



# Bio-X Interdisciplinary Initiatives Symposium

## Poster Session

### August 27, 2014

POSTER #	TITLE	AUTHORS
1	The Effects of Lysyl Oxidase and APC Photochemical Bonding on Articular Cartilage Integration	Aristos Athens <sup>1</sup> , Chunhua Zheng <sup>1</sup> , Alberto Arvayo <sup>1</sup> , Marc Levenston <sup>1</sup> Department of Mechanical Engineering (BME STBL - Biomechanical Engineering, Soft Tissue Biomechanics Lab) <sup>1</sup> , Stanford University
2	Regulation of Glucose-6-Phosphate Dehydrogenase by p53	Tatum Banayat <sup>1</sup> , Sunhee Hwang <sup>2</sup> , Daria Mochly-Rosen <sup>2</sup> Departments of Bioengineering <sup>1</sup> and Chemical & Systems Biology <sup>2</sup> , Stanford University
3	The Effects of Optogenetic Neuronal Stimulation of the Contralateral Cerebellar Dentate Nucleus on Functional Recovery Post-Stroke	Alex Bautista <sup>1,2</sup> , Michelle Cheng <sup>1,2</sup> , Eric Wang <sup>1,2</sup> , Shunsuke Ishizaka <sup>1,2</sup> , Aatman Shah <sup>1,2</sup> , Gary Steinberg <sup>1,2</sup> Department of Neurosurgery <sup>1</sup> and Stanford Stroke Center <sup>2</sup> , Stanford University
4	The Utility of Parathyroid Hormone in Regulating the Migration of Breast Cancer Cells to Osteoblasts <i>In Vitro</i>	Lance Bettinson <sup>1</sup> , Srilatha Swami <sup>1</sup> , Joy Y. Wu <sup>1</sup> Department of Medicine (Division of Endocrinology) <sup>1</sup> , Stanford University
5	RNA to Protein: Detecting Differences in Allele Specific RNA Expression and Translation Across Individuals	Maheetha Bharadwaj <sup>1</sup> , Can Cenik <sup>1</sup> , Mike Snyder <sup>1</sup> Department of Genetics <sup>1</sup> , Stanford University
6	Is There an Early Effect of APP/PS1 Mutation on Dendritic Spines?	Kiana Brown <sup>1,2</sup> , Richie Sapp <sup>1,2</sup> , Taeho Kim <sup>1,2</sup> , George S. Vidal <sup>1,2</sup> , Carla Shatz <sup>1,2</sup> Departments of Biology <sup>1</sup> and Neurobiology <sup>2</sup> , Stanford University
7	Effects of Long-Term Stress on Regulatory T cells	Anna C. Cai <sup>1</sup> , Tuong D. Phan <sup>1</sup> , Arlene M. Laeno <sup>1</sup> , Krista N. Ring <sup>1</sup> , Firdaus S. Dhabhar <sup>1,2,3,4</sup> Department of Psychiatry & Behavioral Sciences (Laboratory of Stress Immunology) <sup>1</sup> , Institute for Immunity, Transplantation & Infection <sup>2</sup> , Cancer Institute <sup>3</sup> , and Bio-X <sup>4</sup> , Stanford University
8	A Protocol for Photocaging Guanidines: Progress Towards a Controlled-Release Saxitoxin	Matthew Callahan <sup>1</sup> , Rhiannon Thomas-Tran <sup>2</sup> , Justin Du Bois <sup>2</sup> Departments of Chemical Engineering <sup>1</sup> and Chemistry <sup>2</sup> , Stanford University
9	Mechanisms of Class-Specific Control of Regulatory RNAs	Brian T. Do <sup>1</sup> , Ryan A. Flynn <sup>1</sup> , and Howard Y. Chang <sup>1</sup> Howard Hughes Medical Institute and Program in Epithelial Biology <sup>1</sup> , Stanford University
10	The Role of the Immune System in Tumor Regression upon MYC Inactivation	Rachel K. Do <sup>1</sup> , Stephanie C. Casey <sup>1</sup> , Dean W. Felsher <sup>1</sup> Department of Medicine (Division of Oncology) <sup>1</sup> , Stanford University
11	How Brain Structure Drives Behavioral Development: Early Amygdala Volume and Later Behavioral Outcome in Individuals with Fragile X Syndrome and Idiopathic Autism	Andrea Fisher <sup>1,2</sup> , Jennifer L. Bruno <sup>1,2</sup> , Ashley Stark <sup>1,2</sup> , Amy A. Lightbody <sup>1,2</sup> , Allan L. Reiss <sup>1,2,3,4</sup> Center for Interdisciplinary Brain Sciences Research <sup>1</sup> and Departments of Psychiatry <sup>2</sup> , Radiology <sup>3</sup> , and Pediatrics <sup>4</sup> , Stanford University
12	YY1 Expression is Sufficient for the Maintenance of the Cardiac Progenitor Cell State	Nick Flores <sup>1</sup> , Guang Li <sup>1</sup> , Serge Gregoire <sup>2</sup> , Sean Wu <sup>1</sup> Institute of Stem Cell & Regenerative Biology (Division of Cardiovascular Medicine, Cardiovascular Institute) <sup>1</sup> , Stanford University; Department of Medicine (Cardiovascular

		Research Center, Division of Cardiology) <sup>2</sup> , Massachusetts General Hospital
13	Schwann Cell Delivery Within a Hydrogel for Spinal Cord Injuries	Larry Ge <sup>1</sup> , Sarah Heilshorn <sup>2</sup> , Giles Plant <sup>3</sup> Departments of Biology <sup>1</sup> , Materials Science & Engineering <sup>2</sup> , and Neurosurgery <sup>3</sup> , Stanford University
14	The Role of <i>mBgcN</i> in the Switch from Proliferation to Differentiation in the Adult Mammalian Germ Line Stem Cell Lineage	Rebecca Gold <sup>1</sup> , Alexis Bailey <sup>1</sup> , Margaret Fuller <sup>1</sup> Department of Developmental Biology <sup>1</sup> , Stanford University
15	Investigating the Effects of Radiation on Tumor Cell Migration Using Intravital Microscopy	Meghana Golla <sup>1</sup> , Marjan Rafat <sup>1</sup> , Megan Albertelli <sup>2</sup> , Marta Vilalta <sup>1</sup> , Edward Graves <sup>1</sup> Departments of Radiation Oncology <sup>1</sup> and Comparative Medicine <sup>2</sup> , Stanford University
16	Enhancing Wound Healing and Regeneration Through Inactivation of the Rb Pathway	Diana Gong <sup>1,2</sup> , Julia Arand <sup>1,2</sup> , Anne-Flore Zmoos <sup>1,2</sup> , Frederique Zindy <sup>3</sup> , Julien Sage <sup>1,2</sup> Departments of Pediatrics <sup>1</sup> and Genetics <sup>2</sup> , Stanford University; Department of Tumor Cell Biology <sup>3</sup> , St. Jude Children's Research Hospital, Memphis, TN
17	An <i>In Vitro</i> Human Induced Pluripotent Stem Cell-Derived Cardiomyocyte Model Reveals Alterations in Iron Metabolism in Doxorubicin-Induced Cardiotoxicity	Ryoko Hamaguchi <sup>1,2,3,4</sup> , Arun Sharma <sup>1,2,3,4</sup> , Paul Burridge <sup>1,2,3,5</sup> , Joseph C. Wu <sup>1,2,3,4,5</sup> , Sean M. Wu <sup>1,2,3</sup> Departments of Medicine (Division of Cardiology) <sup>1</sup> , Biology <sup>4</sup> , and Radiology <sup>5</sup> , Institute for Stem Cell Biology & Regenerative Medicine <sup>2</sup> , and Stanford Cardiovascular Institute <sup>3</sup> , Stanford University
18	Screening of Candidate Cancer Stem Cell Markers in Glioblastoma Using a Live Cell Array	Nicholas Hansen <sup>1</sup> , Hai Li <sup>1</sup> , Stephen Skirboll <sup>1</sup> Department of Neurosurgery <sup>1</sup> , Stanford University
19	Use of $\alpha$ B-Crystallin as Prophylactic Treatment for Post-Traumatic Epilepsy	Lana Ho <sup>1</sup> , Lawrence Steinman <sup>2</sup> , David A. Prince <sup>2</sup> Departments of Biology <sup>1</sup> and Neurology & Neurological Sciences <sup>2</sup> , Stanford University
20	Using Affective Science to Decrease Sedentary Behavior and Increase Physical Activity	Zachary B. Hoskins <sup>1</sup> , Arlene L. Amieva <sup>2</sup> , Martine S. Madill <sup>1</sup> , Edward D. Salonga <sup>2</sup> , Ashley A. Shurick <sup>1</sup> , James J. Gross <sup>1</sup> Departments of Psychology <sup>1</sup> and Human Biology <sup>2</sup> , Stanford University
21	Size Fractionation of <i>Enterococci</i> in Coastal Water of Northern California	Tsao-Wei Huang <sup>1</sup> , Lauren Murray Sassoubre <sup>2</sup> , Alexandria Boehm <sup>2</sup> Departments of Biology <sup>1</sup> and Civil & Environmental Engineering <sup>2</sup> , Stanford University
22	Frequency-Encoding of Fat Cell Differentiation	Mia Hutchinson <sup>1</sup> , Karen Tkach <sup>1</sup> , Wenting Yang <sup>1</sup> , Mary Teruel <sup>1</sup> Department of Chemical & Systems Biology <sup>1</sup> , Stanford University
23	Assessing the Role of the p53 Target Gene, <i>Pard6g</i> , in Tumor Suppression	Michael Jin <sup>1</sup> , Kathryn Biegging <sup>1</sup> , Laura Attardi <sup>1</sup> Department of Radiation Oncology <sup>1</sup> , Stanford University
24	Which Neurons Control Reproductive Behavior in Cichlid Fish?	Danielle Katz <sup>1</sup> , Nicole Gurtler <sup>1</sup> , Scott Juntti <sup>1</sup> , Mariana Jimenez <sup>1</sup> , Russ Fernald <sup>1</sup> Department of Biology <sup>1</sup> , Stanford University
25	Reconstruction of Protein Aligned with Gold Particles	Hyoung June Kwon <sup>1</sup> , Maia Azubel <sup>1</sup> , Roger Kornberg <sup>1</sup> Department of Structural Biology <sup>1</sup> , Stanford University
26	Establishing Organoid Cultures of Human Gastrointestinal Tissues	Jeffrey Kwong <sup>1</sup> , H. Chuck Zhang <sup>1</sup> , Michael Cantrell <sup>1</sup> , Brian Deutsch <sup>1</sup> , Olivier Gevaert <sup>2</sup> , Xingnan Li <sup>1</sup> , J.T. Neal <sup>1</sup> , Katie Planey <sup>2</sup> , Steven Wang <sup>1</sup> , Calvin Kuo <sup>1</sup> Department of Medicine (Division of Hematology) <sup>1</sup> and Center for Biomedical Informatics Research <sup>2</sup> , Stanford University

