



Stanford Bio-X Interdisciplinary Initiatives
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Poster Session
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1	Folding and Catalysis of the glmS Ribozyme Riboswitch Studied at the Single-Molecule Level	Andrew Savinov ¹ , Steven M. Block ^{2,3} Biophysics Program ¹ and Departments of Applied Physics ² and Biology ³ , Stanford University
2	Topological Control of DNA Organization: Interfaces Between Physics, Biology, and Materials Science	Brad A. Krajina ¹ , Abbygail Foster ² , Sarah C. Heilshorn ² , Andrew J. Spakowitz ¹ Departments of Chemical Engineering ¹ and Materials Science & Engineering ² , Stanford University
3	Towards Engineered Plant-Microbe Symbioses	Mathias J. Voges ^{1,2} , Yang Bai ³ , Ruben G. Oter ³ , Masayoshi Hashimoto ³ , Paul Schulze-Lefert ³ , Elizabeth S. Sattely ² Departments of Bioengineering ¹ and Chemical Engineering ¹ , Stanford University; Department of Plant Microbe Interactions, Max Planck Institute for Plant Breeding Research, Germany ³
4	Not Just a Black Box: Interpretable Deep Learning for Genomics	Avanti Shrikumar ^{1*} , Peyton Greenside ^{2*} , Anshul Kundaje ^{1,3} (*co-first authors) Departments of Computer Science ¹ , Biological Data Science ² , and Genetics ³ , Stanford University
5	Orientation Estimation of a Continuum Manipulator in a Phantom Lung	Jake Sganga ¹ , David Camarillo ¹ Department of Bioengineering ¹ , Stanford University
6	Synergistic Direct Interactions Contribute to Cenp-A Histone Variant Nucleosome Stability in Cells	Shengya Cao ¹ , Keda Zhou ^{2,3,4} , Karolin Luger ^{2,3,4} , Aaron F. Straight ¹ Department of Biochemistry ¹ , Stanford University; Departments of Chemistry ² and Biochemistry ³ and Howard Hughes Medical Institute ⁴ , University of Colorado at Boulder
7	Imaging the Cardiac Field Potential with Graphene Optoelectronics	Allister F. McGuire ¹ , Jason Horng ² , Halleh B. Balch ² , Hsin-Zon Tsai ² , Patrick R. Forrester ² , Michael F. Crommie ² , Feng Wang ² , Bianxiao Cui ¹ Department of Chemistry, Stanford University ¹ ; Department of Physics ² , University of California-Berkeley
8	Dynamic Genetic Control of Gene Expression and DNA Methylation in Human Aging	Trevor Martin ¹ , Hunter Fraser ¹ Department of Biology ¹ , Stanford University
9	Multimodal Measurements of Single-Molecule Dynamics using FluoRBT	Ivan E. Ivanov ^{1,2} , Paul Lebel ^{2,3,5} , Florian C. Oberstrass ^{2,5} , Zev Bryant ^{2,4} Departments of Chemical Engineering ¹ , Bioengineering ² , Applied Physics ³ , and Structural Biology ⁴ , Stanford University; Berkeley Lights Inc. and Ultima Genomics, Inc. ⁵
10	Semiautomated Classification of Motion Modes in Complex Single-Molecule Trajectories	Lucien E. Weiss ¹ , Ljiljana Milenkovic ² , Joshua Y. Yoon ¹ , Tim Stearns ² , W. E. Moerner ¹ Departments of Chemistry ¹ and Biology ² , Stanford University

11	A Parameterized Family of Anatomically Accurate Human Upper-Body Musculoskeletal Models	Samir Menon ¹ , Toki Migimatsu ¹ , Oussama Khatib ¹ Department of Computer Science ¹ , Stanford University
