanofibrous Scaffold**
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505 **Rapid Production of a Tubular Dense Collagen Construct for Tissue Engineering**

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506 **Bioceramic Nanocrystal Coating via Pickering Emulsion Route: Fabrication of Hydroxyapatite/Biodegradable Composite Microspheres for Injectable Cell Scaffold**

T. Terada;
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507 **Fabrication of Fiber Based 3D Tissue Engineering Scaffolds**

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[1]North Carolina State Univ., Raleigh, NC, [2]Inst. für Textiltechnik, RWTH-Aachen Univ., Aachen, GERMANY.

508 **Endostatin-Producing Cartilaginous Constructs Using Collagen Hydrogels and Pre-Formed Collagen Sponge-Like Scaffolds**

L. Jeng[1], B. R. Olsen[2], M. Spector[3];
[1]Massachusetts Inst. of Technology, Cambridge, MA, [2]Brigham and Women's Hosp., Harvard Med. Sch., Boston, MA, [3]VA Boston Hlth.care System, Boston, MA.

509 **Optimization of Fiber Alignment Within Polycaprolactone Nerve Conduits**

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[1]Univ. of Pittsburgh, Pittsburgh, PA, [2]Univ. of Cincinnati, Cincinnati, OH.

510 **Characterization and Cytocompatibility of Doxycycline Composite Scaffolds**

M. E. Cortes, V. C. C. Trajano, K. J. R. Costa, R. D. Sinisterra;
UFMG, Belo Horizonte, MG, BRAZIL.

511 **Mechanical Analysis of Poly(Ethylene Glycol) Diacrylate and Agarose Interpenetrating Network Hydrogels**

D. A. Rennerfeldt, G. C. Ingavle, S. H. Gehrke, M. S. Detamore;
Univ. of Kansas, Lawrence, KS.

512 **Printing of Biocompatible Polymers and their Composites for Biomedical Engineering**

M. Rasekh[1], Z. Ahmad[1], R. Day[2], M. Edirisinghe[1];
[1]Univ. Coll. London (UCL), London, UNITED KINGDOM, [2]Windeyer Inst., Univ. Coll. London (UCL), London, UNITED KINGDOM.

513 **Electrospun Biodegradable Polycaprolactone/Poly(1,4-Butylene Adipate-Co-Polycaprolactam) Hybrid Scaffold For Bone Tissue Engineering**

S. T S, R. Balu;
Indian Inst. of Technology Madras (IITM), Chennai, INDIA.

514 **Effect of Negative Poisson's Ratio of Polyurethane Scaffold on Chondrotyte Behavior with Mechanical Stimulus**

S-W. Shin, Sr.[1], H-S. Roh[1], K-W. Park[1], J-B. Choi[2], J-C. Park[3], J-K. Kim[1];
[1]Inje Univ., Gimhae, KOREA, REPUBLIC OF, [2]Hansung Univ., Seoul, KOREA, REPUBLIC OF, [3]Yonsei Univ., Seoul, KOREA, REPUBLIC OF.

515 **Fabrication of Chemically Crosslinked Gelatin Microspheres with Tunable Degradation Profiles**

M. A. Serban, T. Knight, R. Payne;
Tengion, Inc, Winston-Salem, NC.

516 **Highly Aligned Porous Biomaterials by Reverse Freeze Casting**
S-W. Yook[1], H-E. Kim[1], Y-H. Koh[2];
[1]Seoul Natl. Univ., Seoul, KOREA, REPUBLIC OF, [2]Korea Univ., Seoul, KOREA, REPUBLIC OF.

517 **Absorbable Solvent-Precipitated Foams and Applications Thereof**
K. D. Gray, Jr., M. S. Taylor, R. T. Pace, J. T. Corbett, S. W. Shalaby;
Poly-Med, Inc., Anderson, SC.

Modification of Three Dimensional Scaffolds for Tissue Engineering Applications

518 **CS-Blood Hydrogel Adhesive for the Expansion and Controlled Differentiation of Stem Cells**
I. Strehin, I. Wu, Q. Lu, J. Zhan, J. Elisseeff;
Johns Hopkins Univ., Baltimore, MD.

519 **Hydroxyapatite Surface Nanoscaled characterization and Electrical Potential Functionalization to Engineer Osteoblasts Attachment and Generate Bone Tissue**
Y. Dekhtyar, Sr.;
Riga Technical Univ., Riga, LATVIA.

520 **Endothelial Progenitor Cell Adhesion and Growth on Peptide-Coated Electrospun Scaffolds**
R. Shenkman, X. Wang, D. Heath, S. L. Cooper;
The Ohio State Univ., Columbus, OH.

521 **Mesenchymal Stem Cell Chondrogenesis and Chondrocyte Response to Extracellular Matrix Molecules**
E. E. Coates, J. P. Fisher;
Univ. of Maryland, College Park, MD.

522 **Effects of FGF-1 and PEG Matrix Properties on 3D Fibroblast Invasion**
S. Sokic, G. Papavasiliou;
Illinois Inst. of Technology, Chicago, IL.

523 **Formation of Aggregated Alginate Constructs in a Tubular Perfusion System**
A. B. Yeatts, C. N. Gordon, J. P. Fisher;
Univ. of Maryland, College Park, MD.

524 **Implantable "Sensate" Medial Condyle Surface Replacement Allows Shear and Axial Load Sensing**
J. S. Szivek, G. J. Heden, N. H. Diggins, C. P. Geffre, J. T. Ruth, L. D. Farrow;
Univ. of Arizona, Tucson, AZ.

525 **Co-encapsulation of TGF-β1 into Negatively Charged Oligo(polyethylene glycol) Fumarate Hydrogels to Enhance Chondrogenesis of Bone Marrow Stromal Cells**
M. E. Casper, M. Dadsetan, M. J. Yaszemski;
Mayo Clinic, Rochester, MN.

526 **Scaffold Design for Functional Tissue Engineering and Cell-Based Gene Therapy Applications**

A. M. Yousefi;
Miami Univ., Oxford, OH.

527 **Influence of Fluid Flow on Porous Scaffold Structural Deformation**
S. V. Madihally, **J. Podichetty**, D. Dhane;
Oklahoma State Univ., Stillwater, OK.

528 **Electrospun Polyvinyl Alcohol/Cyclodextrin/Tobramycin Nanofibrous Matrix for Drug Delivery**
P. Bhullar[1], **W. Song**[1], X. Jin[1], T. Shi[1], D. Markel[2], W. Ren[1];
[1]Wayne state Univ., Detroit, MI, [2]Detroit Med. Ctr./Providence Hosp. Orthopedic Surgery Residency Program, Detroit, MI.

529 **Visible Light Crosslinkable Chitosan-based Hydrogels for Tissue Engineering Applications**
Y. Hou[1], J. Hu[1], B. Wu[2], M. Lee[1];
[1]Sch. of Dentistry, Univ. of California, Los Angele, Los Angeles, CA, [2]Dept. of Bioengineering, Univ. of California, Los Angele, Los Angeles, CA.

530 **Plasma Surface Modification of Electrospun Poly(ε-Caprolactone) Nanofibers and its Effect on Surface Bioactivity**
J. E. Jones[1], D. Yan[1], H. Li[1], J. C. M. Lee[1], Q. Yu[1], X. Yuan[2], J. Sheng[2], G. Ma[2];
[1]Univ. of Missouri, Columbia, MO, [2]Tianjin Univ., Tianjin, CHINA.

Self-Assembly in Tissue Engineering

531 **A Fluorescent Method for Detecting Ligand Availability on the Surface of Self-Assembled Peptide Nanofibers**
E. A. Verbus[1], J. S. Rudra[1], A. R. Urbach[2], J. H. Collier[1];
[1]Univ. of Chicago, Chicago, IL, [2]Trinity Univ., San Antonio, TX.

532 **Directed Assembly of Microscale Particles by Acoustic Waves for Biomedical Applications**
F. Xu;
Harvard Med. Sch., Cambridge, MA.

533 **Directed Assembly of Microscale Hydrogels via Magnetics**
F. Xu;
Harvard Med. Sch., Cambridge, MA.

534 **Three-dimensional Constructs Induce High Cellular Activities for Protein and Cytokine Productions**
K. Kadowaki, M. Matsusaki, M. Akashi;
Graduate Sch. of Engineering, Osaka Univ., Suita, JAPAN.

535 **Osteogenic Differentiation of Human Mesenchymal Stem Cells Synergistically Enhanced by Biomimetic Peptide Amphiphiles Combined with Conditioned Media**
J. Anderson, J. Vines, J. Patterson, H. Chen, A. Javed, H-W. Jun;
Univ. of Alabama at Birmingham, Birmingham, AL.

536 **Withdrawn**

537 **Culture and Analysis of Adipocytes in Two and Three Dimensional Culture Configurations**
L. M. Harris, A. B. Silvestrini, A. V. Janorkar;
Univ. of Mississippi Med. Ctr., Jackson, MS.

538 **Effects of Hydroxyapatite Mineralization and EDC Cross-linking on the Response of Collagen Fibers to Tensile Loads**
R. F. Banglmaier, T. Bou-Akl, P. VandeVord;
Wayne State Univ., Detroit, MI.

Spatially Patterned Biomaterials for Tissue Engineering

539 **Maximizing Cellular Pattern Resolution in Biofabrication**
L. Roudsari, E. Bland, M. Pepper, V. Seshadri, T. Burg, K. Burg;
Clemson Univ., Clemson, SC.

540 **Decreased VEGF Synthesis by Lung Carcinoma Cells on Polymer Nanometer Surface Features**
L. Zhang, T. J. Webster;
Brown Univ., Providence, RI.

541 **Microfabrication of an Artificial Bruch's Membrane for the Treatment of Age-Related Macular Degeneration**
K. J. McHugh[1], M. Saint-Geniez[2], S. L. Tao[3];
[1]Boston Univ., Boston, MA, [2]Schepens Eye Res. Inst. and Harvard Med. Sch., Boston, MA, [3]The Charles Stark Draper Laboartory, Cambridge, MA.

542 **Biodegradable Elastomeric Substrates with Concentric Microgrooves for Regulating MC3T3 Cell Behavior**
K. Wang[1], L. Cai[1], L. Zhang[2], J. Dong[2], **S. Wang**[1];
[1]The Univ. of Tennessee Knoxville, Knoxville, TN, [2]North Carolina State Univ., Raleigh, NC.

543 **Biodegradable Elastomeric Substrates with Micro-fabricated Grooves for Promoting Neurite Extension**
L. Cai[1], L. Zhang[2], J. Dong[2], **S. Wang**[1];
[1]The Univ. of Tennessee Knoxville, Knoxville, TN, [2]North Carolina State Univ., Raleigh, NC.

544 **Micropatterned Thermoresponsive Polymer Brush Surfaces for Preparation of Cell Sheets with Well-defined Alignment**
H. Takahashi, M. Nakayama, T. Okano;
Tokyo Women's Med. Univ., Tokyo, JAPAN.

545 **Alignment of 3D Nano-/Micro-Structured Silk Fibroin-Chitoson Scaffolds Using DEP for Tissue Engineering**
L. Wang, T. Iyyanki, J. Hubenak, A. Mathur;
The Univ. of Texas, M. D. Anderson Cancer Ctr., Houston, TX.

546 **In Vitro Assembly of Micropatterned Cell Sheets for Vascular Tissue Engineering**
N. Patel, J. Cavicchia, B-m. Newby, G. Zhang;
Univ. of Akron, Akron, OH.

547 **Engineered Microtopographies Direct Human Coronary Artery Cell Elongation and**

Orientation
C. M. Magin, A. Baah-Dwomoh, M. Showalter, M. Segal, A. Brennan;
Univ. of Florida, Gainesville, FL.

Tissue Engineered Scaffolds

548 **Assembly of Functional Neovessels using a Stereolithographic Hydrogel Matrix**
J. Jeong, V. Chan, C. Cha, P. Zorlutuna, R. Bashir, **H. Kong**;
Univ. of Illinois at Urbana-Champaign, Urbana, IL.

Strategies to Promote Vascularization of Tissue Engineered Constructs

549 **Immobilized VEGF Fragment Promotes Microvasculature Formation in Poly(ethylene glycol) Diacrylate Hydrogels**
J. E. Saik[1], J. E. Barbick[1], D. J. Gould[1], M. E. Dickinson[2], J. L. West[1];
[1]Rice Univ., Houston, TX, [2]Baylor Coll. of Med., Houston, TX.

550 **Myocardial Protection and Angiogenic Synergism in Acute Myocardial Infarction Using Dual Growth Factor with Self-Assembling Peptide Nanofiber Hydrogel**
J. Kim[1], Y. Park[2], Y. Jeong[1], S-h. Kim[1], **S. Kim**[1];
[1]Korea Inst. of Sci. and Technology, Seoul, KOREA, REPUBLIC OF, [2]Korea Univ., Seoul, KOREA, REPUBLIC OF.

551 **3D Microfluidic Tissue Model with Perfused Human Capillaries**
M. L. Moya, Y-H. Hsu, C. C. W. Hughes, A. P. Lee, S. C. George;
Univ. of California, Irvine, Irvine, CA.

552 **Modular Poly(Ethylene Glycol) Scaffolds with Multiple Levels of Porosity for Cell Transplantation and Vascularization**
D. L. Elbert, A. W. Smith, M. J. Stork, P. K. Nguyen, I. R. Efimov;
Washington Univ., St. Louis, MO.

553 **FEM Optimization of Sustained VEGF Delivery for Angiogenesis Applications**
E. Martinez, P. Lofti, S. Dash, M. Romero-Ortega;
Univ. of Texas at Arlington, Arlington, TX.

554 **Parsing Inflammatory Cues in Angiogenesis**
A. L. Zachman[1], S. W. Crowder[1], H. K. Kleinman[2], J. B. Kohn[3], H-J. Sung[1];
[1]Vanderbilt Univ., Nashville, TN, [2]Natl. Inst. of Dental and Craniofacial Res., Bethesda, MD, [3]New Jersey Ctr. for Biomaterials, Rutgers Univ., Piscataway, NJ.

555 **Quantitative Fluorescence Imaging for Tissue Engineered Systems**
E. Bland, K. Burg;
Clemson Univ., Clemson, SC.

556 **Localized Delivery of bFGF from Elctrospun Scaffolds for Guided Angiogenesis**
X. Vial, R. B. Montero, S. Pham, F. M. Andreopoulos;
Univ. of Miami, Coral Gables, FL.

557 **Engineering Hydrogel Scaffold for Rapid and Functional Vascularization**
G. Sun;
Johns Hopkins Univ., Baltimore, MD.

558 **Three-Dimensional Morphological Quantification to Understand Vasculogenesis**
J. Rytlewski, S. Rajput, L. Nguy, L. Suggs;
Univ. of Texas at Austin, Austin, TX.

559 **Endothelial Cell Response to Vascular Endothelial Growth Factor on Hydroxyapatite Surfaces**
K. D. Solomon, J. L. Ong;
Univ. of Texas at San Antonio, San Antonio, TX.

Valves and Stents

560 **Electrospun Scaffolds with Gradient Morphology for Use in Endovascular Aortic Aneurysm Repair**
J. Massey[1], S. R. Bailey[2], M. Agrawal[1];
[1]Univ. of Texas at San Antonio, San Antonio, TX, [2]Univ. of Texas Hlth.Sci. Ctr. at San Antonio, San Antonio, TX.

