



**Stanford Bio-X Interdisciplinary Initiatives  
Seed Grants Symposium  
Poster Session  
August 24, 2017**

POSTER #	TITLE	AUTHORS
1	Antibodies Against Pf Phage Prevent <i>Pseudomonas aeruginosa</i> Wound Infections by Promoting Phagocytosis	Michelle Bach <sup>1</sup> , Jolien Sweere <sup>1</sup> , Heather Ishak <sup>1</sup> , Gina Suh <sup>1</sup> , Paul Bollyky <sup>1</sup> Department of Medicine (Division of Infectious Diseases <sup>1</sup> ), Stanford University
2	Visualizing Neuronal Release of Sonic Hedgehog in Taste Receptor Cell Regeneration	Ankit Baghel <sup>1</sup> , Wan-Jin Lu <sup>1</sup> , Philip Beachy <sup>1,2,3</sup> Department of Biochemistry <sup>2</sup> , Institute for Stem Cell Biology & Regenerative Medicine <sup>1</sup> , and Howard Hughes Medical Institute <sup>3</sup> , Stanford University
3	Deep Learning-Driven Protein-Protein Docking	Rishi Bedi <sup>1</sup> , Raphael Townshend <sup>1</sup> , João Rodrigues <sup>2</sup> , Ron Dror <sup>1</sup> Departments of Computer Science <sup>1</sup> and Structural Biology <sup>2</sup> , Stanford University
4	NIRS Neurofeedback for Improving Executive Function in Children with ADHD	Sarah Bell <sup>1</sup> , Hadi Hosseini <sup>1</sup> , Allan Reiss <sup>1</sup> Department of Psychiatry & Behavioral Sciences <sup>1</sup> , Stanford University
5	Elucidating the Biological Targets and Pathways of Novel Drugs in Breast Cancer	Alisha Birk <sup>1</sup> , Catherine Going <sup>1</sup> , Vineet Kumar <sup>2</sup> , Sanjay Malhotra <sup>2</sup> , Sharon Pitteri <sup>1</sup> Departments of Radiology <sup>1</sup> and Radiation Oncology <sup>2</sup> , Stanford University
6	Early Steps Towards Automating Surgical Tasks Through Physics and Soft-Body Simulation	Alexandra Bourdillon <sup>1</sup> , Animesh Garg <sup>2</sup> , Hanjay Wang <sup>1</sup> , Jack Boyd <sup>1</sup> , Marco Pavone <sup>3</sup> , Joseph Woo <sup>1</sup> Departments of Cardiothoracic Surgery <sup>1</sup> , Computer Science <sup>2</sup> , and Aeronautics & Astronautics <sup>3</sup> , Stanford University
7	MicroRNA Regulation of Neuronal Mitochondrial Function During Oxidative Stress	Ryan Buchanan <sup>1</sup> , Anand Rao <sup>1</sup> , Georgia Kaidonis <sup>1</sup> , Xiaoyun Sun <sup>1</sup> , Creed Stary <sup>1</sup> Department of Anesthesia <sup>1</sup> , Stanford University
8	Dissecting Mechanisms of Drug Action by Structure-Function Mapping with CRISPR Saturation Editing of Amino Acids	Tucker Burnett <sup>1</sup> , Kevin Roy <sup>2</sup> , Justin Smith <sup>2,3</sup> , Maddison Morgan <sup>4</sup> , Julia Schulz <sup>5</sup> , Kevin Orsley <sup>6</sup> , Lars Steinmetz <sup>2</sup> , Bob St. Onge <sup>3</sup> , Ron Davis <sup>2,3</sup> Departments of Chemistry <sup>1</sup> , Genetics <sup>2</sup> , Biochemistry <sup>3</sup> , and Bioengineering <sup>5</sup> , Stanford University; Department of Biology <sup>4</sup> , Middlebury College; Department of Biology <sup>6</sup> , Emmanuel College
9	Targeting CREB for Novel AML Therapies	Tae-León Butler <sup>1,2</sup> , Justin Chan <sup>1,2</sup> , Hee-Don Chae <sup>1,2</sup> , Kathleen Sakamoto <sup>1,2</sup> Departments of Pediatrics <sup>1</sup> and Medicine (Division of Hematology & Oncology <sup>2</sup> ), Stanford University
10	Improving the Efficiency of Homologous Recombination in High-Throughput CRISPR Editing in <i>Saccharomyces cerevisiae</i>	Julia Schulz <sup>1</sup> , Justin D. Smith <sup>2,3</sup> , Kevin Roy <sup>2</sup> , Maddison Morgan <sup>4</sup> , Tucker Burnett <sup>5</sup> , Kevin Orsley <sup>6</sup> , Sundari Suresh <sup>3</sup> , Angela Chu <sup>3</sup> , Ron Davis <sup>2,3</sup> , Bob St. Onge <sup>3</sup> , Lars Steinmetz <sup>2</sup> Departments of Bioengineering <sup>1</sup> , Genetics <sup>2</sup> , Biochemistry <sup>3</sup> , and Chemistry <sup>5</sup> , Stanford University; Department of Biology <sup>4</sup> , Middlebury College; Department of Biology <sup>6</sup> , Emmanuel College
11	Aging-Induced Neurodegeneration in the African Turquoise Killifish	Sharon Chen <sup>1</sup> , Andrew McKay <sup>1</sup> , Anne Brunet <sup>2</sup> Departments of Biology <sup>1</sup> and Genetics <sup>2</sup> , Stanford University

12	Optimizing Super-Resolution Microscopy to Visualize Chromatin Conformation of Cis-Regulatory Elements During Development	Zack Cinquini <sup>1</sup> , Leslie Mateo <sup>2</sup> , Alistair Boettiger <sup>2</sup> Departments of Computer Science <sup>1</sup> and Developmental Biology <sup>2</sup> , Stanford University
13	The Consolidation of Memory: An Analysis of Cortical Circuits Involved in Remote Memory Retrieval	Kendall Costello <sup>1</sup> , Laura DeNardo <sup>1</sup> , Cindy Liu <sup>1</sup> , Eliza Adams <sup>1</sup> , Will Allen <sup>1</sup> , Liqun Luo <sup>1,2</sup> Department of Biology <sup>1</sup> and Howard Hughes Medical Institute <sup>2</sup> , Stanford University
14	Automatic Phenotype Extraction from Medical Records	Cole A. Deisseroth <sup>1</sup> , Johannes Birgmeier <sup>1</sup> , Jonathan A. Bernstein <sup>2</sup> , Gill Bejerano <sup>1</sup> Departments of Developmental Biology <sup>1</sup> and Pediatrics <sup>2</sup> , Stanford University
15	Modulating Visual Sensitivity with Transcranial Electrical Stimulation	Jorge Delgado <sup>1</sup> , Guillaume Riesen <sup>1</sup> , Molly Lucas <sup>2</sup> , Anthony Norcia <sup>1</sup> Departments of Psychology <sup>1</sup> and Neuroscience <sup>2</sup> , Stanford University
16	Impact of Recurrent Seizures on Myelin Plasticity in a Rat Model of Absence Epilepsy	Eleanor Frost <sup>1</sup> , Juliet Knowles <sup>1</sup> , Michelle Monje <sup>1</sup> Department of Neurology & Neurological Sciences <sup>1</sup> , Stanford University
17	Multimodal Imaging of the FMR1 Knockout Mouse: A Model of Fragile X Syndrome	Scarlett Guo <sup>1</sup> , Samantha Reyes <sup>1</sup> , Bin Shen <sup>1</sup> , Shawn Scatliffe <sup>1</sup> , Jun Hyung Park <sup>1</sup> , Zheng Miao <sup>1</sup> , Jessa Castillo <sup>1</sup> , Sanaz Mohajeri <sup>1</sup> , Meng Gu <sup>1</sup> , Christoph Leuze <sup>1</sup> , Frederick T. Chin <sup>1</sup> Department of Radiology <sup>1</sup> , Stanford University
18	Genetic Determinants of Physical Activity	David Amar <sup>3</sup> , Daryl Waggott <sup>3</sup> , David Hsu <sup>1,3</sup> , Anna Shcherbina <sup>2</sup> , Euan Ashley <sup>2,3</sup> Departments of Biology <sup>1</sup> and Medicine (Division of Cardiovascular Medicine <sup>3</sup> ) and Program in Biomedical Informatics <sup>2</sup> , Stanford University
19	3D Bioprinting of Vascular hiPSC-Based Cardiac Tissue	James B. Hu <sup>1</sup> , Ken T. Hinh <sup>1</sup> , Daniel A. Hu <sup>1</sup> , Ryan Ferdowsian <sup>1</sup> , Sneha Venkatraman <sup>1</sup> , Orlando Chirikian <sup>1</sup> , Jan W. Buikema <sup>1</sup> , Vahid Serpooshan <sup>1</sup> , Sean Wu <sup>1,2,3</sup> Stanford Cardiovascular Institute <sup>1</sup> , Institute for Stem Cell Biology & Regenerative Medicine <sup>2</sup> , and Department of Medicine (Division of Cardiovascular Medicine <sup>3</sup> ), Stanford University
20	Robust Cancer Image Feature Discovery through Novel Digital Phantoms	Akshay Jaggi <sup>1</sup> , Sebastian Echeragay <sup>1</sup> , Shaimaa Bakr <sup>2</sup> , Sandy Napel <sup>1</sup> Departments of Radiology <sup>1</sup> and Electrical Engineering <sup>2</sup> , Stanford University
21	Single-Cell Ribo-Seq via Affinity Purification	Mika Jain <sup>1</sup> , Stephen Quake <sup>2</sup> Departments of Computer Science <sup>1</sup> and Bioengineering <sup>2</sup> , Stanford University
22	Characterization of Novel Cell Lines Isolated from Human Brain Arteriovenous Malformations (AVMs)	Ketan Jain-Poster <sup>1</sup> , Lorelei Shoemaker <sup>1</sup> , Breanna Allen <sup>1</sup> , Steven Chang <sup>1</sup> Department of Neurosurgery <sup>1</sup> , Stanford University
23	SNARE Proteins as Antagonistic Regulators of KRAS	Tiffany Jiang <sup>1,2</sup> , Yonglu Che <sup>3</sup> , Paul Khavari <sup>4</sup> Departments of Music <sup>1</sup> , Biology <sup>2</sup> , Cancer Biology <sup>3</sup> , and Dermatology <sup>4</sup> , Stanford University
24	c-Jun, a New Player in Regulating Bone Mass, as a Clinical Target for the Treatment of Osteopenic Disease	Yong-hun Kim <sup>1*</sup> , Tristan Lerbs <sup>1*</sup> , Camille Van Neste <sup>1</sup> , Gerlinde Wernig <sup>1</sup> (*equal contribution) Department of Pathology <sup>1</sup> , Stanford University
25	Effects of Categorization on the Other-Race Effect	Hee Joo Ko <sup>1</sup> , Annabelle Tao <sup>1</sup> , Jennifer Yih <sup>1</sup> , Omri Raccach <sup>1</sup> , Josef Parvizi <sup>1</sup> Department of Neurology & Neurological Sciences <sup>1</sup> , Stanford University
26	Uncovering the Hidden Role of Ribosomes in Mammalian Development	Pallavi Krishnarao <sup>1,4</sup> , Gerald Tiu <sup>2</sup> , Maria Barna <sup>2,3</sup> Departments of Biology <sup>1</sup> , Genetics <sup>2</sup> , and Developmental Biology <sup>3</sup> and Symbolic Systems Program <sup>4</sup> , Stanford University
27	Identification of Novel Interactions Between Astrocytic Neurexin-1 and Synaptic Ligands	Jason Li <sup>1,2</sup> , Justin Trotter <sup>3</sup> , Thomas Südhof <sup>3</sup>

