

# CROSSING BOUNDARIES TO PROPEL TISSUE ENGINEERING INTO THE CLINIC

## POSTER SESSION

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Stanford University



POSTER #	TITLE	AUTHORS
1	Telomere and Mitochondrial Dysfunction in Duchenne Muscular Dystrophy	Alex C.Y. Chang <sup>1,2,3,5</sup> , Vittavat Termglinchan <sup>4,5</sup> , Alexandre Ribeiro <sup>4,6</sup> , Ioannis Karakikes <sup>4,5</sup> , Sang-Ging Ong <sup>4,5</sup> , Edward LaGory <sup>7</sup> , Amato J. Giaccia <sup>7</sup> , Beth Pruitt <sup>4,6</sup> , Joseph Wu <sup>4,5</sup> , Helen M. Blau <sup>1,2,3,5</sup> Baxter Laboratory for Stem Cell Biology <sup>1</sup> , Institute for Stem Cell Biology & Regenerative Medicine <sup>2</sup> , Departments of Microbiology & Immunology <sup>3</sup> , Medicine (Division of Cardiology) <sup>4</sup> , Mechanical Engineering <sup>6</sup> , and Radiation Oncology (Division of Radiation & Cancer Biology) <sup>7</sup> , and Stanford Cardiovascular Institute <sup>5</sup> , Stanford University
2	Engineering Pre-Vascularized Skeletal Muscle with Physiologically-Relevant Cellular Organization for Treatment of Volumetric Muscle Loss	Karina Nakayama <sup>1,2</sup> , Marco Quarta <sup>1</sup> , Victor Garcia <sup>1</sup> , Zachary Strassberg <sup>1</sup> , Oscar Abilez <sup>2</sup> , Thomas A. Rando <sup>1,3</sup> , Ngan F. Huang <sup>1,2,4</sup> Veterans Affairs Palo Alto Health Care System <sup>1</sup> ; Stanford Cardiovascular Institute <sup>2</sup> and Departments of Neurology & Neurological Sciences <sup>3</sup> and Cardiothoracic Surgery <sup>4</sup> , Stanford University
3	Maintenance of Neural Progenitor Cell Stemness in 3D Hydrogels Requires Matrix Remodeling	Christopher M. Madl <sup>1</sup> , Ruby E. Dewi <sup>2</sup> , Cong Dinh <sup>2</sup> , Kyle J. Lampe <sup>2,3</sup> , Duong Nguyen <sup>4</sup> , Annika Enejder <sup>4</sup> , Sarah C. Heilshorn <sup>2</sup> Departments of Bioengineering <sup>1</sup> and Materials Science & Engineering <sup>2</sup> , Stanford University; Department of Chemical Engineering <sup>3</sup> , University of Virginia; Departments of Biology & Biological Engineering and Chemical Biology <sup>4</sup> , Chalmers University of Technology, Sweden
4	Human Bone Marrow-Derived Mesenchymal Stem Cells Delivery Using Biomimetic Cell-Laden Hydrogels	Deepti Rana <sup>1*</sup> , Murugan Ramalingam <sup>1,2</sup> (*corresponding author) I Centre for Stem Cell Research, A Unit of Institute for Stem Cell Biology and Regenerative Medicine-Bengaluru <sup>1</sup> , Christian Medical College Campus, India; WPI-Advanced Institute for Materials Research <sup>2</sup> , Tohoku University, Japan
5	Engineering Three-Dimensional Microenvironments for Primary Intestinal Organoids	Rebecca DiMarco <sup>1</sup> , James Su <sup>2</sup> , Kelley Yan <sup>3</sup> , Ruby Dewi <sup>2</sup> , Gabriela Bernal <sup>2</sup> , Calvin Kuo <sup>3</sup> , Sarah Heilshorn <sup>2</sup> Departments of Bioengineering <sup>1</sup> , Materials Science & Engineering <sup>2</sup> , and Medicine (Division of Hematology) <sup>3</sup> , Stanford University
6	Reconstruction of Large Segmental Bone Defects in Sheep Tibiae Using Novel Baghdadite Scaffolds as Bone Graft Substitutes	Jiao Jiao Li <sup>1</sup> , Seyed-Iman Roohani-Esfahani <sup>1</sup> , Colin R. Dunstan <sup>1</sup> , Terrence Quach <sup>1</sup> , Roland Steck <sup>2</sup> , Siamak Saifzadeh <sup>2</sup> , Peter Pivonka <sup>3</sup> , Hala Zreiqat <sup>1</sup>