561 **Neomycin-Enhanced Carbodiimide Crosslinking for Glycosaminoglycan Stability in Bioprosthetic Heart Valves**
J. G. W. Leong;
Clemson Univ., Clemson, SC.

562 **HDL-Adsorbing Hydrophilic Surfaces: Potential as Blood-Compatible Endothelium Regenerating Coatings.**
M. L. W. Knetsch, L. H. Koole;
Maastricht Univ., Maastricht, NETHERLANDS.

563 **Influence of Zn Content in Mgal3 and Mgal9 Alloys on Initial Corrosion Behavior in Human Blood**
J. Geis-Gerstorfer, C. Schille, E. Schweizer, F. Rupp, L. Scheideler, A. Nolte, H-P. Wendel;
Univ. of Tuebingen, Tuebingen, GERMANY.

564 **Nitinol Corrosion Ions Inhibit α-actin Expression and Decrease Aspect Ratio of Rat Vascular Smooth Muscle Cells in vitro**
B. H. Winn;
Clemson Univ., Clemson, SC.

565 **Electrochemically-assisted Functionalization of a 316L Stainless Steel Surface: Towards the Minimization of In-stent Restenosis**
H. Dadafarin, L. Li, E. C. Davis, S. Omanovic;
McGill Univ., Montreal, QC, CANADA.

Scaffolds for Cardiovascular and Musculosketetal Organ Regeneration

566 **Online Monitoring of Tissue-Engineered Cartilage Development in a Dynamic Compression Bioreactor**

J. Popp[1], J. Roberts[2], S. Bryant[2], T. Quinn[1];
[1]Natl. Inst. of Standards and Technology, Boulder, CO, [2]Univ. of Colorado, Boulder, CO.

567 **Gene Regulation in MMP-Degradable Carriers Differs Between Fibroblasts and Mesenchymal Stem Cells**
D. M. Doroski, J. S. Temenoff;
Georgia Inst. of Technology, Atlanta, GA.

568 **Phenotype Characterization of Human Coronary Artery Smooth Muscle Cells Using Cyclic Mechanical Strain**
S. Sharifpoor[1], C. A. Simmons[1], R. S. Labow[2], J. P. Santerre[1];
[1]Univ. of Toronto, Toronto, ON, CANADA, [2]Univ. of Ottawa, Ottawa, ON, CANADA.

569 **Postoperative Tissue Adhesion Barrier Gel Based on Hyaluronic Acid and Alginate**
S. Na[1], S. Oh[1], K. Song[2], **J. Lee**[1];
[1]Hannam Univ., Daejeon, KOREA, REPUBLIC OF, [2]Chungnam Natl. Univ., Daejeon, KOREA, REPUBLIC OF.

570 **Direct Co-Culture of Endothelial Progenitor Cells with Human Mesenchymal Stem Cells on Nanopatterned Surfaces**
C. E. Fernandez, F. Zhao, W. M. Reichert;
Duke Univ., Durham, NC.

Dynamically Responsive Biomaterials

571 **Bicomponent Selectively-Absorbable Hernia Mesh for Improved Wound Healing**
S. J. Peniston, G. T. Hilas, M. S. Taylor, S. W. Shalaby;
Poly-Med, Inc., Anderson, SC.

572 **Smart Coating of Poly(*N*-isopropylacrylamide)-Based Block Copolymers for Cell Sheet Harvest**
M. Nakayama[1], N. Yamada[2], H. Kanazawa[2], T. Okano[1];
[1]Tokyo Women's Med. Univ., Tokyo, JAPAN, [2]Keio Univ., Tokyo, JAPAN.

573 **Iron Oxide Nanocomposite Sol-Gel Systems for Remote Controlled Drug Release**
A. M. Hawkins, C. E. Bottom, D. A. Puleo, J. Z. Hilt;
Univ. of Kentucky, Lexington, KY.

574 **Rapid, pH-dependent Self Healing Hydrogels**
A. Phadke, C-C. Hsu, C. Zhang, G. Arya, M. Tauber, S. Varghese;
Univ. of California, San Diego, La Jolla, CA.

575 **Design of Smart Biodegradable Materials with Dynamically Tunable Stiffness for Control of Cell Functions**
K. Uto, M. Ebara, T. Aoyagi;
Natl. Inst. for Materials Sci., Tsukuba, JAPAN.

576 **Enzymatically Triggered Microcapsules For Water-soluble Drug Delivery Applications**
X. Cheng, S. A. Desai, K. Carson, M. L. Kimmel;
Southwest Res. Inst., San Antonio, TX.

577 **Temporal Control of Mechanical Properties of Degradable Poly(β-amino ester) Networks**

D. Safranski[1], D. Weiss[2], J. Clark[2], W. R. Taylor[2], K. Gall[1];

[1]Georgia Inst. of Technology, Atlanta, GA, [2]Emory Univ., Atlanta, GA.

578 **Shear-Induced Adhesion in Mussel Foot Protein-1 Films**

R. Schur, R. Andresen-Eguiluz, D. Gourdon;
Cornell Univ., Ithaca, NY.

579 **Layer-by-Layer Assembly of Biocompatible Polyelectrolytes on pH and Temperature Responsive Microgels**

E. Costa[1], A. Aguiar-Ricardo[2], P. T. Hammond[1];

[1]Massachusetts Inst. of Technology, Cambridge, MA, [2]REQUIMTE/CQFB, Faculdade de Ciências e Tecnologia, Univ.e Nova de Lisboa, Caparica, PORTUGAL.

580 **Thermoresponsive Cell Culture Surfaces for Promoting Cell Adhesion**

J. Kobayashi, M. Nishi, Y. Akiyama, M. Yamato, T. Okano;
Tokyo Women's Med. Univ., Tokyo, JAPAN.

581 **Novel Injectable Thermo-Responsive Complexes For Prolonged Nitric Oxide Delivery**

J. Yang, R. Lith, **G. A. Ameer**;
Northwestern Univ., Evanston, IL.

582 **Light-triggered Phase Transitions in Nanofiber-Nanorod Composites**

V. Ramanan, K. C. Hribar, J. A. Burdick;
Univ. of Pennsylvania, Philadelphia, PA.

583 **Smart Biodegradable POSS-Polycaprolactone PolyUrethanes**

E. Huitron-Rattinger;
Universidad Nacional Autonoma de Mexico, Cuernavaca, MEXICO.

584 **Preparation of PIPAAm Modified Silicone Elastomer by Using Electron Beam Irradiation**

Y. Akiyama;
Inst. of Advanced BioMed. Engineering and Sci., 8-1 Kawadacho,, JAPAN.

Engineering Instructive Cues into Biomaterials

585 **Effect of Bioactive Surface Coating on Protein Adsorption, Bone Cell Differentiation and Immune Response**

Aniket, I. Marriott, A. El-Ghannam;
The Univ. of North Carolina at Charlotte, Charlotte, NC.

586 **Genipin-crosslinked Chitosan/Poly(lysine) Films to Promote Oligodendrocyte Progenitor Cells' Attachment and Proliferation In-vitro**

M. Mekhail, G. Almazan, M. Tabrizian;
McGill Univ., Montreal, QC, CANADA.

587 **Effect of Polyelectrolyte Multilayer Assembly on Accessibility of Immobilized Growth Factor**

N. M. Shah[1], F. Gorouhi[1], B. J. Wood[1], A. Agarwal[2], J. Covert[1], R. R. Isseroff[1], N. L. Abbott[2], C. J. Murphy[1];

[1]Univ. of California, Davis, Davis, CA, [2]Univ. of Wisconsin-Madison, Madison, WI.

588 **Bulk and Surface Covalent Immobilization of ECM Molecules on Hydrogels formed by Michael-type Addition**
A. Sen, R. C. Cribb, J. Lee, K. Webb;
Clemson Univ., Clemson, SC.

589 **Synthesis and Collection of Collagen Nanotubes for Biomaterials Application**
D. Kalaskar, J. Landoulsi, C. Dupont-Gillain, S. Demoustier;
Université catholique de Louvain, Louvain-la-Neuve, BELGIUM.

590 **Immobilization of Epidermal Growth Factor on Titanium**
Y. Ito;
Riken Advanced Sci. Inst., Wako-shi, JAPAN.

591 **Morphology Tuning of Chitosan Films via Electrochemical Deposition on Metallic Substrates**
L. Altomare, F. Rubini, A. Cigada, R. Chiesa, L. De Nardo;
Politecnico di Milano, Milan, ITALY.

Responsive Biomaterials: Exploiting Biological Signals

592 **Thermosensitive Hydrogels Induce Cardiosphere Derived Cells Differentiation into Cardiac Lineage In Vitro**
Z. Li, J. Guan;
Ohio State Univ., Columbus, OH.

593 **Controlling the Adhesion and Differentiation of Mesenchymal Stem Cells Using Cell Responsive, Hyaluronic Acid-based, Doubly-Crosslinked Networks**
A. K. Jha, **X. Jia**;
Univ. of Delaware, Newark, DE.

594 **Temperature-Controlled Modulation of Fibrin Matrix Properties**
A. S. C. Soon, C. S. Lee, T. H. Barker;
Georgia Inst. of Technology, Atlanta, GA.

595 **Dual Coating Proteins Silanized to Titanium Alloy: A Bioinductive Surface for Fibroblasts**
C. J. Pendegrass, M. El-Husseiny, G. Blunn;
Univ. Coll. London, Stanmore, Middlesex, UNITED KINGDOM.

596 **Increased Proteoglycan Syntheses in Primary Human and Bovine Chondrocytes in Biomimetic PEG Hydrogels Containing Type I Collagen and Hyaluronic Acid Signaling Motifs**
L. Smith[1], D. McBurney[2], A. Ganos[1], A. Nugent[2], W. Horton[2], M. L. Becker[1];
[1]Univ. of Akron, Akron, OH, [2]Northeastern Ohio Universities Coll. of Med. and Pharmacy, Rootstown, OH.

597 **Protein Adsorption On Poly(Methacrylic Acid) Modified Silicon Nanowire Arrays**
L. Yuan[1], Q. Yu[2], H. Chen[1], Y. Zhang[2], H. Wang[1];
[1]Soochow Univ., Suzhou, CHINA, [2]Wuhan Univ. of Technology, Wuhan, CHINA.

Optimization and Characterization of Nanoparticle Biocompatibility

598 **Vascular Smooth Muscle Cell Mechanics in Response to Gold Nanoparticles**
W. McAllister, L. Wiles, P. Kerscher, J. Turbeville, C. Kitchens, D. Dean;
Clemson Univ., Clemson, SC.

599 **Intracellular Degradation and Distribution of Size-Controlled Antigen-Encapsulated Biodegradable Nanoparticles**
F. Shima, T. Akagi, M. Akashi;
Osaka Univ., Suita, JAPAN.

600 **Preparation of PLLA Nanocomposites Containing Magnesium Hydroxide for Neutralization of an Acidic Environment in Biodegradable Polymers**
C. Kum, J. Choi, K. Park, **D. Han**;
Korea Inst. of Sci. and Technology, Seoul, KOREA, REPUBLIC OF.

601 **Transport of Dendritic Nanoparticles across the Porcine Buccal Mucosa: Implications for Buccal Administration of Dendrimer-Based CNS Nanomedicines**
Q. Yuan[1], Y. Fu[2], W. Kao[2], D. Janigro[3], H. Yang[1];
[1]Virginia Commonwealth Univ., Richmond, VA, [2]Univ. of Wisconsin-Madison, Madison, WI, [3]Cleveland Clinic Fndn., Cleveland, OH.

602 **The Conjugation of Amyloid Beta Protein on the Gold Colloidal Nanoparticles' Surface**
K. Yokoyama;
SUNY Geneseo Coll., Geneseo, NY.

603 **Green Synthesis of Gold Quantum Dots and Cadmium Free Quantum Dots for Cancer Cell Imaging: Haemocompatibility and Cytotoxicity Evaluation.**
C. Durgadas, D. Sreenivasan, C. Sharma;
Sree Chitra Tirunal Inst. for Med. Sci. and Technology, Trivandrum, INDIA.

604 **Surface Modifications of Poly(N-isopropylacrylamide) Microgels for Targeted Drug Delivery**
H-Y. Tsai, M. Yates;
Univ. of Rochester, Rochester, NY.

605 **Analysis of Cellular Adhesion on Substrate Containing Multi-Walled Carbon Nanotube (MWCNTs)**
M. M. Machado[1], A. O. Lobo[2], S. C. Ramos[2], E. J. Corat[2], **M. A. F. Corat**[1]; [1]CEMIB/UNICAMP, Campinas, BRAZIL, [2]INPE, São José dos Campos, BRAZIL.

606 **Analysis of Cellular Spreading on Substrate Containing Multi-Walled Carbon Nanotube (MWCNTs)**
M. M. Machado[1], A. O. Lobo[2], S. C. Ramos[2], E. J. Corat[2], **M. A. F. Corat**[1];
[1]CEMIB/UNICAMP, Campinas, BRAZIL, [2]INPE, São José dos Campos, BRAZIL.

607 **Study of Mesenchymal Stem Cell Function on Zinc Oxide Nanoparticles**
A. C. Jayasuriya, A. H. Jayatissa;
Univ. of Toledo, Toledo, OH.

Translational Research in Nano-biomaterials

608 **Nitric Oxide-Releasing Nanoparticle/Polymer Microfiber Composites**
J. A. Nash, P. N. Coneski, D. A. Riccio, M. H. Schoenfisch;

Univ. of North Carolina at Chapel Hill, Chapel Hill, NC.

609 **Intravenously Administered Nanoparticles to Control Bleeding**

A. Shoffstall[1], K. Kelly[2], J. Ustin[2], D. Campbell[1], L. Wu[1], E. Lavik[1];

[1]Case Western Reserve Universitiy, Cleveland, OH, [2]Metro Hlth., Cleveland, OH.

610 **Acid Etched Porocoat® of CoCrMo for Biological Fixation**

W. Tong, L. Salvati;

DePuy Orthopaedics, Warsaw, IN.

611 **Increased Cardiomyocyte Uptake of N-acetylglucosamine-Decorated Nanoparticles**

W. D. Gray[1], X. Ning[2], J. C. Sy[1], M. E. Davis[1], N. Murthy[1];

[1]Georgia Inst. of Technology and Emory Univ., Atlanta, GA, [2]Georgia Inst. of Technology, Atlanta, GA.

612 **Nanofibrous PLA Mesh is Wound Adherent and Hemostatic in Pig Liver Resection Model**

W. H. Velander[1], J. Calcaterra[1], R. Spretz[2], S. Noriega[2], G. Larsen[2], M. A. Carlson[3], I. I. Pipinos[3], J. M. Johanning[3];

[1]Univ. of Nebraska, Lincoln, NE, [2]LNK Chemsolutions LLC, Lincoln, NE, [3]Univ. of Nebraska Med. Ctr., Omaha, NE.

613 **The Role Of Surface Topography On Cellular Attachment To Poly(L Lactic Acid) Electrospun Fibers**

R. F. Ostapoff, A. Throm, S. Gleiman;

Covidien, North Haven, CT.