27	Identifying the Molecular Mechanisms of RJ50 in Mammalian Cells and Its Effect on the Maintenance of Stem Cell Pluripotency	Ted Li <sup>1</sup> , Andrew Spencley <sup>1</sup> , Peter Janki <sup>1</sup> , Cole Dovey <sup>2</sup> , Jennifer Lumb <sup>2</sup> , Jan Carette <sup>2</sup> , Kevin Wang <sup>1</sup> Departments of Dermatology <sup>1</sup> and Microbiology & Immunology <sup>2</sup> , Stanford University
28	Identification of Novel Therapeutic and Diagnostic Strategies for Rheumatoid Arthritis Using Gene Expression Data	Cindy Lin <sup>1</sup> , Hyojung Paik <sup>1</sup> , Dexter Hadley <sup>1</sup> , Marina Sirota <sup>1</sup> , Atul J. Butte <sup>1</sup> Department of Pediatrics (Division of Systems Medicine) <sup>1</sup> , Stanford University
29	Neuronal Extracellular Matrix Components Implicated in <i>C. elegans</i> Model of Novel Synapse Formation Pathway	Eric Lopez <sup>1</sup> , Peri Kurshan <sup>1</sup> , Kang Shen <sup>1</sup> Department of Biology <sup>1</sup> , Stanford University
30	Comparisons and Annotations of INDEL Variants from Next Generation Sequencing Data	John Louie <sup>1</sup> , Rachel Goldfeder <sup>2</sup> , Daryl Waggot <sup>3</sup> , Euan Ashley <sup>4,5,6</sup> Departments of Computer Science <sup>1</sup> , Biomedical Informatics <sup>2</sup> , Cardiovascular Medicine <sup>3</sup> , Medicine <sup>4</sup> , Genetics <sup>5</sup> , and Pathology <sup>6</sup> , Stanford University
31	The C1ql3 Protein Affects Emotional Memory	Matthew Lum <sup>1</sup> , David Martinelli <sup>1</sup> , Thomas Südhof <sup>1</sup> Department of Molecular & Cellular Physiology <sup>1</sup> , Stanford University
32	Simulating and Enhancing Vision through Photovoltaic Retinal Prosthesis	Alex Martinez <sup>1,2</sup> , John Doherty <sup>1,2</sup> , Daniel Palanker <sup>1,2</sup> Department of Ophthalmology <sup>1</sup> and Hansen Experimental Physics Laboratory <sup>2</sup> , Stanford University
33	Investigating the Role of Toll-Like Receptors in Neuronal Connectivity and Synapse Formation	Anna McGregor <sup>1</sup> , Louise Giam <sup>1</sup> , Ozgun Gokce <sup>1</sup> , Peng Zhou <sup>1</sup> , Thomas Südhof <sup>1</sup> Department of Molecular & Cellular Physiology <sup>1</sup> , Stanford University
34	Functional Properties of the Hippocampus in Siberian Hamsters: Illuminating the Relationship Between Circadian Rhythms and Learning	Laura McMartin <sup>1</sup> , Daniel V. Madison <sup>2</sup> Departments of Biology <sup>1</sup> and Molecular & Cellular Physiology <sup>2</sup> , Stanford University
35	Neural Dynamics in the Human Ventral Temporal Cortex During Letter and Number Processing	Jennifer Meylor <sup>1,2</sup> , Sandra Gattas <sup>1,2</sup> , Josef Parvizi <sup>1,2</sup> Department of Neurology & Neurological Sciences <sup>1</sup> and Stanford Human Intracranial Cognitive Electrophysiology Program (SHICEP) <sup>2</sup> , Stanford University
36	Robust Dipstick Urinalysis with a Mobile Phone Using a Low-Cost, Micro Volume SlipChip	Matthew Millett <sup>1</sup> , Kiran Magar <sup>1</sup> , Monica Bendernagel <sup>1</sup> , Genna Smith <sup>1</sup> , Saara Khan <sup>1</sup> , Kristen Lurie <sup>1</sup> , Mehdi Javanmard <sup>1</sup> , Audrey K. Ellerbee <sup>1</sup> Department of Electrical Engineering (Stanford Biomedical Optics Group) <sup>1</sup> , Stanford University
37	Beta-Catenin Stabilization Promotes Proliferation, Migration, and Fate Change of Cochlear Axin2+ Cells	Nina Myers <sup>1</sup> , Sara Billings <sup>1</sup> , Elvis Huarcaya Najarro <sup>1</sup> , Alan G. Cheng <sup>1</sup> Department of Otolaryngology <sup>1</sup> , Stanford University
38	Alzheimer's Disease: The Impact of Presenilin 1 Mutation on Autophagy in Human Neurons	Samar Naamo <sup>1</sup> , Daniel Haag <sup>1</sup> , Marius Wernig <sup>1</sup> Department of Stem Cell Biology & Regenerative Medicine <sup>1</sup> , Stanford University
39	Recurrent Mutations in KNSTRN and Disruption of Multiple Notch Signaling Genes in Cutaneous Squamous Cell Carcinoma	Christie B. Nguyen <sup>1</sup> , Carolyn S. Lee <sup>1</sup> , Aparna Bhaduri <sup>1</sup> , Angela Mah <sup>1</sup> , Whitney Johnson <sup>1</sup> , Cody J. Aros <sup>1</sup> , Alexander Ungewickell <sup>1</sup> , Zurab Siprashvili <sup>1</sup> , Aaron Straight <sup>1</sup> , Jinah Kim <sup>1</sup> , Sumaira Aasi <sup>1</sup> , Paul A. Khavari <sup>1</sup> Program in Epithelial Biology <sup>1</sup> , Stanford University
40	An Investigation of the Role of CD47 in HCV Infection	Edward Pham <sup>1</sup> , Benjamin Fram <sup>1</sup> , Thai Nguyen <sup>2</sup> , Jeffrey S. Glenn <sup>1</sup> Departments of Medicine <sup>1</sup> and Bioengineering <sup>2</sup> , Stanford University