12	Design of Self-Assembling Bio-Inks for Cell-Based 3D Printing	Karen Dubbin ¹ , Yuki Hori ¹ , Anthony Tabet ¹ , Kazuomori Lewis ² , Sarah Heilshorn ¹ Departments of Materials Science & Engineering ¹ and Chemical Engineering ² , Stanford University
13	Automatic Identification of Cellular Niches Using Deep Neural Networks and Multi-Parameter Imaging	Salil S. Bhate ^{1,2} , Yury Goltsev ¹ , Nikolay Samusik ¹ , Garry P. Nolan ¹ Baxter Lab ¹ and Department of Bioengineering ² , Stanford University
14	TREM2 Haplodeficiency Impairs the Protective Microglia Barrier Function in Mice and Humans, Leading to Reduced Amyloid Plaque Compactness and Insulation	Peng Yuan ¹ , Carlo Condello ² , Jaime Grutzendler ³ Department of Biology ¹ , Stanford University; Department of Neurology ² , University of California-San Francisco; Department of Neurology ³ , Yale University
15	Elastin-like Protein-Hyaluronic Acid (ELP-HA) Hydrogels with Decoupled Mechanical and Biochemical Cues for Cartilage Regeneration	Danqing Zhu ¹ , Huiyuan Wang ² , Pavin Trinh ³ , Sarah C. Heilshorn ² , Fan Yang ^{1,4} Departments of Bioengineering ¹ , Materials Science & Engineering ² , Biology ³ , and Orthopaedic Surgery ⁴ , Stanford University
16	Engineering Patterned Biofilms for Microbial Consortia	Xiaofan Jin ¹ , Ingmar Riedel-Kruse ¹ Department of Bioengineering ¹ , Stanford University
17	Identifying the Biomechanical Features of Football Head Impacts Using a Support Vector Machine Classifier	Lyndia C. Wu ¹ , Calvin Kuo ² , Jesus Loza ² , Mehmet Kurt ¹ , Kaveh Laksari ¹ , Livia Zarnescu ¹ , Daniel Senif ³ , Scott C. Anderson ³ , Logan Miller ⁴ , Jill Urban ⁴ , Joel Stitzel ⁴ , David Camarillo ^{1,2} Departments of Bioengineering ¹ , Mechanical Engineering ² , and Sports Medicine ³ , Stanford University; Department of Biomedical Engineering ⁴ , Wake Forest University
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19	Males and Females Differ In Biochemical Composition of Platelet-Rich Plasma	Grace Xiong ¹ , Nithya Lingampalli ^{2,4} , Smritee Dadhwal ¹ , Lawrence Leung ^{3,4} , William Robinson ^{2,4} , Constance R. Chu ^{1,4} Departments of Orthopaedic Surgery ¹ and Medicine (Divisions of Immunology and Rheumatology ² and Hematology ³), Stanford University; VA Palo Alto Health Care System ⁴
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21	Segmentation of the Human Nucleus Accumbens Using High Resolution Diffusion Tractography	Sam Cartmell ¹ , Qiyuan Tian ² , Christophe Leuze ² , Grant Yang ² , Jennifer McNab ² , Casey Halpern ³

		School of Medicine ¹ and Departments of Radiology ² and Neurosurgery ³ , Stanford University
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24	A Spinal Cord Circuit for Thermosensation and Thermal Nociception	Chen Ran ¹ , Gabriella Kamalani ¹ , Mark Hoon ² , Xiaoke Chen ¹ Department of Biology ¹ , Stanford University; Molecular Genetics Unit ² , Laboratory of Sensory Biology, National Institute of Dental & Craniofacial Research–National Institutes of Health
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26	Stability of Monoclonal Antibodies in Solution Affected by Interfacial Viscoelasticity	Aadithya Kannan ¹ , Ian C. Shieh ² , Danielle L. Leiske ² , Chunzi Liu ¹ , Camila Kofman ¹ , Gerald G. Fuller ¹ Department of Chemical Engineering ¹ , Stanford University; Genentech, Inc. ²
