

STANFORD BIO-X PHD FELLOWSHIPS 2021



2021 Stanford Bio-X Fellows

The Stanford Bio-X Graduate Fellowships



The mission of the Stanford Bio-X Program is to catalyze discovery by crossing the boundaries between disciplines to bring interdisciplinary solutions, to create new knowledge of biological systems, and to benefit human health.

Since it was established in 1998, Stanford Bio-X has charted a new approach to life science research by bringing together clinical experts, life scientists, engineers, and others to tackle the complexity of the human body. Currently nearly 1,000 Stanford Faculty and over 8,500 students, postdocs, researchers, etc. are affiliated with Stanford Bio-X. The generous support from donors, including the Bowes Foundation, enables the program to remain successful—at any given time, Stanford Bio-X is training at least 60 Ph.D fellows, and Fall 2021 brings 25 new fellows to the program.

The Stanford Bio-X Graduate Fellowship Program was started to answer the need for training a new breed of visionary science leaders capable of crossing the boundaries between disciplines in order to bring novel research endeavors to fruition. Since its inception in 2004, the three-year fellowships, including the Stanford Bio-X Bowes Fellowships and the Bio-X Stanford Interdisciplinary Graduate Fellowships (Bio-X SIGFs), have provided 343 graduate students with awards to pursue interdisciplinary research and to collaborate with multiple mentors, enhancing their potential to generate profound transformative discoveries.

Stanford Bio-X Fellows become part of a larger Stanford Bio-X community of learning that encourages their further networking and development. We achieve this through formal career development workshops and through the Stanford Bio-X Travel Program, where we award grants to fellows who are accepted to give talks at national and international meetings. Stanford Bio-X Fellows are provided the opportunity to present their work at all Stanford Bio-X symposia in order to share their knowledge and interact with other students, faculty, and members of the industry.



Stanford Bio-X Bowes Fellow Delaney Miller, pictured at left in the lab prior to COVID-19 (see pg. 11 for research details)

Success at Stanford and beyond...



2005 Stanford Bio-X Bowes Fellow Virginia Chu is an assistant professor of occupational therapy at Virginia Commonwealth University, and the director of the VCU Sensorimotor Performance and Rehabilitation Engineering lab. The primary goal of her research is to improve evaluation of sensorimotor processing in children, in order to develop tailored interventions for children with developmental delays. She has received numerous grants to support this work, including the VCU Presidential Research Quest Fund and a Pilot Grant from the Center for Smart Use of Technology to Assess Real-world Outcomes.

2010 Stanford Bio-X Bowes Fellow Joanna Mattis recently completed her neurology residency and epilepsy fellowship at the University of Pennsylvania. She is now an Instructor in the Department of Neurology at Penn. Joanna just received the K08 career development award from the NIH (NINDS), in July of 2021, and was also a recipient of the 2020 Young Investigator Award from the American Epilepsy Society.





2013 Stanford Bio-X Bowes Fellow Michael Yip is an associate professor in the department of electrical and computer engineering and Director of Medical Robotics Collaboratory at the Contextual Robotics Institute in the University of California, San Diego. Michael received the NSF CAREER award and the NIH Trailblazer award in the areas of surgical robotics, automation, and artificial intelligence, and was nominated for the best medical robotics paper at the top robotics conference worldwide for his work in autonomous robotic hemorrhage control.

2015 Morgridge Family SIGF Fellow and Stanford Bio-X SIGF Peyton Greenside is the Founder and CSO at BigHat Biosciences, a novel protein therapeutics company and developer of an Al-guided antibody design platform. Founded in late 2019, BigHat has experienced rapid growth in its first 15 months, engineering a potent neutralizing SARS-CoV-2 bispecific antibody in the lab at the onset of the COVID-19 pandemic. BigHat was awarded Amgen's Golden Ticket to MBC BioLabs and a Small Business Innovation Research (SBIR) grant from the National Institute of Standards and Technology (NIST). In 2021, they raised \$19 million in Series A funding.





2017 Morgridge Family SIGF Fellow and Stanford Bio-X SIGF Alexander Ratner is the co-founder and CEO at Snorkel AI, a startup supporting and commercializing the open source Snorkel framework (snorkel.org) for programmatically building and managing training data sets for machine learning. The Snorkel system, which Alex developed as part of his Bio-X funded thesis work, is now used by Google, Intel, Stanford Medicine, and many more; has resulted in over thirty-six peer-reviewed publications; and has raised over \$135 million since debuting in 2019. Alex is also an assistant professor in computer science at the University of Washington in Seattle.

