Stanford Bio-X Interdisciplinary Initiatives Seed Grants
Poster Session
February 26, 2020

Posters are alphabetized by the last name of the presenter.
Presenters' names are listed in bold.

POSTER #	TITLE	AUTHORS
1	A Comprehensive Analysis of Essential Genes Reveals Mutualistic Interactions in *B. subtilis* Biofilms	**Heidi A. Arjes**[1], Haiwen Gui[1], Kerwyn C. Huang[1,2] Departments of Bioengineering[1] and Microbiology & Immunology[2], Stanford University
2	An Atlas of the Elastic Modulus of Soft Organs in Mice Measured at the Nano-Level	**Eneko Axpe**[1,2], Doreen Chan[1], Santiago Correa[1], Abigail K. Grosskopf[1], Eric A. Appel[1] Department of Materials Science & Engineering[1], Stanford University; Space Biosciences Division[2], NASA-Ames Research Center
3	Interaction of Developmental and Morphological Traits in the Evolutionary History of Plant Physiology	**Andrés Baresch**[1], C. Kevin Boyce[1] Department of Geological Sciences[1], Stanford University
4	Engineering a Live Bacterial Therapeutic for Type 1 Diabetes	**Kaisha Benjamin**[1], John Glass[2], Yo Suzuki[2], Drew Endy[1] Department of Bioengineering[1], Stanford University; Synthetic Biology Group[2], J. Craig Venter Institute
5	Investigating the Biomechanics of Single-Sarcomere Contraction in Stem Cell-Derived Cardiomyocytes	**Foster Birnbaum**[1], Gaspard Pardon[1], Helen Blau[1] Department of Microbiology & Immunology[1], Stanford University
6	Spatial Expansions and Serial Bottlenecks Produce Different Topologies of Genealogical Trees	**Gabriel Birzu**[1], Oskar Hallatschek[2], Kirill S. Korolev[3] Department of Applied Physics[1], Stanford University; Department of Physics & Integrative Biology[2], University of California, Berkeley; Department of Physics[3], Boston University
7	T2 Cluster Analysis of ACL-Reconstructed Knees: Detecting Superficial and Deep Changes to Femoral and Tibial Cartilage Over 18-Months Post-Surgery	**Marianne S. Black**[1,2], Kate Young[2], Akshay S. Chaudhari[2], Feliks Kogan[2], Garry E. Gold[2,3,4], Marc E. Levenston[1,2,3], Brian A. Hargreaves[2,3,5] Departments of Mechanical Engineering[1], Radiology[2], Bioengineering[3], Orthopaedic Surgery[4], and Electrical Engineering[5], Stanford University
8	A Neural Network that Predicts the Knee Adduction Moment from the Positions of Anatomical Landmarks	**Melissa A. Boswell**[1], Scott D. Uhlrich[2,6], Łukasz Kidziński[1], Kevin Thomas[3], Julie A. Kolesar[1,6], Garry E. Gold[5], Gary S. Beaupre[1,3], Scott L. Delp[1,2,5] Departments of Bioengineering[1], Mechanical Engineering[2], Biomedical Informatics[3], Radiology[4], and Orthopaedic Surgery[5], Stanford University; Musculoskeletal Research Lab[6], VA Palo Alto Healthcare System
9	Fundamental Molecular Origins of Dynamically Associating Biopolymer Networks	**Pam Cai**[1], Mike Kratchovil[2], Brad Krajina[1], Sarah Heilshorn[2], Andy Spakowitz[1] Departments of Chemical Engineering[1] and Materials Science & Engineering[2], Stanford University
10	Rational Design Strategies for Tough Self-Healing Materials	**Christopher Cooper**[1], Jiheong Kang[1], Zhenan Bao[1]

		Department of Chemical Engineering[1], Stanford University
11	A Tale of Two Contrast Agents: The Independent and Combined Effects of Solution Properties on the Mechanics of Soft Tissues in the Knee	**Hollis Crowder**[1], Eva G. Baylon[2], Marc Levenston[1] Department of Mechanical Engineering[1], Stanford University; Department of Orthopaedic Surgery[2], University of California, San Francisco
12	Arborescent Lycopsid Periderm Production Was Limited	**Michael P. D'Antonio**[1], C. Kevin Boyce[1] Department of Geological Sciences[1], Stanford University
13	A Confirmatory Test for Sperm in Sexual Assault Samples Using a Microfluidic-Integrated Cell Phone Imaging System	**Shreya Deshmukh**[1,2], Fatih Inci[1], Merve G. Karaaslan[1], George Duncan[3], Leonard Klevan[4], Utkan Demirci[1] Bio-Acoustic MEMS in Medicine (BAMM) Laboratory[1] and Department of Bioengineering[2], Stanford University; Halmos College of Natural Sciences & Oceanography[3], Nova Southeastern University; Lenny Klevan Consulting[4]
14	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], Aaron Wheeler[5], Peter Sarnow[3], Theo Palmer[1], Jeffrey D. Macklis[4]*, Suzanne A. Tharin[1]* (*equal contribution and 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, Center for Brain Science, and Harvard Stem Cell Institute[4], Harvard University; Department of Biology[5], Program in Neuroscience, Syracuse University