27	Mechanical Confinement Regulates Cartilage Matrix Formation by Chondrocytes	Hong-pyo Lee ¹ , Luo Gu ^{2,3} , David J. Mooney ^{2,3} , Marc E. Levenston ¹ , Ovijit Chaudhuri ¹ Department of Mechanical Engineering ¹ , Stanford University; School of Engineering & Applied Sciences ² and Wyss Institute for Biologically Inspired Engineering ³ , Harvard University
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		Public Health ² , Departments of Integrative Biology ³ and Civil & Environmental Engineering ⁵ , University of California-Berkeley; Eastern and Southern Africa Center of International Parasite Control ⁴ , Kenya Medical Research Institute (KEMRI), Nairobi, Kenya
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34	Antibody Selection in Response to Influenza Vaccine	Departments of Structural Biology ¹ and Electrical Engineering ² , Bio-X Program ³ , Molecular Imaging Program at Stanford ⁴ , and Biophysics Program ⁵ , Stanford University Lily Blair ¹ , Steve Quake ^{2,3,4} , Daniel Fisher ^{1,2,4}
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40	Investigating Novel Super Enhancer of Cardiac Development	Department of Chemistry ¹ , Stanford University; Department of Molecular Physiology & Biological Physics ² , University of Virginia Gunes Ates Akgun ¹ , Jaechol Lee ² , Ningyi Shao ² , Joseph Wu ^{2,3} , Zhen Cheng ³
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43	Circumferential and Radial Variations in T2, T2* and T1rho in the Osteoarthritic Meniscus	Departments of Biology ¹ , Psychiatry & Behavioral Sciences (Center for Interdisciplinary Brain Sciences Research) ² , and Radiology ³ , Stanford University Marianne S. Black ¹ , Garry E. Gold ^{2,3} , Marc E. Levenston ^{1,2,3} , Brian A. Hargreaves ^{2,3}

		Departments of Mechanical Engineering ¹ , Radiology ² , and Bioengineering ³ , Stanford University
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45	Utilizing the Glutaminase Pathway for Treatment and Monitoring of Cancer	Sonya Park ¹ , Hongjuan Zhao ² , Fred Chin ³ , Andrei Iagaru ¹ , Melinda Telli ⁴ , Donna Peehl ² , Erik Mittra ¹ , Alice Fan ⁴ Departments of Radiology (Nuclear Medicine) ¹ , Urology ² , Radiochemistry ² , and Medicine (Division of Oncology) ⁴ , Stanford University
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50	Rivas Lab: Translating Biomedical Data into Meaningful Discoveries	Christopher DeBoever ^{1,2} , Mamie Wang ³ , Antonio Edward Lindsey ³ , Oliver Bear Don't Walk IV ³ , Adam Lavertu ³ , Yosuke Tanigawa ³ , Greg McInnes ³ , Manuel Rivas ¹ Departments of Biomedical Data Science ¹ and Genetics ² and Biomedical Informatics Training Program ³ , Stanford University
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58	An Intravascular Magnetic Wire for High-Throughput <i>in vivo</i> Enrichment of Rare Circulating Biomarkers	Ophir Vermesh ^{1,2*} , Amin Aalipour ^{1,2,3*} , Tianjia J. Ge ^{1,4*} , Yamil Saenz ² , Yue Guo ⁵ , Seung-min Park ^{1,2} , Yoshiaki Mitsutake ⁶ , Michael Bachmann ^{2,7} , Chin Chun Ooi ⁸ , Jennifer Lyons ⁶ , Kerstin Mueller ² , Hamed Arami ^{1,2} , Alfredo Green ⁶ , Shan X. Wang ^{5,9} , Sanjiv S. Gambhir ^{1,2,3} (*co-first authors) Molecular Imaging Program at Stanford ¹ , Departments of Radiology ² , Bioengineering ³ , Electrical Engineering ⁵ , Medicine (Division of Cardiovascular Medicine) ⁶ , Pediatrics ⁷ , Chemical Engineering ⁸ , and Materials Science & Engineering ⁹ , and Howard Hughes Medical Institute ⁴ , Stanford University