614 **Assessment of a Decellularized Porcine Diaphragm and Gold Nanomaterial Composite as a Tissue Scaffold for Wound Healing**

M. J. Cozad, S. L. Bachman, S. A. Grant;

Univ. of Missouri, Columbia, MO.

615 **Antioxidant Hydrogels for Cellular Encapsulation Using Cerium Oxide Nanoparticles**

J. D. Weaver, C. L. Stabler;

Univ. of Miami, Miami, FL.

616 **Evaluating Bacterial Colonization of Nanomodified Endotracheal Tubes in a Bench Top Airway Model**

M. Machado[1], K. Tarquinio[2], T. Webster[1];

[1]Brown Univ., Providence, RI, [2]Rhode Island Hosp., Providence, RI.

617 **Microparticle-Mediated Nox2-Sirna Therapy for Preventing Cardiac Dysfunction Following Myocardial Infarction**

I. Somasuntharam[1], J. Sy[1], G. Seshadri[1], N. Murthy[1], M. Davis[2];

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618 **Integration of Silver-Impregnated Polymeric Multilayers onto Biological Tissues to Provide Antibacterial Activity**

A. Agarwal, K. M. Guthrie, C. J. Czuprynski, M. J. Schurr, J. F. McAnulty, C. J. Murphy, N. L. Abbott;

Univ. of Wisconsin, Madison, WI.

619 **Biodegradable Nanoparticles Containing Benzopsoralens and Vascular Function in Pathological Skin Disorders**

A. J. Gomes[1], L. O. Lunardi[2], F. H. Caetano[2], A. E. H. Machado[3], A. F. Oliveira[4], L. M. Bendhack[5], **C. N. Lunardi**[1];

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620 **Nitric Oxide-releasing TEOS Nanoparticles Antitumoral Action Om Melan-a Cells**

A. J. Gomes[1], E. M. Espreafico[2], E. Tfouni[3];

[1]FCE-UnB, Brasilia, BRAZIL, [2]FMRP-USP, Ribeirão Preto, BRAZIL, [3]FFCLRP-USP, Ribeirão Preto, BRAZIL.

621 **Bioengineered Controlled Delivery System for the Treatment of Acute Liver Failure**

S. Kobsa, G. Wu, B. Liu, H. G. Cohen, E. S. Swenson, W. M. Saltzman;
Yale Univ. Sch. of Med., New Haven, CT.

622 **Characterization of Nano-scaled Cellulose Surface Area and Pore Size**

J. Guo, J. M. Catchmark;
The Pennsylvania State Univ., University Park, PA.

Alternative Platforms for Pharmacologic Administration

623 **Novel Multimeric siRNA-XDNA Nanostructures for Precise Multifunctional Synergistic Therapy**

C. Ke, S. Um, D. J. Irvine;
Massachusetts Inst. of Technology, Cambridge, MA.

624 **Size Dependent Biocidal Action of Nitric Oxide-Releasing Silica Nanoparticles**

A. W. Carpenter, M. H. Schoenfisch;
Univ. of North Carolina at Chapel Hill, Chapel Hill, NC.

625 **Lyotropic Lipids of the Endogenous, n-Acylethanolamide Variety for Drug Delivery to Ocular Tissue**

F. Lasowski[1], H. Sheardown[1], M. Moghaddam[2];

[1]McMaster Univ., Hamilton, ON, CANADA, [2]CSIRO, Sydney, AUSTRALIA.

626 **Encapsulation of Antigens into Microparticles Results in Subunit Dosage Sparing Capabilities**

J. H. Wilson Welder, L. Huntimer, **K. A. Ross**, B. Carrillo-Conde, L. Pruisner, B. Narasimhan, M. J. Wannemuehler;
Iowa State Univ., Ames, IA.

627 **Radiopaque Microspheres for Improved Transarterial Chemical Embolization of Tumors.**

K. Saralidze, M. L. W. Knetsch, L. H. Koole;
Maastricht Univ., Maastricht, NETHERLANDS.

628 **Development of a Poly(lactic acid) Poly(ethylene glycol) Nanoparticle for Delivery of Vitamin D3 to Severe Asthmatics**

M. V. Scionti;
Villanova Univ., Villanova, PA.

629 **In Vitro and In Vivo Evaluation of Hydroxyzine Hydrochloride Microcapsules for Skin Delivery**
C. Rizkalla, R. Aziz, I. Soliman;
Faculty of Pharmacy, Cairo Univ., Egypt, Cairo, EGYPT.

630 **Synthesizing Calcium Alginate Nanoparticles via a New Interfacial Cross-linking Technique**
P. Singh, J. Nesamony;
Univ. of Toledo, Toledo, OH.

631 **Controlled Photoinitiated Nitric Oxide Release from S-nitroso-N-acetyl-DL-penicillamine Derivatized Silicone Rubber (SNAP-SR)**
M. C. Frost, G. E. Gierke, M. Starrett, M. Nielsen;
Michigan Technological Univ., Houghton, MI.

632 **AS-ODN Delivery into Mammalian Cells Using High Hydrostatic Pressurized Cationic Liposome**
T. Kimura, A. Sano, K. Nam, Y. Sasaki, K. Akiyoshi, A. Kishida;
Tokyo Med. and Dental Univ., Tokyo, JAPAN.

633 **Polysialic Acid-Based Nanoparticles for Systemic Drug Delivery**
N. Zhang, C. J. Schweikert, Z. Balmuth-Loris, R. A. Bader;
Syracuse Univ., Syracuse, NY.

Diabetes Care / Insulin Delivery

634 **Nanocomplexes System Based on Lithocholic acid-Modified Exendin-4 and Glycol Chitosan Bearing β-Cyclodextrin for the Treatment of Type 2 Diabetes.**
H. Jang[1], S. Son[2], S. Chae[2], K. Lee[2], J. Park[1];
[1]KyungHee Univ., Suwon, KOREA, REPUBLIC OF, [2]SungKyunKwan Univ., Suwon, KOREA, REPUBLIC OF.

635 **Enhanced Rat Islet Function and Viability within a Biomimetic Self-Assembled Nanomatrix Gel**
D. Lim[1], S. Antipenko[1], N. Hadley[1], W. Cui[1], J. Thompson[1], J. Corbett[2], **H-W. Jun**[1];
[1]Univ. of Alabama at Birmingham, Birmingham, AL, [2]Med. Coll. of Wisconsin, Milwaukee, WI.

636 **Developing Hydrogel Systems for the Formation of Islets of Langerhans from Single β-Cells**
X. Liu, X. Li, X. Wen;
Clemson Univ., Charleston, SC.

637 **Correlating Regional Hypoxia to Reduction in Insulin Secretion in Encapsulated Pancreatic β-cell Aggregates**
M. L. Skiles;
Univ. of South Carolina, Columbia, SC.

Drug Delivery from Implant Surfaces

638 **Toward an Antimicrobial Coated External Fixation Pin**
T. R. Meyer, B. Luchsinger, M. Schallenberger;
Bacterin Intl., Inc., Belgrade, MT.

639 **Osseointegration of Silver Treated Titanium Alloy**

M. J. Coathup[1], J. Shawcross[2], C. Scarsbrook[1], M. Korda[1], A. Hanoun[1], M. Pickford[2], P. Agg[2], G. W. Blunn[1];

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640 **Electro-deposition of Antimicrobial Silver Coatings on Stainless Steel Implants**

A. Bandyopadhyay;
Washington State Univ., Pullman, WA.

641 **Drug Eluting Stents: Controlled Drug Release Using Magnesium Alloy Coatings**

C. E. Macias[1], G. Mani[2], M. Feldman[3], C. Agrawal[1];

[1]Univ. of Texas at San Antonio, San Antonio, TX, [2]Univ. of South Dakota, Sioux Falls, SD, [3]Univ. of Texas Hlth.Sci. Ctr. at San Antonio, San Antonio, TX.

642 **A Temperature-Sensitive Drug Release System Based on Phase-Change Materials**

Y. Zhang, S-W. Choi, Y. Xia;
Washington Univ. in St. Louis, St. Louis, MO.

643 **Comparison of Antimicrobial Needleless I.V. Connectors in a Septum Contamination Assay**

M. Schallenberger, B. Luchsinger, T. Meyer;
Bacterin Intl. Inc., Belgrad, MT.

644 **Antibiotic Release from HA-coated Porous Metal Structures Under Static and Dynamic Conditions**

A. S. LaCroix, S. Sundaramurthy, G. Gupta;
Biomet Inc., Warsaw, IN.

645 **Withdrawn**

646 **Management of the Infected Arthroplasty Using Antibiotic-Loaded Hydroxyapatite Blocks Combined With Cement Spacer**

Y. Mochida, K. Ishii, K. Harigane, N. Taki, Y. Akamatsu, N. Mitsugi, T. Saito;
Yokohama City Univ., Yokohama, JAPAN.

647 **Commercial Collagen Matrices for In Vitro Diagnostic Bioartificial Arteries**

T. W. Steele;
Nanyang Technological Univ., Singapore, SINGAPORE.

648 **A Drug Eluting, Osseointegrative Phospholipid Coating for Titanium Implants**

D. A. Prawel, K. C. Popat, S. P. James;
Colorado State Univ., Ft. Collins, CO.

649 **Application of α-Cristobalite and β-Rhenanite as Drug Delivery Systems**

H. Pacheco;
Univ. of North Carolina at Charlotte, Charlotte, NC.

650 **Viability and Differentiation of BMP-2 on W-20-17 cells in the Presence of Vancomycin**

H. Doty, J. D. Bumgardner, W. O. Haggard;
Univ. of Memphis, Memphis, TN.

651 **Synthesis and Characterization of Dendrimer-Drug Nanodevices to Target Periprosthetic Inflammation**
W. Ren, A. Bosnjakovic, M. Mishra, T. Shi, R. M. Kannan;
Wayne State Univ., Detroit, MI.

652 **Silica Xerogel-Chitosan Hybrid Coating on Porous Hydroxyapatite Scaffold for BMP Loading**
S-H. Jun[1], E-J. Lee[1], J-H. Jang[2], H-E. Kim[1];
[1]Seoul Natl. Univ., Seoul, KOREA, REPUBLIC OF, [2]In-Ha Univ., Incheon, KOREA, REPUBLIC OF.

653 **Thermoreversible PLGA-g-PEG Hydrogels Containing Hydroxyapatite for Potential Lipid Growth Factor Delivery**
G. Lin, L. Cosimbescu, N. Karin, B. Tarasevich;
Pacific Northwest Natl. Lab., Richland, WA.

654 **Dense Titanium Implants Embedded with Growth Factors**
H-D. Jung, E-J. Lee, H-E. Kim;
Seoul Natl. Univ., Seoul, KOREA, REPUBLIC OF.

655 **Preparation of Polyvinyl Alcohol (PVA) Microspheres Using Freeze-thaw Cycling Methods**
D. Buzas[1], **W. Song**[1], X. Jin[1], T. Shi[1], D. Markel[2], W. Ren[1];
[1]Wayne State Univ., Detroit, MI, [2]Detroit Med. Ctr./Providence Hosp. Orthopedic Surgery Residency Program, Detroit, MI.

Biologically Derived Materials

656 **Rat Adipose Derived Stem Cell (Rasc) Adhesion and Viability on Non-Cross-Linked Porcine Acellular Dermal Matrix (Ncl-PADM) In Vitro**
T. S. Iyyanki;
The Univ. of Texas, M.D Anderson Cancer Ctr., Houston, TX.

657 **Chondocytes From Human, Horse, Camel, Dog, and Cat Articular Cartilage Propagated on Microcarrier Spinner Culture Respond to Pro-Inflammatory Stimuli**
M. W. Grzanna, L. F. Heinecke, A. Y. Au, S. L. Ownby, A. C. Mrozinski, C. G. Frondoza;
Nutramax Lab., Inc., Edgewood, MD.

658 **Chinese Yam-Derived Adhesive for Tissue Engineering**
L. Xia, S. Lenaghan, A. Wills, M. Zhang;
Univ. of Tennessee, Knoxville, TN.

659 **Fibroblast-derived, ECM-enriched Biomaterials for Use in Nerve Repair.**
M. B. Christensen, P. A. Tresco;
Univ. of Utah, Salt Lake City, UT.

660 **Effect of Solvent Acids on Physical Properties and Cell Attachment to Chitosan Microsphere-based Scaffolds**
R. E. Manning;
Univ. of Memphis, Memphis, TN.

661 **An Investigation of NIH3T3 Cell Adhesion and Transfection on Glycol-Chitosan-Based Multilayered Films**
C. Holmes[1], P. O. Bagnaninchi[2], M. Tabrizian[1];

[1]McGill Universiy, Montreal, QC, CANADA, [2]MRC Ctr. for Regenerative Med., Edinburgh, UNITED KINGDOM.

662 **NanoSPONGE™ Crosslinked Natural Biopolymers Matrix**
G. Ritter, C. Nataraj, J. Kirk;
Nanotherapeutics, Alachua, FL.

663 **Biomimetic Aggrecan Based on a Polyacrylic Acid (PAA) Core and Chondroitin Sulfate (CS) Bristles**
N. Ganesh[1], S. Sarkar[1], E. Vresilovic[2], M. Marcolongo[1];
[1]Drexel Univ., Philadelphia, PA, [2]Penn State Univ., Hershey, PA.

664 **Bioabsorbable Hydrogel Made of Hydroxyapatite Functionalized Microspherelike Bacterial Cellulose Particles for Cartilage and Bone Tissue Regeneration**
Y. Hu, J. M. Catchmark, E. A. Vogler`;
Pennsylvania State Univ., University Park, PA.

665 **HPGuar Provides a Therapeutic Glycocalyx for Superior Tissue Lubrication**
L. F. Springer[1], R. E. Baier[1], A. E. Meyer[1], H. A. Ketelson[2], D. L. Meadows[2];
[1]Univ. at Buffalo, Buffalo, NY, [2]Alcon Res. Ltd., Fort Worth, TX.

666 **Genipin-Crosslinked Nano-Fibrous Chitosan Membranes: Preliminary Testing For Use as GTR Membranes**
P. A. Norowski, Jr.[1], W. C. Clem[2], P. C. Adatrow[3], W. O. Haggard[1], J. D. Bumgardner[1];
[1]Univ. of Memphis, Memphis, TN, [2]Wright Med. Technology, Arlington, TN, [3]Univ. of Tennessee Hlth.Sci. Ctr., Memphis, TN.

667 **Mechanical Property Improvements to Chitosan through Disulfide Bonds**
K. B. Miles, H. W. T. Matthew;
Wayne State Univ., Detroit, MI.

668 **The Stability and Biocompatibility of Electrospun Collagen Using Common Cross-linking Agents**
G. Portocarrero, P. Mashi, D. Pandya, S. Amara, G. Collins, T. Livingston Arinzeh;
New Jersey Inst. of Technology, Newark, NJ.

669 **Gelatin-Ovalbumin Hybrid Hydrogels: Characterization and their Potential as a Dual Growth Factor Delivery Device**
T. Horseman, A. Whittington;
Virginia Polytechnic Inst. and State Univ., Blacksburg, VA.