15	Geometric Deep Learning to Predict the Structure of Macromolecules	**Stephan Eismann**[1,2], Raphael J.L. Townshend[2], Nathaniel Thomas[3], Milind Jagota[2,4], Bowen Jing[2], Ron O. Dror[2,5,6,7] Departments of Applied Physics[1], Computer Science[2], Physics[3], Electrical Engineering[4], Structural Biology[5], and Molecular & Cellular Physiology[6] and Institute for Computational & Mathematical Engineering[7], Stanford University
16	Progress Toward Voltage-Gated Sodium Channel Imaging Agents	**Anna Elleman**[1], Darren Finkelstein[1], Justin Du Bois[1] Department of Chemistry[1], Stanford University
17	The Role of Hedgehog Signaling in Facial Nerve Regeneration Following Injury	**Chrisa Faniku**[1], William Kong[1], Michelle Zhang[1], Jon-Paul Pepper[1] Department of Otolaryngology (Division of Facial Plastic & Reconstructive Surgery)[1], Stanford University
18	Conductive Materials Resembling Soft Biological Tissues: Towards Next-Generation Bio-Electronic Interfaces	**Vivian R. Feig**[1], Helen Tran[2], Minah Lee[3], Kathy Liu[1], Lucia Giulia Brunel[2], Zhenan Bao[2] Departments of Materials Science & Engineering[1] and Chemical Engineering[2], Stanford University; Center for Energy Storage Research[3], Korea Institute of Science & Technology
19	Development of Cardio-Safe BCR-ABL Inhibitors for Multidrug Resistant CML Using Phenotypic Screening in Stem Cell Derived Cardiomyocytes	**Dries Feyen**[1,4], Arne Bruyneel[1,4], Mallesh Pandrala[2], Anna Hnatiuk[1,4], Arpit Dheeraj[2], Dhanir Tailor[2], Isabel Morgado[1,4], Volker Wiebking[3], Matthew Porteus[3], Sanjay V. Malhotra[2], Mark Mercola[1,4]

		Departments of Medicine[1], Radiation Oncology[2], and Pediatrics[3] and Stanford Cardiovascular Institute[4], Stanford University
20	Spatial Statistics for Violence Prevention: Understanding Patterns of Violence in Nairobi, Kenya through GPS and Maps	**Rina Friedberg**[1], Clea Sarnquist[2], Gavin Nyairo[3], Michael Baiocchi[1,4] Departments of Statistics[1] and Pediatrics[2] and Prevention Research Center[4], Stanford University; African Institute for Health & Development[3]
21	Engineering Polymer Conformation for Efficient Carbon Nanotube Sorting	**Theodore Z. Gao**[1], Zehao Sun[2,3], Xuzhou Yan[2], Zhenan Bao[2] Departments of Materials Science & Engineering[1] and Chemical Engineering[2], Stanford University; College of Chemistry & Molecular Engineering[3], Peking University
22	Quantifying Myelin and Axon Orientations with Nanostructure-Specific X-ray Tomography	**Marios Georgiadis**[1,2,3], Aileen Schroeter[1], Zirui Gao[1,4], Manuel Guizar-Sicairos[4], Marianne Liebi[5], Christoph Leuze[3], Jennifer McNab[3], Aleezah Balolia[6], Jelle Veraart[2], Sunglyoung Kim[2], Timothy Shepherd[2], Choong H. Lee[2], Jiangyang Zhang[2], Piotr Walczak[7,8], Lin Yang[9], Shirish Chodankar[9], Gergely David[10], Mark Augath[1], Valerio Zerbi[1], Stefan Sommer[1], Oliver Bunk[4], Dmitry S. Novikov[2], Els Fieremans[2], Markus Rudin[1,11], Michael Zeineh[3] Institute for Biomedical Engineering[1], ETH Zurich; Center for Biomedical Imaging[2], New York University School of Medicine; Department of Radiology[2], Stanford University; Swiss Light Source[4], Paul Scherrer Institute; Department of Physics[5], Chalmers University; Department of Psychology[6], University of Colorado Denver; Department of Radiology[7], Johns Hopkins University School of Medicine; Department of Diagnostic Radiology & Nuclear Medicine[8], University of Maryland; National Synchrotron Light Source II[9], Brookhaven National Laboratory; Balgrist University Hospital[10] and Institute of Pharmacology & Toxicology[11], University of Zurich
23	An Integrated Multi-Scale Model for Pediatric Brain Tumor Survival Prediction	Yeping Lina Qiu[1,2], Amaury Sabran[1], Hong Zheng[1], **Olivier Gevaert**[1,3] Departments of Medicine (Stanford Center for Biomedical Informatics Research)[1], Electrical Engineering[2], and Biomedical Data Science[3], Stanford University
24	An Integrated Multi-omic Single Cell Atlas to Redefine Human B Cell Memory	**David R. Glass**[1,2]*, Albert G. Tsai[2]*, John Paul Oliveria[2,3], Felix J. Hartmann[2], Samuel C. Kimmey[2,4], Ariel A. Calderon[1,2], Luciene Borges[2], Marla C. Glass[5], Lisa E. Wagar[6], Mark M. Davis[6], Sean C. Bendall[1,2] (*co-authorship) Immunology Graduate Program[1] and Departments of Pathology[2], Developmental Biology[4], Surgery[5], and Microbiology & Immunology[6], Stanford University; Department of Medicine (Division of Respirology)[3], McMaster University
25	Investigating the Detection of Bimanual Haptic Retargeting in Virtual Reality	**Eric J. Gonzalez**[1], Sean Follmer[1] Department of Mechanical Engineering[1], Stanford University