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65	Darwin: A Hardware-Accelerated Framework For Genomic Sequence Alignment	Yatish Turakhia ¹ , Gill Bejerano ^{2,3,4} , William Dally ^{1,2} Departments of Electrical Engineering ¹ , Computer Science ² , Developmental Biology ³ , and Pediatrics ⁴ , Stanford University
66	Micro RNA 200b Modulates ROS-Induced Injury in Neuronal Cells	Josh Bell ¹ , Xiaoyun Sun ² , Creed M. Stary ² , Rona G. Giffard ² Department of Anesthesia ¹ , University of Toronto; Department of Anesthesiology, Perioperative & Pain Medicine ² , Stanford University
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		Departments of Dermatology ³ and Genetics ⁴ , Stanford University
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73	Fine-Tuned Protein Production in <i>Methanosarcina acetivorans</i> C2A	Ann A. Karim ¹ , Daniel R. Gestaut ² , Alfred M. Spormann ^{1,3} Departments of Civil & Environmental Engineering ¹ , Biology ² , and Chemical Engineering ³ , Stanford University
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75	Development of Mini-Gut with Periodically Contracting Smooth Muscle Organoids	Qianqian Wang ^{1,2} , Ke Wang ³ , R. Sergio Solorzano-Vargas ⁴ , Po-Yu Lin ^{1,2} , Christopher M. Walthers ² , Anne-Laure Thomas ¹ , Martín G. Martín ⁴ , James C. Y. Dunn ^{1,2} Department of Surgery (Division of Pediatric Surgery) ¹ , Stanford University; Department of Bioengineering ² and Eli & Edythe Broad Center of Regenerative Medicine & Stem Cell Research ⁴ , University of California-Los Angeles; Department of Computer Science ³ , University of North Carolina at Chapel Hill
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82	Charge-Altering Releasable Transporters (CARTs) for the Delivery and Release of Messenger RNA in Living Animals	Colin J. McKinlay ¹ , Jessica R. Vargas ¹ , Timothy R. Blake ¹ , Jonathan W. Hardy ^{2,7} , Masamitsu

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83	Enhancer Evolution and the Origins of Vertebrate Brain Development	Paul Minor ¹ , Yao Yao ² , Nat Clarke ¹ , Doug Epstein ² , Christopher Lowe ¹ Department of Biology ¹ , Stanford University; Department of Genetics ² , University of Pennsylvania Laura Y. Lu ¹ , Florence Loi ¹ , Karthik Nathan ¹ , Tzu-hua Lin ¹ , Jukka Pajarinen ¹ , Emmanuel Gibon ^{1,3} , Akira Nabeshima ¹ , Luis Cordova ^{1,4} , Eemeli Jämsen ⁵ , Zhenyu Yao ¹ , Stuart B. Goodman ^{1,2} Departments of Orthopaedic Surgery ¹ and Bioengineering ² , Stanford University; Laboratoire de Biomécanique et Biomatériaux Ostéo-Articulaires ³ , Faculté de Médecine - Université Paris, France; Department of Oral and Maxillofacial Surgery ⁴ , University of Chile, Santiago, Chile; Department of Medicine ⁵ , Clinicum, University of Helsinki, and Helsinki University Hospital, Finland