41	Neuronal Activity Promotes Pediatric High-Grade Glioma Growth <i>In Vivo</i>	Humsa Venkatesh <sup>1,2,3,4</sup> , Viola Caretti <sup>1,2,3,4</sup> , Tessa Johung <sup>1,2,3,4</sup> , Alyssa Noll <sup>1,2,3,4</sup> , Michelle Monje <sup>1,2,3,4</sup> Departments of Neurology <sup>1</sup> , Neurosurgery <sup>2</sup> , and Pediatrics <sup>3</sup> and Institute for Stem Cell Biology & Regenerative Medicine <sup>4</sup> , Stanford University
42	Biomaterial Scaffolds & Regenerative Medicine: Novel Methods for Neural Progenitor Cell Transplantation in Spinal Cord Injuries	Nnaoma Oji <sup>1</sup> , Jim Weimann <sup>1</sup> , Karen Dubbin <sup>2</sup> , Sarah Heilshorn <sup>2</sup> , Giles Plant <sup>1</sup> Departments of Neurosurgery <sup>1</sup> and Materials Science & Engineering <sup>2</sup> , Stanford University
43	Statistical and Bioinformatic Analysis of Retroviral Insertions in Human Cells	Bhaven Patel <sup>1</sup> , Andres Lebensohn <sup>1</sup> , Jan Carette <sup>2</sup> , Rajat Rohatgi <sup>1</sup> , Julia Salzman <sup>3</sup> Departments of Medicine <sup>1</sup> , Microbiology & Immunology <sup>2</sup> , and Biochemistry <sup>3</sup> , Stanford University
44	The Role of CapZ Actin-Capping Protein in T cell Motility and Activation	Anuj Patel <sup>1</sup> , Timothy Thauland <sup>1</sup> , Manish Butte <sup>1</sup> Department of Pediatrics <sup>1</sup> , Stanford University
45	Take Your 'Pick': Using <i>D. melanogaster</i> Genetic Screens to Understand the Relationship Between NPC1 and ER Reorganization in Niemann-Pick, Type C Disease	Karthik Ramasubramanian <sup>1</sup> , Luis A. Milla <sup>1</sup> , Matthew P. Scott <sup>1,2,3</sup> Departments of Developmental Biology <sup>1</sup> , Genetics <sup>2</sup> , and Bioengineering <sup>3</sup> , Stanford University
46	Characterization of the Novel AMPK Substrate Sorting Nexin-17	Michael L. School <sup>2</sup> , Bethany E. Schaffer <sup>1,2</sup> , Nicholas T. Hertz <sup>3</sup> , Rebecca S. Levine <sup>3</sup> , Travis J. Maures <sup>2</sup> , B�er�enice A. Benayoun <sup>2</sup> , Max R. Banko <sup>2</sup> , Reuben J. Shaw <sup>4</sup> , Kevan M. Shokat <sup>3</sup> , Anne Brunet <sup>2</sup> Departments of Cancer Biology <sup>1</sup> and Genetics <sup>2</sup> , Stanford University; Department of Cellular & Molecular Pharmacology <sup>3</sup> , University of California, San Francisco; Molecular & Cell Biology Laboratory <sup>4</sup> , Salk Institute for Biological Studies, La Jolla, CA
47	Inhibiting Methanogenesis from Carbon Monoxide in <i>Methanosarcina acetivorans</i> C2A to Enhance Acetate Formation	Wayne Sheu <sup>1</sup> , Ann Lesnefsky <sup>2</sup> , Alfred Spormann <sup>1,2</sup> Departments of Chemical Engineering <sup>1</sup> and Civil Engineering <sup>2</sup> , Stanford University
48	Interrogating the Role of Jarid1B in MYC-Addicted Lymphomas	Delaney K. Sullivan <sup>1</sup> , Daniel C. Koch <sup>1</sup> , Dean W. Felsher <sup>1</sup> Department of Medicine (Division of Oncology) <sup>1</sup> , Stanford University
49	Exploring Striatal Inhibitory Networks that Mediate Abnormal Reward Processing in an Autism Mouse Model	Gordon Sun <sup>1,2</sup> , Marc Fucillo <sup>1,2</sup> , Patrick Rothwell <sup>1,2</sup> , Rob Malenka <sup>1,2</sup> Departments of Neurology <sup>1</sup> and Psychiatry <sup>2</sup> , Stanford University
50	Transcription Start Site Variation in Medullary Thymus Epithelial Cells	Christine Tataru <sup>1</sup> , Phillip Brennecke <sup>1</sup> , Aino Jarvelin <sup>2</sup> , Wu Wei <sup>1</sup> , Lars Steinmetz <sup>1</sup> Department of Genetics <sup>1</sup> , Stanford University; Genome Biology <sup>2</sup> , European Molecular Biology Laboratory
51	Reduced Working Memory Predicts Impaired Long-Term Memory in Chronic Media Multitaskers	Monica Thieu <sup>1</sup> , Melina Uncapher <sup>1</sup> , Anthony Wagner <sup>1,2</sup> Department of Psychology <sup>1</sup> and Neurosciences Program <sup>2</sup> , Stanford University
52	Small Protein Characterization of Assymmetric Cell Division in <i>Caulobacter crescentus</i>	Karli Thompson <sup>1</sup> , Jared Schrader <sup>1</sup> , Lucy Shapiro <sup>1</sup> Department of Developmental Biology <sup>1</sup> , Stanford University
53	Low Treatment Rates in Patients Meeting Guideline Criteria in Diverse Practice Settings	Sally A. Tran <sup>1</sup> , Lily H. Kim <sup>1</sup> , Vincent G. Nguyen <sup>2</sup> , Huy N. Trinh <sup>2,3</sup> , Jiayi Li <sup>4</sup> , Jian Q. Zhang <sup>5</sup> , Mindie H. Nguyen <sup>1</sup> Division of Gastroenterology & Hepatology <sup>1</sup> , Stanford University; Pacific Health Foundation <sup>2</sup> , San Jose, CA; San Jose Gastroenterology <sup>3</sup> , San

		Jose, CA; Gastroenterology <sup>4</sup> , Palo Alto Medical Foundation, Mountain View, CA; Chinese Hospital <sup>5</sup> , San Francisco, CA
54	Constructing a Destabilization Domain Vector for <i>Entamoeba invadens</i>	Emily Truong <sup>1</sup> , Susmitha Suresh <sup>1</sup> , Upi Singh <sup>1</sup> Department of Infectious Diseases <sup>1</sup> , Stanford University
55	Determining the Role of Clinical Mutations in Gli1 on Basal Cell Carcinoma Drug Resistance	Nicole Urman <sup>1</sup> , Scott Atwood <sup>1</sup> , Anthony Oro <sup>1</sup> Department of Dermatology <sup>1</sup> , Stanford University
56	Wnt Signalling in Skeletal Muscle	Kristina Vaculik <sup>1</sup> , Makiko Mizutani <sup>1</sup> , Roeland Nusse <sup>1</sup> Department of Developmental Biology <sup>1</sup> , Stanford University
57	Using Viral Vectors to Induce Inhibitory Neuron Formation in the Dentate Gyrus	Camille Van Neste <sup>1</sup> , Yan Li <sup>2</sup> , Marius Wernig <sup>2</sup> Departments of Chemistry <sup>1</sup> and Pathology <sup>2</sup> , Stanford University
58	Genetic Correction of Myosin-7 Mutations in an iPSC-Based Disease Model of Familial Hypertrophic Cardiomyopathy	Abhishek Venkataramana <sup>1</sup> , Ioannis Karakikes <sup>2</sup> , Vittavat Termglinchan <sup>2</sup> , Sebastian Diecke <sup>2</sup> , Joseph Wu <sup>2</sup> Departments of Biology <sup>1</sup> and Medicine (Division of Cardiology) <sup>2</sup> , Stanford University
59	Role of Novel Wnt Receptor Complexes in Cartilage Development	Catherynn Vuong <sup>1</sup> , Piera Smeriglio <sup>1</sup> , Subba Lakshmi Dhulipala <sup>1</sup> , Nidhi Bhutani <sup>1</sup> Department of Orthopaedic Surgery <sup>1</sup> , Stanford University
60	Novel Tendon Graft for Rotator Cuff Repair	Evelyna Wang <sup>1</sup> , Elmer Ker <sup>2</sup> , Angel Mercado <sup>2</sup> , Anthony Behn <sup>2</sup> , Peter Yang <sup>2</sup> , Emilie Cheung <sup>2</sup> Departments of Materials Science & Engineering <sup>1</sup> and Orthopaedic Surgery <sup>2</sup> , Stanford University
61	Bioengineered Hydrogels for Sustained Release of Interleukin 2 in the Treatment of Chronic Wounds	Jason Yang <sup>1</sup> , Maria Birukova <sup>1</sup> , Vivekananda Sunkari <sup>1</sup> , Paul Bollyky <sup>1</sup> Division of Infectious Diseases & Geographic Medicine <sup>1</sup> , Stanford University
62	Integrating Glycoproteomics and RNA-seq in Profiling Adipose Tissue	Christine Yiwen Yeh <sup>1</sup> , Brian Donald Piening <sup>2</sup> , Sarah Michelle Totten <sup>3</sup> , Tracey Lynn McLaughlin <sup>4</sup> , Michael Snyder <sup>2</sup> , Sharon Pitteri <sup>3</sup> Departments of Biology <sup>1</sup> , Genetics <sup>2</sup> , Radiology <sup>3</sup> , and Medicine <sup>4</sup> , Stanford University
63	Single-Cell High-Throughput Analysis of Nuclear Localization	Yuki Yoshiyasu <sup>1</sup> , Tyler Burns <sup>1</sup> , Jake Batchelder <sup>1</sup> , Julie Yu <sup>1</sup> , Andreas Frei <sup>1</sup> , Pier Federico Gheradini <sup>1</sup> , Felice Alessio Bava <sup>1</sup> , Wendy J. Fantl <sup>1</sup> , Garry P. Nolan <sup>1</sup> Department of Microbiology & Immunology (Baxter Laboratory for Stem Cell Biology) <sup>1</sup> , Stanford University
64	Hsp90 and the Evolution of New Traits	Alex Yuan <sup>1</sup> , Daniel Jarosz <sup>1,2</sup> Departments of Chemical & Systems Biology <sup>1</sup> and Developmental Biology <sup>2</sup> , Stanford University
65	Optical Measurement of the Electrochromic Response of Prussian Blue	Connie Zeng <sup>1</sup> , Allister McGuire <sup>1</sup> , Felix Alfonso <sup>1</sup> , Bianxiao Cui <sup>1</sup> Department of Chemistry <sup>1</sup> , Stanford University
66	A Cell Type Specific Transcriptional Repressor Directs Selective Upregulation of Terminal Differentiation Program	Jongmin Kim <sup>1</sup> , Margaret T. Fuller <sup>2,3</sup> Departments of Chemical & Systems Biology <sup>1</sup> , Developmental Biology <sup>2</sup> , and Genetics <sup>3</sup> , Stanford University
67	High-Resolution Cancer Imaging with Spectral Domain Optical Coherence Tomography	Orly Liba <sup>1,2</sup> , Elliott SoRelle <sup>1,3</sup> , Adam de la Zerda <sup>1</sup> Departments of Structural Biology <sup>1</sup> , Electrical Engineering <sup>2</sup> , and Biophysics <sup>3</sup> , Stanford University
68	Characterization of the Hedgehog Signal Transducer Smoothed by Single-Molecule Imaging	Lucien E. Weiss <sup>1</sup> , Ljiljana Milenkovic <sup>2</sup> , Josh Y. Yoon <sup>1</sup> , Steffen J. Sahl <sup>1</sup> , Matthew Scott <sup>2</sup> , W. E. Moerner <sup>1</sup> Departments of Chemistry <sup>1</sup> and Developmental Biology <sup>2</sup> , Stanford University