26	Circadian Modulation of Oligodendroglial Lineage Cells in Developmental Myelination	**Jacob Greene**[1], **Ella Eisinger**[1], **Erin M. Gibson**[1]

		Department of Psychiatry & Behavioral Sciences[1], Stanford University
27	Effects of Water, Sanitation, Handwashing (WSH) and Nutritional Interventions on Gut Microbiota Maturation in Young Children: A Cluster-Randomized Controlled Trial in Rural Bangladesh	**Jessica A. Grembi**[1], Elizabeth K. Costello[1], Audrie Lin[4], Rashidul Haque[5], Susan P. Holmes[2], Stephen P. Luby[1], David A. Relman[1,3,6] Departments of Medicine (Division of Infectious Diseases)[1], Statistics[2], and Microbiology & Immunology[3], Stanford University; School of Public Health (Division of Epidemiology)[4], University of California, Berkeley; International Centre for Diarrheal Disease Research[5]; VA Palo Alto Health Care System[6]
28	Analysis of Data Corrections for the First-Generation Radiofrequency Penetrable PET Insert for Simultaneous PET/MR	**Andrew Groll**[1], Craig S. Levin[1,2,3,4] Departments of Radiology[1], Electrical Engineering[2], Bioengineering[3], and Physics[4], Stanford University
29	Convergence and Divergence: The Story of Placenta Evolution as Told by *Poeciliopsis* Fishes	**Michael W. Guernsey**[1], Andres Hagmayer[2], Bart J.A. Pollux[2], David N. Reznick[3], Julie C. Baker[4] Departments of Developmental Biology[1] and Genetics[4], Stanford University; Department of Animal Sciences[2], University of Wageningen; Department of Biology[3], University of California, Riverside
30	Generative Modeling of Whole Brain Seizure Networks at Single Cell Resolution	**Darian Hadjiabadi**[1,2], Matthew Lovett-Barron[1], Ivan Raikov[2], Jure Leskovec[3], Scott C. Baraban[4], Karl Deisseroth[1], Ivan Soltesz[2] Departments of Bioengineering[1], Neurosurgery[2], and Computer Science[3], Stanford University; Department of Neurological Surgery[4], University of California, San Francisco
31	Distinct Gut Microbiota Profiles During Active Oral Immunotherapy of Peanut Allergic Subjects and Age-Matched Healthy Controls	**Ziyuan He**[1,2], Gouri Vadali[3], Wenming Zhang[1,2], Rose L. Szabady[3], Jason M. Norman[3], Bruce Roberts[3], R. Sharon Chinthrajah[1,2], Stephen J. Galli[2,4,5], Kari C. Nadeau[1,2], Sandra Andorf[1,2] Departments of Medicine[1], Pathology[4], and Microbiology & Immunology[5] and Sean N. Parker Center for Allergy & Asthma Research[2], Stanford University; Vedanta Biosciences[3]
32	New Therapeutic Approach Activating HIF1 to Modulate Angiogenesis and Cardioprotection by a Novel Small Molecule Inhibitor of RBPJ	**Anna Hnatiuk**[1], Dries Feyen[1], Dhanir Tailor[2,4], Cecilia Hurtado[4], Mallesh Pandrala[2], Arne Bruyneel[1], Ricardo Serrano[1], David Staudt[1], Arpit Dheeraj[2,3], Sanjay V. Malhotra[2,4], Mark Mercola[1] Departments of Cardiovascular Medicine[1], Radiation Oncology[2], and Radiation Biology[3], Stanford University; Development, Aging, & Regeneration Program[4], Sanford Burnham Prebys Medical Discovery Institute
33	Frequency-Domain Beamforming of Signals in Medical Ultrasound Using Range Doppler Method	**Marko Jakovljevic**[1], Roger Michaelides[2], Ettore Biondi[2], Howard Zebker[2], Jeremy Dahl[1] Departments of Radiology[1] and Geophysics[2], Stanford University
34	Adipose Secreted Isthmin-1 Stimulates PI3K/AKT Signaling and Improves Glucose Homeostasis While Reducing Hepatic Steatosis	**Zewen Jiang**[1,2], Meng Zhao[1,2], Mari Aikio[3,4], Yunshin Jung[1,2], Florence Dou[3,4], Alexander Roche[3,4], Ivan Carcamo-Oribe[5,6], Joshua Knowles[5,6], Martin Wabitsch[7], Eric A. Appel[8,9], Caitlin Maikawa[8,9], Linus Tsai[10], Evan D. Rosen[10], Bruce M. Spiegelman[3,4], Katrin J. Svensson[1,2]

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35	Improving Rural Health Care Reduces Illegal Logging and Conserves Carbon in a Tropical Forest	**Isabel J. Jones**[1,2], Andrew J. MacDonald[3], Skylar Hopkins[4], Andrea J. Lund[5], Zac Yung-Chun Liu[1,2], Nurul Ihsan Fawzi[6], Mahardika Putra Purba[6], Katie Fankhauser[7], Monica Nirmala[8], Arthur G. Blundell[9], Ashley Emerson[10], Jonathan Jennings[10], Lynne Gaffikin[11,12], Michele Barry[12], David Lopez-Carr[13], Kinari Webb[12], Giulio A. De Leo[1,2,14], Susanne H. Sokolow[1,2,15]* (*corresponding author) Hopkins Marine Station[1], Departments of Biology[2] and Obstetrics & Gynecology[11], Emmett Interdisciplinary Program in Environment & Resources[5], Center for Innovation in Global Health[12], and Woods Institute for the Environment[14], Stanford University; Earth Research Institute[3], Bren School of Environmental Science & Management[13], and Marine Science Institute[15], University of California, Santa Barbara; Department of Biological Sciences[4], Virginia Polytechnic Institute; Alam Sehat Lestari[6]; Department of Family Medicine[7], Oregon Health & Science University; Department of Global Health & Population[8], Harvard T. H. Chan School of Public Health; Natural Capital Advisors[9]; Health In Harmony[10]