		Departments of Computer Science <sup>1</sup> , Biology <sup>2</sup> , and Molecular & Cellular Physiology <sup>3</sup> , Stanford University
28	Validation Studies of Live Cell Array-Derived Markers to Identify Cancer Stem Cells in GBM	Cindy Liu <sup>1</sup> , Hai Li <sup>1</sup> , Stephen Skirboll <sup>1</sup> Department of Neurosurgery <sup>1</sup> , Stanford University
29	A Novel Method to Fabricate 3D Gradient Hydrogels with Clinically Relevant Dimensions for Cartilage Repair	Elisa Liu <sup>1</sup> , Danqing Zhu <sup>1</sup> , Fan Yang <sup>1,2</sup> Departments of Bioengineering <sup>1</sup> and Orthopaedic Surgery <sup>2</sup> , Stanford University
30	Discovering Agonist Nanobodies to Muscle Stem Cell GPCRS for Use as Therapeutic Biologics	Helen Liu <sup>1,2,3</sup> , David M. Burns <sup>1,2,3</sup> , Helen Blau <sup>1,2,3</sup> Baxter Laboratory for Stem Cell Biology <sup>1</sup> , Department of Microbiology & Immunology <sup>2</sup> , and Institute for Stem Cell Biology & Regenerative Medicine <sup>3</sup> , Stanford University
31	Investigating the Role of Gpr126 and cAMP in Schwann Cells	Hannah Llorin <sup>1</sup> , Mariapaola Sidoli <sup>1</sup> , William Talbot <sup>1</sup> Department of Developmental Biology <sup>1</sup> , Stanford University
32	Patient-Specific Blood Flow Simulations of Kawasaki Disease for Thrombotic Risk Stratification	Alexander Lu <sup>1</sup> , Noelia G. Grande <sup>2</sup> , Alison L. Marsden <sup>3,4,5</sup> Departments of Mechanical Engineering <sup>2</sup> , Bioengineering <sup>3</sup> , Cardiology (Division of Pediatric Cardiology <sup>5</sup> ), Institute for Computational & Mathematical Engineering <sup>4</sup> , and Biomedical Computation Program <sup>1</sup> , Stanford University
33	Examining Arrhythmogenic Indicators: Advanced Portable Telemetry for Monitoring Postoperative Atrial Fibrillation	Jonathan Jia-An Mak <sup>1</sup> , Cody Carlton <sup>2</sup> , Miguel Rodrigo <sup>3</sup> , Joy Aparicio Valenzuela <sup>4</sup> , Xinyuan Zhang <sup>4</sup> , Patrick D. Loftus <sup>4</sup> , Anson Lee <sup>4</sup> Departments of Electrical Engineering <sup>1</sup> , Computational Biology <sup>2</sup> , Cardiovascular Medicine <sup>3</sup> , and Cardiothoracic Surgery <sup>4</sup> , Stanford University
34	Investigating the Role of CDPC1 and CD47 in Metastatic Prostate Cancer Immune Evasion and Tumorigenesis	Anoop Manjunath <sup>1</sup> , Gunsagar S. Gulati <sup>2</sup> , Rosalynd Upton <sup>2</sup> , Elly Seo <sup>3</sup> , Owen Marecic <sup>3</sup> , Michael Lopez <sup>3</sup> , Jun Seit <sup>4</sup> , Debashis Sahoo <sup>5</sup> , Anne Leyrat <sup>6</sup> , Michael Gonzales <sup>6</sup> , Norma Neff <sup>7</sup> , Sopheak Sim <sup>4</sup> , Stephen Quake <sup>7</sup> , Michael T. Longaker <sup>3</sup> , Charles K. F. Chan <sup>3</sup> , Irving L. Weissman <sup>8,9</sup> Departments of Biology <sup>1</sup> , Cancer Biology <sup>2</sup> , Surgery <sup>3</sup> , Bioengineering <sup>7</sup> , Pathology <sup>8</sup> , and Developmental Biology <sup>9</sup> and Institute for Stem Cell Biology & Regenerative Medicine <sup>4</sup> , Stanford University; Department of Pediatrics <sup>5</sup> , University of California, San Diego; Fluidigm Corporation <sup>6</sup>
35	Effect of Intranasal Oxytocin on Contagious Response to Yawning and Laughter in Children with Autism	Michael G. Mariscal <sup>1</sup> , Sophie M. Rose <sup>1</sup> , Robin A. Libove <sup>2</sup> , Antonio Y. Hardan <sup>2</sup> , Karen J. Parker <sup>2</sup> Departments of Human Biology <sup>1</sup> and Psychiatry & Behavioral Sciences <sup>2</sup> , Stanford University
36	Divided Attention's Effect on Flexible Prospection During Navigation	Sarah Matsunaga <sup>1</sup> , Stephanie Gagnon <sup>2</sup> , Thackery Brown <sup>3</sup> , Anthony Wagner <sup>2</sup> Departments of Human Biology <sup>1</sup> and Psychology <sup>2</sup> , Stanford University; School of Psychology <sup>3</sup> , Georgia Institute of Technology
37	Localizing Origins of the Essential Tremor Phenotype in a Novel Mouse Model	Max Melin <sup>1</sup> , Mu Zhou <sup>1</sup> , Thomas C. Sudhof <sup>1,2,3</sup> Departments of Molecular & Cellular Physiology <sup>1</sup> , Neurology <sup>2</sup> , and Psychiatry & Behavioral Sciences <sup>3</sup> , Stanford University
38	Determining the Role of VCAM1 <sup>+</sup> Brain Endothelial Cells in Mediating Neuroinflammation and Brain Aging	Taylor Merkel <sup>1</sup> , Hanadie Yousef <sup>1</sup> , Davis Lee <sup>2</sup> , Tony Wyss-Coray <sup>1,2</sup> Department of Neurology & Neurological Sciences <sup>1</sup> , Stanford University; VA Palo Alto Health Care System <sup>2</sup> , Palo Alto

39	Characterization of the p53 Tumor Suppressor Protein-Protein Interactions Identified by Affinity Purification and Mass Spectrometry	Clare Moffatt <sup>1</sup> , Nitin Raj <sup>1</sup> , Nancie Moonie <sup>2</sup> , Janos Demeter <sup>2</sup> , Ahlima Roumane <sup>1</sup> , Sara Sakowitz <sup>1</sup> , Peter Jackson <sup>2</sup> , Laura Attardi <sup>1</sup> Departments of Radiation Oncology <sup>1</sup> and Microbiology & Immunology <sup>2</sup> , Stanford University
40	Novel Parallel Computing Methods for Fitting Neuronal Network Models to Experimental Data	Grace Ng <sup>1</sup> , Aaron Milstein <sup>1</sup> , Ivan Raikov <sup>1</sup> , Ivan Soltesz <sup>1</sup> Department of Neurosurgery <sup>1</sup> , Stanford University
41	Appropriation of Tissue Renewal Signals Drives Development of Intestinal Stem Cell Adenomas	Sang Ngo <sup>1</sup> , Jackson Liang <sup>2</sup> , Lucy O'Brien <sup>1</sup> Department of Molecular & Cellular Physiology <sup>1</sup> , Stanford University; Genentech, Inc. <sup>2</sup>
42	Human Chromatin Reorganization Using a CRISPR/dCas9-Based Dimerization System	Cindy Nguyen <sup>1</sup> , Haifeng Wang <sup>1</sup> , Stanley Qi <sup>1</sup> Department of Bioengineering <sup>1</sup> , Stanford University
43	Sex Differences in White Matter Tract Development Across Puberty	Kira Oskirko <sup>1</sup> , Tiffany Ho <sup>1</sup> , Natalie Colich <sup>1</sup> , Ian Gotlib <sup>1</sup> Department of Psychology <sup>1</sup> , Stanford University
44	Generating <i>in vitro</i> Models of HER2 Positive Gastric Cancer from Patient Derived Normal Tissue	Enoch Park <sup>1</sup> , Amanda Mah <sup>1</sup> , Calvin Kuo <sup>1</sup> Department of Hematology <sup>1</sup> , Stanford University
45	Understanding the Roles of AP2A and P63 in Guiding Non-Neural Ectoderm Cell Commitment	Jennifer Parker <sup>1</sup> , Jillian Pattison <sup>2</sup> , Jessica Torkelson <sup>2</sup> , Sandra Carlos <sup>2</sup> , Anthony Oro <sup>2</sup> Department of Biology <sup>1</sup> and Dermatology <sup>2</sup> , Stanford University
46	The Effect of Augmented Reality on Gait in Parkinson's Disease	Jordan Parker <sup>1</sup> , Johanna O'Day <sup>2</sup> , Russell Mendonca <sup>1</sup> , Chioma Anidi <sup>1</sup> , Helen Bronte-Stewart <sup>1</sup> Departments of Neurology & Neurological Sciences <sup>1</sup> and Bioengineering <sup>2</sup> , Stanford University
47	The Effects of the Heterozygous 16p11.2 Deletion on Cell Proliferation in the Embryonic Brain	Tess Rinaldo <sup>1</sup> , Brooke Babineau <sup>1</sup> , Aditi Narayan <sup>1</sup> , Michelle Kielhold <sup>1</sup> , Amy Moon <sup>1</sup> , Theo Palmer <sup>1</sup> Department of Neurosurgery <sup>1</sup> , Stanford University
48	Photogrammetry for Morphological Analysis of African Cichlids	Maricela Sistos <sup>1</sup> , Sebastian Alvarado <sup>1</sup> , Russell Fernald <sup>1</sup> Department of Biology <sup>1</sup> , Stanford University
49	Project SERVE: An Insomnia Clinical Trial for Military Veterans	Gia Paige Soles <sup>1,2</sup> , Alan F. Schatzberg <sup>1</sup> , Steven E. Lindley <sup>3</sup> , Rebecca Ann Bernert <sup>1,2</sup> Department of Psychiatry & Behavioral Sciences <sup>1</sup> and Suicide Prevention Research Laboratory <sup>2</sup> , Stanford University; VA Palo Alto Health Care System <sup>3</sup> , Menlo Park Division
50	The Role of GCNT1 in Prostate Cancer Development	Austin Su <sup>3</sup> , En-Chi Hsu <sup>1</sup> , Meghan Rice <sup>1</sup> , Mark Backup <sup>3</sup> , Rosalie Nolley <sup>2</sup> , James Brooks <sup>2</sup> , Donna Peehl <sup>2</sup> , Tanya Stoyanova <sup>1</sup> Departments of Radiology <sup>1</sup> , Urology <sup>2</sup> , and Biology <sup>3</sup> , Stanford University
51	Activity-Dependent Investigation of Insular Cortex Circuitry Dynamics	Daniel Tang <sup>1</sup> , Brian Hsueh <sup>3,4</sup> , Li Ye <sup>2,5</sup> , Josh Jennings <sup>1</sup> , Karl Deisseroth <sup>1,2,5</sup> Departments of Bioengineering <sup>1</sup> and Psychiatry & Behavioral Sciences <sup>2</sup> , Neurosciences Program <sup>3</sup> , Medical Scientist Training Program <sup>4</sup> , and Howard Hughes Medical Institute <sup>5</sup> , Stanford University
52	Genetic and Functional Dissection of Neural Circuits: Decoding Behavioural Control	Nicole S. Ticea <sup>1,2</sup> , Ethan B. Richman <sup>3</sup> , Karl Deisseroth <sup>2,4,5*</sup> , Liqun Luo <sup>6*</sup> (*these authors jointly supervised this work) Departments of Physics <sup>1</sup> , Bioengineering <sup>4</sup> , Psychiatry & Behavioral Sciences <sup>5</sup> , and Biology <sup>6</sup> , Stanford School of Engineering <sup>2</sup> , and Stanford Neurosciences Institute <sup>3</sup> , Stanford University
53	Inhibition of the Ribosomal S6 Kinase Causes Cell Cycle Arrest and Apoptosis in Acute Myeloid Leukemia Cells	Bruce Tiu <sup>1</sup> , Hee-Don Chae <sup>1</sup> , Ritika Dutta <sup>1</sup> , Kathleen Sakamoto <sup>1</sup>

