



Stanford Bio-X Interdisciplinary Initiatives
Seed Grants Symposium
Poster Session
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POSTER #	TITLE	AUTHORS
1	Engineering Symbiotic Microbes for Sustainable AgTech	Tim Schnabel ¹ , Elizabeth Sattely ² Departments of Bioengineering ¹ and Chemical Engineering ² Stanford University
2	Magnetic Levitation for Malaria: Multiplexed Analysis of Blood for Resource-Limited Settings	Shreya Deshmukh ^{1,2,3} , Anna Chen ⁴ , N. Gozde Durmus ^{5,6} , Kaushik Sridhar ^{1,5} , Bryan Greenhouse ⁴ , Elizabeth Egan ^{7,8} , Utkan Demirci ^{1,2} Bio-Acoustic MEMS in Medicine (BAMM) Laboratory, Canary Center at Stanford for Cancer Early Detection ¹ , Departments of Radiology ² , Bioengineering ³ , Biochemistry ⁶ , Pediatrics (Division of Infectious Diseases ⁷), and Microbiology & Immunology ⁸ , and Stanford Genome Technology Center ⁵ , Stanford University; Greenhouse Lab, Department of Medicine (Division of Experimental Medicine ⁴), University of California, San Francisco
3	A Deep Learning Study of Object Recognition under Occlusion and Modeling of V4-vIPFC Interaction	Byungwoo Kang ¹ , Shaul Druckmann ² Departments of Physics ¹ and Neurobiology ² , Stanford University
4	Using the Neuroscience of Fear Extinction for Anxiety Reduction: Rationale and Research Design	Cheryl W. Zhang ¹ , Tali M. Ball ¹ Department of Psychiatry & Behavioral Sciences ¹ , Stanford University
5	A Novel Method for Single-Cell Tracking Using PET	Kyung Oh Jung ¹ , Tae Jin Kim ¹ , Byunghang Ha ¹ , Guillem Pratz ¹ Department of Radiation Oncology ¹ , Stanford University
6	Neurodesign: How to Meaningfully Enhance Human Behavior	Matteo Zallio ^{1,2} , Jan Auernhammer ^{1,2} , Larry Leifer ^{1,2} Center for Design Research ¹ and Department of Mechanical Engineering ² , Stanford University
7	MicroRNA Controls over Corticospinal Motor Neuron Development	Jessica L. Diaz ¹ , Verl B. Siththanandan ¹ , Victoria Lu ¹ , Jessica L. MacDonald ⁵ , Nicole Gonzalez-Nava ^{1,2} , Lincoln Pasquina ^{4,5,6} , Peter Sarnow ³ , Theo Palmer ¹ , Jeffrey D. Macklis ^{4,5,6*†} , Suzanne A. Tharin ^{1*†} (*equal contribution; †corresponding authors) Departments of Neurosurgery ¹ and Microbiology & Immunology ³ , Stanford University; Department of Biostatistics & Bioinformatics ² , Duke University; Department of Stem Cell & Regenerative Biology ⁴ , Center for Brain Science ⁵ , and Harvard Stem Cell Institute ⁶ , Harvard University; Department of Biology (Program in Neuroscience ⁷), Syracuse University
8	Effects of Dopamine Agonist and TMS Treatments on Anhedonic Depression: Preliminary Findings	Serena Tally ^{1,2} , Bailey Holt-Gosselin ¹ , Arielle Keller ¹ , Brooke Staveland ¹ , Nolan Williams ¹ , Patricia Suppes ^{1,2} , Michael Ostacher ^{1,2} , Leanne Williams ^{1,2} Department of Psychiatry & Behavioral Sciences ¹ , Stanford University; Veterans Affairs Palo Alto Health Care System ²