36	Promiscuity of Dirigent Proteins for Biosynthesis of Lignan Analogs	**Seung Yeon Kim**[1,2], Elizabeth Sattely[1,2] Department of Chemical Engineering[1] and Howard Hughes Medical Institute[2], Stanford University
37	Temperature-Dependent Bacterial Growth Rate Responses	**Benjamin Knapp**[1], Lillian Zhu[2], Kerwyn Casey Huang[2,3] Biophysics Program[1] and Departments of Bioengineering[2] and Microbiology & Immunology[3], Stanford University
38	In Mice and Men: Skeletal Stem Cells and Their Ability to Regenerate Cartilage	**Lauren Koepke**[1], Matthew Murphy[1], Irv Weissman[2], Michael Longaker[1,2], Charles Chan[1,2] Department of Surgery[1] and Institute for Stem Cell Biology & Regenerative Medicine[2], Stanford University
39	High Past and Present Resilience of the Amazon Rainforest	**Tyler Kukla**[1], C. Page Chamberlain[1] Department of Geological Sciences[1], Stanford University
40	Ocular Dominance Plasticity in an Alzheimer's Mouse Model	**Kate LeBlanc**[1], Michelle Drews[1], Carla Shatz[1,2] Departments of Biology[1] and Neurobiology[2], Stanford University
41	Systematic Characterization of a Novel GelMA-Based Hydrogel System	**Jiannan Li**[1], **Seyedsina Moeinzadeh**[1], Carolyn Kim[1], Chi-Chun Pan[1], George Weale[1], Yunzhi Peter Yang[1,2,3]

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42	Soft and Morphable Electronics for Neural Interface	**Jinxing Li**[1], Yuxin Liu[2], Shang Song[3], Baibing Zhang[4], Estelle Spear[5], Wenhui Xu[6], Paul M. George[3], Aida Habtezion[5], Xiaoke Chen[4], Zhenan Bao[1] Departments of Chemical Engineering[1], Bioengineering[2], Neurosurgery[3], Biology[4], Gastroenterology & Hepatology[5], and Materials Science & Engineering[6], Stanford University
43	Rheological Determination of Cell-on-Cell Sliding Friction in Mucin Deficient Dry-Eye Model	**Chunzi Liu**[1], Amy Madl[1], Wolfgang Kress[2], Frank Straube[2], Gerald G. Fuller[1] Department of Chemical Engineering[1], Stanford University; Late Phase Analytical Development & Characetrization[2], Novartis International AG
44	Nervous System Evolution: A Molecular Genetic Characterization of Neural Cell Types in *S. kowalevskii*	**José Miguel Andrade López**[1], Ariel M. Pani[2], Paul J. Minor[1], Christopher J. Lowe[1] Department of Biology[1], Stanford University; Department of Biology[2], University of North Carolina at Chapel Hill
45	A Supramolecular Lithium Ion Conductor Based Stretchable Battery	**David Mackanic**[1], Yi Cui[2], Zhenan Bao[1] Departments of Chemical Engineering[1] and Materials Science & Engineering[2], Stanford University
46	Matrix Remodeling Enhances the Differentiation Capacity of Neural Progenitor Cells in 3D Hydrogels	**Christopher M. Madl**[1,2], Bauer L. LeSavage[2], Ruby E. Dewi[3], Kyle J. Lampe[3,4], Sarah C. Heilshorn[3] Baxter Laboratory for Stem Cell Biology[1] and Departments of Bioengineering[2] and Materials Science & Engineering[3], Stanford University; Department of Chemical Engineering[4], University of Virginia
47	Supramolecular Excipients for Biomimetic Insulin Formulations	**Caitlin Maikawa**[1], David Maahs[2], Bruce Buckingham[2], Eric Appel[3] Departments of Bioengineering[1], Pediatrics[2], and Materials Science & Engineering[3], Stanford University
48	An Ultra-Fast Insulin Formulation Enabled by High Throughput Screening of Designer Polymeric Excipients	**Joseph L. Mann**[1], Caitlin L. Maikawa[2], Anton A. A. Smith[1,3], Abigail K. Grosskopf[4], Sam W. Baker[5], Gillie A. Roth[2], Catherine M. Meis[1], Emily C. Gale[6], Celine S. Liong[2], Santiago Correa[1], Doreen Chan[7], Lyndsay M. Stapleton[2], Anthony C. Yu[1], Ben Muir[8], Shaun Howard[8], Almar Postma[8], Eric A. Appel[1,2,9,10] Departments of Materials Science & Engineering[1], Bioengineering[2], Chemical Engineering[4], Comparative Medicine[5], Biochemistry[6], Chemistry[7], and Pediatrics (Division of Endocrinology)[10] and ChEM-H[9], Stanford University; Department of Science & Technology[3], Aarhus University
49	Effect of Porosity of the Functional Graded Scaffold for Treatment of Steroid-Associated Osteonecrosis of the Femoral Head in Rabbits	**Masahiro Maruyama**[1], Chi-Chun Pan[1,4], Seyedsina Moeinzadeh[1], Elaine Lui[1,4], Hunter Storaci[1], Tzuhua Dennis Lin[1], Chi-Wen Lo[1], Monica Romero Lopez[1], Masaya Ueno[1], Takeshi Utsunomiya[1], Ning Zhang[1], Tahsin N. Khan[1], Claire Rhee[1], Zhenyu Yao[1], Stuart B. Goodman[1,3], Yunzhi Peter Yang[1,2,3] Departments of Orthopaedic Surgery[1], Materials Science & Engineering[2], Bioengineering[3], and Mechanical Engineering[4], Stanford University