Graduates of the program have transitioned to promising postdoctoral positions or medical training and to successful careers in academia and industry, while others have established their own start-up companies. Six of our alumni—Adam de la Zerda, Andreas Loening, Guillem Pratx, David Myung, David Camarillo, and Xiaojing Gao—are now faculty members at Stanford University. Additionally, our fellows publish high-impact first-author journal articles, receive grants and fellowships from Fubright, the National Institutes of Health (NIH), the National Research Service Awards (NRSA), and the National Science Foundation (NSF) among others, file patent applications, and give TEDx talks, exemplifying the importance of interdisciplinary research.

To learn about the successes of our alumni, please see page 26.

Stanford Bio-X Graduate Fellowships 2021



CARLOS ALVARADO ACOSTA William and Lynda Steere Fellow, Stanford Bio-X SIGF

Structural Biology Mentors: Joseph Puglisi (Structural Biology) and Zev Bryant (Bioengineer-

ing) Uncovering the Kinetic and Mechanochemical Regulation of Scanning

Protein synthesis through translation is a fundamental and essential process for life. Specifically, translation initiation dictates the reading frame of decoding and is often dysregulated in various disease states. Carlos aims to understand the regulation behind scanning; the process by which the ribosome and eukaryotic initiation factors (eIFs) locate the start site of translation. Initiation is dynamic, involving the rapid movements of the ribosome and eIFs, and thus many of these dynamics remain hidden underneath ensemble averages. To overcome these challenges, his plan leverages a combination of single-molecule kinetics and mechanochemical measurements to uncover mechanistic details.

MANISH AYUSHMAN

Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF

Bioengineering

Fan Yang (Bioengineering, Orthopaedic Surgery), Ashby Morrison (Biology), Ovijit Chaudhuri (Mechanical Engineering), Yan Xia (Chemistry), and Constance Chu (Orthopedic Surgery) Enabling Stem Cells to "Zipline" in 3D: Enhancing Car-

Enabling Stem Cells to "Zipline" in 3D: Enhancing Cartilage Regeneration using Sliding Hydrogels with Tunable Molecular Mobility

Articular cartilage injury represents a leading cause of disability, yet effective therapies remain elusive. Hydrogels are attractive injectable biomaterials for mesenchymal stem cell (MSC)-based cartilage repair, yet generally lead to slow cartilage regeneration with poor mechanical strength. Furthermore, no hydrogels developed to date allow precise tuning of molecular mobility, which is critical for cells to re-organize the surrounding niche during cartilage development. The goal of Manish's proposal is to validate sliding hydrogels with tunable mobility as a novel biomaterial tool to enhance MSC-based cartilage regeneration in vivo and to elucidate the molecular mechanisms by characterizing involved mechanotransduction and chromatin biology.



Stanford Bio-X Honorary Fellow Nicholas Rommelfanger (see pg. 13 for research details)





CECELIA BROWN Stanford Bio-X Bowes Fellow Biology

Mentors: Jan Skotheim (Biology), Julien Sage (Pediatrics – Hematology & Oncology and Genetics), and Polly Fordyce (Bioengineering and Genetics) Controlling Cell Division by Disrupting the Cyclin D-Rb Interaction

Dysregulation of G1/S proteins Cyclin D and Rb is a common attribute of most cancers thereby necessitating therapeutic intervention. Cecelia's research aims to develop specific inhibitors targeting Cyclin D's docking site to disrupt Rb binding using two approach es. The first approach involves leveraging the inhibitory properties of the Rb C-terminal helix to function as a competitive inhibitor. She will optimize the synthetic peptide inhibitor for potency and cell delivery. The second approach involves using the Stanford High-Throughput Bioscience Center to screen their ~130,000 compound library with an in vitro FRET assay to find small molecules that disrupt the Cyclin D- Rb interaction.

JE-RUI (RAY) CHANG

Morgridge Family SIGF Fellow, Stanford Bio-X SIGF Bioengineering

Mentors: Manu Prakash (Bioengineering) and Sanjiva Lele (Aeronatics & Astronautics and Mechanical Engineering)

Extreme Biophysics: How Ultrafast Contractility Shapes Organelle Geometry (Topology) and Mechanics in Giant Cells

Understanding extremes in biological systems provides novel insights into the fundamental limits of life. To understand cellular gigantism and intracellular adaptations under extreme forces, Spirostomum ambiguum, a giant ultrafast contractile ciliate with peak acceleration of 15g, was chosen the model organism. With transmitted electron microscopy, Ray recently discovered a novel "gyroid-like" architecture of rough endoplasmic reticulum (RER) around vacuolar meshwork, leading to new insights of how organelle topology and mechanics enables survival of extreme physiological conditions experienced during contraction. He generalizes his work to study the fundamental problem of ER shape and mechanism of energy dissipation in giant cells.