84	Pro-Inflammatory M1 Macrophages Promote Osteogenesis by Mesenchymal Stem Cells via the COX-2-Prostaglandin E2 Pathway	Lorelei D. Shoemaker ^{1,2} , Steven D. Chang ^{1,2} Department of Neurosurgery ¹ and the Stanford Neuromolecular Innovation Program ² , Stanford University
85	A Novel Proliferating Cell Population in Human Brain Arteriovenous Malformations and its Potential Contribution to Disease Pathology	Jayant Charthad ¹ , Marcus J. Weber ¹ , Jerry Chang ¹ , Syridon Baltsavias ¹ , Max Wang ¹ , Amin Arbabian ¹ Department of Electrical Engineering ¹ , Stanford University
86	Minimally Invasive Ultrasonically Powered Implantable Devices for Next-Generation Therapies and Neuromodulation	Jeehey Song ^{1,2} , Ali Shariati ^{1,2} , Joyce Y. Liao ^{1,2} Department of Ophthalmology ¹ and Byers Eye Institute ² , Stanford University
87	Impact of Homonymous Visual Field Defect on Reading	Mahmood Alhusseini ¹ , Dave Vidmar ² , Gabriela Meckler ¹ , Christopher Kowalewski ¹ , Fatemah Shenasa ¹ , Albert J. Rogers ¹ , Tina Baykaner ¹ , Junaid Zaman ¹ , Mallika Tamboli ¹ , David E. Krummen ¹ , Paul Zei ¹ , Mohan Viswanathan ¹ , Paul J. Wang ¹ , Johannes Brachmann ³ , John M. Miller ⁴ , Wouter-Jan Rappel ² , Sanjiv M. Narayan ¹ Department of Medicine ¹ , Stanford University; Department of Physics ² , University of California-San Diego; Clinic of Cardiology ³ , Klinikum Coburg, Germany; Department of Medicine ⁴ , Indiana University
88	Mechanisms for Persistent Atrial Fibrillation Revealed by 2 Independent Algorithms at Sites of Termination by Localized Ablation	Aaron Milstein ¹ , Katie C. Bittner ² , Sandro Romani ² , Jeffrey C. Magee ² , Ivan Soltesz ¹ Department of Neurosurgery ¹ , Stanford University; HHMI Janelia Research Campus ²
89	Behavioral Time-Scale Synaptic Plasticity Underlies Spatial Coding in the Hippocampus	Alexa Wnorowski ¹ , Elena Matsa ^{2,3,4,5} , Alsu Zamaleeva ⁶ , Mohammed Ahmed ⁶ , Arita Dubnika ⁶ , John H. Ahrens ² , Wenchao Sun ⁶ , Vittavat Termglinchan ^{2,3,4,5} , Ioannis
90	Slow-Release Lipid Nanoparticles for Targeted Cardiac Delivery of Allele-Specific siRNA to Treat Dilated Cardiomyopathy	

		Karakikes ^{2,3,4,5} , Oscar Abilez ^{2,3,4,5} , Jayakumar Rajadas ⁶ , Joseph C. Wu ^{2,3,4,5} Department of Bioengineering ¹ , Medicine ³ , and Radiology ⁴ , Stanford Cardiovascular Institute ² , Institute of Stem Cell Biology & Regenerative Medicine ⁵ , and Biomaterials & Advanced Drug Delivery Laboratory ⁶ , Stanford University
91	Fear Learning in Adolescents with Chronic Pain and Pain-Related Fear	Vaibhav Murali ¹ , Corey Kronman ^{2,3,4} , Lauren Heathcote ¹ , Maya Hernandez ¹ , Clas Linnman ^{2,3,4} , David Borsook ^{2,3,4} , Laura Simons ¹ Department of Anesthesiology, Perioperative & Pain Medicine ¹ , Stanford University; Department of Anesthesiology, Perioperative & Pain Medicine ² and P.A.I.N. (Pain & Analgesia Imaging Neuroscience) Group ³ , Boston Children's Hospital; Center for Pain in the Brain ⁴ , Harvard Medical School
92	Charged Archaeal S-Layer Modulates Enzyme Kinetics in Pseudo-Periplasmic Space	Po-Nan Li ^{1,3} , Frederic Poitevin ² , Jonathan Herrmann ² , Henry van den Bedem ³ , Soichi Wakatsuki ^{2,3} Departments of Electrical Engineering ¹ and Structural Biology ² , Stanford University; Biosciences Division ³ , SLAC National Accelerator Laboratory