Biologically Inspired Biomaterials Approaches for Cancer Research

670 **Electrospun Fiber-Glia White Matter Mimetics**
A. Hissong[1], S. Rao[1], J. Larison[1], J. Johnson[1], A. Sarkar[2], J. Lannutti[1], J. Winter[1];
[1]The Ohio State Univ., Columbus, OH, [2]Univ. of Arkansas for Med. Sci., Little Rock, AR.

671 **Brain Mimetic Hydrogels for Investigating Glioblastoma Multiforme Migration in 3D**
S. S. Rao[1], J. DeJesus[1], A. Sarkar[2], J. O. Winter[1];

[1]The Ohio State Univ., Columbus, OH, [2]Univ. of Arkansas, Little Rock, AR.

672 **Uptake and Migration of Tumor Cells in Response to Hybrid Polymer-Peptide Self-Assembled Nanoparticles**
H. Ardalani, A. E. Mercado, J. Ma, X. He, E. Jabbari;
Univ. of South Carolina, Columbia, SC.

Engineering Therapeutic Delivery from Biomaterial Scaffolds

673 **Antimicrobial-Loaded Microhydrogels Self-Assembled on Polymeric Nanofiber Scaffolds**
Q. Wang, R. Junka, X. Yu, M. Libera;
Stevens Inst. of Technology, Hoboken, NJ.

674 **Controlled Therapeutic Release from a Nucleic Acid Aptamer Functionalized Gold Nanoparticle Platform**
P. Sundaram[1], J. Wower[2], M. E. Byrne[1];
[1]Biomimetic & Biohybrid Materials, BioMed. Devices, and Drug Delivery Lab., Dept. of Chemical Engineering, Auburn Univ., Auburn, AL, [2]Dept. of Animal Sci., Auburn Univ., Auburn, AL.

675 **Effects of Local Delivery of Antibiotics from Chitosan Constructs on Hemostasis**
J. A. Jennings[1], J. K. Smith[1], H. Speich[2], L. Jennings[2], S. P. Noel[1], J. D. Bumgardner[1], W. O. Haggard[1];
[1]Univ. of Memphis, Memphis, TN, [2]Univ. of Tennessee Hlth.Sci. Ctr., Memphis, TN.

676 **Multifunctional Block Copolymer Nanoparticles for Controlled Release of Bone Morphogenetic Protein 2**
L. Xiao, A. C. Greene, K. L. Kiick, **X. Jia**;
Univ. of Delaware, Newark, DE.

677 **Porous EH and EH-PEG Scaffolds as Gene Delivery Vehicles to Skeletal Muscle**
M. O. Wang[1], J. A. Thompson[1], E. E. Falco[1], J. M. Chetta[1], D. M. Yoon[1], E. Z. Li[1], M. M. Kulkami[2], S. B. Shah[1], A. Pandit[2], J. Roth[3], J. P. Fisher[1];
[1]Univ. of Maryland, Coll. Park, College Park, MD, [2]Natl. Univ. of Ireland, Natl. Ctr. for BioMed. Engineering Sci., Galway, IRELAND, [3]Univ. of Kentucky Coll. of Med., Lexington, KY.

678 **Hybrid Biomimetic Nanomatrix for Cardiovascular Applications**
A. Andukuri, A. Tambralli, J. M. Anderson, D. R. Dean, B. C. Brott, H-W. Jun;
Univ. of Alabama at Birmingham, Birmingham, AL.

679 **Hierarchical Nanostructured Polymer Films Enhance Protein and Antibody Permeability**
K. R. Kam;
Univ. of California, San Francisco, San Francisco, CA.

680 **Effect of Hydrophobicity on Release of Hydrophilic Therapeutics from Hydrogel-Electrospun Fiber Mat Composites**
N. Han, P. Bradley, J. Johnson, K. Parikh, A. Hissong, J. Lannutti, **J. Winter**;
The Ohio State Univ., Columbus, OH.

681 **Neuron-specific Polymeric Micelle as a siRNA Delivery Carrier for CNS Regeneration**

J. Zhang, K. Webb, **J. Lee**;
Clemson Univ., Clemson, SC.

682 **Controlled Release of Bfgf from Chemically-Crosslinked Chitosan/Pluronic Hydrogel Containing Heparin**
H. Kim, J. Choi, Y. Son, S. Yoon, E. Jo, H. Yoo;
Kangwon Natl. Univ., Chuncheon, KOREA, REPUBLIC OF.

683 **Controllable Immobilization of Heparin onto Electrospun Poly(ε-caprolactone)/Gelatin Fibers for Growth Factor Delivery**
J. Lee, J. J. Yoo, A. Atala, S. Lee;
Wake Forest Inst. for Regenerative Med., Winston-Salem, NC.

684 **Drug-encapsulated Super Stiff Poly(ethylene glycol) hydrogel for Stem Cell Mobilization**
Y. Liang[1], T. W. Jensen[1], E. J. Roy[1], C. Cha[1], R. J. DeVolder[1], R. E. Kohman[2], B. Zhang[1], K. B. Textor[1], L. A. Rund[1], L. B. Schook[1], Y. Tong[3], **H. Kong**[1];
[1]Univ. of Illinois at Urbana-Champaign, Urbana, IL, [2]Boston Univ., Boston, MA, [3]Natl. Univ. of Singapore, Singapore, SINGAPORE.

685 **Increased Lymphatic Growth with Nitric Oxide and Electrospun Fibers**
C. McCarthy, J. Li, A. Keim, G. Gierke, M. Nielsen, M. Frost, E. Bouta, H. Wang, R. Gilbert, J. Goldman;
Michigan Technological Univ., Houghton, MI.

686 **Optimized Daptomycin Elution from Calcium Sulfate**
K. Smith[1], W. Haggard[1], M. Smeltzer[2];
[1]Univ. of Memphis, Memphis, TN, [2]Univ. of Arkansas for Med. Sci., Little Rock, AR.

687 **In Vitro Evaluation of a Chitosan/ß-GP Gel for a Local Delivery of BMP-2 for Osteoblatic Differentiation**
S. Kim, Y. Kang, Y. Yang;
Univ. of Texas Hlth.Sci. Ctr. at Houston, Houston, TX.

689 **Porous Poly(Caprolactone) Hollow Microspheres With Different Morphologies**
T. S. Jang, E. J. Lee, H. E. Kim;
Seoul Natl. Univ., Seoul, KOREA, REPUBLIC OF.

690 **Development of a Photo-Polymerizable Bone Graft Substitute as a Delivery System for Bone Morphogenetic Protein**
A. J. McNally, K. Sly, S. Lin;
Exactech Inc., Gainesville, FL.

691 **Microfibrous Non-woven Scaffolding for Liquid Drug Delivery**
K. J. Garcia, J. T. Corbett, J. M. Olbrich, M. S. Taylor, S. W. Shalaby;
Poly-Med, Inc., Anderson, SC.

692 **Local Delivery of Proteins and Antibiotics from Elastin-based Scaffolds**

S. S. Amruthwar, A. V. Janorkar;
Univ. of Mississippi Med. Ctr., Jackson, MS.

693 **TCP Particles as a Sustained Release Carrier of Osteogenic Proteins**

Y. Hou[1], J. Hu[1], H. Park[2], B. Wu[3], M. Lee[1];

[1]Sch. of Dentistry, Univ. of California, Los Angele, Los Angeles, CA, [2]Dept. of Chemistry and Biochemistry, Univ. of California, Los Angele, Los Angeles, CA, [3]Dept. of Bioengineering, Univ. of California, Los Angele, Los Angeles, CA.

694 **Layer-By-Layer Assembled Oligodeoxynucleotide Sponge for Multi-Drug Delivery**

J. Lee, Z. Poon, D. Bonner, J. Hong, P. Hammond;
Massachusetts Inst. of Technology, Cambrideg, MA.

695 **Nanofibrous EGF Gene Delivery System Employing Mmps-Responsives Linkers**

H. Kim, H. Yoo, J. Choi, Y. Son, S. Yoon, E. Jo;
Kangwon Natl. Univ., Chuncheon, KOREA, REPUBLIC OF.

696 **Effect of Processing Temperature on Poly(lactic-co-glycolic acid) Scaffold Properties and Bioactivity of Insulin-like Growth Factor I**

A. Clark, T. Milbrandt, Z. Hilt, D. Puleo;
Univ. of Kentucky, Lexington, KY.

697 **In Vitro Degradation of Poly(DL/L-lactide-ε-caprolactone) Biomaterials**

C. Davis, H. Bowman, P. Spencer;
SurModics Pharmaceuticals, Birmingham, AL.

Cancer Drug Delivery

698 **Paclitaxel-Eluting Expansile Nanoparticles for the Treatment of Breast Cancer**

K. V. Zubris[1], R. Liu[2], J. E. Wade[2], A. H. Colby[1], Y. L. Colson[2], M. W. Grinstaff[1];

[1]Boston Univ., Boston, MA, [2]Brigham and Women's Hosp., Boston, MA.

699 **Mechanical Properties and Loading Techniques of Mucoadhesive Films for Treatment of Oral Dysplasia**

S. K. Ramineni, D. Puleo, L. L. Cunningham, T. Dziubla;
Univ. of Kentucky, Lexington, KY.

700 **Block Copolymer Nanoparticles for Gene Delivery in Tumor Model**

D. Velluto, S. Thomas, M. A. Swartz, J. A. Hubbell;
EPFL, Lausanne, SWITZERLAND.

701 **Femtosecond Laser-Assisted Optoporation for Drug and Gene Delivery into Single Mammalian Cells**

P. Soman[1], W. Zhang[2], A. Umeda[3], Z. Zhang[3], S. Chen[2];

[1]Univ. of California, San Diego, La Jolla, CA, [2]Univ. of California, San Diego, San Diego, CA, [3]Univ. of Texas, Austin, Austin, TX.

702 **Using DNA Nanostructures as Antisense Delivery Vehicles**

J-W. Keum[1], J-H. Ahn[2], **H. Bermudez**[1];

[1]Univ. of Massachusetts, Amherst, MA, [2]MIT, Cambridge, MA.

703 **Inhibition of Non-Small Cell Lung Carcinoma (NSCLC) Tumor Growth by Arginine-Albumin Microspheres**
H-Y. Lee, **H-Y. Lee**;
Univ. of Florida, Gainesville, FL.

704 **New Process for the Exclusive γ-Conjugation of Folic Acid for Targeted Drug Delivery**
J. E. Puskas, K. Seo, L. Dos Santos;
The Univ. of Akron, Akron, OH.

705 **Injectable Absorbable Liquid Gel-Forming Systems for Localized Delivery of Therapeutic Agents**
J. M. Olbrich[1], J. T. Corbett[1], K. J. L. Burg[2], W. S. W. Shalaby[1], S. W. Shalaby[1];
[1]Poly-Med, Inc., Anderson, SC, [2]Clemson Univ., Clemson, SC.

706 **Monocytes Hybridized with PAMAM Dendrimer-Doxorubicin Conjugates for Anticancer Drug Delivery**
C. A. Holden, W. Yeudall, H. Yang;
Virginia Commonwealth Univ., Richmond, VA.

707 **In Vivo Tumor Toxicity of Doxorubicin Encapsulated in Peptide-Assembled Polylactide Nanoparticles**
X. He, X. Yang, **E. Jabbari**;
Univ. of South Carolina, Columbia, SC.

708 **Release and Uptake of Pluronic from In Situ Forming PLGA Implants**
A. Carlson, T. Krupka, L. Solorio, A. A. Exner;
Case Western Reserve Univ., Cleveland, OH.

709 **A Novel Micellar-Like Polymeric Nanoparticle for Paclitaxel Delivery: In Vitro and In Vivo Evaluation**
L. Zhang, G. Ma, Y. He, C. Song;
Inst. of BioMed. Engineering, PUMC & CAMS, Tianjin, CHINA.

710 **Autocatalytic Drug Delivery Vehicles**
N. Murthy;
Georgia Tech, Atlanta, GA.

711 ***In vitro* and *in vivo* siRNA Delivery Using Modified Hyperbranched PEI**
X. Chen;
Changchun Inst. of Applied Chemistry, Changchun, CHINA.

712 **Development and Characterization of Cellular Microarrays For Screening Signaling Pathway Inhibitors**
M. R. Carstens, A. Acharya, E. Huang, B. Keselowsky;
Univ. of Florida, Gainesville, FL.

713 **Mixed Micelles Composed of PEG-lipids and Cytotoxic Peptide Amphiphiles for Cancer Therapy**
M. J. Black[1], M. V. Tirrell[2];
[1]Univ. of California, Santa Barbara, Santa Barbara, CA, [2]Univ. of California, Berkeley, Berkeley, CA.

714 **Photosensitizer Encapsulated Hyaluronic Acid Nanoparticles for Photodynamic Therapy of Tumor**

H. Yoon[1], K. Choi[1], H. Koo[2], K. Kim[2], I. Kwon[2], J. Park[3];

[1]Dept. of Life and Nanopharmaceutical Sci., Kyung Hee Univ., Seoul, Korea, Republic of. BioMed. Res. Ctr., Korea Inst. of Sci. and Technology, Seoul, KOREA, REPUBLIC OF, [2]BioMed. Res. Ctr., Korea Inst. of Sci. and Technology, Seoul, KOREA, REPUBLIC OF, [3]Dept. of Life and Nanopharmaceutical Sci., Kyung Hee Univ., Seoul, Korea, Republic of. Dept. of Chemical Engineering, Coll. of Engineering, Kyung Hee Univ., Gyeonggi-do, KOREA, REPUBLIC OF.

715 **Synthesis and Characterization of PEG-Iron Oxide Core-Shell Nanoparticles for Cancer Therapy**

R. J. Wydra, A. M. Kruse, Y. Bae, K. W. Anderson, J. Z. Hilt;
Univ. of Kentucky, Lexington, KY.

716 **The Efficacy of Magnetic Target Drug Delivery to Treat Skin Cancer**

H. E. Misak[1], F. Abedin[1], P. H. Wooley[2], R. Asmatulu[1], **S-Y. Yang**[2];

[1]Wichita State Univ., Wichita, KS, [2]Via Christi Regional Med. Ctr., Wichita, KS.

717 **Formation and Characterization of Drug Encapsulated Polymeric Microspheres for Localized Brain Tumor Therapy**

J. Floyd, A. Galperin, R. Ramakrishna, R. Rostomily, B. D. Ratner;
Univ. of Washington, Seattle, WA.

718 **Material Independent Surface Chemistry for Gold Shell Formation Inspired by Plant Flavonoids**

H. Lee;
MIT, Cambridge, MA.

719 **Biotinylated PLGA Nanoparticles as Versatile Targeting Vehicles for Anti-Cancer Drug Delivery**

O. Donaldson, L. Bell, E. Wagner, N. Comolli;
Villanova Univ., Villanova, PA.

Ceramics in Drug Delivery

720 **Polymer Coated Mesoporous Silica Controlled Release Nanoparticles for Macromolecules**

S. Bhattacharyya, H. Wang, P. Ducheyne;
Univ. of Pennsylvania, 210 S. 33rd Street, PA.

721 **Osteoblast-like MG-63 Cells Behavior on Poly-Caprolactone/Wollastonite Nanocomposites Surface**

J. Podporska;
Dublin City Univ., Dublin, IRELAND.

722 **Drug Delivery from Calcium Sulfate/Hydrogel Space-Making Composites**

B. R. Orellana, M. V. Thomas, J. Z. Hilt, D. A. Puleo;
Univ. of Kentucky, Lexington, KY.

723 **Calcium Phosphates in Drug Delivery: Adsorption and Release Kinetics of Lovastatin**

S. Bose;
Washington State Univ., Pullman, WA.

724 **Gene Transfection Using PVA/HAp/DNA Nanoparticles Prepared by High Hydrostatic Pressurization**

T. Kimura[1], K. Nam[1], T. Furuzono[2], M. Okada[2], A. Kishida[1];

[1]Tokyo Med. and Dental Univ., Tokyo, JAPAN, [2]Natl. Cardiovascular Ctr. Res. Inst., Osaka, JAPAN.