69	Head Impact Classification Using an Instrumented Mouthguard	Lyndia Wu <sup>1</sup> , Livia Zarnescu <sup>1</sup> , Vaibhav Nangia <sup>2</sup> , Bruce Cam <sup>2</sup> , David Camarillo <sup>1</sup> Departments of Bioengineering <sup>1</sup> and Mechanical Engineering <sup>2</sup> , Stanford University
70	Elucidating Brain Tumor-Niche Interactions in 3D Using Biomimetic Hydrogels	Christine Wang <sup>1</sup> , Xinming Tong <sup>2</sup> , Fan Yang <sup>1,2</sup> Departments of Bioengineering <sup>1</sup> and Orthopaedic Surgery <sup>2</sup> , Stanford University
71	Engineering Emergent Multicellular Behavior Through Synthetic Adhesion Programs	David Glass <sup>1</sup> , Ingmar Riedel-Kruse <sup>1</sup> Department of Bioengineering <sup>1</sup> , Stanford University
72	Engineering Mixed-Culture Biofilms	Xiaofan Jin <sup>1</sup> , Ingmar Riedel-Kruse <sup>1</sup> Department of Bioengineering <sup>1</sup> , Stanford University
73	Sample Multiplexing Using Single Chip Microfluidically Partitioned Magnetic Sensor Arrays for Protein Measurements	Daniel J. B. Bechstein <sup>1</sup> , Jung-Rok Lee <sup>1</sup> , Adi W. Gani <sup>2</sup> , Chin Chun Ooi <sup>3</sup> , Junyi Wang <sup>2</sup> , Shan X. Wang <sup>2,4</sup> Departments of Mechanical Engineering <sup>1</sup> , Electrical Engineering <sup>2</sup> , Chemical Engineering <sup>3</sup> , and Materials Science & Engineering <sup>4</sup> , Stanford University
74	The Minimal Cadherin-Catenin Complex Binds to Actin Filaments Under Force	Craig D. Buckley <sup>1</sup> , Jiongyi Tan <sup>2</sup> , Karen L. Anderson <sup>3</sup> , Dorit Hanein <sup>3</sup> , Niels Volkmann <sup>3</sup> , William I. Weis <sup>2,4,5</sup> , W. James Nelson <sup>5,6</sup> , Alexander R. Dunn <sup>1,2,7</sup> Departments of Chemical Engineering <sup>1</sup> , Structural Biology <sup>4</sup> , Molecular & Cellular Physiology <sup>5</sup> , and Biology <sup>6</sup> , Biophysics Program <sup>2</sup> , and Stanford Cardiovascular Institute <sup>7</sup> , Stanford University; Bioinformatics & Structural Systems Biology Program <sup>3</sup> , Sanford-Burnham Medical Research Institute
75	Know Thy Measurements: A Lesson in Scientific Rigor from MRI R2' Relaxometry	Wendy Ni <sup>1,2</sup> , Thomas Christen <sup>1</sup> , Zungho Zun <sup>1</sup> , Greg Zaharchuk <sup>1</sup> Departments of Radiology <sup>1</sup> and Electrical Engineering <sup>2</sup> , Stanford University
76	Experts' Views on Surgical Skills Assessment	Pankaj Sharma <sup>1</sup> , Ahmad Y. Sheikh <sup>2</sup> , Patricia Youngblood <sup>3</sup> , Sakti Srivastava <sup>3</sup> Departments of Electrical Engineering <sup>1</sup> , Cardiothoracic Surgery <sup>2</sup> , and Surgery <sup>3</sup> , Stanford University
77	Immunoassay on Plasmonic Gold (pGOLD) Platform	Bo Zhang <sup>1</sup> , Hongjie Dai <sup>1</sup> Department of Chemistry <sup>1</sup> , Stanford University
78	The Magnitude of the Knee Moment in the Transverse Plane Is a Sensitive Metric to Differences in Ambulatory Knee Loading	Eric F. Chehab <sup>1,2,5</sup> , Julien Favre <sup>1,4</sup> , Thomas P. Andriacchi <sup>1,3,5</sup> Departments of Mechanical Engineering <sup>1</sup> , Bioengineering <sup>2</sup> , and Orthopaedic Surgery <sup>3</sup> , Stanford University; Musculoskeletal Medicine <sup>4</sup> , Lausanne University Hospital, Switzerland; Palo Alto Veterans Affairs <sup>5</sup>
79	Finite Element and Kinematic Criteria of Mild Traumatic Brain Injury Using 6DOF Measurements	Fidel Hernandez <sup>1</sup> , Lyndia Wu <sup>2</sup> , Michael Yip <sup>2</sup> , Andrew Hoffman <sup>3</sup> , Jaime Lopez <sup>4</sup> , Gerald Grant <sup>5</sup> , Svein Kleiven <sup>6</sup> , David Camarillo <sup>2</sup> Departments of Mechanical Engineering <sup>1</sup> , Bioengineering <sup>2</sup> , Endocrinology <sup>3</sup> , Neurology <sup>4</sup> , and Neurosurgery <sup>5</sup> , Stanford University; Department of Neuronic Engineering <sup>6</sup> , KTH Royal Institute of Technology
80	Optical Transmission of Analog SiPM Signals for ToF PET/MRI	Matthew F. Bieniosek <sup>1</sup> , Craig S. Levin <sup>1,2,3,4</sup> Departments of Electrical Engineering <sup>1</sup> , Radiology <sup>2</sup> , Bioengineering <sup>3</sup> , and Physics <sup>4</sup> , Stanford University
81	Elucidating Brain Connectivity Networks in Major Depressive Disorder Using Classification-Based Scoring	Matthew Sacchet <sup>1,2</sup> , Gautam Prasad <sup>1,3</sup> , Lara C. Foland-Ross <sup>1</sup> , Paul M. Thompson <sup>3</sup> , Ian H.