		Department of Pediatrics <sup>1</sup> , Stanford University
54	The Role of Reactive Astrocytes in the Surrounding Microenvironment of Brain Metastases	Kevin Tran <sup>1</sup> , Sophia Chernikova <sup>1</sup> , Ian Connolly <sup>1</sup> , Eli Johnson <sup>1</sup> , Bina Kakusa <sup>1</sup> , Lina Khoeur <sup>1</sup> , Yingmei Li <sup>1</sup> , Dina Polyak <sup>1</sup> , Melanie G. Hayden Gephart <sup>1</sup> Department of Neurosurgery <sup>1</sup> , Stanford University
55	Synthesis of Solvatochromic Probes to Label the Mycobacterial Cell Wall	Ashley Utz <sup>1</sup> , Samantha G. L. Keyser <sup>2,4</sup> , Mireille Kamariza <sup>1</sup> , Aidan Pezacki <sup>3,4</sup> , Carolyn R. Bertozzi <sup>4,5</sup> Departments of Biology <sup>1</sup> and Chemistry <sup>4</sup> and Howard Hughes Medical Institute <sup>5</sup> , Stanford University; Department of Chemistry <sup>2</sup> , University of California, Berkeley; Department of Chemistry & Biomolecular Sciences <sup>3</sup> , University of Ottawa, Canada
56	Effects of Tumor Irradiation on Circulating Macrophage Localization	Jonathan Wang <sup>1</sup> , Stavros Melemenidis <sup>1</sup> , Laura Bronsart <sup>1</sup> , Luis Soto <sup>2</sup> , Ysaman Ahrari <sup>1</sup> , Edward Graves <sup>1</sup> Department of Radiation Oncology <sup>1</sup> and Cancer Biology <sup>2</sup> , Stanford University
57	Developmental Expression of the Non-Classical MHC1 Qa-1, a Regulator of Visual Plasticity	Alan Y. Wei <sup>1</sup> , Ioana A. Marin <sup>1</sup> , Kylie S. Chew <sup>1</sup> , Carla J. Shatz <sup>1,2</sup> Departments of Biology <sup>1</sup> and Neurobiology <sup>2</sup> , Stanford University
58	Tissue-Restricted Redundancy of Adenylate Kinases 1 and 2 Explains SCID-Phenotype in Reticular Dysgenesis (AK2 Deficiency)	Ashley Westerfield <sup>1</sup> , Avni Awani <sup>1</sup> , Katja Weinacht <sup>1</sup> Department of Pediatrics <sup>1</sup> , Stanford University
59	Understanding the Role of the Gene C2orf54 in the Epidermal Differentiation Process	Kamina Wilkerson <sup>1</sup> , Angela Peralta <sup>1</sup> , Dane Sessions <sup>1</sup> , Carolyn Lee <sup>1</sup> Department of Dermatology <sup>1</sup> , Stanford University
60	How to Feed a Cancer Cell: The KRAS Gene and Macropinocytosis	David Wu <sup>1</sup> , Marcus Kelly <sup>1,2</sup> , Peter K. Jackson <sup>1,3</sup> Departments of Immunology & Microbiology <sup>1</sup> and Cancer Biology <sup>2</sup> and Baxter Laboratory for Stem Cell Biology <sup>3</sup> , Stanford University
61	T2, T2*, and T1ρ Variations of Cartilage Imaged in Four <i>ex-vivo</i> Environments	Michelle Xiao <sup>1</sup> , Marianne S. Black <sup>1,2</sup> , Garry E. Gold <sup>2,3</sup> , Brian A. Hargreaves <sup>2,3</sup> , Marc E. Levenston <sup>1,2,3</sup> Departments of Mechanical Engineering <sup>1</sup> , Radiology <sup>2</sup> , and Bioengineering <sup>3</sup> , Stanford University
62	Modeling Kinetics of GLP1R-Mediated Peptide-Based Drug Delivery	Benjamin Yeh <sup>1</sup> , Tim Horton <sup>2</sup> , Justin Annes <sup>3</sup> Departments of Bioengineering <sup>1</sup> , Chemistry <sup>2</sup> , and Medicine (Division of Endocrinology <sup>3</sup> ), Stanford University
63	Kinetics of Contrast Agents Extravasation Across the Blood Brain Barrier After Focused Ultrasound Opening	Victoria Yuan <sup>1,2</sup> , Aurea Pascal-Tenorio <sup>1,2</sup> , Kim Butts Pauly <sup>1,2</sup> Department of Radiology <sup>1</sup> and Radiological Sciences Laboratory <sup>2</sup> , Stanford University
64	Investigating NAA10 Mutation-Based Cardiac Dysfunction Using Human iPSC Disease Modeling	Sophia Zhang <sup>1</sup> , Ning Ma <sup>1</sup> , Joseph Wu <sup>1</sup> Department of Medicine (Stanford Cardiovascular Institute <sup>1</sup> ), Stanford University
65	Multi-Scale Matrix Mechanics in Breast Cancer Models Revealed by Dynamic Light Scattering Microrheology: At the Intersection of Biology and Polymer Physics	Audrey Zhu <sup>1</sup> , Brad Krajina <sup>1</sup> , Sarah Heilshorn <sup>2</sup> Departments of Chemical Engineering <sup>1</sup> and Materials Science & Engineering <sup>2</sup> , Stanford University
66	Mechanisms of Generalist Host Range in the Ectomycorrhizal Symbiosis	Laura Bogar <sup>1</sup> , Kabir Peay <sup>1</sup> Department of Biology <sup>1</sup> , Stanford University
67	Discovery and Engineering of an Anti-Fungal Biosynthetic Pathway from Edible Plants	Amy Calgaro-Kozina <sup>1</sup> , Elizabeth Sattely <sup>1</sup> Department of Chemical Engineering <sup>1</sup> , Stanford University
68	Telomere Shortening as a Hallmark of Lethal Dilated Cardiomyopathy	Alex C.Y. Chang <sup>1,2,4,5</sup> , Andrew C.H. Chang <sup>1,2,4</sup> , Koki Sasagawa <sup>1,2,4,5</sup> , Anna Kirillova <sup>1,2,4,5</sup> , Ioannis

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69	Hydroxyapatite Coated Microribbon-Based Hydrogels Induce Robust Osteogenesis and Mineralization of Mesenchymal Stem Cells in 3D	Bogdan Conrad <sup>1</sup> , Xinming Tong <sup>2</sup> , Fan Yang <sup>2,3</sup> Departments of Orthopaedic Surgery <sup>2</sup> and Bioengineering <sup>3</sup> and Institute for Stem Cell Biology & Regenerative Medicine <sup>1</sup> , Stanford University
70	The Fatty Acid Elongase EloF Is a Major Driver in the Sexual Isolation of <i>Drosophila simulans</i> and <i>Drosophila sechellia</i>	Peter Combs <sup>1</sup> , Joshua Krupp <sup>2</sup> , Neil Khosla <sup>1</sup> , Dennis Bua <sup>1</sup> , Joel Levine <sup>2</sup> , Hunter Fraser <sup>1</sup> Department of Biology <sup>1</sup> , Stanford University; Department of Biology <sup>2</sup> , University of Toronto
71	Shape-Aware Spatio-Temporal Descriptors for Interaction Classification	Soeren Pirk <sup>1</sup> , Olga Diamanti <sup>1</sup> , Boris Thibert <sup>1</sup> , Danfei Xu <sup>1</sup> , Leonidas Guibas <sup>1</sup> Department of Computer Science <sup>1</sup> , Stanford University
72	Stable Region Correspondences Between Non-Isometric Shapes	Vignesh Ganapathi-Subramanian <sup>1</sup> , Boris Thibert <sup>2,4</sup> , Maks Ovsjanikov <sup>3</sup> , Leonidas J. Guibas <sup>2</sup> Departments of Electrical Engineering <sup>1</sup> and Computer Science <sup>2</sup> , Stanford University; École Polytechnique <sup>3</sup> , Université Paris-Saclay; Université Grenoble Alpes <sup>4</sup>
73	Using Handheld Stereo Depth Cameras to Extend Medical Imaging for Radiation Therapy Planning	Cesare Jenkins <sup>1,2</sup> , Shu-Jung Yu <sup>1</sup> , Lei Xing <sup>1</sup> Departments of Radiation Oncology <sup>1</sup> and Mechanical Engineering <sup>2</sup> , Stanford University
74	Metabolomics and Transcriptomics Implicate Acetylenic Compounds in Plant-Pathogen Interactions	Ju Eun Jeon <sup>1,2</sup> , Mary Beth Mudgett <sup>1</sup> , Elizabeth Sattely <sup>2</sup> Departments of Biology <sup>1</sup> and Chemical Engineering <sup>2</sup> , Stanford University
75	The Influence of Protein-Surfactant Interfacial Co-Adsorption on Thin Film Drainage and Bubble Coalescence	Aadithya Kannan <sup>1</sup> , Ian C. Shieh <sup>2</sup> , Danielle L. Leiske <sup>2</sup> , Nikhil Sethia <sup>1</sup> , Camila Kofman <sup>1</sup> , Gerald G. Fuller <sup>1</sup> Department of Chemical Engineering <sup>1</sup> , Stanford University; Genentech Inc. <sup>2</sup>
76	Single-Cell Imaging Using Radioluminescence Microscopy Reveals Unexpected Binding Pattern of [ <sup>18</sup> F] HFB	Louise Kiru <sup>1</sup> , Tae Jin Kim <sup>1</sup> , Bin Shen <sup>2</sup> , Frederick T. Chin <sup>2</sup> , Guillem Pratx <sup>1</sup> Departments of Radiation Oncology <sup>1</sup> and Radiology <sup>2</sup> , Stanford University
77	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>4,5</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 <sup>4</sup> and Biological Engineering <sup>5</sup> , Chalmers University of Technology, Gothenburg Sweden
78	A Programmable Alternative Splicing Platform for Regulating Protein Diversity	Melina Mathur <sup>1</sup> , Cameron Kim <sup>1</sup> , Sarah Munro <sup>2</sup> , Christina D. Smolke <sup>1</sup> Department of Bioengineering <sup>1</sup> , Stanford University; National Institute of Standards & Technology <sup>2</sup> , U.S. Department of Commerce
79	Inactivation and Transcriptional Response of <i>Staphylococcus aureus</i> to Sunlight Under Oxic and Anoxic Conditions	Jill S. McClary <sup>1</sup> , Alexandria B. Boehm <sup>1</sup> Department of Civil & Environmental Engineering <sup>1</sup> , Stanford University