9	Whole System Immune Phenotyping of Male and Female Mice Reveals Striking Sex Differences and Similarities in the Immune Response to Injury	Nolan A. Huck ¹ , Quentin J. Baca ¹ , Ed Ganio ¹ , Huaishuang Shen ^{1,2} , Elena S. Haight ¹ , David J. Clark ¹ , Nima Aghaeepour ¹ , Brice Gaudilliere ¹ , Vivianne L. Tawfik ¹ Department of Anesthesiology, Perioperative & Pain Medicine ¹ , Stanford University; Department of Orthopedic Surgery ² , The First Affiliated Hospital of Soochow University
10	Neurotrophic Factors in mTBI Treatment with rTMS	Nicole Strossman ¹ , Windy McNeerney ^{1,2} , Benjamin Hambro ¹ , Girish Swaminath ¹ , Lilly Wu ¹ , Valerie Darcy ¹ , Michelle Madore ¹ , Art Noda ¹ , Beatriz Hernandez ¹ , Ansgar Furst ^{1,2} , Russell Toll ^{3,4} , Maya Yutsis ^{3,4} , Brian Yochim ¹ , David Clark ¹ , Odette Harris ^{3,4,5} , Jerome Yesavage ^{1,2} , Maheen Adamson ^{3,4,5} Neurosurgery/Psychiatry ³ , Defense and Veterans Brain Injury Center (DVBIC) ⁴ and Rehabilitation/Neurosurgery ⁵ , Veterans Affairs Palo Alto Health Care System ¹ ; Department of Psychiatry & Behavioral Sciences ² , Stanford University
11	Spatiotemporal Control of Voltage-Gated Sodium Channels	Anna Elleman ¹ , Christopher Makinson ² , Alli Haynes ¹ , John Huguenard ^{2*} , Justin Du Bois ^{1*} (*corresponding authors) Departments of Chemistry ¹ and Neurology & Neurological Sciences ² , Stanford University
12	Wireless, Wearable Electroencephalography (EEG) Device for Sleep Monitoring	Michael Silvernagel ¹ , Naoji Matsuhisa ² , Zhenan Bao ² , Emmanuel Mignot ³ , Ada S.Y. Poon ¹ Departments of Electrical Engineering ¹ , Chemical Engineering ² , and Psychiatry & Behavioral Sciences (Division of Sleep Medicine ³), Stanford University
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73	Step-Initiated Multichannel Neuromuscular Electrical Stimulation for Flexed-Knee Gait in Cerebral Palsy	Jake A. Mooney ¹ , Jessica Rose ^{1,2} Department of Orthopaedic Surgery ¹ , Stanford University; Motion & Gait Analysis Lab ² , Lucile Packard Children's Hospital

74	Architectural Basis of Leptin and IL-6 Transmembrane Signaling	Alpay B. Seven ¹ , Ricardo A. Fernandes ¹ , Christopher Garcia ¹ , Georgios Skiniotis ¹ , Department of Molecular & Cellular Physiology ¹ , Stanford University
75	Metabolic Differences between Hyperpolarized ¹³ C Pyruvate MRI and ¹⁸ F-FDG PET Imaging in a Rat Model of Spontaneous Brain Cancer	Mette H. Lauritzen ¹ , Keshav Datta ¹ , Milton Merchant ² , Taichang Jang ² , Ralph E. Hurd ¹ , Shie-Chau Liu ¹ , Lawrence Recht ² , Daniel M. Spielman ¹ Departments of Radiology ¹ and Neurology ² , Stanford University
76	Sustained Release Vaccine Platforms for Enhanced Humoral Immunity	Gillie Agmon ¹ , Emily C. Gale ² , Marcela A. Hernandez ³ , Wei Luo ³ , Eneko Axpe ⁴ , Eric A. Appel ⁴ Departments of Bioengineering ¹ , Biochemistry ² , Microbiology & Immunology ³ , and Materials Science & Engineering ⁴ , Stanford University
77	Computational Investigations of Coronary Artery Growth Mechanisms During Embryonic Heart Development	Suhaas Anbazhakan ¹ , Kristy Red-Horse ² , Alison Marsden ¹ Departments of Bioengineering ¹ and Biology ² , Stanford University