725 **Controlling Silica-induced Oxidative Stress to Facilitate Therapeutic Applications of Engineered Silica**

J. Ambati[1], A. Lopez[2], D. Cochran[1], P. Wattamwar[1], K. Bean[3], T. Dziubla[1], S. Rankin[1];

[1]Univ. of Kentucky, Lexington, KY, [2]Univ. of Arkansas, Fayetteville, AR, [3]Tuskegee Univ., Tuskegee, AR.

Ceramics in Orthopaedic and Dental Applications

726 **Bioactive Glass Scaffold with Oriented Porous Structure for the Repair of Load Bearing Bones**

X. Liu, M. N. Rahaman;

Missouri Univ. of Sci. and Technology, Rolla, MO.

727 ***In vitro* Characterization of Lithium-Doped Tricalcium Phosphate for Bone Graft**

S. Bose;

Washington State Univ., Pullman, WA.

728 **Increasing the Potential of Bioactive Glass as a Scaffold for Bone Tissue Engineering with Synthetic ECM**

M. Ammar, C. Przybylowski, S. S. Jedlicka;

Lehigh Univ., Bethlehem, PA.

729 **Hydroxyapatite Platelets in Physiological Environment**

A. Slepko, A. A. Demkov;

The Univ. of Texas at Austin, Austin, TX.

730 **Effect of Silica and Titania Doping on Calcium Phosphate-Based Glass Properties for Bone Tissue Engineering**

M. Shah Mohammadi[1], N. Muja[1], C. Stähli[1], M. N. Bureau[2], S. N. Nazhat[1];

[1]McGill Univ., Montreal, QC, CANADA, [2]Industrial Materials Inst., Natl. Res. Council Canada, Boucherville, QC, CANADA.

731 **Fiber Reinforced Calcium Silicate Phosphate Bone Cements**

A. Goudarzi, T. Troczynski, N. D. Ruse;

Univ. of British Columbia, Vancouver, BC, CANADA.

732 **Practical Considerations in Accurate Determination of Ca/P Ratios of Calcium Phosphate Materials**

M. A. Ross, W. Tong;

DePuy Orthopaedics Inc., Warsaw, IN.

733 **Bioactive Injectable Nanotube/Nano-HA/Phema Composites for Orthopedic Applications**

L. Sun;

Brown Univ., Providence, RI.

734 **The Effect of Sio_2 and Zno Doping On the Mechanical and Biological Properties of B-TCP Scaffolds Fabricated Using Three-Dimensional (3-D) Printing**
S. Bose;
Washington State Univ., Pullman, WA.

735 **Preparation and Characterization of Hydroxyapatite Doped with La3+**
Z. Xia, E. Johnson, **M. Wei**;
Univ. of Connecticut, Storrs, CT.

736 **Hydrating Calcium Phosphate/ Demineralized Bone Matrix Graft Material with Blood, Bone Marrow, and Antibiotics**
A. D. Rosenberg, N. Camacho, J. Chang;
ETEX Corp., Cambridge, MA.

737 **Preparation of Porous Calcium Phosphate Cement from a-TCP Balls**
K. Ishikawa[1], K. Turu[1], T. Kien[1], M. Maruta[1], S. Matsuya[2];
[1]Kyushu Univ., Fukuoka, JAPAN, [2]Fukuoka Dental Coll., Fukuoka, JAPAN.

738 **Effect of L-Arginine, and L-Glutamic Acid in Solution on the Crystallization of Hydroxyapatite**
M. Tavafoghi Jahromi, M. Cerruti;
McGill Univ., Montreal, QC, CANADA.

739 **Silver Doped Hydroxylapatite Plasma Sprayed Coatings - Antimicrobial Properties and Cytotoxic Effect on Human Osteoblasts**
J. Podporska;
Dublin City Univ., Dublin, IRELAND.

Orthopaedic Alternative Bearing Surfaces: Laboratory Findings and Clinical Actualities

740 **Highly Impact Resistant Surface Crosslinked UHMWPE for Total Joint Implants**
E. Oral, O. K. Muratoglu;
Massachusetts Gen. Hosp., Boston, MA.

741 **The Growth and Characteristics of a Micro-textured Surface on Ti6Al4V**
S. J. L. Sullivan, L. D. T. Topoleski;
Univ. of Maryland, Baltimore County, Baltimore, MD.

742 **Effect of Head Size and Liner Thickness on the Wear of Crosslinked, Thermally-Remelted UHMWPE**
C. Laukhuf, P. Liao, C. Hardaker;
DePuy Orthopaedics, Warsaw, IN.

743 **A New Highly-Radiopaque Bone Cement with Built-in Iodine, and its Potential Utility in Vertebroplasty.**
A. Pepiol[1], C. Vinas[1], M. L. Knetsch[2], K. Saralidze[2], L. Koole[2];
[1]Materials Res. Inst. of Barcelona, Barcelona, SPAIN, [2]Maastricht Univ., Maastricht, NETHERLANDS.

744 **A Pseudoelastic Approach to Sustain Compression in Bone Fractures and Fusions in Response to Bone Resorption**

C. M. Yakacki[1], K. Gall[2], R. Patel[2], D. Dirschl[3], D. Pacaccio[4];
[1]MedShape Solutions, Atlanta, GA, [2]The Georgia Inst. of Technology, Atlanta, GA, [3]Univ. of North Carolina, Chapel Hill, NC, [4]Advanced Foot and Ankle Surgeons, Yorkville, IL.

745 **The Effect of ASTM F-2003 Accelerated Aging of UHMWPE on Specimen Weight Change**
C. E. Golightly, E. E. Sloan, E. M. Lucas, J. D. DesJardins;
Clemson Univ., Clemson, SC.

746 **Comparison Between Gravimetric Wear and Wear Scar Size from Tibial Inserts Tested in a Knee Simulator**
M. E. Roy[1], L. A. Whiteside[2], B. J. Katerberg[3], D. J. Schnettgoecke[3];
[1]Missouri Bone & Joint Res. Fndn., St. Louis, MO, [2]Missouri Bone & Joint Res. Fndn.; Signal Med. Corp., St. Louis, MO, [3]Signal Med. Corp., St. Louis, MO.

747 **Effect of Roughened Counterpart on Behaviors of Vitamin E Infused Ultra-High Molecular Weight Polyethylene**
Q. Wang[1], J. Wu[1], I. Khan[2];
[1]Durham Univ., Durham, UNITED KINGDOM, [2]Biomet UK Ltd, Swindon, UNITED KINGDOM.

Scaffold Assisted Bone Defect Repair / Regeneration

748 **3D Polymer Reinforced Calcium Phosphate Cement Scaffolds for Bone Tissue Engineering**
D. L. Alge[1], S. Harbin[1], W. S. Goebel[2], J. Bennett[3], T. Treasure[3], **T-M. G. Chu**[3];
[1]Purdue Univ., West Lafayette, IN, [2]Indiana Univ. Sch. of Med., Indianapolis, IN, [3]Indiana Univ. Sch. of Dentistry, Indianapolis, IN.

749 **Modified Calcium Phosphate Biomaterials as Human Mesenchymal Stem Cell Delivery Vehicles for Bone Repair**
S-H. Park[1], D. L. Kaplan[2], J. Chang[1];
[1]ETEX Corp., Cambridge, MA, [2]Tufts Univ., Medford, MA.

750 **Shape Memory and Porosity Characteristics of a Novel Orthopaedic Scaffold**
C. G. Gamboa, A. P. Govil;
N. I. Thompson; Advanced Biologics LLC, Ladera Ranch, CA.

751 **Response Behaviors Study Of Human Bone Marrow-Derived Mesenchymal Stem Cells and Endothelial Cells to Calcium Phosphate Scaffold**
Y. Kang[1], S. Kim[1], J. Donnelly[2], N. Sadr[2], Y-C. Chen[2], H. Bae[2], A. Khademhosseini[2], Y. Yang[1];
[1]the Univ. of Texas Hlth.Sci. Ctr. at Houston, Houston, TX, [2]Harvard-MIT Div. of Hlth.Sci. and Technology, Cambridge, MA.

752 **A Newly Developed Biodegradable Injectable Polymer-Metallic Hybrid Material**
H. Wong[1], K. Yeung[1], P. Chu[2], K. Luk[1], K. Cheung[1];
[1]The Univ. of Hong Kong, Hong Kong, HONG KONG, [2]City Univ. of Hong Kong, Hong Kong, HONG KONG.

753 **Biomineralized Highly Aligned Nanofiber Array Based Building Unit for Bone Regeneration**
E. M. Katsanevakis, V. Beachley, X. Wen, N. Zhang;

Clemson Univ., Charleston, SC.

754 **Silicon Substituted Calcium Phosphate Biomaterials - The Effect of Strut Porosity on Osteoinduction**

M. J. Coathup[1], O. Chan[1], K. A. Hing[2], T. Buckland[3], C. Campion[3], G. W. Blunn[1];
[1]Univ. Coll. London, Stanmore, Middlesex, UNITED KINGDOM, [2]Queen Mary Univ. London, London, UNITED KINGDOM, [3]ApaTech Ltd, Elstree, UNITED KINGDOM.

755 **Novel Totally Biodegradable Biomimetic Scaffolds for Bone Regeneration and Repair**

M. Bergenstock, N. Wang, W. Lau, Q. Liu;
3D Biotek, North Brunswick, NJ.

756 **Dense Collagen-Nanosized Bioactive Glass Hybrid as Rapid Implantable Scaffold for Bone Tissue Engineering**

B. Marelli[1], C. E. Ghezzi[1], J. E. Barralet[1], A. R. Boccaccini[2], S. N. Nazhat[1];
[1]McGill Univ., Montreal, QC, CANADA, [2]Univ. of Erlangen-Nürnberg, Erlangen, GERMANY.

757 **Effects of SC-CO_2 Sterilization and Storage on Osteoinductivity of DBM**

Q-Q. Qiu, J. Connor;
LifeCell Corp., Branchburg, NJ.

758 **Microcracks Enhance OB Maturation In Vitro**

Y. Shu, M. J. Baumann, E. D. Case, S. Meyer, M. Buczkowski, K. Tyler, R. Irwin, L. R. McCabe;
Michigan State Univ., East Lansing, MI.

759 **Highly Aligned Porous Alumina Ceramics by Extruding Unidirectionally Frozen Alumina/Camphene Body**

Y-W. Moon[1], K-H. Shin[1], J-H. Sung[1], Y-H. Koh[1], W-y. Choi[2], Y. Jin[2], H-E. Kim[2];
[1]Korea Univ., Seoul, KOREA, REPUBLIC OF, [2]Seoul Natl. Univ., Seoul, KOREA, REPUBLIC OF.

760 **Novel Orthopaedic Implant with Antimicrobial Properties and Reverse Phase Medium**

C. G. Gamboa, A. P. Govil, N. I. Thompson;
Advanced Biologics LLC, Ladera Ranch, CA.

761 **Mechanical Properties and Bioactivity of PEEK-OPTIMA® / Hydroxyapatite Compounds**

M. Brady[1], A. H. C. Poulsson[2], J. Wilson[1], D. Eglin[2], G. Richards[2], M. Jarman-Smith[1];
[1]Invibio Ltd, Thornton-Cleveleys, UNITED KINGDOM, [2]AO Res. Inst., Davos, SWITZERLAND.

762 **Bioactive Glass-Collagen Scaffolds for Treating Infected Bone**

S. Cooper[1], M. Goude[1], K. Lim[1], M. So[2], A. B. Brennan[1];
[1]Univ. of Florida, Gainesville, FL, [2]Vanderbilt Univ., Nashville , TN.

763 **Ovalbumin-Based Scaffolds reinforced with Cellulose Nanocrystals for Bone Tissue Regeneration**

B. P. Glaesemann, A. Wittington, M. Roman;
Viriginia Polytechnic and State Univ., Blacksburg, VA.

764 **Exposed Hydroxyapatite Particles on the Surface of Photo-crosslinked Nanocomposites and Promoted MC3T3 Cell Function**

L. Cai, **S. Wang**;
The Univ. of Tennessee Knoxville, Knoxville, TN.

765 **Effect of Calcium Coating on Tyrosine-Derived Polycarbonate Scaffold Architecture**

O. Ortiz[1], M. H. R. Magno[1], R. Z. LeGeros[2], A. Darr[1], J. Kohn[1];

[1]Rutgers, The State Univ. of New Jersey, Piscataway, NJ, [2]New York Univ., New York, NY.

766 **Mineralized Tissue Formation by Human Osteoblasts in Contact with Biodegradable Polymers**

K. F. Bombonato-Prado[1], L. S. Pinto[1], A. L. Rosa[1], V. D. Jahno[2], R. R. Fernandes[1];

[1]Univ. of São Paulo, Ribeirão Preto, BRAZIL, [2]Catholic Univ. of Rio Grande do Sul, Porto Alegre, BRAZIL.

767 **Highly Porous Bioresorbable Scaffolds with Protein Controlled Release for Tissue Regeneration Applications**

O. Grinberg, I. Binderman, **J. J. Elsner**, M. Zilberman;
Tel Aviv Univ., Ramat Aviv, ISRAEL.

Characterization of and Cellular Response to Orthopaedic Wear Debris

768 **Systemic Homing of Osteoprogenitor Cells to Continuously Infused UHMWPE Particles In Vivo**

P-G. Ren, Z. Huang, K. Fritton, T. Ma, S. Biswal, R. L. Smith, S. B. Goodman;
Stanford Univ., Stanford, CA.

769 **Primary Human Macrophage Responses to PEEK-OPTIMA® and UHMWPE Particulate Implant Debris**

N. J. Hallab[1], A. Kinbrum[2], M. Brady[2];

[1]Rush Univ. Med. Ctr., Chicago, IL, [2]Invibio Biomaterial Solutions, Thornton-Cleveleys, UNITED KINGDOM.

770 **Characterization and Quantification of Wear-debris from Periprosthetic Tissues from Total Hip Patients**

M. K. Musib, V. Rasquinha, S. Saha;
SUNY Downstate Med Ctr., Brooklyn, NY.

771 **Oncogenesis in Arthroplasty**

C. J. Lavernia;
Orthopaedic Inst. at Mercy, Miami, FL.

Dental Materials

772 **Withdrawn**

773 **Response of Osteoblast-Like Cells to Poling Titania Coating**

A. Nagai[1], Y. Yamazaki[1], C. Ma[1], Y. Tsutsumi[1], T. Hanawa[1], T. Toyama[2], K. Yamashita[1];

[1]Tokyo Med. & Dental Univ., Tokyo, JAPAN, [2]Nihon Univ., Tokyo, JAPAN.