		Gotlib <sup>1,2</sup> Department of Psychology <sup>1</sup> and Neurosciences Program <sup>2</sup> , Stanford University; Imaging Genetics Center (Keck School of Medicine) <sup>3</sup> , USC
82	Recent Selective Sweeps in <i>Drosophila melanogaster</i> Show Signatures of Soft Sweeps	Nandita R. Garud <sup>1,2</sup> , Philipp W. Messer <sup>2</sup> , Erkan O. Buzbas <sup>2,3</sup> , Dmitri A. Petrov <sup>2</sup> Departments of Genetics <sup>1</sup> and Biology <sup>2</sup> , Stanford University; Department of Statistical Science <sup>3</sup> , University of Idaho
83	To Explore the More Realistic Energy Responses of the In-Depth Photon Counting Detectors	Yuan Yao <sup>1,2</sup> , Norbert Pelc <sup>1,2,3</sup> Departments of Bioengineering <sup>1</sup> , Radiology <sup>2</sup> , and Electrical Engineering <sup>3</sup> , Stanford University
84	Biomimetic Approaches to Tactile Sensing	Benjamin C.-K. Tee <sup>1</sup> , Alex Chortos <sup>2</sup> , Ariane Tom <sup>3</sup> , Andre Berndt <sup>3</sup> , Allister McGuire <sup>4</sup> , Kevin Tien <sup>5</sup> , Huiliang Wang <sup>2</sup> , Carter Lin <sup>4</sup> , Bianxiao Cui <sup>4</sup> , Karl Deisseroth <sup>3</sup> , Tse Nga Ng <sup>6</sup> , Zhenan Bao <sup>7</sup> Departments of Electrical Engineering <sup>1</sup> , Materials Science & Engineering <sup>2</sup> , Bioengineering <sup>3</sup> , Chemistry <sup>4</sup> , and Chemical Engineering <sup>7</sup> , Stanford University; Department of Electrical Engineering <sup>5</sup> , Columbia University; Palo Alto Research Center <sup>6</sup>
85	Probing the Metabolomics of Circulating Tumor Cells at the Single-Cell Level	Laura S. Sasportas <sup>1,3</sup> , Silvan Tuerkcan <sup>2</sup> , Guillem Pratz <sup>2</sup> , Sanjiv S. Gambhir <sup>1,3</sup> Departments of Radiology <sup>1</sup> , Radiation Oncology <sup>2</sup> , and Bioengineering <sup>3</sup> , Stanford University
86	High Throughput Identification of Adaptive Mutations in Yeast Experimental Evolution Using DNA Barcodes	Sandeep Venkataram <sup>1</sup> , Yuping Li <sup>1,2</sup> , Barbara Dunn <sup>2</sup> , Jessica Chang <sup>2</sup> , Jamie Blundell <sup>1,3</sup> , Sasha Levy <sup>2,4</sup> , Daniel Fisher <sup>3</sup> , Gavin Sherlock <sup>2</sup> , Dmitri Petrov <sup>1</sup> Departments of Biology <sup>1</sup> , Genetics <sup>2</sup> , and Applied Physics <sup>3</sup> , Stanford University; Laufer Center for Physical and Quantitative Biology <sup>4</sup> , Stony Brook University
87	Balancing Forces in Cell Pairs	Joo Yong Sim <sup>1</sup> , Jens Möller <sup>4</sup> , Kevin C. Hart <sup>2</sup> , Diego Ramallo <sup>3</sup> , Viola Vogel <sup>4</sup> , William Weis <sup>2</sup> , Alex Dunn <sup>3</sup> , W. James Nelson <sup>2</sup> , Beth L. Pruitt <sup>1,2</sup> Departments of Mechanical Engineering <sup>1</sup> , Biology & Molecular Cellular Physiology <sup>2</sup> , and Chemical Engineering <sup>3</sup> , Stanford University; ETH Zurich Health Sciences & Technology <sup>4</sup>
88	Mimicking Cartilage Zonal Organization Using Gradient Hydrogels	Danqing (Bonnie) Zhu <sup>1</sup> , Xinming Tong <sup>2</sup> , Janice Lai <sup>3</sup> , Fan Yang <sup>1,2</sup> Departments of Bioengineering <sup>1</sup> , Orthopaedic Surgery <sup>2</sup> , and Mechanical Engineering <sup>3</sup> , Stanford University
89	Prickle/Spiny-Legs Isoforms Control the Polarity of the Apical Microtubule Network in PCP	Katherine Sharp <sup>1,2</sup> , Jessica Olofsson <sup>1</sup> , Jeffrey D. Axelrod <sup>1</sup> Departments of Pathology <sup>1</sup> and Genetics <sup>2</sup> , Stanford University
90	Architecture of Interphase Chromosomes	Kyle P. Eagen <sup>1</sup> , Tom A. Hart <sup>1,2,3,4</sup> , Roger D. Kornberg <sup>1</sup> Departments of Structural Biology <sup>1</sup> , Developmental Biology <sup>2</sup> , Genetics <sup>3</sup> , and Bioengineering <sup>4</sup> , Stanford University
91	Real-Time Beam Visualization for Monitoring External Beam Radiotherapy	Cesare Jenkins <sup>1</sup> , Dominik Naczynski <sup>2</sup> , Lei Xing <sup>2</sup> Departments of Mechanical Engineering <sup>1</sup> and Radiation Oncology <sup>2</sup> , Stanford University
92	Soft Selective Sweeps in Complex Demographic Scenarios	Ben Wilson <sup>1</sup> , Dmitri Petrov <sup>1</sup> , Philipp Messer <sup>2</sup> Department of Biology <sup>1</sup> , Stanford University; Department of Biological Statistics & Computational Biology <sup>2</sup> , Cornell University

93	Optimal High Dimensional Bayesian Inference	Madhu Advani <sup>1</sup> , Surya Ganguli <sup>1</sup> Department of Applied Physics <sup>1</sup> , Stanford University
94	Model-less Control of a Flexible Robotic Catheter	Michael Yip <sup>1</sup> , Paul Wang <sup>2</sup> , David Camarillo <sup>1</sup> Departments of Bioengineering <sup>1</sup> and Cardiovascular Medicine <sup>2</sup> , Stanford University
95	Physical Modeling of Chromosome Segregation in Bacteria Reveals Impact of Force and DNA Relaxation	Thomas J. Lampo <sup>1</sup> , Nathan J. Kuwada <sup>2</sup> , Paul A. Wiggins <sup>2,3</sup> , Andrew J. Spakowitz <sup>1</sup> Department of Chemical Engineering <sup>1</sup> , Stanford University; Departments of Physics <sup>2</sup> and Bioengineering <sup>3</sup> , University of Washington
96	Geometric Parameters of Complex Endovascular Abdominal Aortic Aneurysm Repair	Ga-Young Suh <sup>1</sup> , Jason T. Lee <sup>1</sup> , Ronald L. Dalman <sup>1</sup> , Christopher P. Cheng <sup>1</sup> Department of Surgery <sup>1</sup> , Stanford University
97	Purification of Target DNA from Whole Human Blood Using Isotachopheresis-Affinity Chromatography	Viktor Shkolnikov <sup>1</sup> , Juan G. Santiago <sup>1</sup> Department of Mechanical Engineering <sup>1</sup> , Stanford University
98	Catalyzing <i>In Vivo</i> Cartilage Formation by Neonatal Chondrocytes Through Harnessing the Trophic Effects of Adipose Derived Stem Cells in 3D	Janice H. Lai <sup>1</sup> , Lorenzo Deveza <sup>2,3</sup> , Stephanie Yu <sup>4</sup> , Fan Yang <sup>2,3</sup> Departments of Mechanical Engineering <sup>1</sup> , Orthopaedic Surgery <sup>2</sup> , and Bioengineering <sup>3</sup> , Stanford University
99	Effects of Soluble Factors and Oxygen Tension on Chondrocytes-Stem Cells Interactions and the Resulting Cartilage Formation	Janice H. Lai <sup>1</sup> , Stephanie Yu <sup>2</sup> , Shaheen Jeeawoody <sup>3</sup> , R. Lane Smith <sup>2</sup> , William Maloney <sup>2</sup> , Fan Yang <sup>2,3</sup> Departments of Mechanical Engineering <sup>1</sup> , Orthopaedic Surgery <sup>2</sup> , and Bioengineering <sup>3</sup> , Stanford University
100	Real-Time Observation of Transcription Initiation from the T7A1 Promoter	Furqan M. Fazal <sup>1*</sup> , Cong A. Meng <sup>2*</sup> , Steven Block <sup>1,3</sup> (*equal contribution) Departments of Applied Physics <sup>1</sup> , Chemistry <sup>2</sup> , and Biology <sup>3</sup> , Stanford University
101	Generation of Functional Cortical Neurons and Astrocytes from Human Pluripotent Stem Cells in 3D Cultures	Steven Sloan <sup>1</sup> , Anca Pasca <sup>2</sup> , Laura Clarke <sup>1</sup> , Ben Barres <sup>1</sup> , Sergiu Pasca <sup>3</sup> Departments of Neurobiology <sup>1</sup> , Pediatrics <sup>2</sup> , and Psychiatry & Behavioral Sciences <sup>3</sup> , Stanford University
102	Antibody Repertoire Analysis	Christopher J. Emig <sup>1</sup> , Lolita Penland <sup>1</sup> , Stephen R. Quake <sup>1</sup> Department of Bioengineering <sup>1</sup> , Stanford University
103	Chemical Inhibition of the Cytoskeletal FtsZ Division Machinery: A Complicated Relationship	Amanda Miguel <sup>1</sup> , Jen Hsin <sup>1</sup> , Tianyun Liu <sup>2</sup> , Grace Tang <sup>1</sup> , Russ Altman <sup>1,2</sup> , Kerwyn Casey Huang <sup>1,3</sup> Departments of Bioengineering <sup>1</sup> , Genetics <sup>2</sup> , and Microbiology & Immunology <sup>3</sup> , Stanford University
104	Probing the Stiffness of the Extracellular Matrix to Control Activation of T cells in Type 1 Diabetes	Adi de la Zerda <sup>1</sup> , Tim Thauland <sup>2</sup> , Sarah Heilshorn <sup>1</sup> , Paul Bollyky <sup>3</sup> , Manish Butte <sup>2</sup> Departments of Materials Science & Engineering <sup>1</sup> , Medicine (Infectious Diseases) <sup>3</sup> , and Pediatric Allergy & Immunology <sup>2</sup> , Stanford University
105	Frequency Dependence of Ultrasound Neuromodulation	Patrick Ye <sup>1</sup> , Kim Butts Pauly <sup>1,2</sup> Departments of Bioengineering <sup>1</sup> and Radiology <sup>2</sup> , Stanford University
106	Nanostructured Iridium Oxide Nanotube Arrays for Sensitive Electrophysiological Measurement	Allister McGuire <sup>1</sup> , Ziliang Carter Lin <sup>2</sup> , Dara Bobb-Semple <sup>1</sup> , Bianxiao Cui <sup>1</sup> Departments of Chemistry <sup>1</sup> and Applied Physics <sup>2</sup> , Stanford University
107	Global Chromatin Accessibility Increase During Tumor Progression and Metastasis of mSCLC Linked to Gene Amplification of NFI Family Transcription Factors	Sarah Denny <sup>1</sup> , Dian Yang <sup>2</sup> , Monte Winslow <sup>2,3</sup> , William Greenleaf <sup>1,3</sup> Programs in Biophysics <sup>1</sup> and Cancer Biology <sup>2</sup> and