78	A Human Mission to Mars: Predicting the Bone Mineral Density Loss of Astronauts	Eneko Axpe ^{1,2} , Doreen Chan ¹ , Metadel F. Abegaz ² , Ann-Sofie Schreurs ² , Joshua S. Alwood ² , Ruth K. Globus ² , Eric A. Appel ¹ Department of Materials Science & Engineering ¹ , Stanford University; Space Biosciences Division ² , NASA-Ames Research Center
79	Arsenic and the Human Gut Microbiome	Stephanie Bachas-Daunert ¹ , Sooyeol Kim ¹ , Crystal Perez ² , Juan Lezama Pacheco ³ , Elizabeth Costello ⁴ , Craig Criddle ¹ , David A. Relman ^{4,5} Departments of Civil & Environmental Engineering ¹ , Biology ² , Earth System Sciences ³ , Medicine (Division of Infectious Diseases ⁴), and Microbiology & Immunology ⁵ , Stanford University
80	Nanoparticle-Mediated Drug Delivery from Macroporous Microribbon-Based Scaffolds for Accelerating Tissue Regeneration	Danial Barati ¹ , Xinming Tong ¹ , Menglin Chen ² , Fan Yang ^{1,3} Departments of Orthopedic Surgery ¹ and Bioengineering ³ , Stanford University; Department of Engineering ² , Aarhus University
81	Interpreting the Utility of Deep Learning Super-Resolution in the Context of Quantitative MRI Biomarkers	Akshay S. Chaudhari ¹ , Jeff P. Wood ² , Kathryn J. Stevens ^{1,3} , Eric K. Gibbons ⁴ , Zhongnan Fang ⁵ , Arjun D. Desai ¹ , Jin Hyung Lee ^{5,6,7,8} , Garry E. Gold ^{1,3,7} , Brian A. Hargreaves ^{1,7,9} Departments of Radiology ¹ , Orthopaedic Surgery ³ , Neurology & Neurological Sciences ⁶ , Bioengineering ⁷ , Neurosurgery ⁸ , and Electrical Engineering ⁹ , Stanford University; Austin Radiological Association ² ; Department of Radiology & Imaging Sciences ⁴ , University of Utah; LVIS Corporation ⁵
82	Image-Domain Insertion of Spatially Correlated, Locally Varying Noise in CT Images	Sarah E. Divil ^{1,2} , Norbert J. Pelc ^{2,3} Departments of Electrical Engineering ¹ , Radiology ² , and Bioengineering ³ , Stanford University
83	Investigating the Relationship between Red Blood Cell Variation and Natural Malaria Resistance	Emily R. Ebel ¹ , Marilou Tétard ² , Carrie Lin ² , Sandra K. Larkin ³ , Frans A. Kuypers ³ , Dmitri A. Petrov ¹ , Elizabeth S. Egan ² Departments of Biology ¹ and Pediatrics ² , Stanford University; Children's Hospital Oakland Research Institute ³

84	Constant Force Shock Absorbers for Preventing Traumatic Brain Injury	Michael Fanton ¹ , Hossein Vahid Alizadeh ² , Elliot Hawkes ³ , Mehmet Kurt ⁴ , Godfrey Mungal ^{1,5} , David Camarillo ^{1,2} Departments of Mechanical Engineering ¹ and Bioengineering ² , Stanford University; Department of Mechanical Engineering ³ , UC Santa Barbara; Department of Mechanical Engineering ⁴ , Stevens Institute of Technology; Department of Mechanical Engineering ⁵ , Santa Clara University
85	Carbon Dioxide Assimilation by Type II Methanotrophs	Wakuna M. Galega ¹ , Vince Pane ² , Robert Waymouth ² , Craig S. Criddle ¹ Departments of Civil & Environmental Engineering ¹ and Chemistry ² , Stanford University
86	Microribbon-Based Hydrogels with Mixed Compositions Accelerate Cartilage Regeneration with Biomimetic Mechanical Properties by MSCs in 3D	Courtney Gegg ¹ , Xinming Tong ² , Fan Yang ^{1,2} Departments of Bioengineering ¹ and Orthopaedic Surgery ² , Stanford University