774 **Integrative Design of a Poly(ethylene glycol)-Poly(propylene glycol)-Alginate Hydrogel for Three Dimensional Biomineralization**
C. Cha, H. Kong;
Univ. of Illinois, Urbana, IL.

775 **A Trilayer Fibrous Composite Scaffold with nHA for Periodontal Regeneration**
V. Thomas[1], J. P. Ball[2], M. C. Bottino[1], Y. K. Vohra[1];
[1]Univ. of Alabama at Birmingham, Birmingham, AL, [2]Univ. of Florida, Gainesville, FL.

776 **Synthesis and Characterization of Nanostructured Dental Polymers through Phase Dispersion Control**
Q. Ye, J. Park, A. Misra, R. Parthasarathy, V. Singh, P. Spencer;
Univ. of Kansas, Lawrence, KS.

777 **Enzyme Immobilization Enhances GBR-Membrane Performance**
J. van den Beucken, D. Oortgiesen, A. Plachokova, G. Meijer, J. Jansen;
Radboud Univ. Nijmegen Med. Ctr., Nijmegen, NETHERLANDS.

778 **Correlation Between Citotoxity Of Self-Etching Resin Cements On The Cell Cycle Of Fibroblasts And Degree Of Conversion**
K. I. R. Teixeira, Jr., L. F. d. Morgan, Jr., R. d. Albuquerque, Sr., M. E. Cortés, Sr., L. T. A. Poletto, Sr.;
UFMG, Belo Horizonte, BRAZIL.

779 **Preparation of a PQAS-containing Dental GIC Cement for Improved Antibacterial Function**
Y. Weng, D. Xie;
Indiana Univ. Purdue Univ. Indianapolis, Indianapolis, IN.

780 **Methacrylate Derivatives of Bile Acids for Use as Monomers for Dental Resins**
M. A. Gauthier, S. Lerouge, D. Fortin, **J. X. Zhu**;
Univ. of Montreal, Montreal, QC, CANADA.

781 **Correlation Between Osseointegration And Implant Surfaces - Roughness And Coating**
M. Adam[1], C. Ganz[1], W. Xu[1], H. R. Sarajian[2], B. Frerich[2], T. Gerber[1];
[1]Inst. of Physics, Univ. of Rostock, Rostock, GERMANY, [2]Dept. of Oral & Maxillofacial Plastic Surgery, Univ. of Rostock, Rostock, GERMANY.

782 **Plasma Treatment of Dentin Surface for Enhanced Wettability**
A. C. Ritts[1], **A. Blumhagen**[1], Q. Yu[1], H. Li[1], UMKC, X. Yao[2], Y. Wang[2], C. Xu[2], L. Hong[3], M. Chen[4];
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Conducting Polymers as Biomaterials

783 **Multiple Electrical Stimulation Through Conductive PLLA/Ppy/Heprin Scaffold Promotes In Vitro Bone Regeneration**
M. Rouabhia;
Laval Univ., Quebec, QC, CANADA.

784 **Carbon Nanotube Doped Poly(3,4-Ethylenedioxythiophene) for Chronic Neural Stimulation**
X. Luo[1], C. L. Weaver[1], D. D. Zhou[2], R. Greenberg[2], X. T. Cui[1];
[1]Univ. of Pittsburgh, Pittsburgh, PA, [2]Second Sight Med. Products, Inc., Sylmar, CA.

785 **Graphene Nanocomposites for Neural Tissue Applications**
W. He, E. Parrish;
Univ. of Tennessee, Knoxville, TN.

786 **Amperometric Glucose Biosensor Based On Conducting Polymer Nanotubes**
M. Abidian;
Pennsylvania State Univ., University Park, PA.

Tribocorrosion of Metallic Biomaterials

787 **Effect of Proteins and Normal Load on the Tribocorrosion Behavior of Hip Joint Implant Material (CoCrMo Alloy)**
M. J. C. Runa[1], M. M. T. Mathew[2], C. Nagelli[2], M. Laurent[2], J. Jacobs[2], M. Wimmer[2], **L. Rocha**[1];
[1]Univ. of Minho, Guimarães, PORTUGAL, [2]Rush Univ. Med. Ctr., Chicago, IL.

788 **Toxicological Risk of Magnesium Alloys as Implant Materials - Theoretical and Experimental Assessment**
W. Ip, C. Yuen;
The Univ. of Hong Kong, Hong Kong SAR, HONG KONG.

789 **Investigation of the Tribocorrosion Between Polyethylene and Cobalt-chromium**
J. Hesketh;
Univ. of Leeds, Leeds, UNITED KINGDOM.

790 **Iron-Substitution in Hydroxyapatite Using a Simple Ion Exchange Soaking Procedure**
E. Kramer, M. Staruch, M. Jain, **M. Wei**;
Univ. of Connecticut, Storrs, CT.

791 **Tribocorrosion and Corrosion Resistance in Artificial Saliva of Tin/Nc-Tin/A-Si3N4 Coating Deposited By Magnetron Sputtering**
J. J. GARCIA[1], M. Flores[2], O. JIMENEZ[2];
[1]Universidad Panamericana, Zapopan, MEXICO, [2]Universidad De Guadalajara, Zapopan, MEXICO.

Chemoselective Chemistry for Biomaterials

792 **Chemoselective Chemistry of Catechol for HA hydrogels and Conjugation of Biological Molecules**
M. Lee, H. Lee;
KAIST, Daejeon, KOREA, REPUBLIC OF.

793 **Covalent Layer by Layer (CLbL) Assembly of Hydrogel Coatings via Chemoselective Staudinger Ligation**
H. R. Rengifo, K. M. Gattás-Asfura1, J. A. Giraldo, C. L. Stabler;
Univ. of Miami Miller Sch. of Med., Miami, FL.

Mechanical Characterization of Biomaterials

794 **Effect of X-Ray Irradiation on Porcine and Murine Cartilage Modulus**
A. Lindburg, S. A. Bielby, J. S. Willey, J. D. DesJardins, D. M. Dean;
Clemson Univ., Clemson, SC.

795 **Mechanical Properties of Processed Chitosan Fibers for Use in Scaffold Reinforcement**
O. Blowytsky[1], M. Z. Albanna[1], H. L. Walters, III[2], H. W. T. Matthew[1];
[1]Wayne State Univ., Detroit, MI, [2]Children's Hosp. of Michigan, Detroit, MI.

796 **Thin Films Prepared from Novel Absorbable Polymers for Use as Compliant Wrap**
K. D. Gray, Jr., R. T. Pace, M. S. Taylor, S. W. Shalaby;
Poly-Med, Inc., Anderson, SC.

797 **Deterioration of Compressive Properties of Bone Cement due to Release of Multiple Antibiotics over Extended Time Periods**
M. K. Musib, K. Chakote, W. Hayes, V. Rasquinha, S. Saha;
SUNY Downstate Med Ctr., Brooklyn, NY.

798 **Effect of Ionizing Radiation on the Modulus and Residual Strains in Bone**
A. Singhal[1], A. C. Deymier-Black[1], J. D. Almer[2], D. C. Dunand[1];
[1]Northwestern Univ., Evanston, IL, [2]Argonne Natl. Lab., Argonne, IL.

799 **Development of Surrogate Annulus for Nucleus Replacement Devices- A Load Sharing Study**
V. Singh, B. R. Morrow, C. G. Ogden, K. M. Sitton;
Medtronic, Inc., Memphis, TN.

800 **Strain Characterization and Modeling of Bone-Implant System**
F. Yuan[1], A. Singhal[1], J. D. Almer[2], L-P. Lefebvre[2], D. C. Dunand[1], L. C. Brinson[1];
[1]Northwestern Univ., Evanston, IL, [2]Argonne Natl. Lab., Argonne, IL.

801 **Carbon-Fiber Reinforced PEEK for Cervical Disc Arthroplasty**
G. D. G. Langohr, H. Gawel, N. Maheshwari, J. B. Medley;
Univ. of Waterloo, Waterloo, ON, CANADA.

802 **Characterization of Cell-Seeded PEGDA Hydrogels Adapted for Tissue Engineered Heart Valves**
C. A. Durst, M. P. Cuchiara, E. G. Mansfield, J. L. West, K. J. Grande-Allen;
Rice Univ., Houston, TX.

803 **Quantifying Deformation and Recovery of Polyethylene in Total Knee Replacement**
A. M. Metcalfe[1], J. L. Tikka[1], M. A. Strickland[2], M. R. Dressler[1];
[1]DePuy Orthopaedics Inc, Warsaw, IN, [2]Bioengineering Sci. Res. Group, Univ. of Southampton, Southampton, UNITED KINGDOM.

804 **Micromechanical characterization of Inter- and Intra-Lamellar Annulus Fibrosus Specimens**
J. L. Isaacs[1], E. Vresilovic[2], M. Marcolongo[1];
[1]Drexel Univ., Philadelphia, PA, [2]Pennsylvania State Univ., Dept. of Orthopedic Surgery, Harrisburg, PA.

805 **The Influence of Machining on Micro-hardness Properties of CoCrMo Alloys**
O. Vesnovsky[1], B. Farrokh[2], L. D. T. Topoleski[2], L. W. Grossman[1];
[1]FDA, Silver Spring, MD, [2]UMBC, Baltimore, MD.

806 **Tissue-on-Tissue Lubrication by Natural and Xerostomic Saliva and Saliva Substitutes**
R. Ganesh, M. N. Hatton, R. E. Baier, **A. E. Meyer**;
Univ. at Buffalo, Buffalo, NY.

807 **Constitutive Model for Stress on Nickel - Titanium Shape Memory Alloy Considering an Austenite - Twinned Martensite - Detwinned Martensite Phase Transformation Approach**
M. I. Varela-Jimenez, M. Bueno, J. A. Cortes;
Tecnologico de Monterrey, Monterrey, MEXICO.

808 **Influence of Fluid Flow on Porous Scaffold Structural Deformation**
J. Podichetty, S. Madihally;
Oklahoma State Univ., Stillwater, OK.

809 **Biomechanics and Enzymatic Degradation of Two Acellular Dermal Matrices**
J. A. Faleris, J. D. Michaelson, R. M. C. Hernandez, R. Prado, S. T. Moore, R. Cobb;
RTI Biologics, Alachua, FL.

810 **Advanced Nanoindentation of Viscoelastic Properties in Soft Biomaterials**
N. Randall, B. Zhou;
CSM Instruments, Needham, MA.

811 **A Novel High Strength and High Porosity Titanium Scaffold**
J. L. Krevolin, J. Liu, K. Patel, R. Dahl;
Bio2 Technologies, Woburn, MA.

Biocompatibility and Surface Chemistry: Where the Rubber Meets the Road

812 **Preparation, Characterization, and *in vitro* Evaluation of Mineral/Osteogenic Growth Peptide Composite Grown on Calcium Phosphate Coated CP Titanium**
C. Chen[1], I-S. Lee[1], S-M. Zhang[2], H-C. Yang[3], S-H. Choi[4], S-M. Chung[5]; [1]
Atomic-scale Surface Sci. Res. Ctr., Yonsei Univ., Seoul, KOREA, REPUBLIC OF, [2]Advanced Biomaterials and Tissue Engineering Ctr., HUST, Wuhan, CHINA, [3]Dept. of Dental Biomaterials Sci., Seoul Natl. Univ., Seoul, KOREA, REPUBLIC OF, [4]Dept. of Periodontology, Yonsei Univ., Seoul, KOREA, REPUBLIC OF, [5]Implatium Implant Inst., Seoul, KOREA, REPUBLIC OF.

813 **Stable Oxygen Plasma Surface Modification of PEEK to Improve Osteoblast Cytocompatibility**
A. Poulsson, R. Richards;
AO Res. Inst., Davos Platz, SWITZERLAND.

814 **Detailed Characterization of Sodium Hyaluronate using Aqueous Size Exclusion Chromatography with Advanced Detection**
P. Harmon, P. Maziarz, M. Liu;
Bausch and Lomb, Rochester, NY.

815 **Assessment of Protein-Biomaterial Surface Interaction by Streaming Potential Measurement**
T. Luxbacher;
Anton Paar GmbH, Graz, AUSTRIA.

816 **Cytocompatible Polymer Surface with Photocleavable Groups for Regulating the Single Cell Attachment/Detachment**
B. Byambaa, T. Konno, K. Ishihara;
The Univ. of Tokyo, Tokyo, JAPAN.

817 **Immobilization of Polyethylene Glycol-Corn Trypsin Inhibitor on Polyurethane for Inhibition of Contact Factor Activation upon Blood Contact**
S. Alibeik, S. Zhu, J. Yau, J. Weitz, J. Brash;
McMaster Univ., Hamilton, ON, CANADA.

818 **Surface Modification Of 3C-Sic (001) Via Organic Functionalization**
A. Oliveros[1], S. J. Schoell[2], C. Frewin[1], I. D. Sharp[2], S. E. Saddow[1];
[1]Univ. of South Florida, Tampa, FL, [2]Walter Schottky Inst., Garching, GERMANY.

819 **Platelet Response to PEG-Modified Surface With Different Molecular Architecture**
S. Kakinoi[1], L. Ye[2], Y. Inoue[3], K. Ishihara[3], N. Yui[4], T. Yamaoka[1];
[1]Natl. Cerebral and Cardiovascular Ctr. Res. Inst., Osaka, JAPAN, [2]Japan Advanced Inst. of Sci. and Technology, Ishikawa, JAPAN, [3]The Univ. of Tokyo, Tokyo, JAPAN, [4]Advanced Inst. of Sci. and Technology, Ishikawa, JAPAN.

820 **The Cell Biocompatibility of Human Pulpal Fibroblasts After Photodynamic Therapy**
I. M. A. Diniz, K. I. Teixeira, P. V. Araújo, L. A. Poletto, M. Cortés;
Federal Univ. of Minas Gerais, Belo Horizonte, BRAZIL.

821 **Heat Generation Characteristics of the Annealed Duplex Stainless Steel Thermo-Rod for Hyperthermia**
Y. Kim[1], H-w. Choo[1], E-M. Hwang[2], S-m. Choi[3];
[1]INJE Univ., Kimhae City, KOREA, REPUBLIC OF, [2]Koswire Ltd, Yangsan, KOREA, REPUBLIC OF, [3]Catholic Univ. of Pusan, Busan, KOREA, REPUBLIC OF.

Surface Modification for Sensors and Diagnostics

822 **Animating Optical Materials for a Sensor Device**
P-Y. Chung, T-H. Lin, G. Schulz, C. Batich, P. Jiang;
Univ. of Florida, Gainesville, FL.

823 **Combined Micro-Contact Printing and Microfluidic Patterning of Biomarkers in a microfluidic device**
T. F. Didar, M. Tabrizian, A. M. Foudeh, J. Daoud;
McGill Univ., Montreal, QC, CANADA.

824 **Surface Modification with Hydrophobin Proteins**
Q. Ren, V. K. Morris, A. H. Kwan, M. Sunde;
Univ. of Sydney, Sydney, AUSTRALIA.