93	ApoE2, ApoE3 and ApoE4 Differentially Activate a Non-Canonical MAP-Kinase Cascade Stimulating Abeta-Secretion	Yu-Wen Alvin Huang ¹ , Marius Wernig ² , Thomas C. Südhof ¹ Department of Molecular & Cellular Physiology ¹ and Institute for Stem Cell Biology & Regenerative Medicine ² , Stanford University
94	Living Galapagos Islands	Alexander Tarashansky ¹ , Bo Wang ¹ Department of Bioengineering ¹ , Stanford University
95	Ecosystem Regeneration in Single Animals	Youngbin Lim ¹ , Margarita Khariton ¹ , Yuan Xue ¹ , Bo Wang ¹ Department of Bioengineering ¹ , Stanford University
96	Environmental Calcium Controls Alternate Physical States of the Caulobacter Surface Layer	Jonathan Herrmann ^{1,2} , Paul Bargar ³ , Po-Nan Li ⁴ , Thomas Lane ² , Thomas Weiss ² , Lucy Shapiro ⁵ , Soichi Wakatsuki ^{1,2} Departments of Structural Biology ¹ , Electrical Engineering ⁴ , and Developmental Biology ⁵ , Stanford University; SLAC National Accelerator Laboratory ² ; Menlo-Atherton High School ³
97	Probing the Binding Specificity in Protein Interaction Networks Using Spectrally Encoded Peptide-Bead Libraries	Huy Q. Nguyen ¹ , Nikhil P. Damle ² , Jagoree Roy ² , Bjorn Harink ³ , Kara Brower ¹ , Scott Longwell ¹ , Brian Baxter ³ , Kurt Thorn ³ , Martha Cyert ² , Polly Fordyce ¹ Departments of Bioengineering ¹ and Biology ² , Stanford University; Department of Biophysics & Biochemistry ³ , University of California-San Francisco
98	Programmed Cell Fate Changes in Embryonic Stem Cells Using CRISPR Technology	Marie La Russa ^{1,2} , Yanxia Liu ² , Marcos Torres ² , Yuchen Gao ³ , Barbara Panning ⁴ , Stanley Lei Qi ^{2,5} Biomedical Sciences Program ¹ and Department of Biochemistry & Biophysics ⁴ , University of California-San Francisco; Departments of Bioengineering ² and Chemical & Systems Biology ⁵ and Cancer Biology Program ³ , Stanford University

99	Adhesion Prevention Using Polymer Nanoparticle (PNP) Hydrogels	Lyndsay Stapleton ¹ , Amanda Steele ¹ , Joseph Woo ² , Eric Appel ³ Departments of Bioengineering ¹ , Cardiothoracic Surgery ² , and Materials Science & Engineering ³ , Stanford University
100	Multimodal Oscillatory Coupling and Spectral Features in Epileptic Focus Localization from Sleep Electroencephalography Recordings	Tibor Nánási ¹ , Balint File ² , Zoltan Karasz ² , Emilia Toth ^{3,4} , Daniel Fabo ^{3,4} , Laszlo Entz ⁵ , Lorand Eross ⁵ , Istvan Ulbert ¹ Institute of Cognitive Neuroscience & Psychology, Research Centre for Natural Sciences ¹ , Hungarian Academy of Sciences; Faculty of Information Technology & Bionics ² , Pázmány Péter Catholic University; Epilepsy Centrum ³ and Departments of Neurology ⁴ and Functional Neurosurgery ⁵ , National Institute for Clinical Neurosciences, Budapest, Hungary
101	2 nd Generation “Trigger and Release” Smart Probes for Imaging Tumor Hypoxia <i>in vivo</i>	Bin Shen ¹ , Samuel Banister ¹ , Walid Fawzi Alrashed Alsharif ¹ , Zheng Miao ¹ , Marjan Rafat ² , Marta Vilalta ² , Edward E. Graves ² , Ananth Srinivasan ¹ , Frederick T. Chin ¹ Departments of Radiology ¹ and Radiation Oncology ² , Stanford University