80	Charge-Altering Releasable Transporters (CARTs) for the Delivery and Release of Messenger-RNA	Colin J. McKinlay <sup>1</sup> , Jessica R. Vargas <sup>1</sup> , Timothy R. Blake <sup>1</sup> , Jonathan W. Hardy <sup>2,7</sup> , Masamitsu Kanada <sup>2,7</sup> , Christopher H. Contag <sup>2,3,4,5,7</sup> , Paul A. Wender <sup>1,6</sup> , Robert M. Waymouth <sup>1</sup> Departments of Chemistry <sup>1</sup> , Pediatrics <sup>2</sup> , Microbiology & Immunology <sup>3</sup> , Bioengineering <sup>4</sup> , Radiology <sup>5</sup> , and Chemical & Systems Biology <sup>6</sup> and Molecular Imaging Program at Stanford (MIPS) <sup>7</sup> ; Stanford University
81	Optical Control of Neural Ablation in Zebrafish - A Model for CNS Injury Mechanisms	Karen Mruk <sup>1,2</sup> , Patrick A. Piza <sup>1</sup> , Mohammad A. Alnaqib <sup>1</sup> , James K. Chen <sup>1,2</sup> Departments of Chemical & Systems Biology <sup>1</sup> and Developmental Biology <sup>2</sup> , Stanford University
82	Prostaglandin E2 Is Essential for Efficacious Skeletal Muscle Stem Cell Function, Augmenting Regeneration and Strength	Adelaida R. Palla <sup>1,4,5,*</sup> , Andrew T.V. Ho <sup>1,4,5,*</sup> , Matthew R. Blake <sup>1,4,5</sup> , Nora D. Yucel <sup>1,4,5</sup> , Yu Xin Wang <sup>1,4,5</sup> , Klas E.G. Magnusson <sup>1,2,4,5</sup> , Colin A. Holbrook <sup>1,4,5</sup> , Peggy Kraft <sup>1,4,5</sup> , Scott L. Delp <sup>3</sup> , Helen M. Blau <sup>1,4,5</sup> (*equal contribution) Baxter Laboratory for Stem Cell Biology <sup>1</sup> , Departments of Microbiology & Immunology <sup>4</sup> and Bioengineering <sup>3</sup> , and Institute for Stem Cell Biology & Regenerative Medicine <sup>5</sup> , Stanford University; Department of Signal Processing <sup>2</sup> (ACCESS Linnaeus Centre), KTH Royal Institute of Technology, Sweden
83	Recurrent Architectures for Annotating Protein Secondary Structural Elements	Christopher Probert <sup>1,2</sup> , Aaron Cravens <sup>3</sup> Departments of Genetics <sup>1</sup> , Computer Science <sup>2</sup> , and Bioengineering <sup>3</sup> , Stanford University
84	PointNet: Deep Learning on Point Sets for 3D Classification and Segmentation	Charles Ruizhongtai Qi <sup>1</sup> , Hao Su <sup>2</sup> , Kaichun Mo <sup>2</sup> , Leonidas J. Guibas <sup>2</sup> Departments of Electrical Engineering <sup>1</sup> and Computer Science <sup>2</sup> , Stanford University
85	Tumor and Immune Cell Infiltration Are Enhanced by Irradiation of Normal Tissues in Immunocompromised Mice	Marjan Rafat <sup>1</sup> , Todd A. Aguilera <sup>1</sup> , Marta Vilalta <sup>1</sup> , Laura L. Bronsart <sup>1</sup> , Luis A. Soto <sup>1</sup> , Rie von Eyben <sup>1</sup> , Amato J. Giaccia <sup>1</sup> , Edward E. Graves <sup>1</sup> Department of Radiation Oncology <sup>1</sup> , Stanford University
86	Competition-Colonization Tradeoffs Structure Microbial Diversity	Gabriel R. Smith <sup>1</sup> , Brian S. Steidinger <sup>1</sup> , Thomas D. Bruns <sup>2</sup> , Kabir G. Peay <sup>1</sup> Department of Biology <sup>1</sup> , Stanford University; Department of Plant & Microbial Biology <sup>2</sup> , University of California, Berkeley
87	Recurrent Neural Network Models to Quantitatively Predict RNA Interactions	Michelle Wu <sup>1</sup> , Johan Andreasson <sup>2,3</sup> , Wipapat Kladwang <sup>3</sup> , Will Greenleaf <sup>2</sup> , Rhiju Das <sup>3</sup> Departments of Genetics <sup>2</sup> and Biochemistry <sup>3</sup> and Program in Biomedical Informatics <sup>1</sup> , Stanford University
88	Advancing Cellular RNA Device Engineering with Data-Rich Strategies and Automation	Joy S. Xiang <sup>1</sup> , Peter Dykstra <sup>1</sup> , Christina D. Smolke <sup>1</sup> Department of Bioengineering <sup>1</sup> , Stanford University
89	Cell Type-Specific Chromatin Signatures Underline Regulatory DNA Elements in Human Induced Pluripotent Stem Cells and Cardiac Cells	Ming-Tao Zhao <sup>1,2,3,*</sup> , Ning-Yi Shao <sup>1,2,3,*</sup> , Shijun Hu <sup>1,2,3,*</sup> , Ning Ma <sup>1,2,3</sup> , Rajini Srinivasan <sup>4</sup> , Fereshteh Jahanbani <sup>5</sup> , Jaecheol Lee <sup>1,2,3</sup> , Michael P. Snyder <sup>5,†</sup> , Joseph C. Wu <sup>1,2,3,†</sup> (*co-first authors; †corresponding authors) Stanford Cardiovascular Institute <sup>1</sup> , Departments of Medicine (Division of Cardiology <sup>2</sup> ), Chemical & Systems Biology <sup>4</sup> , and Genetics <sup>5</sup> , and Institute for Stem Cell Biology & Regenerative Medicine <sup>3</sup> , Stanford University
90	Imaging the Cardiac Field Potential via Graphene Optoelectronics	Allister F. McGuire <sup>1</sup> , Halleh B. Balch <sup>2</sup> , Jason Horng <sup>2</sup> , Hsin-Zon Tsai <sup>2</sup> , Patrick R. Forrester <sup>2</sup> ,

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91	Tissue Architecture Coordinates Differentiation and Apical Emergence in the <i>Drosophila</i> Midgut Epithelium	Paola Moreno-Roman <sup>1</sup> , Irina Kolotueva <sup>3</sup> , Bruno Humbel <sup>3</sup> , Lucy Erin O'Brien <sup>2</sup> Departments of Bioengineering <sup>1</sup> and Molecular & Cellular Physiology <sup>2</sup> , Stanford University; Electron Microscopy Facility <sup>3</sup> , Université de Lausanne
92	Engineering Plant-Microbe Symbioses For Drought Tolerance and Nitrogen Fixation	Tim Schnabel <sup>1</sup> , Elizabeth Sattely <sup>2</sup> Departments of Bioengineering <sup>1</sup> and Chemical Engineering <sup>2</sup> , Stanford University
93	Quantitative Contrast-Enhanced Optical Coherence Tomography	Yonatan Winetraub <sup>1,3,4,5</sup> , Elliott D. SoRelle <sup>1,3,5</sup> , Orly Liba <sup>1,2,3,4</sup> , Adam de la Zerda <sup>1,2,3,4,5</sup> Departments of Structural Biology <sup>1</sup> and Electrical Engineering <sup>2</sup> , Molecular Imaging Program at Stanford (MIPS) <sup>3</sup> , Stanford Bio-X <sup>4</sup> , and Biophysics Program <sup>5</sup> , Stanford University
94	Widespread Differential Expression of Coding Region and 3'UTR Sequences in Neurons and Other Tissues	Ze Yang <sup>1</sup> , Thomas Kenney <sup>1</sup> , Shaoyi Ji <sup>1</sup> , Arif Kocabas <sup>1</sup> , Sarayna Kumar <sup>1</sup> , Mary Hynes <sup>1</sup> Department of Biology <sup>1</sup> , Stanford University
95	The Veterinary Service Center: Services Available to the Stanford Research Community	Sam Baker <sup>1</sup> Department: Department of Comparative Medicine <sup>1</sup> , Stanford University
96	Improving Cerebral Blood Flow Measurement Using Data – Deep Learning, Simultaneous PET-MR and Optimized Arterial-Spin-Label MRI	Enhao Gong <sup>1</sup> , Jia Guo <sup>2</sup> , Audrey Fan <sup>2</sup> , John Pauly <sup>1</sup> , Greg Zaharchuk <sup>2</sup> Departments of Electrical Engineering <sup>1</sup> and Radiology <sup>2</sup> , Stanford University
97	Estimating Pressure in the Brain for Ultrasound Neuromodulation: a Validation Study	Steve Leung <sup>1</sup> , Taylor Webb <sup>2</sup> , Kim Butts Pauly <sup>3</sup> Departments of Bioengineering <sup>1</sup> , Electrical Engineering <sup>2</sup> , and Radiology <sup>3</sup> , Stanford University
98	Convexity Properties of Artificial Neural Networks	Blaine Rister <sup>1</sup> , Daniel Rubin <sup>2,3,4</sup> Departments of Electrical Engineering <sup>1</sup> , Radiology <sup>2</sup> , Medicine (Division of Bioinformatics Research <sup>3</sup> ), and Biomedical Data Science <sup>4</sup> , Stanford University
99	CD81: A Novel Lymphoma Therapeutic Target	Felipe Vences-Catalán <sup>1</sup> , Chiung-Chi Kuo <sup>1</sup> , Ranjani Rajapaksa <sup>1</sup> , Caroline Duault <sup>1</sup> , Ron Levy <sup>1</sup> , Shoshana Levy <sup>1</sup> Department of Medicine (Division of Oncology <sup>1</sup> ), Stanford University
100	Integrated Molecular and Clinical Analysis for Understanding Human Disease Relationships	Winston A. Haynes <sup>1,2</sup> , Rohit Vashisht <sup>1</sup> , Francesco Vallania <sup>2</sup> , Charles Liu <sup>2</sup> , Gregory L. Gaskin <sup>1</sup> , Erika Bongen <sup>2</sup> , Shane Lofgren <sup>1,2</sup> , Timothy E. Sweeney <sup>1,2</sup> , Paul J. Utz <sup>3</sup> , Nigam H. Shah <sup>1,*</sup> , Purvesh Khatri <sup>1,2,*</sup> (*corresponding authors) Stanford Center for Biomedical Informatics Research <sup>1</sup> and Institute for Immunity, Transplantation, & Infection <sup>2</sup> , Stanford University
101	A Completely Novel Class of Intravenous Anesthetics without Hemodynamic Sequelae: “Translating from <i>in silico</i> to Behavior”	Edward J. Bertaccini <sup>1,2</sup> , M. Frances Davies <sup>1,2</sup> , Yao Li <sup>1</sup> , Yun Wu <sup>1</sup> , Eric R. Gross <sup>1</sup> , Noëlie S.J. Cayla <sup>1</sup> , Beza A. Dagne <sup>1</sup> , M. Bruce MacIver <sup>1</sup> Department of Anesthesiology, Perioperative & Pain Medicine <sup>1</sup> , Stanford University; Department of Veterans Affairs <sup>2</sup> , Palo Alto VA Health Care System
102	Generation of EEG Oscillations of Neocortical Brain Slices	Noëlie S.J. Cayla <sup>1</sup> , Stephen W. Evans <sup>2</sup> , Beza A. Dagne <sup>1</sup> , M. Bruce MacIver <sup>1,2</sup>