825 **Bromocresol Green pH Sensor in the Presence of Nitric Oxide**
M. Nielsen, M. C. Frost;
Michigan Technological Univ., Houghton, MI.

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826 **Simple and Effective Non-Thrombogenic Surface Modifications using Macro Zwitterionic Surface Modifiers for Metallic Blood Contacting Devices**
S-H. Ye, C. A. Johnson, Jr., J. R. Woolley, V. Shankarraman, W. R. Wagner;
McGowan Inst. for Regenerative Med., Univ. of Pittsburgh, Pittsburgh, PA.

827 **Tissue Plasminogen Activator-Containing Polyurethane Surfaces for Fibrinolytic Activity**
Z. Wu[1], H. Chen[1], J. L. Brash[2];
[1]Coll. of Chemistry,Soochow Univ., Suzhou, CHINA, [2]Sch. of BioMed. Engineering, McMaster Univ., Hamilton, ON, CANADA.

828 **Enhanced Adhesion of Polymer Coating on Stainless Steel Surface by Direct Ring-Opening Polymerization of L-Lactide**
S. Cho[1], J. Choi[1], K. Park[1], D. Chung[2], **D. Han**[1];
[1]Korea Inst. of Sci. and Technology, Seoul, KOREA, REPUBLIC OF, [2]Sungkyunkwan Univ., Suwon, KOREA, REPUBLIC OF.

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S-M. Kim, J-H. Jo, H-E. Kim;
Seoul Natl. Univ., Seoul, KOREA, REPUBLIC OF.

830 **Biocompatible Surface Generation on Poly(ether ether ketone) by Self-initiated Photoinduced Graft Polymerization**
T. Tateishi[1], M. Kyomoto[1], T. Yamaoka[2], K. Ishihara[1];
[1]Dept. of materials engineering, The Univ. of tokyo, Tokyo, JAPAN, [2]Natl. Cerebral And Cardiovascular Center Research Inst., Osaka, JAPAN.

831 **Functionalized Alginate Hydrogel Coatings for Endothelial Progenitor Cell Capture from Whole Blood**
A. Hatch;
Northeastern Univ., Boston, MA.

832 **Surface Treatments for Orthopaedic Implants which Prevent Bacteria Growth and Support Cell Proliferation**
J. D. Jarrell, Sr.[1], P. A. Tran[2], C. Baker[3], J. R. Morgan[3], R. A. Hayda[2], C. T. Born[2];
[1]BioIntraface, Inc, Riverside, RI, [2]Rhode Island Hosp., Providence, RI, [3]Brown Univ., Providence, RI.

833 **Surface Modification of Equiatomic Nitinol Alloy to Reduce Ni Ion Release**
A. Bandyopadhyay;
Washington State Univ., Pullman, WA.

834 **Flexible HA Coating On Magnesium for Orthopedic Implant Applications**
J-H. Jo, H-E. Kim;
Seoul Natl. Univ., Seoul, KOREA, REPUBLIC OF.

835 **Nanometer-Thick Collagen/Calcium Phosphate Coatings with Improved Mechanical and Biological Performance**
L. T. de Jonge, **S. C. G. Leeuwenburgh**, J. J. J. van den Beucken, J. G. C. Wolke, J. A. Jansen;
Radboud Univ. Nijmegen Med. Ctr., Nijmegen, NETHERLANDS.

836 **Phase Separated Polymer Blend Thin Film Scaffolds for Wound Healing Application**
C. Zhang, J. Marszalek, Z. He, A. Karim;
The Univ. of Akron, Akron, OH.

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837 **Efficient, Greener Synthesis of Reducible Disulfide Polymers and Disulfide Crosslinked Networks**
E. Q. Rosenthal, J. E. Puskas;
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838 **Biocompatibility and Thermal Properties of Absorbable Thermoplastic Polyurethanes**
R. S. Bezwada, **N. Srivastava**;
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839 **Characterization of Novel Injectable Click-Hydrogel Scaffold for the Treatment of Re-Synostosis**
C. Hermann[1], S. Wilson[1], X. Ning[1], R. Olivares-Navarrete[1], R. Guldberg[1], N. Murthy[1], J. Williams[2], B. Boyan[1], Z. Schwartz[1];
[1]Georgia Inst. of Technology, Atlanta, GA, [2]Children's Hlth.care of Atlanta, Atlanta, GA.

840 **Controlling The In Vivo Degradation Rate of Poly(ethylene carbonate) Through Crosslinking**
L. Cornacchione, **B. G. Amsden**;
Queen's Univ., Kingston, ON, CANADA.

841 **Coefficient Of Friction of Polyvinyl (Alcohol) Based Hydrogels Against Swine Articular Cartilage**
H. Bodugoz Senturk[1], S. Nanda[2], D. Bichara[1], H. Kluk[3], G. Braithwaite[4], O. K. Muratoglu[1];
[1]Massachusetts Gen. Hosp., Boston, MA, [2]Boston Univ., Boston, MA, [3]Dartmouth Coll., Hanover, NH, [4]Massachusetts Gen. Hosp./Harvard Med. Sch., Boston, MA.

842 **Design and Fabrication of an Integrated Bi-layered Scaffold for Osteochondral Tissue Engineering**
A. Galperin, R. A. Oldinski, S. J. Florczyk, J. D. Bryers, M. Zhang, M. A. Paul, B. D. Ratner;
Univ. of Washington, Seattle, WA.

843 **Reduced Inflammatory Responses Of Poly(Lactide-Co-Glycolide) By Incorporating Hydroxybenzyl Alcohol Releasing Copolyoxalate**
D. Lee, Y. Lee, S. Jeong, D. Hong, G. Khang;
Chonbuk Natl. Univ., Jeonju, Chonbuk, KOREA, REPUBLIC OF.

844 **Tailoring Degradation Rate and Mechanical Properties of Modified Poly(ε-caprolactone)**
T-Y. Shih;
Industrial Technology Res. Inst., Hsinchu 30011, TAIWAN.

845 **Microstructure and Rheology of Polyhydroxyalkanoates: Influence of Valerate Content**

M. Domínguez-Díaz[1], A. Flores[2], R. Cruz-Silva[3], A. Romo-Uribe[1];

[1]Inst. de Ciencias Físicas, UNAM, Cuernavaca, MEXICO, [2]Inst. de Estructura de la Materia, CSIC, Madrid, SPAIN, [3]Centro de Investigación en Ingeniería y Ciencias Aplicadas, UAEM, Cuernavaca, MEXICO.

846 **Hydrolysable Linkers and Crosslinkers for Absorbable Polymers**

N. Srivastava, R. S. Bezwada;
Bezwada BioMed., LLC, Hillsborough, NJ.

847 **Effects of Addition of Transition Metal Oxides to Polymer on Growth of Human Cells**

P. A. Tran[1], J. D. Jarrell[2], R. A. Hayda[1], C. T. Born[1];

[1]Rhode Island Hosp., Providence, RI, [2]Biointraface, East Greenwich, RI.

848 **Viscous Polyester Terpolymers as a Short-Term Drug Delivery Platform**

G. A. Winchester;
Surmodics Pharmaceuticals, Birmingham, AL.

849 ***In vitro* Degradation Behavior of Poly(*p*-dioxanone) Films: Effects of Temperature on Physical Properties**

E. L. Paetzell, M. Deng, R. Vetrecin;
Ethicon, Somerville, NJ.

850 **Poly(Butylene Fumerate) and Poly(Butylene Fumerate)-*co*-(Butylene Maleate) as Biodegradable Materials for Tissue Engineering**

E. L. Hedberg-Dirk[1], K. N. Cicotte[1], S. M. Dirk[2];

[1]Univ. of New Mexico, Albuquerque, NM, [2]Sandia Natl. Lab., Albuquerque, NM.

851 **Mechanical Properties of and *In Vitro* Response to a Novel Resorbable Biomaterial**

M. Jarman-Smith[1], J. E. Wilson[1], A. Elleray[1], P. Souter[2], G. R. Webster[3], B. Wilson[3], A. Kelly[4], L. Mulvaney-Johnson[4], D. F. Farrar[2];

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852 **A Novel Polysaccharide-Derived Hydrogel with Controllable Viscosity for Adhesion Prevention**

Y. Yamamoto;
Teijin Limited, Tokyo, JAPAN.

853 **Study and Characterization of Telmisartan Controlled Release's Devices using Cyclodextrins and Biodegradable Polymers**

A. D. M. Gomes, A. L. A. César, I. S. Lula, R. D. Sinisterra, Sr.;
Federal Univ. of Minas Gerais, Belo Horizonte, BRAZIL.

854 **Electrospinning and hemostatic properties of gelatin/zein fibrous membranes**

C. Yao;
Southeast Univ., Nanjing, CHINA.

855 **Enhanced Cytosolic Drug Delivery Using Fully Biodegradable Poly(Amino Oxalate) Particles**

D. Lee;
Chonbuk Natl. Univ., Jeonju, Chonbuk, KOREA, REPUBLIC OF.

856 **pH-Responsive Self-Healing Hydrogels Formed by Boronate-Catechol Complexation**
L. He;
Northwestern Univ., Evanston, IL.

857 **Self-Assembling Of Alkyl Chains in Acylated Hyaluronan**
D. Smejkalova, M. Hermannova, R. Sulakova, L. Palek, V. Velebny;
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858 **Hybrid Bio/Synthetic Biomimetic Aggrecan: An Enzymatically Resistant Design Strategy**
S. Sarkar[1], L. Mejias[1], C. Schauer[1], E. Vresilovic[2], M. Marcolongo[1];
[1]Drexel Univ., Philadelphia, PA, [2]Penn State Hershey Med. Ctr., Hershey, PA.

859 **Synthesis And Characterization Of Temperature-Sensitive Oligo(Ethylene Glycol) Grafted Poly(L-Glutamate) Copolymers**
C. He, Y. Cheng, C. Xiao, J. Ding, X. Zhuang, X. Chen;
Changchun Inst. of Applied Chemistry, Chinese Academy of Sci., Changchun, CHINA.

860 **Mechanical Characterization of PVA-UHMWPE Fiber Composites for Meniscal Replacement**
J. L. Holloway, S. El-Amin, N. Kelly, S. A. Maher, A. M. Lowman, G. R. Palmese;
Drexel Univ., Philadelphia, PA.

861 **Amphotericin B Delivery from Antimicrobial Loaded Bone Cement is Increased by Poragens**
C. Kweon[1], A. McLaren[1], C. Leon[2], R. Miller[1], **R. McLemore**[1];
[1]Banner Good Samaritan Orthopaedic Residency, Phoenix, AZ, [2]Arizona State Univ., Phoenix, AZ.

862 **Fabrication of Mineralized Zein/Hydroxyapatite Nanofibrous Membranes**
X. Li;
Southeast Univ., Nanjing, CHINA.

863 **Developing Permissive Hydrogels with Physiological Osmolarity for 3D Cell Growth**
X. Jin, X. Wen;
Clemson Univ.-Med. Univ. of South Carolina, Charleston, SC.

864 **PLA Electrospun Fibers Incorporating Silver Nanoparticles. Morphology and Thermal Properties**
H. Vargas;
Univ. Natl. Autonoma de Mexico, Cuernavaca, MEXICO.

865 **Electrospun Polyhydroxyalkanoate Membranes**
M. Domínguez-Díaz[1], A. Flores[2], R. Cruz-Silva[3], A. Romo-Uribe[1];
[1]Inst. de Ciencias Físicas, UNAM, Cuernavaca, MEXICO, [2]Inst. de Estructura de la Materia, CSIC, Madrid, SPAIN, [3]Centro de Investigación en Ingeniería y Ciencias Aplicadas, UAEM, Cuernavaca, MEXICO.

866 **Biological Analysis of Newly Fabricated Nano-Porous Network on PEEK Surface**
Y. Zhao[1], **K. Yeung**[1], H. Pan[1], J. Jiang[2], P. Chu[2], K. Luk[3], K. Cheung[1];
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Physics and Materials Sci., City Univ. of Hong Kong, Hong Kong, HONG KONG, Dept. of Orthopaedics & Traumatology, The Univ. of Hong Kong, Hong Kong, HONG KONG.

867 **High-Throughput Screening Of PLGA Thin Films Utilizing Hydrophobic Fluorescent Dyes**
S. Kumar;
Nanyang Technological Univ., Singapore, SINGAPORE.

868 **A Non Free Radical, Single Step Synthesis Method for Poly(β-amino Ester) Hydrogels**
D. Biswal, P. Wattamwar, A. Lyvers, T. Dziubla, J. Z. Hilt;
Univ. of Kentucky, Lexington, KY.

869 **Tuning Bending Stiffness in Elastomeric Electrospun Scaffolds for Heart Valve Tissue Engineering**
N. J. Amoroso, A. D'Amore, M. S. Sacks, W. R. Wagner;
Univ. of Pittsburgh, Pittsburgh, PA.

870 **Use of Nylon-3 Polymer Libraries to Characterize and Control Cell-Polymer Interactions**
R. Liu, S. H. Gellman, K. S. Masters;
Univ. of Wisconsin, Madison, WI.

871 **Studies of Shear Stress-Dependent Cell Detachment from Temperature-Responsive Cell Culture Surfaces by Using Microfluidic Devices**
Z. Tang, Y. Akiyama, K. Itoga, J. Kobayashi, T. Okano;
Inst. of Advanced BioMed. Engineering and Sci., TWIns, Tokyo Women's Med. Univ., Tokyo, JAPAN.

872 **Immobilization Of Gene Vectors On Maleic Anhydride-Grafted-Poly(D,L-Lactide-Co-Glycolide) Surfaces For Localized Gene Delivery**
G. Ma, C. Song;
Peking Union Med. Coll. & Chinese Academy of Med. Sci., Tianjin, CHINA.

873 **Tube-shaped Devices with Controlled Geometry for Programmed Drug Delivery**
M. Park, C. Park, S. Lee, E. Cho, J. Lee, Y. Choy;
Seoul Natl. Univ., Seoul, KOREA, REPUBLIC OF.

874 **Amino Acid based Polyesteramides and Polyesterurethanes: Cell Resposive Matrices for Drug Delivery**
A. A. Dias[1], B. Plum[1], B. Turnell[2];
[1]DSM BioMed., Geleen, NETHERLANDS, [2]Consultant, Oxford, UNITED KINGDOM.

875 **Withdrawn**

876 **Synthesis and Swelling Behaviors of Biodegradable pH-Sensitive Hydrogels Composed of Poly(Acrylic Acid) and Poly(L-Glutamic Acid)**
X. Zhuang, X. Gao, C. Zhao, C. He, Q. Xu, X. Chen;
Changchun Inst. of Applied Chemistry, Changchun, CHINA.

877 **Characterization of Polyelectrolyte-Coated Liposomes for Delivery of Estradiol**
K. Bowey[1], J-F. Tanguay[2], M. Tabrizian[1];
[1]McGill Univ., Montreal, QC, CANADA, [2]Montreal Heart Inst., Montreal, QC, CANADA.