87	Robust Reconstruction of Single Cell Differentiation Trajectories Using CytoTRACE	Gunsagar Gulati ^{1,2,3} , Shaheen Sikandar ^{1,2,4} , Daniel Wesche ^{1,2} , Anoop Manjunath ^{1,2} , Anjan Bharadwaj ^{1,2} , Francisco Ilagan ^{1,2} , Michael F. Clarke ^{1,3,4} , Aaron M. Newman ^{1,2,3} Institute for Stem Cell Biology & Regenerative Medicine ¹ , Departments of Biomedical Data Science ² and Medicine ⁴ , and Cancer Biology Program ³ , Stanford University
88	Functional Pathways Regulated by microRNA Networks in CD8 T Cell Aging	Claire E. Gustafson ^{1,2} , Mary M. Cavanagh ^{1,2} , Jun Jin ^{1,2} , Cornelia M. Weyand ^{1,2} , Jörg J. Goronzy ^{1,2} Department of Medicine (Division of Immunology & Rheumatology ¹), Stanford University; Department of Medicine ² , Veterans Affairs Palo Alto Healthcare System
89	Cas9 Interrogates DNA in Discrete Steps Modulated by Mismatches and Supercoiling	Ivan Ivanov ¹ , Addison Wright ² , Joshua Cofsky ² , Jennifer Doudna ³ , Zev Bryant ⁴ Departments of Chemical Engineering ¹ and Bioengineering ⁴ , Stanford University; Departments of Molecular & Cell Biology ² and Chemistry ³ , University of California, Berkeley
90	Decoding Regulatory DNA Sequence in Keratinocyte Differentiation	Daniel Kim ¹ , Viviana Risca ² , James Chappell ² , Adam Rubin ³ , Minyi Shi ² , Zhixin Zhao ² , Namyoun Jung ³ , Howard Chang ³ , Michael Snyder ² , Will Greenleaf ² , Anshul Kundaje ^{2,4} , Paul A. Khavari ³ Departments of Biomedical Data Science ¹ , Genetics ² , Dermatology ³ , and Computer Science ⁴ , Stanford University
91	Uncovering the Genotype-Phenotype-Fitness Map of Microbes Adapting to Novel Environments	Grant Kinsler ^{1*} , Kerry Geiler-Samerotte ^{2*} , Dmitri Petrov ¹ (*equal contribution) Department of Biology ¹ , Stanford University; Center for Mechanisms of Evolution ² , Arizona State University
92	18F-FDG Positron Emission Tomography (PET) Imaging Biomarkers for Outcome Prediction in Non-Small Cell Lung Cancer	Sarah A. Mattonen ¹ , Guido A. Davidzon ² , Ann N.C. Leung ¹ , Minal Vasanawala ³ , George Horng ⁴ , Viswam S. Nair ⁵ , Sandy Napel ¹ Departments of Radiology ¹ and Medicine (Division of Nuclear Medicine ²), Stanford University; Veterans Affairs Palo Alto Health Care System ³ ; California Pacific Medical Center, Pulmonary & Critical Care Medicine ⁴ , Moffitt Cancer Center & Research Institute; Morsani College of Medicine ⁵ , University of South Florida

93	Engineered Cerebral Cortex-Like Conductive Scaffold Generates Functional Neurons	Byeongtaek Oh ¹ , Vivek Lam ¹ , Paul George ¹ Department of Neurology & Neurological Sciences ¹ , Stanford University
94	Selective Passive Adsorption of Nitrate with Surfactant Treated Porous Electrode and Electrostatic Regeneration	Diego I. Oyarzun ¹ , Ali Hemmatifar ¹ , James W. Palko ² , Michael Stadermann ³ , Juan G. Santiago ¹ Department of Mechanical Engineering ¹ , Stanford University; Department of Mechanical Engineering ² , University of California, Merced; Lawrence Livermore National Laboratory ³