		Department of Genetics <sup>3</sup> , Stanford University
108	Using fMRI to Characterize How Cortex Represents Limb Motions	Samir Menon <sup>1</sup> , Jack Zhu <sup>1</sup> , Paul Quigley <sup>1</sup> , Franco Pestilli <sup>2</sup> , Kwabena Boahen <sup>3</sup> , Oussama Khatib <sup>1</sup> Departments of Computer Science <sup>1</sup> , Psychology <sup>2</sup> , and Bioengineering <sup>3</sup> , Stanford University
109	Developing a Small-Scale ChIP-seq Method to Probe Bcl11b Targets in Mammary Stem Cells	Liz Chen <sup>1</sup> , Shang Cai <sup>1</sup> , Mark Zarnegar <sup>1</sup> , Michael Clarke <sup>1</sup> Department of Stem Cell Biology & Regenerative Medicine <sup>1</sup> , Stanford University
110	Shape Regulation of Human iPS Cell Derived Cardiomyocytes	Aleksandra K. Denisin <sup>1,2</sup> , Alexandre J. S. Ribeiro <sup>2,3</sup> , Yen-Sin Ang <sup>5</sup> , Renee Rivas <sup>5</sup> , Deepak Srivastava <sup>5</sup> , Beth L. Pruitt <sup>2,3,4</sup> Departments of Bioengineering <sup>1</sup> , Mechanical Engineering <sup>2</sup> , and Molecular & Cellular Physiology <sup>4</sup> , Stanford University; Stanford Cardiovascular Institute <sup>3</sup> ; Gladstone Institute of Cardiovascular Disease, University of California San Francisco <sup>5</sup>
111	Quantifying <i>In Vivo</i> Three Dimensional Geometric Changes and Deformations of the Thoracic Aorta and Branching Vessels Following Thoracic Endovascular Aortic Repair (TEVAR)	Kelsey Hirotsu <sup>1</sup> , Ga-Young Suh <sup>2</sup> , Christopher Cheng <sup>2</sup> School of Medicine <sup>1</sup> and Department of Vascular Surgery <sup>2</sup> , Stanford University
112	Optical Sorting on Si <sub>3</sub> N <sub>4</sub> Strip and MIM Waveguides	Saara A. Khan <sup>1</sup> , Chia-Ming Chang <sup>1</sup> , Yu Shi <sup>1</sup> , Yousif Kelaita <sup>1</sup> , Zain Zaidi <sup>1</sup> , Nathan Loewke <sup>1</sup> , Catherine Jan <sup>1</sup> , Audrey Ellerbee <sup>1</sup> , Olav Solgaard <sup>1</sup> Department of Electrical Engineering <sup>1</sup> , Stanford University
113	Novel Small-Molecule Inhibitors of the CLC-Ka Chloride Channel	Anna K. Koster <sup>1</sup> , Chase Wood <sup>2</sup> , Kee-Hyun Choi <sup>3</sup> , Jonas Almqvist <sup>4</sup> , Rhiannon Thomas-Tran <sup>1</sup> , Merritt Maduke <sup>2</sup> , Justin Du Bois <sup>1</sup> Departments of Chemistry <sup>1</sup> and Molecular & Cellular Physiology <sup>2</sup> , Stanford University; Korea Institute of Science & Technology <sup>3</sup> ; Uppsala University <sup>4</sup>
114	Dynamic Cell Culture Alters the Phenotype of Cancer Cells	Gizem Calibasi* <sup>1</sup> , Sinan Guven* <sup>1</sup> , Aaron Goldman <sup>2,3</sup> , Utkan Demirci <sup>1</sup> (*equal contribution) Department of Radiology <sup>1</sup> , Stanford University; Laboratory for Nanomedicine (Division of Biomedical Engineering), Brigham and Women's Hospital <sup>2</sup> , and Department of Medicine <sup>3</sup> , Harvard Medical School
115	3D <i>In Vitro</i> Neural Circuits from Pluripotent Stem Cells	Sinan Guven <sup>1</sup> , Volha Liaudanskaya <sup>1</sup> , Ed Boyden <sup>3,4,5</sup> , Utkan Demirci <sup>1</sup> Department of Radiology <sup>1</sup> and Canary Center for Cancer Early Detection <sup>2</sup> , Stanford University; Department of Biological Engineering <sup>3</sup> , MIT Media Lab <sup>4</sup> , and McGovern Institute <sup>5</sup> , Massachusetts Institute of Technology
116	Inflammatory Markers Influence Microembolization in Patients Undergoing Carotid Interventions	Elizabeth Hitchner <sup>1</sup> , Sharla Powell White <sup>2</sup> , Lauren Lahey <sup>3</sup> , William Robinson <sup>3</sup> , Wei Zhou <sup>1,2</sup> Palo Alto Veterans Hospital (Division of Vascular Surgery) <sup>1</sup> ; Divisions of Vascular Surgery <sup>2</sup> and Immunology & Rheumatology <sup>3</sup> , Stanford University
117	Ectoine-Assisted Preservation of Red Blood Cell Phenotype and Function During Nanoliter Vitrification	Rami El Assal <sup>1,2</sup> , Sinan Guven <sup>1,2</sup> , Umut Atakan Gurkan <sup>3,4</sup> , Irep Gozen <sup>3</sup> , Hadi Shafiee <sup>3</sup> , Sedef Dalbeyber <sup>3</sup> , Noor Abdalla <sup>3</sup> , Gawain Thomas <sup>5</sup> , Wendy Fuld <sup>6</sup> , Ben Illigens <sup>7</sup> , Jessica Estanislau <sup>8</sup> , Joseph Khoory <sup>8</sup> , Richard Kaufman <sup>6</sup> , Claudia Zylberberg <sup>9</sup> , Neal Lindeman <sup>6</sup> , Qi Wen <sup>5</sup> , Ionita Ghiran <sup>8</sup> , Utkan Demirci <sup>1,2,3</sup> Department of Radiology <sup>1</sup> and Canary Center at

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118	Systematic Approach for Mapping the Voltage-Gated Sodium Channel Pore Using Modified Guanidinium Toxins	Rhiannon Thomas-Tran <sup>1</sup> , James R. Walker <sup>1</sup> , Jeffrey E. Merit <sup>1</sup> , Justin Du Bois <sup>1</sup> Department of Chemistry <sup>1</sup> , Stanford University
119	Gamma Radiation Effects on CNS Circuit Function Provide a Mechanism for Antidepressant Action	Melis K. Sunay <sup>1</sup> , Beza A. Dagne <sup>1</sup> , Spencer Orbegozo <sup>1</sup> , Gabriella Bertaccini <sup>1</sup> , Hiroshi Doi <sup>2</sup> , Rona G. Giffard <sup>1</sup> , Susan J. Knox <sup>2</sup> , M. Bruce MacIver <sup>1</sup> Departments of Anesthesiology, Perioperative & Pain Medicine <sup>1</sup> and Radiation Oncology <sup>2</sup> , Stanford University
120	Differentiation of Human Induced Pluripotent Stem Cells Toward Chondrocytes Using Defined Growth Factors	Jieun Lee <sup>1</sup> , Piera Smeriglio <sup>1</sup> , Sarah E.B. Taylor <sup>1</sup> , Janice Lai <sup>1</sup> , Lakshmi Dhulipala <sup>1</sup> , Fan Yang <sup>1</sup> , Nidhi Bhutani <sup>1</sup> Department of Orthopaedic Surgery <sup>1</sup> , Stanford University
121	Portable Lensless Microscopy Platform for Healthcare Applications	H. Cumhur Tekin <sup>1,2</sup> , Fatih Inci <sup>1,2</sup> , Antonio C. Sobieranski <sup>3,4</sup> , Mehmet Yuksekkaya <sup>5</sup> , Eros Comunello <sup>4</sup> , Daniel Cobra <sup>6</sup> , Aldo von Wangenheim <sup>3,4</sup> , Utkan Demirci <sup>1,2</sup> Canary Center for Cancer Early Detection <sup>1</sup> , Department of Radiology <sup>2</sup> , Stanford University; Federal University of Parana <sup>3</sup> , Brazil; National Brazilian Institute for Digital Convergence <sup>4</sup> , Brazil; Biomedical Engineering Department <sup>5</sup> , Baskent University, Turkey; dCERTI Foundation <sup>6</sup> , Federal University of Santa Catarina, Brazil
122	Evaluating the Value of Targeted Prostate Biopsy: MR-US Fusion in an Office Setting	Richard E. Fan <sup>1</sup> , Benjamin I. Chung <sup>1</sup> , James D. Brooks <sup>1</sup> , Katherine J. To'o <sup>2</sup> , Bruce L. Daniel <sup>2</sup> , Pejman Ghanouni <sup>2</sup> , Geoffrey A. Sonn <sup>1</sup> Departments of Urology <sup>1</sup> and Radiology <sup>2</sup> , Stanford University
123	Quantum Nature of the Hydrogen Bond Network in the Ketosteroid Isomerase Active Site	Lu Wang <sup>1</sup> , Stephen D. Fried <sup>1</sup> , Steven G. Boxer <sup>1</sup> , Thomas E. Markland <sup>1</sup> Department of Chemistry <sup>1</sup> , Stanford University
124	Skin-Stretch Haptic Feedback for Improved Control of Brain-Computer Interfaces	Sean M. Sketch <sup>1</sup> , Darrel R. Deo <sup>1</sup> , Jayant Menon <sup>2</sup> , Allison M. Okamura <sup>1</sup> Departments of Mechanical Engineering <sup>1</sup> and Neurosurgery <sup>2</sup> , Stanford University
125	Liquid-Templated Cell Assembly for Tissue Engineering	Pu Chen <sup>1,2</sup> , Sinan Güven <sup>1,2</sup> , Utkan Demirci <sup>1,2</sup> Department of Radiology <sup>1</sup> and Canary Center for Early Cancer Detection <sup>2</sup> , Stanford University
126	Micro-a-fluidics ELISA for Rapid CD4 Cell Count at the Point-of-Care	ShuQi Wang <sup>1</sup> , Savas Tasoglu <sup>2</sup> , Paul Chen <sup>2</sup> , Michael Chen <sup>2</sup> , Ragip Akbas <sup>3</sup> , Sonya Wach <sup>2</sup> , Cenk Ozdemir <sup>2</sup> , Umut Atakan Gurkan <sup>2</sup> , Françoise F. Giguel <sup>4</sup> , Daniel R. Kuritzkes <sup>5</sup> , Utkan Demirci <sup>1,2</sup> (#corresponding author) Canary Center at Stanford for Cancer Early Detection <sup>1</sup> , Stanford University; Bio-Acoustic-MEMS in Medicine (BAMM) Laboratory <sup>2</sup> and Division of Infectious Diseases <sup>5</sup> , Brigham and Women's Hospital at Harvard Medical School; Civil Engineering Department <sup>3</sup> , Özyeğin University, Istanbul, Turkey; Infectious Diseases Unit <sup>4</sup> , Massachusetts