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103	New Anesthetic Discovery: Towards a Safer “Etomidate”	Lawrence L. Fu <sup>1</sup> , Noëlie S. Cayla <sup>1</sup> , Beza A. Dagne <sup>1</sup> , Timothy H. Li <sup>1</sup> , M. Frances Davies <sup>1,2</sup> , Edward J. Bertaccini <sup>1,2</sup> , M. Bruce MacIver <sup>1</sup> Department of Anesthesiology, Perioperative & Pain Medicine <sup>1</sup> , Stanford University; Department of Anesthesia <sup>2</sup> , VA Palo Alto Health Care System
104	Teasing Apart the Desired Effects of Anesthetics from Unwanted Side Effects at GABA <sub>A</sub> Receptors	Noëlie S. Cayla <sup>1</sup> , Beza A. Dagne <sup>1</sup> , Yun Wu <sup>1</sup> , James R. Trudell <sup>1</sup> , M. Frances Davies <sup>1</sup> , M. Bruce MacIver <sup>1</sup> , Edward J Bertaccini <sup>1,2</sup> Department of Anesthesiology, Perioperative & Pain Medicine <sup>1</sup> , Stanford University; Department of Anesthesia <sup>2</sup> , Palo Alto VA Health Care System
105	Nanoscopic Control and Quantification of Enantioselective Optical Forces	Yang Zhao <sup>1</sup> , Amr Saleh <sup>1</sup> , Marie Anne van der Harr <sup>2</sup> , Keino Davis <sup>1</sup> , Jennifer A. Dionne <sup>1</sup> Department of Materials Science & Engineering <sup>1</sup> , Stanford University; FOM Institute AMOLF <sup>2</sup> , Amsterdam, The Netherlands
106	Reduced BMPR2 Signaling Impairs Right Ventricular Heart Function and Exaggerates Cardiac Fibrosis upon Chronic Pressure Overload	Mario Boehm <sup>1</sup> , Xuefei Tian <sup>1</sup> , Mingming Zhao <sup>2</sup> , Svenja Dannewitz <sup>1</sup> , Kazuya Kuramoto <sup>1</sup> , Jerry Kuang <sup>1</sup> , Sushma Reddy <sup>2</sup> , Daniel Bernstein <sup>2</sup> , Euan Ashley <sup>3</sup> , Edda Spiekerkoetter <sup>1</sup> Departments of Medicine (Divisions of Pulmonary & Critical Care Medicine <sup>1</sup> and Cardiovascular Medicine <sup>3</sup> ) and Pediatrics (Division of Pediatric Cardiology <sup>2</sup> ), Stanford University
107	Enzastaurin Reverses Vascular Remodeling in Experimental Pulmonary Hypertension by Targeting the Novel BMPR2 Modifier FHIT	Svenja Dannewitz Prosseda <sup>1</sup> , Kazuya Kuramoto <sup>1</sup> , Xuefei Tian <sup>1</sup> , Kazuya Miyagawa <sup>1</sup> , Mario Boehm <sup>1</sup> , Fan Zhang <sup>2</sup> , David Solow-Cordero <sup>3</sup> , Joshua Saldivar <sup>3</sup> , Eric Austin <sup>4</sup> , James E. Loyd <sup>4</sup> , Kay Huebner <sup>5</sup> , Purvesh Khatri <sup>6</sup> , Ross J. Metzger <sup>2</sup> , Edda Spiekerkoetter <sup>1,2,7</sup> Departments of Medicine (Division of Pulmonary & Critical Care <sup>1</sup> ), Chemical & Systems Biology <sup>3</sup> , and Bioinformatics <sup>6</sup> , Vera M. Wall Center for Pulmonary Vascular Disease <sup>2</sup> , and Cardiovascular Research Institute <sup>7</sup> , Stanford University; Departments of Pediatrics and Medicine <sup>4</sup> , Vanderbilt University; Department of Virology <sup>5</sup> , Ohio State University
108	Cryo-EM Structure of Histone H3K4 Methyltransferase COMPASS	Qianhui Qu <sup>1</sup> , Yohhei Takahashi <sup>3</sup> , Yidai Yang <sup>4</sup> , Hongli Hu <sup>1</sup> , Yan Zhang <sup>1</sup> , Jean-Francois Couture <sup>4</sup> , Ali Shilatifard <sup>3</sup> , Georgios Skiniotis <sup>1,2</sup> Departments of Molecular & Cellular Physiology <sup>1</sup> and Structural Biology <sup>2</sup> , Stanford University; Department of Biochemistry & Molecular Genetics <sup>3</sup> , Feinberg School of Medicine, Northwestern University; Department of Biochemistry, Microbiology, & Immunology <sup>4</sup> , Ottawa Institute of Systems Biology, University of Ottawa
109	Manipulation of Nuclear Architecture through CRISPR Mediated Chromosomal Looping	Stefanie L. Morgan <sup>1,2</sup> , Natasha C. Mariano <sup>1,2</sup> , Abel Bermudez <sup>3,4</sup> , Nicole L. Arruda <sup>5</sup> , Fangting Wu <sup>6</sup> , Yunhai Luo <sup>1,2</sup> , Gautam Shankar <sup>1,2</sup> , Chiao-Chain Huang <sup>6</sup> , Sharon J. Pitteri <sup>3,4</sup> , Kevin C. Wang <sup>1,2,7</sup> Departments of Dermatology (Program in Epithelial Biology <sup>1</sup> ) and Radiology <sup>4</sup> , Program in Cancer Biology <sup>2</sup> , and Canary Center for Cancer Early Detection <sup>3</sup> , Stanford University; Department of Biology <sup>5</sup> , Bridgewater State

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110	Contrastive Principal Component Analysis	Departments of Electrical Engineering <sup>1</sup> and Biomedical Data Science <sup>2</sup> , Stanford University Anna A. Kim <sup>1,2</sup> , Shruthi Balachandra <sup>2</sup> , Beth L. Pruitt <sup>1,2,3,*</sup> , Lucy E. O'Brien <sup>2,*</sup> (*corresponding authors) Departments of Mechanical Engineering <sup>1</sup> , Molecular & Cellular Physiology <sup>2</sup> , and Bioengineering <sup>3</sup> , Stanford University
111	Mechanosensory Inputs in Adaptive Intestinal Growth	Hanna M. Ollila <sup>1</sup> , Ryan Hillary <sup>1</sup> , Annika Wennerström <sup>3</sup> , Juliette Faraco <sup>1</sup> , Ling Lin <sup>1</sup> , Joachim Hallmayer <sup>2</sup> , Fang Han <sup>4</sup> , Jimmie Ye <sup>5</sup> , Markku Partinen <sup>3</sup> , Markus Perola <sup>3</sup> , Emmanuel Mignot <sup>1,*</sup> (*corresponding author) Stanford University
112	Genetic Association in Narcolepsy Suggests Autoimmune Origin	Center for Sleep Sciences <sup>1</sup> and Department of Psychiatry & Behavioral Sciences <sup>2</sup> , Stanford University; National Institute for Health & Welfare <sup>3</sup> , Finland Department of Surgery <sup>4</sup> , Peking University People's Hospital, Beijing, China; Department of Epidemiology & Biostatistics <sup>5</sup> , University of California, San Francisco
113	Induced Pluripotent Stem Cell Derived Cardiomyocytes on Engineered Platforms Allows for Assessment of Cardiomyocyte Function	Alison Schroer <sup>1,2,3</sup> , Gaspard Pardon <sup>1</sup> , Robin Wilson <sup>1</sup> , Aleksandra Denisin <sup>1</sup> , Erica Castillo <sup>1</sup> , Kristina Kooiker <sup>2,3,4</sup> , Arjun Adhikari <sup>2,3</sup> , Yen Sin Ang <sup>6</sup> , James Spudich <sup>2,3</sup> , Daniel Bernstein <sup>2,4</sup> , Bruce Conklin <sup>6</sup> , Deepak Srivastava <sup>6</sup> , Sean Wu <sup>2,5</sup> , Alexandre Ribeiro <sup>1,2,6</sup> , Beth Pruitt <sup>1,2</sup> Departments of Mechanical Engineering <sup>1</sup> , Biochemistry <sup>3</sup> , Pediatric Cardiology <sup>4</sup> , and Cardiovascular Medicine <sup>5</sup> and Cardiovascular Institute <sup>2</sup> , Stanford University; Gladstone Institute of Cardiovascular Disease <sup>6</sup> , San Francisco
114	Novel CMKLR1 Inhibitors and Structure Activity Relationship Studies for Application in Demyelinating Disease	Vineet Kumar <sup>1</sup> , Melissa LaJevic <sup>2</sup> , Sanjay Malhotra <sup>1</sup> , Brian A. Zabel <sup>2</sup> Department of Radiation Oncology <sup>1</sup> , Stanford University; Palo Alto Veterans Institute for Research <sup>2</sup>
115	Small Molecules Facilitating DNA Repair in Breast Cancer Cells	Kedar Hastak <sup>1</sup> , Vineet Kumar <sup>2</sup> , Mallesh Pandrala <sup>2</sup> , Makelle Gardiner <sup>1</sup> , Sanjay V. Malhotra <sup>2,3</sup> , James M. Ford <sup>1</sup> Departments of Medicine (Division of Oncology <sup>1</sup> ) and Radiation Oncology <sup>2</sup> and Molecular Imaging Program at Stanford (MIPS) <sup>3</sup> , Stanford University
116	Flagellum Couples Cell Shape to Motility in <i>Trypanosoma brucei</i>	Stella Y. Sun <sup>1,2</sup> , Jason T. Kaelber <sup>4</sup> , Muyuan Chen <sup>4</sup> , Xiaoduo Dong <sup>3</sup> , Jian Shi <sup>3</sup> , Matthew Dougherty <sup>4</sup> , Yasaman Nematbakhsh <sup>5</sup> , Lim Chwee Teck <sup>3</sup> , Steven J. Ludtke <sup>4</sup> , Michael F. Schmid <sup>1,2</sup> , Cynthia Y. He <sup>3</sup> , Wah Chiu <sup>1,2</sup> SLAC National Accelerator Laboratory <sup>1</sup> and Department of Bioengineering <sup>2</sup> , Stanford University; Department of Biological Sciences <sup>3</sup> , National University of Singapore; National Center for Macromolecular Imaging <sup>4</sup> , Baylor College of Medicine; Department of Mechanical Engineering <sup>5</sup> , National University of Singapore
117	The Cryo-EM Structure of Eukaryotic V-ATPase Proton Channel and Rotor	Soung-Hun Roh <sup>1</sup> , Nicholas J. Stam <sup>2</sup> , Corey F. Hryc <sup>3</sup> , Stephan Wilkens <sup>2</sup> , Wah Chiu <sup>1</sup> Department of Bioengineering <sup>1</sup> , Stanford University; Department of Biochemistry & Molecular Biology <sup>2</sup> , SUNY Upstate Medical