50	Investigation of VISTA as a Cancer Immune Checkpoint via Therapeutic Antibody Development and Structural Analysis	**Nishant Mehta**[1], Sainiteesh Madinenni[1], Ryan Kelly[2], Robert Lee[3], Andres Parra Sperberg[1], Jennifer Cochran[1,2,3] Departments of Bioengineering[1] and Chemical Engineering[3], Stanford University; xCella Therapeutics[2]
51	Supramolecular Hydrogels for Sustained Release and Enhanced Thermal Stability of Biotherapeutics	**Catherine M. Meis**[1], Erika E. Salzman[2], Caitlin L. Maikawa[3], Anton A. A. Smith[1], Joseph L. Mann[1], Eric A. Appel[1] Departments of Materials Science & Engineering[1] and Bioengineering[3], Stanford University; Department of Applied Physics & Materials Science[2], California Institute of Technology
52	Clog-Free Sorting Using Hydrodynamic Obstacles	**Endre J. Mossige**[1], Arnold J.T.M. Mathijssen[2], Chunzi Liu[1], Ana U. Acuna[2], Michaela M. Hinks[2], Prima D. Sinawang[2], Zachary A. Sexton[2], Sasha Zemsky[2], Polly Fordyce[2] Departments of Chemical Engineering[1] and Bioengineering[2], Stanford University
53	LungNet: A Shallow CNN for Survival Prediction in Lung Cancer	**Pritam Mukherjee**[1], Mu Zhou[1], Edward Lee[2], Anne Schicht[4], Yoganand Balagurunathan[5], Sandy Napel[3], Robert Gillies[5], Simon Wong[2], Alexander Thieme[4], Ann Leung[3], Olivier Gevaert[1,6] Stanford Center for Biomedical Informatics[1] and Departments of Electrical Engineering[2], Radiology[3], and Biomedical Data Science[6], Stanford University; Department of Radiation Oncology & Radiotherapy[4], Charité Universitätsmedizin; Department of Radiology[5], Moffitt Cancer Center
54	Polymer Semiconductors for Stretchable Electronics	**Jaewan Mun**[1], Zhenan Bao[1] Department of Chemical Engineering[1], Stanford University
55	Utilizing Virtual Reality to Examine Avoidance Behavior in Social Anxiety Disorder	**Meghana Nallajerla**[1], Talia Weiss[2], Jeremy Bailenson[2], Tali Ball[1] Departments of Psychiatry & Behavioral Sciences[1] and Communication[2], Stanford University
56	Detecting Neural and Kinematic Features of Different Forward Walking Tasks in Parkinson's Disease	**Johanna O'Day**[1,2], Chioma Anidi[2], Judy Syrkin-Nikolau[2], Ross Anderson[2], Muhammad Furqan Afzal[2], Anca Velisar[2], Scott Delp[6], Helen Bronte-Stewart[2,3] Departments of Bioengineering[1], Neurology & Neurological Sciences[2], and Neurosurgery[3], Stanford University
57	The Tree of Aging: The Structure of Genetic Markers of Aging Across Cell Types	**Róbert Pálovics**[1], Andreas Keller[1], Tony Wyss-Coray[1] Department of Neurology & Neurological Sciences[1], Stanford University
58	A Novel Approach Towards Drug Screening using Single Cell Experiments, Isolated Heart Preparations, Multiscale Modeling, and Machine Learning	**Mathias Peirlinck**[1], Francisco Sahli Costabal[1], Kinya Seo[2], Euan Ashley[2,3], Ellen Kuhl[1,4] Departments of Mechanical Engineering[1], Medicine[2], Pathology[3], and Bioengineering[4], Stanford University
59	Addressing Systematic Errors in Axial Distance Measurements in Localization Microscopy	**Petar N. Petrov**[1], W. E. Moerner[1] Department of Chemistry[1], Stanford University
60	Development of Lentiviral Gene Therapy in Combination with Anti-c-Kit Antibody Conditioning for Treatment of Fanconi Anemia	**Kayla Pfaff**[1,2], Pui Yan Ho[1], Maire Rayburn[1], Agnieszka Czechowicz[1] Department of Pediatrics (Division of Stem Cell Transplantation & Regenerative Medicine)[1], Stanford University; Heritage

		College of Osteopathic Medicine[2], Ohio University
61	Examining Polymorphism's Effect on Gene Regulation in Craniofacial Disorders	**Samantha Piekos**[1], Ann Collier[1], Jillian Pattison[1], Pranav Bhardwaj[2], Austin Wang[3], Sadhana Gaddam[1], Joanna Wysocka[4], Ramanathan Guha[5], Anthony Oro[1] Program of Epithelial Biology[1], Departments of Statistics[2] and Chemical & Systems Biology[4], and Institute for Computational & Mathematical Engineering[3], Stanford University; Google LLC[5]
62	Translational Multimodality Imaging at the Stanford Center for Innovation in *In vivo* Imaging (SCi[3])	**Laura Pisani**[1], **Frezghi Habte**[1], **Jason Thanh Lee**[1] Stanford Center for Innovation in *In vivo* Imaging[1], Stanford University
63	*Clostridium Difficile* Exploits Host Metabolic Pathways During Infection	**Kali M. Pruss**[1], Justin L. Sonnenburg[1,2] Department of Microbiology & Immunology[1], Stanford University; Chan Zuckerberg Biohub[2]