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127	Matrix Stiffness Regulates Pluripotent Stem Cell Differentiation Towards Smooth Muscle Cell Lineage	Soah Lee <sup>1</sup> , Erica Anderson <sup>2</sup> , Xinming Tong <sup>4</sup> , Prachi Wani <sup>2</sup> , Smruti Phadnis <sup>2</sup> , Renee Reijo Pera <sup>2</sup> , Fan Yang <sup>2,3,4</sup> Departments of Materials Science & Engineering <sup>1</sup> , Bioengineering <sup>3</sup> and Orthopaedic Surgery <sup>4</sup> and Institute of Stem Cell & Regenerative Medicine <sup>2</sup> , Stanford University
128	Toward Imaging Zebrafish Sleep Neurocircuitry from Whole Brain to Synapse	Creed M. Stary <sup>1</sup> , Lijun Xu <sup>1</sup> , Xiaoyun Sun <sup>1</sup> , Yibing Ouyang <sup>1</sup> , Jason Leung <sup>1</sup> , Robin E. White <sup>1</sup> , Xiaoxing Xiong <sup>1</sup> , John Li <sup>1</sup> , Rona G. Giffard <sup>1</sup> Department of Anesthesia <sup>1</sup> , Stanford University
129	Microribbon-Based Scaffold Enhances Bone Repair in a Murine Critical Size Calvarial Defect Model	Bogdan Conrad <sup>1</sup> , Li-Hsin Han <sup>2</sup> , Jessie Lam <sup>3</sup> , Fan Yang <sup>2,3</sup> Departments of Stem Cell Biology & Regenerative Medicine <sup>1</sup> , Orthopaedic Surgery <sup>2</sup> , and Bioengineering <sup>3</sup> , Stanford University
130	Modulating Stem Cell-Chondrocytes Interactions for Cartilage Repair Using Combinatorial Extracellular Matrix-Containing Hydrogels	Tianyi Wang <sup>1</sup> , Janice H. Lai <sup>2</sup> , Fan Yang <sup>1,3</sup> Departments of Bioengineering <sup>1</sup> , Mechanical Engineering <sup>2</sup> , and Orthopaedic Surgery <sup>3</sup> , Stanford University
131	Exploratory Study of Atherosclerotic Plaque Using X-ray Diffraction	Herbert Silva <sup>1</sup> , Elsie Gyang <sup>2</sup> , Jason Lee <sup>2</sup> , Apurva Mehta <sup>3</sup> , Chris Tassone <sup>3</sup> , Drew Nelson <sup>1</sup> Departments of Mechanical Engineering <sup>1</sup> and Vascular Surgery <sup>2</sup> and SLAC Synchrotron Radiation Lab <sup>3</sup> , Stanford University
132	Automated Analysis of Large, High Dimensional Flow Cytometry Data Sets	Stephen Meehan <sup>1</sup> , Guenther Walther <sup>2</sup> , Wayne Moore <sup>1</sup> , Darya Orlova <sup>1</sup> , Connor Meehan <sup>3</sup> , David Parks <sup>1</sup> , Noah Zimmerman <sup>4</sup> , Leonore Herzenberg <sup>1</sup> Departments of Genetics <sup>1</sup> and Statistics <sup>2</sup> , Stanford University; Department of Mathematics <sup>3</sup> , California Institute of Technology; Kyron, Inc. <sup>4</sup>
133	Realtime <i>C. elegans</i> Tracking Package with Spatial Targeting for Mechanical Stimulus	John Whitworth <sup>1</sup> , Eileen Mazzochette <sup>2</sup> , Frederic Loizeau <sup>1</sup> , Adam Nekimken <sup>1</sup> , Beth Pruitt <sup>1,3</sup> , Miriam Goodman <sup>3</sup> Departments of Mechanical Engineering <sup>1</sup> , Electrical Engineering <sup>2</sup> , and Molecular & Cellular Physiology <sup>3</sup> , Stanford University
134	Statistical and Computational Methods for Quantification of Circular and Linear RNA Isoform Expression	Linda Szabo <sup>1</sup> , Julia Salzman <sup>2</sup> Departments of Biomedical Informatics <sup>1</sup> and Biochemistry <sup>2</sup> , Stanford University
135	Design of a Highly Steerable Intervention Needle	Kelly Lowen <sup>1</sup> , Caroline Fong <sup>1</sup> , Sanjay Srinivas <sup>1</sup> , Ann Majewicz <sup>1</sup> , Allison Okamura <sup>1</sup> Department of Mechanical Engineering <sup>1</sup> , Stanford University
136	Analyzing the Dynamics of the Human Microbiome During Term and Preterm Pregnancies	Benjamin Callahan <sup>1</sup> , Dan DiGiulio <sup>2</sup> , David Relman <sup>2</sup> , Susan Holmes <sup>1</sup> Departments of Statistics <sup>1</sup> and Medicine (Division of Infectious Diseases) <sup>2</sup> , Stanford University
137	Alk-5 Inhibition Increases Contrast Agent Delivery to Tumors	Olga D. Lenkov <sup>1</sup> , Jacqueline T. Vuong <sup>1</sup> , Catherine Zhao <sup>1</sup> , Celina Ansari <sup>1</sup> , Aubie Shaw <sup>2,3</sup> , Ken Ito <sup>1</sup> , Su Hyun Hong <sup>1</sup> , Mazen Sidani <sup>4</sup> , Matthias Hoffmann <sup>5</sup> , Laura Pisani <sup>1</sup> , Nancy Boudreau <sup>4</sup> , Sanjiv Sam Gambhir <sup>1</sup> , Lisa M. Coussens <sup>2,3</sup> , Heike E. Daldrop-Link <sup>1</sup> Department of Radiology (Molecular Imaging Program at Stanford (MIPS)) <sup>1</sup> , Stanford University; Department of Cell & Developmental Biology <sup>2</sup> and Knight Cancer Institute <sup>3</sup> , Oregon Health and Science University; Department of Surgery <sup>4</sup> , University of California San Francisco; Department of Dermatology, Venerology & Allergology <sup>5</sup> , Goethe University