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118	Cryo-EM Structure of Tbox Riboswitch and tRNA Complex at 7 Angstrom Resolution	Zhaoming Su <sup>1</sup> , Shuang Li <sup>2</sup> , Jinwei Zhang <sup>2</sup> , Wah Chiu <sup>1</sup> Department of Bioengineering <sup>1</sup> , Stanford University; Laboratory of Molecular Biology <sup>2</sup> , NIDDK, NIH
119	Cryo-EM of 30 kDa HIV-1 RNA Dimer Initiation Site	Kaiming Zhang <sup>1</sup> , Sarah C. Keane <sup>2,3</sup> , Zhaoming Su <sup>1</sup> , Rossitza N. Irobalieva <sup>6,7</sup> , Jan Marchant <sup>2,3</sup> , Xiao Heng <sup>4</sup> , Michael F. Schmid <sup>1</sup> , David A. Case <sup>5</sup> , Steven J. Ludtke <sup>6,7</sup> , Michael F. Summers <sup>2,3</sup> , Wah Chiu <sup>1*</sup> (*corresponding author) Department of Bioengineering <sup>1</sup> , Stanford University; Howard Hughes Medical Institute (HHMI) <sup>2</sup> and Department of Chemistry & Biochemistry <sup>3</sup> , University of Maryland, Baltimore County (UMBC); Department of Biochemistry <sup>4</sup> , University of Missouri—Columbia; Department of Chemistry & Chemical Biology <sup>5</sup> , Rutgers University; National Center for Macromolecular Imaging <sup>6</sup> and Verna & Marris McLean Department of Biochemistry & Molecular Biology <sup>7</sup> , Baylor College of Medicine
120	The CEP19-RABL2 GTPase Complex Binds IFT-B to Initiate Intraflagellar Transport at the Ciliary Base	Tomoharu Kanie <sup>1,2</sup> , Peter K. Jackson <sup>1,2</sup> Baxter Laboratory <sup>1</sup> and Department of Microbiology & Immunology <sup>2</sup> , Stanford University
121	Rapid Bacterial Identification Based on Surface-Enhanced Raman Scattering and Machine Learning	Chi-Sing Ho <sup>1</sup> , Neal Jean <sup>2</sup> , Amr Saleh <sup>3</sup> , Stefano Ermon <sup>4</sup> , Niaz Banaei <sup>5</sup> , Jennifer Dionne <sup>3</sup> Departments of Applied Physics <sup>1</sup> , Electrical Engineering <sup>2</sup> , Materials Science & Engineering <sup>3</sup> , Computer Science <sup>4</sup> , and Pathology <sup>5</sup> , Stanford University
122	Evidence That the Human Innate Immune Peptide LL-37 May Be a Binding Partner of A $\beta$ and an Inhibitor of Fibril Assembly	Marcella Chiari <sup>2</sup> , Ersilia de Lorenzi <sup>3</sup> , Raffaella Colombo*, Marina Cretich <sup>2</sup> , Laura Sola <sup>2</sup> , Paola Renzo <sup>4</sup> , Vanna Gagni <sup>2</sup> , Federica Bisceglia <sup>3</sup> , Carlo Morasso <sup>4</sup> , Moonhee Lee <sup>5</sup> , Jian-Ping Guo <sup>5</sup> , Patrick L. McGeer <sup>5</sup> , Annelise E. Barron <sup>1</sup> Department of Bioengineering <sup>1</sup> , Stanford University; Institute of Chemistry of Molecular Recognition <sup>2</sup> , Milan, Italy; Department of Drug Sciences <sup>3</sup> , University of Pavia, Pavia, Italy; #Laboratory of Nanomedicine & Clinical Biophotonics <sup>4</sup> , Fondazione Don Carlo Gnocchi ONLUS, Milan, Italy; Kinsmen Laboratory of Neurological Research <sup>5</sup> , University of British Columbia, Vancouver, Canada
123	Significant ERK1/2 Phosphorylation but No Change in Dual Specificity Phosphatase 14 After Acute Ischemic Optic Neuropathy	Varun Kumar <sup>1</sup> , Jeffrey L. Goldberg <sup>1</sup> , Yaping Joyce Liao <sup>1</sup> Department of Ophthalmology <sup>1</sup> , Stanford University
124	Bayesian Online Haplotype Inference Method for Portable DNA Sequencers	Yosuke Tanigawa <sup>1</sup> , Manuel Rivas <sup>1,2</sup> Biomedical Informatics Training Program <sup>1</sup> and Department of Biomedical Data Science <sup>2</sup> , Stanford University
125	Single-Cell Map of Microbe-Immune Transcriptome	Ryan Kellogg <sup>1,2</sup> , Feiqiao Yu <sup>1</sup> , Stephen Quake <sup>1</sup> , Mike Snyder <sup>2</sup> Departments of Bioengineering <sup>1</sup> and Genetics <sup>2</sup> , Stanford University
126	Designing Novel Nani-Ores for Detection of Small Molecules	Jamin Koo <sup>1</sup> , Andres Parberg <sup>1</sup> , Jessyln Janssen <sup>2</sup> , Possu Huang <sup>1</sup>

		Department of Bioengineering <sup>1</sup> , Stanford University; Department of Biology <sup>2</sup> , University of Manitoba
127	Inhibition of NGLY1 Inactivates the Transcription Factor Nrf1 and Potentiates Proteasome Inhibitor Cytotoxicity	Fred Tomlin <sup>1</sup> , Ulla Gerling-Driessen <sup>1</sup> , Carolyn Bertozzi <sup>1</sup> Department of Chemistry <sup>1</sup> , Stanford University
128	Coordination in a Network of Neural Oscillators Is Influenced by Feedback Delay	Irán Román <sup>1,2</sup> , Takako Fujioka <sup>1,2</sup> Department of Music <sup>1</sup> and Stanford Neurosciences Institute <sup>2</sup> , Stanford University
129	Social Control of Hypothalamus-Mediated Male Aggression	Taehong Yang <sup>1</sup> , Cindy F. Yang <sup>5</sup> , M. Delara Chizari <sup>6</sup> , Niru Maheswaranathan <sup>2</sup> , Kenneth J. Burke, Jr. <sup>5</sup> , Maxim Borius <sup>6</sup> , Sayaka Inoue <sup>1</sup> , Michael C. Chiang <sup>6</sup> , Kevin J. Bender <sup>7</sup> , Surya Ganguli <sup>3,4</sup> , Nirao M. Shah <sup>1,4</sup> Departments of Psychiatry & Behavioral Sciences <sup>1</sup> , Applied Physics <sup>3</sup> , and Neurobiology <sup>4</sup> and Neurosciences Program <sup>2</sup> , Stanford University; Program in Neuroscience <sup>5</sup> and Departments of Anatomy <sup>6</sup> and Neurology <sup>7</sup> , University of California, San Francisco
130	Harnessing Controlled Release Polymer-Nanoparticle Hydrogel to Produce Robust Long-Term Immunity	Gillie Agmon <sup>1</sup> , Anthony C. Yu <sup>2</sup> , Caitlin L. Maikawa <sup>1</sup> , Emily C. Gale <sup>3</sup> , Eric A. Appel <sup>2</sup> Departments of Bioengineering <sup>1</sup> , Materials Science & Engineering <sup>2</sup> , and Biochemistry <sup>3</sup> , Stanford University
131	Role of Transcription Factor Er81/ETV1 in the Enteric Nervous System	Josphine L. Belluardo <sup>1*</sup> , Subhamoy Das <sup>2*</sup> , Richard J. DiCasoli <sup>1</sup> , Michael D. Gershon <sup>3</sup> , Julia A. Kaltschmidt <sup>2</sup> (*co-first authors) Developmental Biology Program <sup>1</sup> , Sloan Kettering Institute, Memorial Sloan Kettering Cancer Center; Department of Neurosurgery <sup>2</sup> , Stanford University; Department of Pathology & Cell Biology <sup>3</sup> , Columbia University
132	Supramolecular CB[7]-PEG Designer Excipient for Improved Insulin Formulations	Caitlin L. Maikawa <sup>1</sup> , Gillie Agmon <sup>1</sup> , Emily C. Gale <sup>2</sup> , Bruce A. Buckingham <sup>3</sup> , David M. Maahs <sup>3</sup> , Eric A. Appel <sup>4</sup> Departments of Bioengineering <sup>1</sup> , Biochemistry <sup>2</sup> , Pediatrics <sup>3</sup> , and Materials Science & Engineering <sup>4</sup> , Stanford University
133	A Novel Bed-Mounted Projection System Is As Effective As Pharmacologic Agent Midazolam and Reduces Pre-Induction Time When Managing Pediatric Preoperative Anxiety: A Retrospective Study	Jeremy H. Tsui <sup>1</sup> , Thomas J. Caruso <sup>1</sup> , Ellen Wang <sup>1</sup> , Samuel Rodriguez <sup>1</sup> Department of Anesthesiology, Perioperative, & Pain Medicine <sup>1</sup> , Stanford University
134	Immersive Virtual Reality Improves Compliance During a Minor Procedure	Jeremy H. Tsui <sup>1</sup> , Justin C. Yuan <sup>1</sup> , Michael Khoury <sup>1</sup> , Vincent Sferra <sup>1</sup> , Meagan Wu <sup>1</sup> , Kevin Chen <sup>1</sup> , Gavin Traber <sup>1</sup> , Vaibhav Murali <sup>1</sup> , Jessica Maya Hernandez <sup>1</sup> , Alexandria Joseph <sup>1</sup> , Samuel Rodriguez <sup>1</sup> , Thomas J. Caruso <sup>1</sup> Department of Anesthesiology, Perioperative, & Pain Medicine <sup>1</sup> , Stanford University
135	Provider Controlled Virtual Reality Experience Adjusts Cognitive Load to Reduce Fear and Perceptual Pain During Intravenous Access in Pediatric Patients	Samuel Rodriguez <sup>1</sup> , Justin C. Yuan <sup>1</sup> , Jeremy H. Tsui <sup>1</sup> , Gavin Traber <sup>1</sup> , Vincent Sferra <sup>1</sup> , Meagan Wu <sup>1</sup> , Jessica Maya Hernandez <sup>1</sup> , Thomas J. Caruso <sup>1</sup> Department of Anesthesiology, Perioperative, & Pain Medicine <sup>1</sup> , Stanford University
136	Building Systems to Support and Sustain Virtual Reality in the Inpatient Setting	Alexandria Joseph <sup>1</sup> , Jeremy H. Tsui <sup>1</sup> , Kevin Chen <sup>1</sup> , Gavin Traber <sup>1</sup> , Meagan Wu <sup>1</sup> , Thomas J. Caruso <sup>1</sup> , Samuel Rodriguez <sup>1</sup> Department of Anesthesiology, Perioperative, & Pain Medicine <sup>1</sup> , Stanford University