878 **Limonene Epoxidation Studies in Order to Obtain Natural Monomers**
A. J. Bonon, Sr.[1], D. Mandelli, Sr.[2], G. B. Shul'pin, Sr.[3], R. Maciel, Sr.[1];

State Univ. of Campinas, Campinas, BRAZIL, [2]Federal Univ. of ABC, Santo André, BRAZIL, [3]Semenov Inst. of Chemical Physics - Russian Academy of Sci., Moscow, RUSSIAN FEDERATION.

879 **Application of High-Hydrostatic Pressure Technique for the Preparation Of PVA-Heparin Hybrid Gel**

J. Negishi[1], K. Nam[1], T. Kimura[1], T. Fujisato[2], A. Kishida[1];

[1]Inst. of Biomaterials and Bioengineering, Tokyo Med. and Dental Univ., Tokyo, JAPAN, [2]Osaka Inst. of Technology, Osaka, JAPAN.

880 **Absorbable Microparticle Surface modification and Examination of Resultant Charge Density**

C. A. Hart, J. T. Corbett, D. R. Ingram, J. M. Olbrich, S. W. Shalaby;
Poly-Med, Inc., Anderson, SC.

881 **Radiation Crosslinked Poly(vinyl alcohol)/Poly(vinyl pyrrolidone)/Poly(ethylene glycol) Hydrogels for Biomedical Applications**

V. R. Binetti, W. Wolf, H. A. Cheng, M. Marcolongo, A. Lowman;
Drexel Univ., Philadelphia, PA.

882 **Study of the Crosslinking of PHEMA Hydrogels by FTIR for Biomedical Applications**

M. F. Passos, **C. G. B. Dias**, V. P. Bavaresco, A. Jardini, C. A. C. Zavaglia, R. Maciel;
State Univ. of Campinas, Campinas, BRAZIL.

883 **Fabrication and Characterization of Synthetic Hydrogel Fibers**

H. Lee, E. Cho, C. Sander, D. Burgin, E. Steele, A. Sen, J. Lee, **K. Webb**;
Clemson Univ., Clemson, SC.

884 **Cytotoxicity of Locally Delivered Amphotericin B**

S. Harmsen[1], A. McLaren[1], C. Pauken[2], **R. McLemore**[1];

[1]Banner Good Samaritan Orthopaedic Residency, Phoenix, AZ, [2]Arizona State Univ., Phoenix, AZ.

885 **Embolization of Abdominal Aortic Aneurysm Using a Radio-Opaque Hydrogel Combining Embolic-Sclerotic Properties**

A. Fatimi[1], S. Berrahmoune[1], J-M. Coutu[1], P. Chabrot[2], G. Soulez[2], S. Lerouge[1];

[1]ÉTS, Montréal, QC, CANADA, [2]CHUM, Radiology Dept., Montréal, QC, CANADA.

886 **Controlled Release of Anti-Microbial Agents for Hospital Acquired Infection**

N. Srivastava, R. S. Bezwada;
Bezwada BioMed., LLC, Hillsborough, NJ.

887 **Interaction of Osteoblast-Like MG-63 Cells with Biodegradable Polyurethane Scaffolds for Cancellous Bone Graft Substitutes**

J. Podporska;
Dublin City Univ., Dublin, IRELAND.

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888 **Plasma Surface Modification of PEEK - Effects on Bacterial Adhesion and Co-culture with Osteoblasts *In Vitro***

E. T. J. Rochford[1], G. Subbiahdoss[2], T. F. Moriarty[1], A. H. C. Poulsson[1], H. C. van der Mei[2], H. J.

Busscher[2], R. Richards[1];

[1]AO Fndn., Davos Platz, SWITZERLAND, [2]Univ. Med. Ctr. Groningen and Univ. of Groningen, Groningen, NETHERLANDS.

889 **Elucidation of Protein Adsorption Behavior Based on Molecular Dynamics around Polymer Brush Surface**

Y. Inoue, T. Nakanishi, K. Ishihara;
The Univ. of Tokyo, Tokyo, JAPAN.

890 **Highly Manufacturable Anti-Fouling Surface Modification of Vascular Access Catheters**

C. C. Huval, M. Bouchard, A. Deleault, J. Kaitz, J. Li, C. Loose, E. Marchese, R. Reed, L. Roth, K. Schultz, M. Skinner, H. Wang, D. Weaver, A. Weinstock, Z. Zhang;
Semprus BioSci., Cambridge, MA.

891 **The Response of Pseudomonas Aeruginosa Biofilm to a Novel Glass Polyalkenoate Cement.**

M. R. Towler[1], A. Coughlan[1], M. P. Ryan[2], N. M. Cummins[2];

[1]Alfred Univ., Alfred, NY, [2]Univ. of Limerick, Limerick, IRELAND.

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892 **Evaluation of Biomaterials for Esophagus or Small Intestine Tissue Engineering**

T. Knight, R. Payne, J. Basu, J. W. Ludlow, N. Sangha, K. Guthrie, M. Jayo, E. Rivera, D. Jain;
Tengion, Inc, Winston-Salem, NC.

893 **Fibrin Targeted Block Co-polymers for the Prevention of Postsurgical Adhesions**

T. D. Dziubla[1], J. M. Medley[2], E. Kaplan[3], H. S. Oz[1], S. C. Sundararaj[1], D. A. Puleo[1];

[1]Univ. of Kentucky, Lexington, KY, [2]Ctr. Coll., Danville, KY, [3]3Ctr. for Advanced Gynecologic Surgery, Walnut Creek, CA.

894 **S1P-Induced Microvascular Remodeling is Mediated by Bone Marrow Cell Recruitment**

A. O. Awojoodu[1], L. S. Anderson[2], S. M. Peirce[1], K. R. Lynch[1], E. A. Botchwey[1];

[1]Univ. of Virginia, Charlottesville, VA, [2]Lafayette Coll., Easton, PA.

895 **Engineering Vascular Replacements with Elastogenic Factor-Functionalized Scaffolds in a Rat Peritoneal Cavity**

C. A. Bashur, A. Ramamurthi;
Cleveland Clinic, Cleveland, OH.

896 **Orchestrated Stem Cell-based Regeneration (OSCeR) for Bone Tissue Engineering**

A. M. Nair, J. Shen, Y-T. Tsai, L. Tang;
The Univ. of Texas at Arlington, Arlington, TX.

897 **Mechanisms of Enhanced Osteoblast Functions in the Presence of Hydroxyapatite Coated Iron Oxide Nanoparticles**

N. Tran, T. J. Webster;
Brown Univ., Providence, RI.

898 **Bioresorbable Polylactide Implant Promotes Tendon Ossification in the Bone Tunnel in Ligament Reconstruction Surgery**

K. Ficek;
Galen Orthopedics, Bierun, POLAND.

899 **Influence of Oxygen Tension in Osteogenic Differentiation of Encapsulated Stem Cells**
S. Sahai, J. O. Blanchette;
Univ. of South Carolina, Columbia, SC.

900 **Aloe Vera Pectin: From Extraction to Matrices for Regenerative Medicine**
S. Bozzini[1], R. Gentilini[1], F. Munarin[1], P. Petrini[1], M. Scavone[2], L. Visai[2], M. C. Tanzi[1];
[1]Politecnico di Milano, Milan, ITALY, [2]Università di Pavia, Pavia, ITALY.

901 **Sustained Release of IGF-1 from Chitosan Microparticles to Apply In Bone Regeneration**
V. Mantripragada, A. C. Jayasuriya;
Univ. of Toledo, Toledo, OH.

902 **Bioresponse of Mammalian Kidney to Implantation of Polymeric Materials**
R. Payne, T. Knight, J. Basu, E. Rivera, N. Robbins, D. McCoy, M. Jayo, C. Halberstadt, D. Jain;
Tengion, Inc, Winston-Salem, NC.

903 **Identifying Regions of Hypoxic Signaling within Three-Dimensional Stem Cell Aggregates for Engineering Cartilage**
M. L. Skiles;
Univ. of South Carolina, Columbia, SC.

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904 **Effect of GRGDSP-Alginate in Alginate Foam for 3D Cell Culture Compared to Cells Affinity to FITC-GRGDSP**
T. Andersen, C. Markussen, H. Heier-Baardson, J. Melvik, M. Dornish;
NovaMatrix/FMC BioPolymer, Sandvika, NORWAY.

905 **Generation of Adipose Tissue from Adipose Derived Stem Cells in HyStem Hydrogels**
S. K. Atzet;
Glycosan Biosystems, Salt Lake City, UT.

906 **Biointegrative Reticulated Elastomeric Matrix for Ventral Hernia Repair**
A. Datta;
Biomerix, Somerset, NJ.

907 **The assessment of Bone Formation in Vitreous Carbon Foam Using the Rat Calvarial Defect Model**
H. Yu[1], N. Zacharias[2], T. Sandid[2], Z. Song[1], S-Y. Yang[1], A. Chong[1], D. A. McQueen[3], P. H. Wooley[1];
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908 **In Vivo Study of a Novel AuNP-Tissue Scaffold**
S. A. Grant[1], C. R. Deeken[2], D. A. Grant[1], S. L. Bachman[1], B. J. Ramshaw[3];
[1]Univ. of Missouri, Columbia, MO, [2]Washington Univ., St. Louis, MO, [3]Halifax Hlth., Daytona Beach,

FL.

909 **Engineered Synthetic Cornea with Controlled Porosity Edge Region for Biological Integration**

F. B. Karp[1], S. Garty[1], M. Maginness[2], A. Marshall[2], T. T. Shen[1], B. D. Ratner[1];

[1]Univ. of Washington, Seattle, WA, [2]Healionics Corp., Seattle, WA.

910 **Cardiomyocyte Response to Varying Composition of ECM Proteins and Stiffness on a Semi-Synthetic Hyaluronan Hydrogel**

A. M. McCollough;
Glycosan Biosystems, Salt Lake City, UT.

911 **Volumizing Characteristics of Dermal Fillers**

B. Voigts;
Merz Aesthetics, Franksville, WI.

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912 **Non-Invasive Quantification of Plasmid Dynamics: Biofilm Formation Effect on Plasmid conjugational plasmid transfer**

H. Ma;
Univ. of Washington, Seattle, WA.

913 **A Novel High Strength and High Porosity Resorbable Scaffold**

J. L. Krevolin, J. Liu, K. Patel, R. Dahl;
Bio2 Technologies, Woburn, MA.

914 **Radiation Crosslinked Shape Memory Polymers for Biomedical Applications**

W. E. Voit[1], T. Ware[1], K. Gall[2];

[1]The Univ. of Texas at Dallas, Richardson, TX, [2]The Georgia Inst. of Technology, Atlanta, GA.

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915 **Highly Compliant Drug Eluting Absorbable Spray Bandage, An Initial Report**

R. T. Pace, J. T. Corbett, J. M. Olbrich, S. D. Nagatomi, K. A. Nichter, S. W. Shalaby;
Poly-Med, Inc., Anderson, SC.

916 ***In Vitro* Antimicrobial Efficacy Testing Of A Needless Connector's Septum Which Has Been Manufactured With Silver And Chlorhexidine**

B. Luchsinger, M. Schallenberger, T. Meyer;
Bacterin Intl., Belgrade, MT.

917 **Evaluation of Biofilm Formation on Spinal Fixation Materials**

S. Vadapalli[1], A. Agostinho[2], M. Harper[1], G. James[2];

[1]Medtronic Spinal and Biologics, Memphis, TN, [2]Montana State Univ.-Bozeman, Bozeman, MT.

918 **Cationic Antimicrobial Peptides Potent against Common Orthopedic Pathogens**

B. Li[1], J. Noore[1], A. Noore[2];

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West Virginia Univ. Sch. of Med., Morgantown, WV, West Virginia Univ., Morgantown, WV.

919 **A New Silicone Carbonate Polyurethane Copolymer**
J. Tan, T. Strang;
St. Jude Med. CRMD, Sylmar, CA.

920 **Retrieval Analyses of Dynesys® Polymeric Implants from a United States Investigational Device Exemption Study**
K. Zhang[1], J. Dawson[1], M. Shen[2];
[1]Zimmer Spine Inc., Minneapolis, MN, [2]Zimmer Inc., Warsaw, IN.

921 **Development of Shape-Memory Polymer Medical Devices - From Academia to Industry**
C. M. Yakacki[1], J. C. Griffis[1], K. Gall[2];
[1]MedShape Solutions, Atlanta, GA, [2]The Georgia Inst. of Technology, Atlanta, GA.

922 **Smooth Muscle Cell Response to Hydroxyapatite Coated Endovascular Stent Materials**
B. H. Winn;
Clemson Univ., Clemson, SC.

Imaging Biomaterials

923 **Versatile Polymer Microspheres for Injection Therapy: Aspects of X-Ray Visibility and Biofunctionalization**
K. Saralidze, M. L. W. Knetsch, L. H. Koole;
Maastricht Univ., Maastricht, NETHERLANDS.

924 **Bioresorbable Microsphere Tracking In Vivo Via Encapsulated Iron Oxide Nanoparticles**
T. W. Franklin-Ford, N. Shah, A. N. Raval, W. L. Murphy;
Univ. of Wisconsin-Madison, Madison, WI.

925 **Design and Synthesis of Manganese-Ligand Based Magnetic Resonance Imaging Contrast Agents**
H. Ai, C. Wu;
Natl. Engineering Res. Ctr. For Biomaterials, Chengdu, Sichuan, CHINA.

926 **A Multidimensional High Content Analysis System For Studying Cell-Matrix Interaction With GPU Accelerated Image Processing**
Y. Pang[1], X. Wang[1], D. Lee[2], A. Matsumura[3], H. P. Greisler[4];
[1]Illinois Inst. of Technology, Hines, IL, [2]Hines VA Hosp., Hines, IL, [3]Chicago Association for Res. and Ed. in Sci., Hines, IL, [4]Loyola Univ. Med. Ctr., Hines, IL.

927 **pH-Responsive Polymeric Micelle For Theranostics Of Ischemia Celebral Area**
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928 **Doxorubicin-Loaded Magnetic Nanorods with Temperature-Dependent Encapsulation**

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H. Kim, H. Yoo, S. Park, J. Choi, Y. Son, S. Yoon, E. Jo;
Kangwon Natl. Univ., Chuncheon, KOREA, REPUBLIC OF.

929 **Multifunctional Halloysite Nanotubes for Drug Delivery and Magnetic Resonance Imaging**
H. Ai, N. Ma;
Natl. Engineering Res. Ctr. For Biomaterials, Chengdu, Sichuan, CHINA.

930 **Controlled Anchoring of SPIO Nanoparticles on Silica Templates as Sensitive MRI Probes**
H. Ai, J. Tian;
Natl. Engineering Res. Ctr. For Biomaterials, Chengdu, Sichuan, CHINA.

931 **Towards Biomimetic Tissue Phantoms for Brain Tumor Detection using Magnetic Resonance Elastography**
A. M. Yousefi[1], J. A. Minton[1], C. S. Drapaca[2];
[1]Miami Univ., Oxford, OH, [2]The Pennsylvania State Univ., University Park, PA.

932 **Dielectric Spectroscopy of MDCK Cell Activity in Microfabricated Three-Dimensional Scaffolds**
J. Daoud[1], K. Asami[2], L. Rosenberg[1], M. Tabrizian[1];
[1]McGill Univ., Montreal, QC, CANADA, [2]Kyoto Univ., Kyoto, JAPAN.