64	Mesothelial Cells Promote Ovarian Cancer Stemness and Chemoresistance through Osteopontin Paracrine Signaling	**Jin Qian**[1], Bauer L. LeSavage[3], Chenkai Ma[4], Suchitra Natarajan[1], Joshua T. Eggold[1], Kelsea M. Hubka[3], Yiren Xiao[1], Katherine C. Fuh[5], Venkatesh Krishnan[2], Annika Enejder[3], Sarah C. Heilshorn[3], Oliver Dorigo[2], Erinn B. Rankin[1,2]* (*corresponding author) Departments of Radiation Oncology[1], Obstetrics & Gynecology[2], and Materials Science & Engineering[3], Stanford University; Molecular Diagnostics Solutions[4], CSIRO Health & Biosecurity; Division of Gynecologic Oncology[5], Washington University in St. Louis
65	Fundamentals of Precise Ultrasound Neuromodulation	**Zhihai Qiu**[1], Mihyun Choi[2], Morteza Mohammadjavadi[1], Kim Butts Pauly[1,2,3] Departments of Radiology[1], Bioengineering[2], and Electrical Engineering[3], Stanford University
66	Increased Peanut Specific IgA Levels in Plasma and Stool Are Associated with Oral Immunotherapy of Peanut Allergic Subjects	**Zoe Quake**[1,2], Elise Liu[3,4,5], Ziyuan He[1,2], R. Sharon Chinthrajah[1,2], Stephen J. Galli[1,6,7], Stephanie C. Eisenbarth[3,4,5], Kari C. Nadeau[1,2] Sean N. Parker Center for Allergy & Asthma Research[1] and Departments of Medicine[2], Pathology[6], and Microbiology & Immunology[7], Stanford University; Departments of Laboratory Medicine[3], Immunobiology[4], and Medicine[5], Yale University
67	3D Co-Culture of Mesenchymal Stem Cells and Macrophages Promotes an Anti-Inflammatory Phenotype with Enhanced Osteogenesis	**Claire Rhee**[1,2], Mónica Romero López[1,2], John Hanlon[1,2,3], Masahiro Maruyama[1,2], Tzu-hua Lin[1,2], Chi-Wen Lo[1,2], Tahsin Khan[1,2], Masaya Ueno[1,2], Takeshi Utsunomiya[1,2], Zhenyu Yao[1,2], Bruce Bunnell[4], Hang Lin[5], Rocky Tuan[5], Stuart B. Goodman[1,2] Orthopaedic Research Laboratories[1] and Department of Orthopaedic Surgery[2], Stanford University; College of Veterinary Medicine[3], Washington State University; Department of Pharmacology[4], Tulane University; Department of Orthopaedic Surgery[5], University of Pittsburgh
68	Effects of N-Terminal Tyrosine Sulfation on the Conformation of Chemokine Receptors	**João Rodrigues**[1], Michael Levitt[1] Department of Structural Biology[1], Stanford University
69	Sustained Release Hydrogel with Modular Adjuvants Enhances Vaccine Response	**Gillie A. Roth**[1], Emily C. Gale[2], Wei Luo[3], Bali Pulendran[3], Eric A. Appel[4]

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70	Mass Spectrometry-Based Highly Multiplexed Super-Resolution Imaging Method for Fine Details of Tumor Microenvironment Monitoring and Tumor-Immune Cell Interactions	Yunhao Bai[1]*, Bokai Zhu[1]*, Marc Bosse[2], Michael Angelo[2], Yongxin Zhao[3], Sizun Jiang[1#], **Xavier Rovira-Clave**[1#], Garry P. Nolan[1#] (*equal contribution, [#]equal contribution) Departments of Microbiology & Immunology[1] and Pathology[2], Stanford University; Department of Biological Sciences[3], Carnegie Mellon University
71	Creating a Rational Design of Capacitive Pressure Sensors Using Pyramidal Microstructures for Specialized Monitoring of Biosignals	**Sara R.A Ruth**[1], Levent Beker[1], Helen Tran[1], Vivian R. Feig[2], Naoji Matsuhisa[1], Zhenan Bao[1] Departments of Chemical Engineering[1] and Material Science & Engineering[2], Stanford University
72	Fluorescent Proteins for Cryogenic Single-Molecule Superresolution Imaging	**Annina M. Sartor**[1], Peter D. Dahlberg[1], Jiarui Wang[1,2], Saumya Saurabh[2], Lucy Shapiro[2], W. E. Moerner[1] Departments of Chemistry[1] and Developmental Biology[2], Stanford University
73	A Peak in Insect Diversity Before the Rise of Angiosperms: Disentangling the Roles of Parasitoids and Pollinators	**Sandra R. Schachat**[1], Jonathan L. Payne[1] Department of Geological Sciences[1], Stanford University
74	RNA-Sequencing of 17 Mouse Organs Across the Lifespan	**Nicholas Schaum**[1#], Benoit Lehallier[2#], Oliver Hahn[2#], Róbert Pálovics[2], Shayan Hosseinzadeh[3], Song E. Lee[2], Rene Sit[3], Davis P. Lee[4], Patricia Morán Losada[2], Macy E. Zardeneta[4], Tobias Fehlmann[5], James Webber[3], Aaron McGeever[3], Kruti Calcuttawala[2], Hui Zhang[4], Daniela Berdnik[4], Vidhu Mathur[2], Weilun Tan[3], Alexander Zee[3], Michelle Tan[3], The Tabula Muris Consortium[†], Angela Pisco[3], Jim Karkanias[3], Norma F. Neff[3], Andreas Keller[2,5]*, Spyros Darmanis[3], Stephen R. Quake[3,6]*, Tony Wyss-Coray[2,4,7,8]* (#equal contribution; *corresponding authors; [†]a full list of authors and affiliations appears in the online version of the paper) Institute for Stem Cell Biology & Regenerative Medicine[1], Departments of Neurology & Neurological Sciences[2] and Bioengineering[6], Paul F. Glenn Center for the Biology of Aging[7], and Wu Tsai Neurosciences Institute[8], Stanford University; Chan Zuckerberg Biohub[3]; VA Palo Alto Healthcare System[4]; Clinical Bioinformatics[5], Saarland University