Stanford Bio-X Honorary Fellow Gabriella Muwanga (see pg. 12 for research details)



Stanford Bio-X Bowes Fellow Sophia Shi (see pg. 14 for research details)



ANA SOFIA DE OLAZARRA Affymetrix Bio-X Fellow, Stanford Bio-X SIGF Electrical Engineering

Mentors: Shan Wang (Materials Science & Engineering and Electrical Engineering) and Paul (PI) Utz (Medicine—Immunology & Rheumatology) Point-of-Care Giant MagnetoResistive Biosensors for Automated Nucleic Acid Amplification and Detection Nucleic acids are powerful biomarkers with broad diagnostic applications including the identification of disease-causing pathogens, gene expression analysis, and genotyping for mutational analysis. Despite their demonstrated value, many nucleic acid amplification technologies (NAATs) depend upon centralized laboratory facilities and trained technicians, hampering their ability to be widely deployed, particularly in limited resource settings. To address this unmet need, Ana Sófia is developing a point-of-care (POC) platform that will automatically perform both PCR amplification and endpoint analyte detection using Giant MagnetoResistive (GMR) biosensors in order to detect nucleic acid biomarkers with clinical laboratory precision.



MICHELLE DREWS Stanford Bio-X Fellow Neurosciences, Medicine

Mentors: Carla Shatz (Biology and Neurobiology), Anca Pasca (Pediatrics – Neonatal and Developmental Medicine), and Catherine Blish (Medicine – Infectious Diseases)

Interferon Exposure, Major Histocompatibility Class I, and Human Brain Development

Major Histocompatibility Class I (MHCI) molecules are famous for their role in anti-viral responses; however, neuronal MHCIs also play an essential role in synaptic pruning during brain development. These separate roles for the same molecule raise the question of what happens when the two collide, such as when a developing brain experiences a viral infection. The goal of Michelle's proposal is to investigate MHCIs in developing human neurons, and to examine how virus associated cytokines (interferons) impact the neuronal MHCIs and developing synapses. This study is important as maternal infections are linked to an increased risk of neurodevelopmental disorders, and perturbations in neuronal MHCI expression may underlie this risk.



HAOTIAN DU Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF Chemistry

Mentors: Possu Huang (Bioengineering), Edgar Engleman (Pathology and Medicine—Immunology & Rheumatology), and Danny Chou (Pediatrics—Endocrinology & Diabetes)

Molecular Engineering of T Cell Receptor Functional Mimetics for Intracellular Oncogenic Marker Targeting Development of precise cancer therapy requires detection of tumor-specific biomarkers. Peptides derived from various oncogene-associated proteins can be presented on cell surfaces as peptide-Major Histocompatibility Complexes (pepMHCs), which are potentially the largest cancer biomarker repertoire. However, there is a large gap between discovery studies of these peptide biomarkers and their clinical translation due to a lack of targeting system. Haotian will develop a platform to recognize and track tumor pepMHCs with computationally designed small stable proteins, mimicking the function of T cell receptors (TCR). The novel targeting system opens up opportunities for tracking intracellular oncogenic biomarkers for immunotherapy treatment.

YI SHIOU DUH

Stanford Bio-X Bowes Fellow Physics

Mentors: Mark Brongersma (Materials Science & Engineering), Xiaoke Chen (Biology), and Guosong Hong (Materials Science & Engineering) **Multi-Depth Brain-Wide Imaging with Metasurfaces** Advances in endoscopic methods could allow neuroscientists to optically stimulate and record complex brain activities. Because rostral ventromedial medulla (RVM), the critical node in the descending pain modulation pathway, is located deep under the pia, conventional optical elements including GRIN lenses and microprisms, are too invasive for behaving mice. Yi Shiou is proposing "MARBLE", a new optical probe design that leverages nanophotonics to achieve multi-depth brainwide optical imaging with minimal invasiveness. It utilizes metasurface-based flat optical elements to realize an optical-waveguide-based endoscope. This endoscope will be the first to enable optical recording with cellular resolution in behaving animals in the RVM.