138	Does Macrophage Phagocytosis Alter the MR Signal of Iron Oxide Nanoparticle Labeled Human Mesenchymal Stem Cells?	Lina Saeed <sup>1</sup> , Deborah Fretwell <sup>1</sup> , Hossein Nejadnik <sup>1</sup> , Olga Lenkov <sup>1</sup> , Isaac Lam <sup>1</sup> , Lydia Mandrussow <sup>2</sup> , Daniel Golovko <sup>3</sup> , Heike E. Daldrup-Link <sup>1</sup> Department of Radiology (Molecular Imaging Program at Stanford (MIPS)) <sup>1</sup> , Stanford University; Feinberg School of Medicine <sup>2</sup> , Northwestern University; Department of Medicine <sup>3</sup> , University of Massachusetts Medical School
139	Toward Imaging Zebrafish Sleep Neural Circuitry from Whole Brain to Synapse	Louis C. Leung <sup>1</sup> , Gordon X. Wang <sup>1</sup> , Romain Madelaine <sup>1</sup> , Caroline Halluin <sup>1</sup> , Gemini Skariah <sup>1</sup> , Philippe Mourrain <sup>1</sup> Department of Psychiatry & Behavioral Sciences <sup>1</sup> , Stanford University
140	Modulation of Mitochondria to Increase Neurogenesis and Modulate Inflammation	Ludmila Voloboueva <sup>1</sup> , Xiouyun Sun <sup>1</sup> , Emily Siegel <sup>1</sup> , Rona Giffard <sup>1</sup> Department of Anesthesia <sup>1</sup> , Stanford University
141	Cell Micropatterning on Transmission Electron Microscopy Grids	Priyanka Sekhar <sup>1</sup> , Jens Moeller <sup>1</sup> , Beth Pruitt <sup>1,2</sup> , Departments of Mechanical Engineering <sup>1</sup> and Molecular & Cellular Physiology <sup>2</sup> , Stanford University
142	Reduced-Noise Algorithms for Endoscopic Imaging through Multimode Fiber	Ruo Yu Gu <sup>1</sup> , Reza N. Mahalati <sup>1</sup> , Joseph M. Kahn <sup>1</sup> Department of Electrical Engineering <sup>1</sup> , Stanford University
143	Establishment of Green Fluorescent Protein and Firefly Luciferase Expressing Mouse Primary Macrophages for Bioluminescence Imaging	Jukka Pajarinen <sup>1</sup> , Tzu-hua Lin <sup>1</sup> , Taishi Sato <sup>1</sup> , Zhenyu Yao <sup>1</sup> , Yrjö T. Konttinen <sup>2</sup> , Stuart B. Goodman <sup>1</sup> Department of Orthopaedic Surgery (Orthopaedic Research Laboratories) <sup>1</sup> , Stanford University; Department of Medicine <sup>2</sup> , Institute of Clinical Medicine, University of Helsinki, Helsinki, Finland
144	Decellularized Pericardial Adipose Tissue Matrices as a Novel Platform for Myocardium Regeneration	Anna Le <sup>1</sup> , Bhagat Patlolla <sup>1</sup> , Yan Zhuge <sup>1</sup> , Lydia Joubert <sup>1</sup> , Paul Chang <sup>1</sup> , Robert C. Robbins <sup>1</sup> , Ramin E. Beygui <sup>1</sup> , Evgenios A. Neofytou <sup>1</sup> Department of Cardiothoracic Surgery <sup>1</sup> , Stanford University
145	Microwave-Acoustic Hybrid Imaging and Potential Applications	Hao Nan <sup>1</sup> , Amin Arbabian <sup>1</sup> Department of Electrical Engineering <sup>1</sup> , Stanford University
146	Miniaturized Medical Implants for High-Power and Deeply-Implanted Applications	Jayant Charthad <sup>1</sup> , Marcus Weber <sup>1</sup> , Jerry Chang <sup>1</sup> , Amin Arbabian <sup>1</sup> Department of Electrical Engineering <sup>1</sup> , Stanford University
147	Feedback-Mediated Suppression of Cell-to-Cell Variability Maintains the Terminally Differentiated State	Zahra Bahrami <sup>1</sup> , Wenting Yang <sup>1</sup> , Mary N. Teruel <sup>1</sup> Department of Chemical & Systems Biology <sup>1</sup> , Stanford University
148	ISFET Sensitivity Enhancement (Exceeding Nernst Limit): Engineering Analyte Condition and Sensor Dimension	Kokab B. Parizi <sup>1</sup> , Xiaoqing Xu <sup>1</sup> , Xiaolin Hu <sup>1</sup> , H.-S. Philip Wong <sup>1</sup> Department of Electrical Engineering <sup>1</sup> , Stanford University
149	NF-κB Decoy Oligonucleotide Mitigate the Suppression of Mesenchymal Stem Cells Osteogenesis Induced by Polyethylene Particles	Tzu-hua Lin <sup>1</sup> , Taishi Sato <sup>1</sup> , Florence Loi <sup>1</sup> , Ruth Zhang <sup>1</sup> , Jukka Pajarinen <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
150	Gold Coated Nanostructure Arrays for Surface Plasmonic Biosensing	Xiaoqing Xu <sup>1</sup> , Xiaolin Hu <sup>1</sup> , Kokab B. Parizi <sup>1</sup> , Yangsen Kang <sup>1</sup> , Yijie Huo <sup>1</sup> , Zhiping Zhang <sup>1</sup> , H.-S. Philip Wong <sup>1</sup> Department of Electrical Engineering <sup>1</sup> , Stanford University
151	New Approaches to Growth and Detachment Modeling of Biofilms	Berkin Dortdivanlioglu <sup>1</sup> , Emma M. Lejeune <sup>1</sup> , Xiaoxuan Zhang <sup>1</sup> , Christian Linder <sup>1</sup>

		Department of Civil & Environmental Engineering <sup>1</sup> , Stanford University Andreas Krischok <sup>1</sup> , Reza Rastak <sup>1</sup> , Christian Linder <sup>1</sup>
152	Novel Computational Models for Electroactive Rubbers and Polymeric Gels with Biomedical Applications	Department of Civil & Environmental Engineering <sup>1</sup> , Stanford University Xiaolin Hu <sup>1</sup> , Kokab Parizi <sup>1</sup> , John Ho <sup>1</sup> , Wendy Li <sup>1</sup> , Mimi Yang <sup>1</sup> , Michael McConnell <sup>2</sup> , Ada Poon <sup>1</sup> , H.-S. Philip Wong <sup>1</sup>
153	Miniaturized RFID Cell-Tag Toward Continuous Living Cell Monitoring	Departments of Electrical Engineering <sup>1</sup> and Medicine (Division of Cardiovascular Medicine) <sup>2</sup> , Stanford University Tanya Glozman <sup>1</sup> , Franco Pestilli <sup>2</sup> , Justin Solomon <sup>3</sup> , Leonidas Guibas <sup>3</sup>
154	Biomarkers for Alzheimer's Disease Based on Shape Analysis of Brain Structures	Departments of Electrical Engineering <sup>1</sup> , Psychology <sup>2</sup> , and Computer Science <sup>3</sup> , Stanford University Guillaume Dupre <sup>1</sup> , Tanya Glozman <sup>2</sup> , Franco Pestilli <sup>3</sup> , Leonidas Guibas <sup>4</sup>
155	A Framework for Mapping Human White-Matter Tracts	Department of Computer Science <sup>1</sup> , École Polytechnique; Departments of Electrical Engineering <sup>2</sup> , Psychology <sup>3</sup> , and Computer Science <sup>4</sup> , Stanford University Huanhuan (Mahsa) He <sup>1</sup> , Alan Chiu <sup>1</sup> , Christopher Contag <sup>2,3,4</sup> , Oliver Dorigo <sup>1</sup>
156	<i>In Vivo</i> Imaging of Tumor-Associated Macrophages in Ovarian Cancer	Department of Obstetrics & Gynecology <sup>1</sup> , Pediatrics <sup>2</sup> , Microbiology & Immunology <sup>3</sup> , and Radiology <sup>4</sup> , Stanford University Wenting Yang <sup>1</sup> , Zahra Bahrami <sup>1</sup> , and Mary N. Teruel <sup>1</sup>
157	Understanding the Role of Adipocyte De-Differentiation in Insulin Resistance	Department of Chemical & Systems Biology <sup>1</sup> , Stanford University Sarah A. Low <sup>1</sup> , Brigitte L. Kieffer <sup>2</sup> , Allan I. Basbaum <sup>3</sup> , Grégory Scherrer <sup>1</sup>
158	Distribution and Function of Delta and Mu Opioid Receptors in Neural Circuits Involved in Descending Pain Control	Department of Anesthesiology, Perioperative, & Pain Medicine <sup>1</sup> , Stanford University; Institute Research Centre <sup>2</sup> , McGill University; Department of Anatomy <sup>3</sup> , University of California San Francisco Arun Thottumkara <sup>1</sup> , Darren Finkelstein <sup>1</sup> , Justin Du Bois <sup>1</sup>
159	Imaging Voltage-Gated Sodium Channels in Live Neurons with Fluorescent Saxitoxin Conjugates	Department of Chemistry <sup>1</sup> , Stanford University Jolyn Gisselberg <sup>1</sup> , Ellen Yeh <sup>1,2</sup>
160	Defining the Malaria Prenylome to Uncover Novel Biology and Anti-Malarial Targets	Departments of Biochemistry <sup>1</sup> and Pathology <sup>2</sup> , Stanford University Zach Cohen <sup>1</sup> , Melis Sunay <sup>1</sup> , Beza Dagne <sup>1</sup> , Bruce MacIver <sup>1</sup>
161	Propofol Increases Neuronal Recovery Rate Following Ischemic Stress, <i>In Vitro</i> , as Compared to Isoflurane	Department of Anesthesiology, Perioperative & Pain Medicine <sup>1</sup> , Stanford University Alekya Rajanala <sup>1</sup> , Ali Shariati <sup>1</sup> , Dora Hermes <sup>2</sup> , Joyce Liao <sup>1</sup>
162	Measuring Visual Pathway Atrophy in Patients with Brain Lesion Using OCT and MRI	Departments of Ophthalmology <sup>1</sup> , and Psychology <sup>2</sup> , Stanford University Kyle M. Kovary <sup>1</sup> , Mary N. Teruel <sup>1</sup>
163	Single Cell Targeted Proteomic Analysis of the Cell Cycle	Department of Chemical and Systems Biology <sup>1</sup> , Stanford University Kunal K. Mehta <sup>1</sup> , Niklaus Evitt <sup>2</sup> , James R. Swartz <sup>1,2</sup>
164	High-Throughput Lysis and Efficient DNA Transformation of Cyanobacteria	Departments of Bioengineering <sup>1</sup> and Chemical Engineering <sup>2</sup> , Stanford University Simin Rahighi <sup>1</sup> , Ilana Braunstein <sup>2</sup> , Ariel Stanhill <sup>2</sup> , Soichi Wakatsuki <sup>1</sup>
165	Selectivity of AIRAPL Tandem UIMs for Lys48-Linked Polyubiquitin Chains	Department of Structural Biology <sup>1</sup> , Stanford University; Department of Biochemistry <sup>2</sup> ,

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166 CHOIR CAT: Moving Beyond Survey Skeuomorphism with Multi-Modal Computerized Adaptive Testing Algorithms

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167 CHOIR: Open Source Platform for Large-Scale Clinical Outcomes Measurement to Support Learning Healthcare Systems

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