75	*In vitro* Assessment of Cardiac Output Effects on Bioprosthetic Pulmonary Valve Behavior	**Nicole Schiavone**[1], Christopher Elkins[1], Doff McElhinney[2], John K. Eaton[1], Alison Marsden[3,4] Departments of Mechanical Engineering[1], Cardiothoracic Surgery[2], Pediatrics[3], and Bioengineering[4], Stanford University
76	Enabling Few-View 3D Computed Tomography Imaging by Deep Learning	**Liyue Shen**[1], Wei Zhao[2], John Pauly[1], Lei Xing[2] Departments of Electrical Engineering[1] and Radiation Oncology[2], Stanford University

77	Controlling Monomer Sequence for Nanodisc Formation	**Anton A. A. Smith**[1], Henriette E. Autzen[4], Joseph L. Mann[1], Yifan Cheng[4], Andrew J. Spakowitz[1,3], Eric A. Appel[1,2] Departments of Materials Science & Engineering[1], Bioengineering[2], and Applied Physics[3], Stanford University; Department of Biochemistry & Biophysics[4], University of California, San Francisco
78	Clinical Implications: Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) Do Not Impact Bone Healing at the Cellular Level	**Holly M. Steininger**[1], Thomas H. Ambrosi[2], Henry Goodnough[3], Malachia Hoover[1], Michael J. Bellino[2], Julius A. Bishop[2], Michael Gardner[2], Michael Longaker[2], Charles K. F. Chan[1,3] Institute for Stem Cell Biology & Regenerative Medicine[1] and Departments of Orthopaedic Surgery[2] and Surgery (Division of Plastic & Reconstructive Surgery)[3], Stanford University
79	PrimateAI: Predicting the Clinical Impact of Human Mutation with Deep Neural Networks	**Laksshman Sundaram**[1], Hong Gao[3], Kyle Farh[3], Anshul Kundaje[1,2], William Greenleaf[2,4] Departments of Computer Science[1], Genetics[2], and Biophysics[4], Stanford University; Artificial Intelligence Lab[3], Illumina
80	Towards Rapid, Accurate Bacterial Blood Stream Infection Identification and Antibiotic Susceptibility Testing with Raman Scattering and Bioprinting	**Loza Tadesse**[1], **Fareeha Safir**[2], Ahmed Shuabi[3], Hongquan Li[4], Kamyar Firouzi[2], Catherine A. Hogan[5], Manu Prakash[1], Mark Holodniy[6], Niaz Banaei[5,6], Stefano Ermon[3], Butrus (Pierre) Khuri-Yakub[4], Stefanie S. Jeffrey[7], Amr A. E. Saleh[8], Jennifer Dionne[8,9] Departments of Bioengineering[1], Mechanical Engineering[2], Computer Science[3], Electrical Engineering[4], Pathology[5], Medicine (Division of Infectious Diseases)[6], Surgery[7], Materials Science & Engineering[8], and Radiology (Molecular Imaging Program)[9], Stanford University
81	Study of the Coincidence Time Resolution of Novel Cerenkov Emission Crystals	**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
82	Self-Assembling Manifolds in Single-Cell RNA Sequencing Data	**Alexander Tarashansky**[1], Pengyang Li[1], Yuan Xue[1], Bo Wang[1,2], Steve Quake[1,3,4] Departments of Bioengineering[1], Developmental Biology[2], and Applied Physics[3], Stanford University; Chan Zuckerberg Biohub[4]
83	3D Amplified MRI (aMRI) for Visualizing Pulsatile Brain Motion	**Itamar Terem**[1,2], Leo Dang[3,4], Allen Champagne[5], Miriam Scadeng[3,4,6], Adam de la Zerda[1,2], Samantha Holdsworth[3,4] Departments of Electrical Engineering[1] and Structural Biology[2], Stanford University; Department of Anatomy & Medical Imaging[3] and Centre for Brain Research[4], University of Auckland; Centre for Neuroscience Studies[5], Queen's University; Department of Radiology[6], University of California, San Diego
84	Decoding the Cross-Talk Between Grafted Neural Stem Cells and Host Brain to Predict the Molecular Mechanisms of Stem Cell-Induced Functional Recovery After Stroke	**Seth Tigchelaar**[1,2], Ricardo L. Azevedo-Pereira[1,2], Nathan C. Manley[1,2], Jennifer Vu[1,2], Zhang Yue[3], Jack Berry[1,2], Guohua Sun[1,2], Tonya Bliss[1,2], Gary K. Steinberg[1,2] Departments of Neurosurgery[1] and Neurology[3] and Stanford Stroke Center[2], Stanford University

85	Molecularly Engineering Polymers for Biodegradable and Stretchable Electronics	**Helen Tran**[1], Vivian Rachel Feig[2], Kathy Liu[2], Hung-Chin Wu[1], Ritchie Chen[3], Jie Xu[1], Karl Deisseroth[3,4], Zhenan Bao[1] Departments of Chemical Engineering[1], Materials Science & Engineering[2], Bioengineering[3], and Psychiatry & Behavioral Sciences[4], Stanford University