Stanford Bio-X Bowes Fellow Ramandeep Vilkhu (see pg. 15 for research details)



Stanford Bio-X Honorary Fellow Christopher Long (see pg. 10 for research details)



YUAN JIA

Morgridge Family SIGF Fellow, Stanford Bio-X SIGF Chemistry

Mentors: Robert Waymouth (Chemistry) and Ronald Levy (Medicine— Oncology)

New Synthetic Transporters for Delivery and Release of mRNA

The design, synthesis, and biological evaluation of a new class of gene delivery agents based on cationic amphiphilic oligomers is proposed by Yuan. The design of these materials is inspired by the Charge-altering Releasable Transporters (CARTs) developed at Stanford, but targets different mechanisms for the intracellular release and endosomal escape of the mRNA. Preliminary results on the delivery of mRNA encoding firefly luciferase indicate that one of these new classes of gene delivery agents is effective both in cell culture and in live mice.



KRISTJAN EERIK KASENIIT

Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF

Bioengineering

Mentors: Xiaojing Gao (Chemical Engineering) and Possu Huang (Bioengineering)

Humanized Molecular Sensors for the Extra- and Intra-Cellular Environments

Mammalian (human) synthetic biology promises to deliver smart therapies for complex conditions like cancer, as well as tools for basic biology by rewiring existing or creating novel biological pathways. In these programs, receptors and other sensors feed information into molecular computation circuits, which decide appropriate responses. While modular computation and effector systems have been created with components sourced from the human genome, available sensors are lacking in modifiability, or are sourced from non-human genomes with potent immunogenicity. Kristjan proposes architectures for robust and modular genetically encoded humanized sensors for both extracellular proteins, as well as the intracellular transcriptional state.



FIKUNWA KOLAWOLE Felix and Heather Baker Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF **Mechanical Engineering**

Mentors: Daniel Ennis (Radiology), Ellen Kuhl (Mechanical Engineering), Marc Levenston (Mechanical Engineering), loe DeSimone (Radiology and Chemical Engineering), and Sachin Malik (Radiology)

Measuring Myocardial Stiffness of the Failing Heart

Currently, no accepted clinical method exists to measure myocardial stiffness in vivo. Increased myocardial stiffness, however, is a significant cardiac remodeling mechanism implicated in heart failure. A Magnetic Resonance Imaging (MRI) and Finite Element Modeling (FEM)-based framework presents a clinically viable myocardial stiffness éstimation technique. Framework validation is critical but remains elusive as ground truth myocardial stiffness is unknown. Fikunwa will overcome this barrier by incorporating soft 3D-printed hearts into an MRI-compatible setup to measure deformation and loading, then use FEM to estimate stiffness and compare to ground truth values. The validated approach will be evaluated in heart failure patients.

RACHAEL KRETSCH

Stanford Bio-X Bowes Fellow **Biophysics**

Mentors: Rhiju Das (Biochemistry) and Wah Chiu (Bioengineering, Microbiology & Immunology, Photon Science Directorate)

Cryo-EM to Visualize Viral RNA

Rapid determination of RNA 3D structures could enable accelerated design of therapeutics against the most conserved regions of viruses. Unfortunately, 3D structures of most RNAs have evaded determination. Recently, cryo-EM on RNA has exceeded expectations, rapidly solving RNA structures too large for NMR or too dynamic for crystallization. Despite promise, current cryo-EM methodology remains incapable of describing the atomic structures of most RNAs. Rachael proposes investigating two unexplored concepts: exploiting negative features in maps and incorporating heterogeneity information into modeling, with the goal of visualizing heterogeneous RNA structures previously unsolvable, with a focus on RNA genomes of pandemic viruses.



VERONICA LI

Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF Chemistry

Mentors: Jonathan Long (Pathology) and Justin Du Bois (Chemistry) Chemical Interrogation of an Exercise-Induced Metabolite Signaling Pathway

The molecular mechanisms that mediate the systemic benefits of physical activity has remained largely mysterious. The Long lab has identified Lac-Phe as an exercise-stimulated circulating metabolite that functions as a periphery-to-brain-signal to suppress appetite and obesity. Veronica will use a multidisciplinary approach that combines chemical synthesis, slice electrophysiology, and in vivo metabolic phenotyping to understand the structural features that mediate the anorexigenic bioactivity of Lac-Phe. When successful, this proposal will elucidate the structural characteristics of Lac-Phe required for appetite suppression, thereby providing potential therapeutic avenues for "capturing" the molecular transducers of physical activity for improving human health.