102	Gradient Control and Microporosity Guidance in 3D Structures for Regenerative Medicine	Raphaël F. Canadas ^{1,2,3} , Alessandro Tocchio ¹ , Alexandra P. Marques ^{2,3} , Joaquim M. Oliveira ^{2,3} , Rui L. Reis ^{2,3} , Utkan Demirci ¹ Bio-Acoustic MEMS in Medicine (BAMM) Laboratory, Canary Center for Cancer Early Detection ¹ , Stanford University; 3B’s Research Group – Biomaterials, Biodegradables & Biomimetics ² , Headquarters of the European Institute of Excellence on Tissue Engineering & Regenerative Medicine, Barco, Portugal; ICVS/3B’sPT Government Associate Laboratory ³ , University of Minho, Braga, Portugal
103	A Next Generation-Differential Extraction Device for Sperm Isolation and DNA Processing On-Chip	Fatih Inci ¹ , Mehmet O. Ozen ¹ , Yeseren Saylan ¹ , Morteza Miansari ¹ , Duygu Cimen ¹ , George Duncan ² , Leonard Klevan ^{3*} , and Utkan Demirci ^{1*} (*corresponding authors) Bio-Acoustic MEMS in Medicine (BAMM) Laboratory, Canary Center for Cancer Early Detection ¹ , Stanford University; Broward County Sheriff’s Office, Crime Laboratory ² , Fort Lauderdale, Florida; DxNow Inc. ³ , Natick, Massachusetts
104	Mechanosensing of Neurons in 3D Brain Surrogate	Tanchen Ren ¹ , Esra Karaca ¹ , Raphaël Canadas ^{1,2,3} , Utkan Demirci ^{1*} Bio-Acoustic MEMS in Medicine (BAMM) Laboratory, Canary Center for Cancer Early Detection ¹ , Stanford University; 3B’s Research Group – Biomaterials, Biodegradables & Biomimetics ² , Headquarters of the European Institute of Excellence on Tissue Engineering & Regenerative Medicine, Barco, Portugal; ICVS/3B’sPT Government Associate Laboratory ³ , University of Minho, Braga, Portugal
105	Evolutionary-Like Selection On-a-Chip: Using Microfluidics to Isolate the Fittest Sperm	Thiruppathiraja Chinnasamy ¹ , James Kingsley ² , Naside Gozde Durmus ^{3,7} , Paul J. Turek ⁴ ,

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106	Monitoring Neutropenia in Cancer Patients at Point-of-Care (POC)	Hakan Inan ¹ , Mehmet O. Ozen ¹ , Utkan Demirci ¹ Bio-Acoustic MEMS in Medicine (BAMM) Laboratory ¹ , Canary Center for Cancer Early Detection, Stanford University
107	Exosome-Total-Isolation-Chip (ExoTIC) Device for Identification of New Lung Cancer Biomarkers	Fei Liu ^{1,2} , Ophir Vermesh ^{2,3} , Tianjia J. Ge ^{2,3} , Steven Madsen ⁴ , Andrew Sabour ^{2,3} , Gayatri Gowrishankar ^{2,3} , Masamitsu Kanada ^{3,5} , Jessie V. Jokerst ^{2,3} , Raymond G. Sierra ⁶ , Edwin Chang ^{1,2,3} , Robert Sinclair ⁴ , Sanjiv Sam Gambhir ^{1,2,3} , Viswam S. Nair ^{2,7} , Utkan Demirci ^{1,2} Bio-Acoustic MEMS in Medicine (BAMM) Laboratory, Canary Center for Cancer Early Detection ¹ , Departments of Radiology ² , Materials Science & Engineering ⁴ , Pediatrics ⁵ , and Medicine ⁷ , Molecular Imaging Program at Stanford (MIPS) ³ , and Stanford PULSE Institute ⁶ , Stanford University