86	IL-4 Overexpressing Mesenchymal Stem Cells Enhance Bone Healing in a Murine Long Bone Critical-Size Defect Model	**Masaya Ueno**[1], Chi-Wen Lo[1], Takeshi Utsunomiya[1], Danial Barati[1], Tzu-hua Lin[1], Yusuke Kohno[1], Bogdan Conrad[1], Claire Rhee[1], Masahiro Maruyama[1], Ning Zhang[1], Tahsin N. Khan[1], Xinming Tong[1], Zhenyu Yao[1], Monica Romero-Lopez[1], Stefan Zwingenberger[3], Fan Yang[1,2], Stuart B. Goodman[1,2] Department of Orthopaedic Surgery[1] and Bioengineering[2], Stanford University; Center for Orthopaedics & Traumatology[3], University Hospital Carl Gustav Carus, Technische Universität Dresden
87	Suppression of NF-kB-induced Chronic Inflammation Enhances Bone Healing in the Murine Continuous Polyethylene Particle Infusion Model	**Takeshi Utsunomiya**[1], Ning Zhang[1], Tzuhua Lin[1], Yusuke Kohno[1], Masaya Ueno[1], Masahiro Maruyama[1], Claire Rhee[1], Ejun Huang[1], Zhenyu Yao[1], Stuart B. Goodman[1,2] Departments of Orthopaedic Surgery[1] and Bioengineering[2], Stanford University
88	Genetic Mechanisms of Olfactory Receptor Specification During Development in *Drosophila*	**David Vacek**[1], Hongjie Li[1], Liqun Luo[1] Department of Biology[1], Stanford University
89	Epigenetic Modulation of CAR T Cell Function	**Panayiotis Vandris**[1], Evan W. Weber[1], Crystal L. Mackall[1] Stanford Cancer Institute[1], Stanford University
90	Learning a Generative Model for Multi-Step Human-Object Interactions from Videos	**He Wang**[1,2]*, Sören Pirk[2]*, Ersin Yumer[3], Vladimir G. Kim[4], Ozan Sener[5], Srinath Sridhar[2], Leonidas J. Guibas[2] (*equal contribution) Departments of Electrical Engineering[1] and Computer Science[2], Stanford University; Uber ATG[3]; Adobe Research[4]; Intel Labs[5]
91	Combined Transient Ablation and Single Cell RNA Sequencing Resolve Medullary Thymic Epithelial Cell Heterogeneity and Development	**Kristen L. Wells**[1], Corey N. Miller[2,3], Andreas R. Gschwind[1], Wu Wei[4], Jonah D. Phipps[2,3], Mark S. Anderson[2,3], Lars M. Steinmetz[1,4,5] Departments of Genetics[1] and Bioengineering[6] and Stanford Genome Technology Center[4], Stanford University; Diabetes Center[2] and Department of Medicine[3], University of California, San Francisco; Genome Biology Unit[5], European Molecular Biology Laboratory (EMBL)
92	Virtual Biopsy for Non-Contact Pathology – Using Optical Coherence Tomography and Machine Learning to Diagnose Cancer Non-Invasively	**Yonatan Winetraub**[1,2,3,4], Edwin Yuan[2,3,4], Itamar Terem[2,3,4], Warren H. Chan[5], Sumaira Aasi[5], Kavita Y. Sarin[5], Adam de la Zerda[1,2,3,4,6] Biophysics Program[1], Departments of Structural Biology[2] and Dermatology[5], Molecular Imaging Program at Stanford[3], and Stanford Bio-X[4], Stanford University; Chan Zuckerberg Biohub[6]
93	Automated Analyses of Dendritic Spines in Volumetric Confocal Microscopic Images Using Deep Learning	**Xuerong Xiao**[1], Maja Djurisic[2], Carla Shatz[2], Daniel Rubin[3] Departments of Electrical Engineering[1], Neurobiology[2], and Biomedical Data Science[3], Stanford University
94	Distributed, Scalable Wireless EEG Patches for Long-Term Sleep and Mental Health Monitoring	**Joonseok Yang**[1], Cheng Chen[1], Hui Wang[1], Michael Silvernagel[1], Naoji Matsushita[2], Zhenan Bao[2], Makoto Kawai[3], Ada S. Y. Poon[1]

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95	Smart Optical Contrast Agents for Middle Ear Infection Diagnosis	**Josh Yim**[1], **Raana Kashfi**[2], Matthew Bogyo[1], Tulio Valdez[2] Departments of Chemical & Systems Biology[1] and Otolaryngology (Division of Head & Neck Surgery)[2], Stanford University
96	Real-Time Visualization of Brain Strain with Neural Network	**Xianghao Zhan**[1], Yuzhe Liu[1], Sam Raymond[1], David Camarillo[1] Department of Bioengineering[1], Stanford University
97	PDGF-BB Mitigates IL-4 Associated Inhibition of Proliferation and Osteogenesis by Mesenchymal Stem Cells	**Ning Zhang**[1], Chi-Wen Lo[1], Takeshi Utsunomiya[1], Masaya Ueno[1], Masahiro Maruyama[1], Claire Rhee[1], Tahsin N. Khan[1], Zhenyu Yao[1], Stuart B. Goodman[1,2] Departments of Orthopaedic Surgery[1] and Bioengineering[2], Stanford University
98	Maltotriose-Based Probes for Fluorescence and Photoacoustic Imaging of Bacterial Infections	**Aimen Zlitni**[1], Gayatri Gowrishankar[1], Idan Steinberg[1], Tom Haywood[1], Sanjiv Sam Gambhir[1,2,3] Departments of Radiology[1], Bioengineering[2], and Materials Science & Engineering[3], Stanford University
99	Towards Polyarylates from Methane – Expanding the Spectrum of Bioavailable Polyhydroxyalkanoates	**Nils J. H. Averesch**[1,2], Craig S. Criddle[1,2] Department of Civil & Environmental Engineering[1], Stanford University; Biofuel & Biomaterial Manufacturing Division[2], CUBES