"I cannot imagine doing my research without the support [of] the Bio-X graduate fellowship. I would like to thank Bio-X... and hope that they will continue to help students aspiring to do translational research at the juncture of science, medicine and engineering." - Stanford Bio-X Bowes Fellow Pankaj Sharma





Stanford Bio-X Bowes Fellow Cecelia Brown (see pg. 5 for research details)



KANG YONG LOH Stanford Bio-X Bowes Fellow Chemistry

Mentors: Karl Deisseroth (Bioengineering, Psychiatry & Behavioral Sciences), Carolyn Bertozzi (Chemistry), and Zhenan Bao (Chemical Engineering)

Genetically Targeted Chemical Assembly and Disassembly of Functional Molecules in Intact Living Systems Living systems' ability to construct chemical structures with complex functions from molecular to macromolecular scales are evolutionarily conserved and essential for survival. Cells are chief engineers in building architectures, ranging from spatial arrangement of photoreceptors in vision, combinatorial nature of chemical receptors in olfaction and mechanosensitive cilia cells in audition. Synthesis of diverse chemical, molecular and macromolecular entities across scales by defined cell-types under physiological conditions in living organisms are beyond the capabilities of human design. Herein, genetically targeted chemical assembly (GTCA) of functional bonds and molecules in intact living systems is proposed to break the limits of human design.



CHRISTOPHER LONG Stanford Bio-X Honorary Fellow Materials Science & Engineering

Mentors: Sarah Heilshorn (Materials Science & Engineering) and Tony Wyss-Coray (Neurology & Neurological Sciences)

A Novel Nonlinear Microscopy Platform for Studying Microglial Subtypes in Alzheimer's Disease

Microglia adopt several subtypes with distinct phenotypes and transcriptional states that are associated with Alzheimer's disease (AD). By combining multiple novel imaging technologies based on nonlinear optical microscopy and RNAScope, this project seeks to map the metabolic and phagocytic function of these microglia, as well as their gene expression and spatial distribution throughout the brain of AD patients. Studies of microglia differentiated from induced pluripotent stem cells will further provide a platform for investigating triggers that activate disease-associated microglia. Development of this unique imaging strategy will enhance our understanding of AD progression and provide a new impactful tool in neuroscience.



Stanford Bio-X Fellows Group Photo 2019



DELANEY MILLER Stanford Bio-X Bowes Fellow Mechanical Engineering

Mentors: Steve Collins (Mechanical Engineering), Nicholas Giori (Orthopaedic Surgery), and Scott Delp (Bioengineering and Mechanical Engineering)

Reducing Muscle Contributions to Knee Joint Loading in Individuals with OA Using a Powered Knee Exoskeleton

Knee osteoarthritis is the most common cause of adult musculoskeletal pain. Reducing knee joint loading—a combination of external and muscle forces—can reduce pain and improve function in affected individuals. Current interventions don't account for the 50-75% of knee loading caused by muscle forces. By using a knee exoskeleton emulator to generate assistive torques and musculoskeletal simulation to estimate knee contact forces, Delaney will find the assistance strategies that maximally reduce muscle contributions to knee loading through human-in-the-loop optimization. This research will inform the design of portable knee exoskeletons that improve knee function and reduce pain.



AMR MOHAMED

Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF Computer Science

Mentors: Anshul Kundaje (Genetics and Computer Science) and Polly Fordyce (Bioengineering and Genetics)

Extracting Thermodynamic DNA Sequence Affinities from *in vivo* Profiles of Transcription Factor Binding Using Deep Learning

Transcription factors (TFs) bind DNA in a sequence-specific manner to regulate gene expression. To understand gene regulation and regulatory networks, it is essential not only to map differences in TF-DNA binding in the genome but also to determine the biophysical basis of specificity. The former is possible using comprehensive *in vivo* assays and the latter requires focused thermodynamical analyses. However, it has been challenging to relate *in vivo* binding data to *in vitro*-derived thermodynamic affinities. Amr's work will show that neural networks can extract thermodynamic affinities *de novo* from genomic occupancy profiles, enabling massive *in silico* experiments to decipher sequence influences on intrinsic affinity and *in vivo* occupancy.