95	Effects of Transfer and Annealing on the Properties of MoS ₂ Monolayer	Sangwook Park ¹ , Angel T. Garcia-Esparza ^{1,2} , Dimosthenis Sokaras ² , Xiaolin Zheng ¹ Department of Mechanical Engineering ¹ , Stanford University; Stanford Synchrotron Radiation Lightsource ² , SLAC National Accelerator Laboratory
96	Inertial Effects in Microfluidic Flow Focusing and Mixing to Study Rapid Biochemical Reactions	Ashwin Ramachandran ¹ , Wei Liao ² , Daniel P. DePonte ³ , Juan G. Santiago ⁴ Departments of Aeronautics & Astronautics ¹ and Mechanical Engineering ⁴ , Stanford University; SLAC National Accelerator Laboratory ³ ; Department of Precision Instrumentation ² , Tsinghua University
97	Was There a Peak in Atmospheric Oxygen During the Era of Giant Dragonflies?	Sandra R. Schachat ¹ , Jonathan L. Payne ¹ Department of Geological Sciences ¹ , Stanford University
98	Rapid Flame Doping of Co to WS ₂ for Efficient Hydrogen Evolution	Xinjian Shi ¹ , Xiaolin Zheng ^{1*} (*corresponding author) Department of Mechanical Engineering ¹ , Stanford University
99	Application of Conditional Adversarial Networks for Automatic Generation of MR-Based Attenuation Map in PET/MR	Li Tao ^{1,2} , Craig S. Levin ^{1,2,3,4} Departments of Radiology ¹ , Electrical Engineering ² , Physics ³ , and Bioengineering ⁴ , Stanford University
100	Barriers and Solutions to Retinal Ganglion Cell Regeneration	Supraja G. Varadarajan ¹ , Andrew D. Huberman ^{1,2,3,4} Departments of Neurobiology ¹ and Ophthalmology ² , Wu Tsai Neurosciences Institute ³ , and Stanford Bio-X ⁴ , Stanford University
101	Deep Part Induction from Articulated Object Pairs	Li Yi ¹ , Haibin Huang ² , Difan Liu ³ , Vangelis Kalogerakis ³ , Hao Su ⁴ , Leonidas Guibas ⁵ Departments of Electrical Engineering ¹ and Computer Science ⁵ , Stanford University; Megvii (Face++) Research ² ; Department of Computer Science ³ , University of Massachusetts Amherst; Department of Computer Science ⁴ , University of California, San Diego
102	Intravascular Axially-Segmented Array Transducer Prototype for Shear Wave Elasticity Imaging	Arsenii Telichko ¹ , Carl Herickhoff ¹ , Jeremy Dahl ¹ Department of Radiology ¹ , Stanford University
103	Global Health, Conflicted Data, and GPS - Analyzing a Gender-Based Violence Intervention in Nairobi, Kenya	Rina Friedberg ¹ , Mike Baiocchi ^{1,2} , Clea Sarnquist ³ Departments of Statistics ¹ and Pediatrics ³ and Prevention Research Center ² , Stanford University
104	Development and Application of a Light Sheet Microscope for 3D Single-Particle Tracking of Chromatin Loci in Thick, Live Mammalian Cells	Petar N. Petrov ¹ , Anna-Karin Gustavsson ^{1,4} , Maurice Y. Lee ^{1,3} , Yoav Shechtman ^{1,5} , Jan Liphardt ^{2,3} , W. E. Moerner ^{1,3} Departments of Chemistry ¹ and Bioengineering ² and Biophysics Program ³ , Stanford University; Department of Biosciences & Nutrition ⁴ , Karolinska Institutet; Biomedical Engineering Department ⁵ , Technion, Israel Institute of Technology