137	Ethical Implications for Virtual Reality Induced False Memory Formation in Pediatric Patients	Justin C. Yuan <sup>1,2</sup> , Jeremy H. Tsui <sup>2</sup> , Kevin Chen <sup>2</sup> , Thomas J. Caruso <sup>2</sup> , Samuel Rodriguez <sup>2</sup> , Alyssa M. Burgart <sup>2</sup> William Beaumont School of Medicine <sup>1</sup> , Oakland University; Department of Anesthesiology, Perioperative, & Pain Medicine <sup>2</sup> , Stanford University
138	Technical Solutions for Implementation of Virtual Reality Headsets in the Hospital Setting	Ben Chuter <sup>1</sup> , Justin C. Yuan <sup>1,2</sup> , Andrew Terajewicz <sup>1</sup> , Michael Khoury <sup>1</sup> , Vincent Sferra <sup>1</sup> , Samuel Rodriguez <sup>1</sup> Department of Anesthesiology, Perioperative, & Pain Medicine <sup>1</sup> , Stanford University; William Beaumont School of Medicine <sup>2</sup> , Oakland University
139	Reading and Ocular Motor Abnormalities in Cerebellar Ataxia	Angela Oh <sup>1</sup> , Tiffany Chen <sup>1</sup> , Joyce Liao <sup>1</sup> Department of Ophthalmology <sup>1</sup> , Stanford University
140	The Landscape of Genomic and Clonal Characterization of Immunogenic Neoepitopes Across >10,000 Samples from 32 Cancers in the Cancer Genome Atlas (TCGA)	HoJoon Lee <sup>1</sup> , Susan M. Grimes <sup>2</sup> , Stephanie Greer <sup>2</sup> , Anurag Sethi <sup>3</sup> , Jae-Ho Cheong <sup>4</sup> , Hanlee P. Ji <sup>1,2</sup> Department of Medicine (Division of Oncology <sup>1</sup> ) and Stanford Genome Technology Center <sup>2</sup> , Stanford University; Seven Bridges Genomics, Inc. <sup>3</sup> , Cambridge, MA; Department of Surgery <sup>4</sup> , Yonsei University, Seoul, Korea
141	Predicting the Molecular Crosstalk Between Transplanted Cells and the Ischemic Brain Using Transcriptome Analysis	Ricardo L. Azevedo-Pereira <sup>1,2</sup> , Nathan C. Manley <sup>1,2</sup> , Jennifer Vu <sup>1,2</sup> , Mårten C. Winge <sup>3</sup> , Jack Berry <sup>1,2</sup> , Guohua Sun <sup>1,2</sup> , Tonya Bliss <sup>1,2</sup> , Gary K. Steinberg <sup>1,2</sup> Departments of Neurosurgery <sup>1</sup> and Dermatology <sup>3</sup> and Stanford Stroke Center <sup>2</sup> , Stanford University
142	Trop2 as a Driver of Aggressive Prostate Cancer	En-Chi Hsu <sup>1,2</sup> , Meghan A. Rice <sup>1,2</sup> , Rosalie Nolley <sup>3</sup> , Jiaoti Huang <sup>4</sup> , Abel Bermudez <sup>1,2</sup> , Sharon Pitteri <sup>1,2</sup> , Donna M. Peehl <sup>3</sup> , James D. Brooks <sup>3</sup> , Tanya Stoyanova <sup>1,2</sup> Departments of Radiology <sup>1</sup> and Urology <sup>3</sup> and Canary Center for Cancer Early Detection <sup>2</sup> , Stanford University; Department of Pathology <sup>4</sup> , Duke University
143	Unique Serum Metabolomic Profiles in Preeclampsia: Implications for Pathophysiology	Zhen Li <sup>1</sup> , Xin Liu <sup>1</sup> , Shiyong Hao <sup>2,3</sup> , Jin You <sup>1</sup> , Jaehong Kim <sup>1</sup> , Karl Sylvester <sup>1</sup> , Doff McElhinney <sup>2,3</sup> , Harvey Cohen <sup>4</sup> , Bruce Ling <sup>1,3</sup> Departments of Surgery <sup>1</sup> , Cardiothoracic Surgery <sup>2</sup> , and Pediatrics <sup>4</sup> , Stanford University; Clinical & Translational Research Program <sup>3</sup> , Betty Irene Moore Children's Heart Center, Lucile Packard Children's Hospital
144	Molecular Regulation of Neutrophil Cell Surface Sialylation and the Siglec-9 Mediated Neutrophil Death	Yue Wang <sup>1</sup> , Zhen Li <sup>1</sup> , Guang Hu <sup>1</sup> , Shiyong Hao <sup>2,5</sup> , Xiaohong Deng <sup>1</sup> , Min Huang <sup>6</sup> , Miao Ren <sup>1</sup> , Xiyuan Jiang <sup>1</sup> , John T. Kanegaye <sup>7,8</sup> , Kee-Soo Ha <sup>9</sup> , JungHwa Lee <sup>9</sup> , Xiaofeng Li <sup>10</sup> , Xuejun Jiang <sup>11</sup> , Yunxian Yu <sup>4</sup> , Adriana H. Tremoulet <sup>7,8</sup> , Jane C. Burns <sup>7,8</sup> , John C. Whitin <sup>3</sup> , Andrew Y. Shin <sup>3</sup> , Karl G. Sylvester <sup>1</sup> , Doff B. McElhinney <sup>3,5</sup> , Harvey J. Cohen <sup>3</sup> , Xuefeng B. Ling <sup>1,4,5</sup> , the Pediatric Emergency Medicine Kawasaki Disease Research Group <sup>8</sup> Departments of Surgery <sup>1</sup> , Cardiothoracic Surgery <sup>2</sup> , and Pediatrics <sup>3</sup> , Stanford University; School of Public Health <sup>4</sup> , School of Medicine, Zhejiang University, China; Clinical & Translational Research Program <sup>5</sup> , Betty Irene Moore Children's Heart Center, Lucile Packard Children's Hospital; The Speciality of

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145	Comparison of <sup>18</sup> F-FDG PET/MR, Whole Body DW MR and Clinical Standard Imaging Tests for Treatment Monitoring of Solid Cancers in Children and Young Adults	Ramitha Nyalakonda <sup>1,2</sup> , Ashok J. Theruvath <sup>1,2</sup> , Anne M. Muehe <sup>1,2</sup> , Sandra Luna-Fineman <sup>3</sup> , Arun A. Rangaswami <sup>2</sup> , Sheri L. Spunt <sup>3</sup> , Heike E. Daldrup-Link <sup>1,2</sup> Department of Radiology <sup>1</sup> and Molecular Imaging Program at Stanford (MIPS) <sup>2</sup> , Stanford University; Department of Pediatrics (Pediatric Oncology <sup>3</sup> ), Lucile Packard Children's Hospital Yang Li <sup>1</sup> , Yiren Zhou <sup>1</sup> , John M. Maris <sup>2</sup> , Amato J. Giaccia <sup>1</sup> , Jiangbin Ye <sup>1</sup>
146	Hypoxia Driven Epigenetic Modifications Regulate Human Neuroblastoma Differentiation	Department of Radiation Oncology <sup>1</sup> , Stanford University; Department of Pediatric Hematology & Oncology <sup>2</sup> , Children's Hospital of Philadelphia Albert M. Li <sup>1,2</sup> , Gregory S. Ducker <sup>6,7</sup> , Yang Li <sup>1</sup> , Jose A. Seoane <sup>3</sup> , Yiren Zhou <sup>1</sup> , Ling Liu <sup>6,7</sup> , Sakari Vanharanta <sup>5</sup> , Erinn B. Rankin <sup>1,2</sup> , Joan Massagué <sup>5</sup> , Christina Curtis <sup>2,3,4</sup> , Joshua D. Rabinowitz <sup>6,7</sup> , Craig B. Thompson <sup>5</sup> , Jiangbin Ye <sup>1,2</sup>
147	Targeting Serine and One-Carbon Metabolism in Metastatic Breast Cancer	Departments of Radiation Oncology <sup>1</sup> and Medicine <sup>3</sup> , Cancer Biology Program <sup>2</sup> , and Stanford Cancer Institute <sup>4</sup> , Stanford University; Cancer Biology & Genetics Program <sup>5</sup> , Memorial Sloan Kettering Cancer Center; Lewis-Sigler Institute for Integrative Genomics <sup>6</sup> and Department of Chemistry <sup>7</sup> , Princeton University Berkin Dortdivanlioglu <sup>1</sup> , Christian Linder <sup>1</sup>
148	A Systematic Study of Swelling-Induced Instabilities of Hydrogels	Department of Civil & Environmental Engineering <sup>1</sup> , Stanford University Elise Robinson <sup>1,2</sup> , Gayatri Gowrishankar <sup>2</sup> , Travis Shaffer <sup>2</sup> , Cayo Gonzalez <sup>2,3</sup> , Vigneshwaran Mani <sup>2,4</sup> , Utkan Demirci <sup>2,4</sup> , Sanjiv Sam Gambhir <sup>1,2,4</sup>
149	Radiolabeling Exosomes using PET Reporter Genes and Probes	Departments of Bioengineering <sup>1</sup> and Radiology <sup>2</sup> and Canary Center for Cancer Early Detection <sup>4</sup> , Stanford University; Department of Biochemistry & Molecular Biophysics <sup>3</sup> , Columbia University Katerina C. Gregoriou <sup>1</sup> , Amy Kyungwon Han <sup>1</sup> , Jung Hwa Bae <sup>1</sup> , Bruce L. Daniel <sup>2</sup> , Mark Cutkosky <sup>1</sup>
150	Electroactive Polymer-Based Haptic Feedback in Teleoperated Needle Membrane Puncture	Departments of Mechanical Engineering <sup>1</sup> and Radiology <sup>2</sup> , Stanford University Kerriann Casey <sup>1</sup> , Roberta Moorhead <sup>1</sup> , Jose Vilches-Moure <sup>1</sup>
151	Comparative Pathology and Diagnostic Services	Department of Comparative Medicine <sup>1</sup> , Stanford University Vladimir Vildavski <sup>1</sup> , Angelo Dragone <sup>2</sup> , Jeff Olsen <sup>2</sup> , Chris Kenney <sup>2</sup> , Ryan Herbst <sup>2</sup> , Stephen Boyd <sup>3</sup> , Nolan Williams <sup>4</sup> , Marty Breidenbach <sup>2</sup> , Anthony Norcia <sup>1</sup>
152	Instrumentation for Combining Electrical Brain Stimulation with EEG Recording	Departments of Psychology <sup>1</sup> , Electrical Engineering <sup>3</sup> , and Psychiatry & Behavioral Sciences <sup>4</sup> and SLAC National Accelerator Laboratory <sup>2</sup> , Stanford University

153	Adhesion Prevention Using Polymer Nanoparticle (PNP) Hydrogels	Lyndsay Stapleton <sup>1</sup> , Amanda Steele <sup>1</sup> , Akshara Thakore <sup>2</sup> , Anthony Yu <sup>3</sup> , Joseph Woo <sup>2</sup> , Eric Appel <sup>3</sup> Departments of Bioengineering <sup>1</sup> , Cardiothoracic Surgery <sup>2</sup> , and Materials Science & Engineering <sup>3</sup> , Stanford University
154	Measuring Microscopic Diffusion Anisotropy in Multiple Sclerosis Patients with Double Diffusion Encoding MRI	Grant Yang <sup>1,2</sup> , Qiyuan Tian <sup>1,2</sup> , Christoph Leuze <sup>2</sup> , Max Wintermark <sup>2</sup> , Jennifer McNab <sup>2</sup> Departments of Electrical Engineering <sup>1</sup> and Radiology <sup>2</sup> , Stanford University
155	Miniaturized Optical BioSensor for Point-of-Care Total Protein Measurement	Fariah Mahzabeen <sup>1</sup> , Ophir Vermesh <sup>2</sup> , Sanjiv S. Gambhir <sup>2,3</sup> , James S. Harris <sup>1</sup> Departments of Electrical Engineering <sup>1</sup> and Radiology <sup>2</sup> and Canary Center for Cancer Early Detection <sup>3</sup> , Stanford University
156	Correlation of Stented Renal Geometry and Respiratory-Induced Deformation with Respect to Stented Length in Complex EVAR Patients	John Kim <sup>1,2</sup> , Ga-Young Suh <sup>1</sup> , Jason T. Lee <sup>1</sup> , Christopher P. Cheng <sup>1</sup> Department of Vascular Surgery <sup>1</sup> , Stanford University; Department of Biology <sup>2</sup> , University of Chicago
157	Modeling Brownian Spheroidal Nanoparticles in Near-Wall Vascular Flows	Tiras Y. Lin <sup>1</sup> , Preyas N. Shah <sup>1</sup> , Bryan R. Smith <sup>2</sup> , Eric S.G. Shaqfeh <sup>1,3</sup> Departments of Mechanical Engineering <sup>1</sup> , Radiology <sup>2</sup> , and Chemical Engineering <sup>3</sup> , Stanford University
158	Injectable Self-Organizing Microtissues for Rapid Host Vascularization of Ischemic Tissues and Stem Cell Delivery	Ninna S. Rossen <sup>1,2</sup> , Rafael zur Nieden <sup>2</sup> , Kahmun Lo <sup>2</sup> , Danielle R. Bajakian <sup>3</sup> , Brian M. Gillette <sup>2</sup> , Samuel K. Sia <sup>2</sup> Department of Radiation Oncology <sup>1</sup> , Stanford University; Department of Biomedical Engineering <sup>2</sup> and NewYork–Presbyterian Hospital <sup>3</sup> , Columbia University
159	Upconverting Nanoparticles as Optical Sensors of Nano- to Micro-Newton Forces	Alice Lay <sup>1</sup> , Derek Wang <sup>2</sup> , Michael Wisser <sup>2</sup> , Randy Mehlenbacher <sup>2</sup> , Yu Lin <sup>3</sup> , Wendy Mao <sup>4</sup> , Miriam Goodman <sup>5</sup> , Jennifer Dionne <sup>2</sup> Departments of Applied Physics <sup>1</sup> , Materials Science & Engineering <sup>2</sup> , Geological Sciences <sup>4</sup> , and Molecular & Cellular Physiology <sup>5</sup> and SLAC Institute for Materials & Energy Sciences <sup>3</sup> , Stanford University
160	Stem Cell Transplantation as Treatment for Acute Ischemic Optic Neuropathy	Louise A. Mesentier-Louro <sup>1</sup> , Mohammad Ali Shariati <sup>1</sup> , Kyle Marra <sup>2</sup> , Varun Kumar <sup>1</sup> , Martin Friedlander <sup>2</sup> , Yaping Joyce Liao <sup>1</sup> Department of Ophthalmology <sup>1</sup> , Stanford University; Department of Cell & Molecular Biology <sup>2</sup> , The Scripps Research Institute
161	Simultaneous Brain and Spinal Cord fMRI Using Slice-Based Dynamic Shimming	Christine Law <sup>1</sup> , Haisam Islam <sup>2</sup> , Sean Mackey <sup>1</sup> , Gary Glover <sup>3</sup> Departments of Anesthesia <sup>1</sup> , Bioengineering <sup>2</sup> , and Radiology <sup>3</sup> , Stanford University
162	Discovering Bacterial Lipids and Lipid Synthesis Enzymes to Clarify Interpretation of the Molecular Fossil Record	Amy B. Banta <sup>1</sup> , Jeremy H. Wei <sup>1</sup> , Alysha Lee <sup>1</sup> , Jose L. Giner <sup>2</sup> , Paula V. Welander <sup>1</sup> Department of Earth System Science <sup>1</sup> , Stanford University; Department of Chemistry <sup>2</sup> , State University of New York (SUNY) College of Environmental Science & Forestry
163	Deep Convolutional Neural Networks for Accelerated Dynamic Magnetic Resonance Imaging	Christopher M. Sandino <sup>1</sup> , Neerav Dixit <sup>1</sup> , Joseph Y. Cheng <sup>2</sup> , Shreyas S. Vasanaawala <sup>2</sup> Departments of Electrical Engineering <sup>1</sup> and Radiology <sup>2</sup> , Stanford University
164	A New SMS Sequence for fMRI: POMP	Patricia Lan <sup>1</sup> , Gary Glover <sup>2</sup> Departments of Bioengineering <sup>1</sup> and Radiology <sup>2</sup> , Stanford University