108	<i>LEVITAS</i> : Levitating Cells for Chemistry-Free Sorting of Rare Circulating Cancer Cells and Cell Clusters from Whole Blood	N. Gozde Durmus ^{1,5} , Kaushik Sridhar ² , Hojae Lee ² , Shreya Sanjay Deshmoukh ^{2,3} , Christian Hoerner ⁶ , Fatih Inci ² , Ozlem Ercal ² , Neeraja Ravi ³ , Yoriko Imae ⁷ , Jordan Preiss ⁷ , Heather A. Wakelee ⁶ , Alice C. Fan ⁶ , Ronald W. Davis ^{1,4,5} , Lars M. Steinmetz ^{4,5*} , Utkan Demirci ^{2*} (*corresponding authors) Departments of Biochemistry ¹ , Bioengineering ³ , Genetics ⁴ , and Medicine (Division of Oncology) ⁶ , Bio-Acoustic MEMS in Medicine (BAMM) Laboratory, Canary Center for Cancer Early Detection ² , Stanford Genome Technology Center ⁵ , and Cancer Clinical Trials Office ⁷ , Stanford University
109	Flow Induces Epithelial-Mesenchymal Transition (EMT) in Dynamic Bioengineered Lung Cancer Microenvironment	Vigneshwaran Mani ¹ , Zhonglin Lyu ¹ , Baris Dercal ¹ , Ramasamy Paulmurugan ^{2,3,4} , Utkan Demirci ¹ Bio-Acoustic MEMS in Medicine (BAMM) Laboratory, Canary Center for Cancer Early Detection ¹ , Stanford University; Molecular Imaging Program at Stanford ² , Cellular Pathway Imaging Laboratory (CPIL) ³ , and Department of Radiology ⁴ , Stanford University
110	Multiplexed μ -fluidic-ELISA for Cardiovascular Disorders	Mehmet O. Ozen ^{1*} , Vigneshwaran Mani ^{1*} , Utkan Demirci ¹ (*equal contribution) Bio-Acoustic MEMS in Medicine (BAMM) Laboratory, Canary Center for Cancer Early Detection ¹ , Stanford University
111	Guided Self-Assembly of Functional Cellular Architectures Based on Magnetic Levitation	Alessandro Tocchio ¹ , Naside Gozde Durmus ^{2,3} , Bukre Coskun ⁴ , Vigneshwaran Mani ¹ , Kaushik Sridhar ¹ , Raphael Faustino Canadas ^{1,5,6} , Rami El Assal ¹ , Utkan Demirci ¹

112	Identifying Regions Where Targeted Ablation Terminated Persistent Atrial Fibrillation: Interobserver Variability in Multiple Mapping Systems	<p>Bio-Acoustic MEMS in Medicine (BAMM) Laboratory, Canary Center for Cancer Early Detection¹, Department of Biochemistry², and Stanford Genome Technology Center³, Stanford University; Department of Molecular & Cellular Biology, University of California-Davis; 3B's Research Group – Biomaterials, Biodegradables & Biomimetics⁵, Headquarters of the European Institute of Excellence on Tissue Engineering & Regenerative Medicine, Barco, Portugal; ICVS/3B'sPT Government Associate Laboratory, University of Minho⁶, Braga, Portugal Gabriela L. Meckler¹, Mallika Tamboli¹, Bartolomiej Imielski¹, Christopher A.B. Kowalewski¹, Mahmood Alhuseini¹, David Vidmar², Fatemah Shenasa¹, Tina Baykaner¹, Junaid Zaman¹, David E. Krummen³, Paul J. Wang¹, Johannes Brachmann⁴, John M. Miller⁵, Wouter-Jan Rappel², Sanjiv M. Narayan¹ Department of Medicine¹, Stanford University; Departments of Physics² and Medicine³, University of California-San Diego; Clinic of Cardiology⁴, Klinikum Coburg, Germany; Department of Medicine⁵, Indiana University William E. Allen^{1,3,4*}, Isaac V. Kauvar^{2,4*}, Michael Z. Chen⁴, Ethan B. Richman^{1,3,4}, Samuel J. Yang², Ken Chan⁷, Viviana Gradinaru⁷, Benjamin E. Deverman⁷, Liqun Luo^{3,5}, Karl Deisseroth^{4,5,6}</p>
113	Global Representations of Goal-Directed Behavior in Distinct Cell Types of Mouse Neocortex	<p>(*equal contribution) Neurosciences Graduate Program¹, Electrical Engineering Graduate Program², Departments of Biology³, Bioengineering⁴, and Psychiatry & Behavioral Sciences⁶, and Howard Hughes Medical Institute⁵, Stanford University; Division of Biology & Bioengineering⁷, California Institute of Technology</p>