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7	Decreased Osteogenesis in Mesenchymal Stem Cells Derived from the Aged Mouse is Associated with Enhanced NF-κB Activity	Tzu-hua Lin <sup>1</sup> , Emmanuel Gibon <sup>1,4</sup> , Florence Loi <sup>1</sup> , Jukka Pajarinen <sup>1</sup> , Luis A. Córdova <sup>1,3</sup> , Akira Nabeshima <sup>1</sup> , Laura Lu <sup>1</sup> , Zhenyu Yao <sup>1</sup> , Stuart B. Goodman <sup>1,2</sup> Departments of Orthopaedic Surgery <sup>1</sup> and Bioengineering <sup>2</sup> , Stanford University; Department of Oral & Maxillofacial Surgery <sup>3</sup> , Faculty of Dentistry, University of Chile - Conicyt, Chile; Biomechanics & Bone & Joint Biomaterials Laboratory <sup>4</sup> , Paris University, France
8	A Novel Growth Factor-Like Role for the Amino Acid L-proline in Driving Neural Lineage Commitment of Embryonic Stem Cells through Early Primitive Ectoderm-Like Cell, Definitive Ectoderm-Like and Neurectoderm Populations	Rachel Shparberg <sup>1,2</sup> , Timothy Mason <sup>1,2</sup> , Michael B. Morris <sup>1,2</sup> Bosch Institute <sup>1</sup> and Discipline of Physiology <sup>2</sup> , School of Medical Sciences, University of Sydney, Australia
9	L-Proline Regulates Mouse Embryonic Stem Cell Pluripotency through the mTOR and MAPK Pathways to Initiate Differentiation to Neural Cells	Hannah Glover <sup>1</sup> , Holly Holliday <sup>1</sup> , Michael Morris <sup>1</sup> Bosch Institute, Discipline of Physiology <sup>1</sup> , School of Medical Sciences, The University of Sydney
10	Isolation of Undifferentiated iPS Cell Based on Cell Rolling Phenotype in Antibody Immobilized Microfluidic Channel	Akihisa Otaka <sup>1</sup> , Atsushi Mahara <sup>1</sup> , Tetsuji Yamaoka <sup>1</sup> Department of Biomedical Engineering <sup>1</sup> , National Cerebral & Cardiovascular Center Research Institute, Japan
11	Improving Cell Transplantation Therapies for Spinal Cord Injury using Injectable Hydrogels	Laura M. Marquardt <sup>1,2</sup> , Vanessa M. Doulames <sup>2</sup> , Karen Dubbin <sup>1</sup> , James Weimann <sup>2</sup> , Giles W. Plant <sup>2</sup> , Sarah C. Heilshorn <sup>1</sup> Departments of Materials Science & Engineering <sup>1</sup> and Neurosurgery <sup>2</sup> , Stanford University
12	Spatial Organization of Multiple Peptide Gradients within a Single Scaffold to Guide Osteochondral Interface Regeneration	Lesley W. Chow <sup>1,2</sup> , Jennifer L. Puetzer <sup>3,4</sup> , Hélène Autefage <sup>3,4</sup> , Anu Solanki <sup>3,4</sup> , Molly M. Stevens <sup>3,4</sup> Department of Materials Science and Engineering <sup>1</sup> and Bioengineering Program <sup>2</sup> , Lehigh University; Departments of Materials <sup>3</sup> and Bioengineering <sup>4</sup> , Imperial College London
13	Surface Modification of poly(L-lactic acid) Nanofiber Conduits with oligo(D-lactic acid) Bioactive Peptide Conjugates for Nerve Regeneration Tube	Yu-I Hsu <sup>1</sup> , Tetsuji Yamaoka <sup>1</sup> Department of Biomedical Engineering <sup>1</sup> , National Cerebral & Cardiovascular Center Research Institute, Japan
14	Viscoelastic Elastin-like Protein – Hyaluronic Acid (ELP – HA) Hydrogels for Organotypic Cultures	Huiyuan Wang <sup>1</sup> , Xingnan Li <sup>2</sup> , Junzhe Lou <sup>1</sup> , Chuck Zhang <sup>2</sup> , Yan Xia <sup>3</sup> , Calvin J. Kuo <sup>2</sup> , Sarah C. Heilshorn <sup>1</sup> Departments of Materials Science & Engineering <sup>1</sup> , Medicine, (Division of Hematology) <sup>2</sup> , and Chemistry <sup>3</sup> , Stanford University
15	Extracellular Matrix Promote Survival and Phenotype of Human iPSC-Derived Endothelial Cell in Hypoxia	Luqia Hou <sup>1,5</sup> , John Collier <sup>3</sup> , Vanita Natu <sup>3</sup> , Trevor Hastie <sup>4</sup> , Ngan Huang <sup>1,2,5</sup> Stanford Cardiovascular Institute <sup>1</sup> , Departments of Cardiothoracic Surgery <sup>2</sup> and Statistics <sup>4</sup> , and Stanford Functional Genomics Facility <sup>3</sup> , Stanford University; Veterans Affairs Palo Alto Health Care System <sup>5</sup> , Palo Alto
16	Physicochemical Characterization of a Novel Bioactive Ion-Doped Calcium Silicate Phosphate Injectable Bone Cement	Young Jung No <sup>1</sup> , Seyed-Iman Roohani-Esfahani <sup>1</sup> , Yogambha Ramaswamy <sup>1</sup> , Siti Mustaffa <sup>1</sup> , Hala Zreiqat <sup>1</sup> Biomaterials & Tissue Engineering Research Unit <sup>1</sup> , School of AMME, University of Sydney, Australia
17	Hydrogel Brain Delivery of Clustered VEGF for Post-Stroke Tissue Regeneration	Lina R. Nih <sup>1,2</sup> , S. Thomas Carmichael <sup>2</sup> , Tatiana Segura <sup>1</sup> Departments of Chemical & Biomolecular Engineering <sup>1</sup> and Neurology <sup>2</sup> , University of California, Los Angeles