165	Functional and Histological Analysis of a Mouse Model of Oculocerebral Renal Syndrome of Lowe	Jorge A. Alvarado <sup>1</sup> , Na Luo <sup>2</sup> , Emilie Song <sup>2</sup> , Judith Quigley <sup>2</sup> , Yang Sun <sup>1</sup> Department of Ophthalmology <sup>1</sup> , Stanford University; Eugene & Marilyn Glick Eye Institute <sup>2</sup> , Indiana University School of Medicine
166	Long Term Effect of High Frequency Deep Brain Stimulation on Subthalamic Beta Band Oscillations and Motor Function in Parkinson's Disease	Amaris Martinez <sup>1</sup> , Anca Velisar <sup>1</sup> , Ross Anderson <sup>1</sup> , Furqan Afzal <sup>1</sup> , Megan Trager <sup>1</sup> , Helen Bronte-Stewart <sup>1,2</sup> Departments of Neurology & Neurological Sciences <sup>1</sup> and Neurosurgery <sup>2</sup> , Stanford University
167	Intravascular Shear Wave Elastography	Arsenii Telichko <sup>1</sup> , Carl Herickhoff <sup>1</sup> , Dongwoon Hyun <sup>1</sup> , Jeremy Dahl <sup>1</sup> Department of Radiology <sup>1</sup> , Stanford University
168	Electric Field Sensitive Upconverting Nanoparticles for <i>in vivo</i> Action Potential Imaging	Randy D. Mehlenbacher <sup>1</sup> , Chris Siefe <sup>1</sup> , Rea Kolbl <sup>2</sup> , Alice Lay <sup>2</sup> , Jennifer A. Dionne <sup>1</sup> Departments of Materials Science & Engineering <sup>1</sup> and Applied Physics <sup>2</sup> , Stanford University
169	Using Algebraic Topology to Examine Brain's Dynamical Organization During Ongoing Cognition	Manish Saggari <sup>1</sup> , Olaf Sporns <sup>2</sup> , Gunnar Carlsson <sup>3</sup> , Gary Glover <sup>4</sup> , Allan Reiss <sup>1,4</sup> Departments of Psychiatry & Behavioral Sciences <sup>1</sup> , Mathematics <sup>3</sup> , and Radiology <sup>4</sup> , Stanford University; Department of Cognitive Science <sup>2</sup> , Indiana University
170	Cationic Amphiphilic Compounds Restrict Intracellular <i>Mycobacterium tuberculosis</i>	Douglas Fox <sup>1</sup> , Michael Schump <sup>2</sup> , Lee Riley <sup>2</sup> , Carolyn Bertozzi <sup>1,3</sup> Department of Chemistry <sup>1</sup> and Howard Hughes Medical Institute <sup>3</sup> , Stanford University; Graduate Group in Infectious Diseases & Immunity <sup>2</sup> , School of Public Health, University of California, Berkeley
171	The Mechanism of Rb Phosphorylation by Cyclin D-Cdk4/6	Benjamin R. Topacio <sup>1,2</sup> , Mardo Kõivomägi <sup>1</sup> , Evgeny Zatulovskiy <sup>1</sup> , Jan M. Skotheim <sup>1</sup> Department of Biology <sup>1</sup> and Cancer Biology Program <sup>2</sup> , Stanford University
172	Pressure Calibration for Transcranial Ultrasound Using Simulation Methods and MR-ARFI	Pooja Gaur <sup>1</sup> , Ningrui Li <sup>2</sup> , Kim Butts Pauly <sup>1</sup> Departments of Radiology <sup>1</sup> and Electrical Engineering <sup>2</sup> , Stanford University
173	Building a Generic, Configurable, and User-Friendly Real-Time Computation Engine	Sabar Dasgupta <sup>1,2</sup> , Pavan Mehrotra <sup>1,2</sup> , Samantha Robertson <sup>2,3</sup> , Paul Nuyujukian <sup>1,2,4,5,6,7</sup> Departments of Electrical Engineering <sup>1</sup> , Bioengineering <sup>2</sup> , and Neurosurgery <sup>4</sup> , Mathematical & Computational Science Program <sup>3</sup> , Neurosciences Program <sup>5</sup> , Stanford Neurosciences Institute <sup>6</sup> , and Stanford Bio-X <sup>7</sup> , Stanford University
174	Deploying Realtime Linux with Python for Applications in Systems Neuroscience	Samantha Robertson <sup>1,2</sup> , Sabar Dasgupta <sup>3,2</sup> , Paul Nuyujukian <sup>2,3,4,5,6,7</sup> Mathematical & Computational Science Program <sup>1</sup> , Departments of Bioengineering <sup>2</sup> , Electrical Engineering <sup>3</sup> , and Neurosurgery <sup>4</sup> , Neurosciences Program <sup>5</sup> , Stanford Neurosciences Institute <sup>6</sup> , and Stanford Bio-X <sup>7</sup> , Stanford University
175	Arsenic and the Gut Microbiome: Biotransformations of Ecological and Toxicological Relevance	Stephanie Bachas-Daunert <sup>1</sup> , Sooyeol Kim <sup>1</sup> , Juan Lezama Pacheco <sup>2</sup> , Craig S. Criddle <sup>1</sup> , David A. Relman <sup>3,4</sup> Departments of Civil & Environmental Engineering <sup>1</sup> , Earth System Science <sup>2</sup> , Medicine <sup>3</sup> , and Microbiology & Immunology <sup>4</sup> , Stanford University
176	Loss of Cilia in Ocular Melanoma: Implications for Diagnosis	Emilie Song <sup>1</sup> , Elaine Chan <sup>1</sup> , Yang Sun <sup>1</sup> Department of Ophthalmology <sup>1</sup> , Stanford University



177	Direct Selection of Fluorescence-Enhancing RNA Aptamers	Michael Gotrik <sup>1,2,3</sup> , Gurpreet Sekhon <sup>2,3</sup> , Tom Soh <sup>2,3</sup> Materials Department <sup>1</sup> , University of California, Santa Barbara; Departments of Radiology <sup>2</sup> and Electrical Engineering <sup>3</sup> , Stanford University Anna Park <sup>1</sup> , Molly Fischer <sup>1</sup> , Vaibhav Murali <sup>1</sup> , Corey Kronman <sup>2,3</sup> , Farah Mahmud <sup>2,3</sup> , Maya Hernandez <sup>1</sup> , Laura Simons <sup>1</sup>
178	Heightened Threat Perception in Adolescents with Chronic Pain	Department of Anesthesiology, Perioperative, & Pain Medicine <sup>1</sup> , Stanford University; Department of Anesthesiology, Perioperative, & Pain Medicine <sup>2</sup> , Boston Children's Hospital; P.A.I.N. (Pain & Analgesia Imaging Neuroscience) Group <sup>3</sup> , Boston Children's Hospital and Center for Pain in the Brain, Harvard Medical School Molly Fischer <sup>1</sup> , Anna Park <sup>1</sup> , Maya Hernandez <sup>1</sup> , Corey Kronman <sup>2,3</sup> , Farah Mahmud <sup>2,3</sup> , Laura Simons <sup>1</sup>
179	Alterations in Memories for Fearful Experiences Among Youth with Chronic Pain	Department of Anesthesiology, Perioperative, & Pain Medicine <sup>1</sup> , Stanford University; Department of Anesthesiology, Perioperative, & Pain Medicine <sup>2</sup> , Boston Children's Hospital; P.A.I.N. (Pain & Analgesia Imaging Neuroscience) Group <sup>3</sup> , Boston Children's Hospital and Center for Pain in the Brain, Harvard Medical School Mirae Parker <sup>2</sup> , Leslie Mateo <sup>1</sup> , Nasa Sinnott-Armstrong <sup>3</sup> , Alistair Boettiger <sup>1</sup>
180	Probing the 3D Structure of Chromatin	Departments of Developmental Biology <sup>1</sup> , Physics <sup>2</sup> , and Genetics <sup>3</sup> , Stanford University Xinyuan Zhang <sup>1</sup> , Joy Aparicio Valenzuela <sup>1</sup> , Jia Liu <sup>2</sup> , Yuxin Liu <sup>2</sup> , Meghedi Babakhanian <sup>3</sup> , Mahmood Al Hussein <sup>4</sup> , Sanjiv Narayan <sup>4</sup> , Paul Wang <sup>3</sup> , Zhenan Bao <sup>2</sup> , Anson Lee <sup>1</sup>
181	Mapping Cardiac Arrhythmic Activities in Rabbit with High Spatiotemporal Resolution Using a Novel Elastic Polymeric Device	Departments of Cardiothoracic Surgery <sup>1</sup> , Chemical Engineering <sup>2</sup> , Medicine <sup>3</sup> , and Cardiovascular Medicine <sup>4</sup> , Stanford University Carolyn Kravitz <sup>1</sup> , Clayton Schwarz <sup>1</sup> , Jan Skotheim <sup>1</sup>
182	Single Cell Studies of Competence and Progression in Primary Mammalian Cells	Department of Biology <sup>1</sup> , Stanford University Vicky Le <sup>1,2</sup> , Garry Coles <sup>1,2</sup> , Lei Xu <sup>1,2</sup> , Florette Hazard <sup>1,2</sup> , Thuyen Nguyen <sup>1,2</sup> , Julien Sage <sup>1,2</sup>
183	Genetically Engineering a Mouse Model for Fibrolamellar Hepatocellular Carcinoma	Departments of Pediatrics <sup>1</sup> and Genetics <sup>2</sup> , Stanford University Christina Wood-Bouwens <sup>1</sup> , Billy Lau <sup>2</sup> , Bob St. Onge <sup>2</sup> , HoJoon Lee <sup>2</sup> , Hanlee P. Ji <sup>1,2</sup>
184	Personalized Molecular Detection of Cancer Mutations	Department of Medicine (Division of Oncology <sup>1</sup> ) and Stanford Genome Technology Center <sup>2</sup> , Stanford University