ADI MUKUND Tusher Family Stanford Interdisciplinary Graduate Fellow,

Stanford Bio-X SIGF Biophysics, Medicine

Mentors: Lacramioara Bintu (Bioengineering), Michael Bassik (Genetics), and Anshul Kundaje (Genetics and Computer Science)

High-Throughput Characterization and Computational Modeling of Interactions Between Effector Domains in Chromatin-Mediated Gene Regulation

Gene expression in humans is regulated in part by numerous chromatin regulators (CRs) that use effector domains to activate and repress transcription in a coordinated manner. Understanding how CRs work together to affect gene expression is critical to understanding gene regulation in human cells. In their studies, Adi will combine recruitment assays to measure transcription-regulatory function with high-throughput perturbation technologies and computational modeling. Adi will build a quantitative model of how different human protein domains combine to affect transcription; this will substantially deepen our understanding of chromatin biology and expand the range of tools we can use to build chromatin-based gene therapies.



GABRIELLA MUWANGA

Stanford Bio-X Honorary Fellow Neurosciences

Mentors: Vivianne Tawfik (Anesthesiology) and Raag Airan (Radiology) **Targeted Delivery of Dexmedetomidine for Pain Relief in a Mouse Model of Complex Regional Pain Syndrome** Complex regional pain syndrome (CRPS) develops after injury to the upper or lower extremities. Increased sensitivity of sympathetic α -2-adrenergic receptors (α 2AR) in the peripheral and central nervous systems is suspected in CRPS. Dexmedetomidine (DEX), an α 2AR agonist, is a potential CRPS treatment whose usage is limited by undesirable side effects including hypotension and bradycardia. Gabriella will deliver DEX locally in the injured limb or spinal cord in a CRPS mouse model using ultrasound-responsive DEX-loaded nanoparticles to maximize its analgesic effects, minimize side effects, and elucidate its mechanisms of action. Hence, we will develop a safe, non-opioid option for pain management.



Stanford Bio-X Bowes Fellow Kang Yong Loh (see pg. 10 for research details)



NICHOLAS ROMMELFANGER Stanford Bio-X Honorary Fellow

Applied Physics

Mentors: Guosong Hong (Materials Science & Engineering) and Paul Nuyujukian (Bioengineering and Neurosurgery)

Breaking the Spatial Limitation of Electrical Microstimulation by Electromagnetic Field Focusing

While electrical stimulation is a powerful tool for probing neural correlates of cognition and treating neurological diseases, it is challenging to contain the stimulating field to small volumes of the brain, let alone single neurons. Here, Nicholas proposes a technique for single-neuron electrical stimulation relying on the "lightning-rod effect" of metallic nanowires in an electric field. Nanowires can enhance an electric field by I-2 orders of magnitude within close proximity of their tips, enabling spatially-restricted stimulation with sub-threshold current injection. Nicholas envisions that this technique will enable single-neuron manipulation in non-human primates and humans and offer more precise clinical treatments.



JOSHUA SAMPSON

Stanford Bio-X Bowes Fellow Bioengineering

Mentors: Mark Skylar-Scott (Bioengineering), Steven Boxer (Chemistry), and Michael Ma (Cardiothoracic Surgery)

Optical Coagulation for 3D Bioprinting in vitro and Directed Hemostasis in vivo

Joshua proposes to develop optical control of coagulation to create two new technologies: (1) Optical Coagulation 3D Bioprinting of cell-laden fibrin, which will combine the biological advantages of a natural protein matrix with the fabrication advantages of stereolithography to print high-fidelity vascularized tissues for studying (patho)physiology, drug responses, and organ engineering, and (2) precision Optical Hemostasis, to avert complications in intricate surgeries like pediatric unifocalization surgery. Joshua is pursuing two promising routes to develop optical coagulation: (1) a split coagulation enzyme reconstituted by optogenetic heterodimerizing domains, and (2) adaption and application of a photoswitchable thrombin-inhibiting aptamer system.



Stanford Bio-X Fellow Michelle Drews (see pg. 6 for research details)



Stanford Interdisciplinary Graduate Fellow (Anonymous Donor) Stanford Bio-X SIGF Manish Ayushman (see pg. 4 for research details)



SOPHIA SHI Stanford Bio-X Bowes Fellow Chemistry

Mentors: Tony Wyss-Coray (Neurology & Neurological Sciences) and Carolyn Bertozzi (Chemistry)

Decoding the Blood-Brain Barrier Glycocalyx in Aging and Neurodegenerative Disease

The blood-brain barrier (BBB) is a highly specialized vascular network that protects the brain from neurotoxic factors and maintains brain homeostasis. Lining the luminal surface of the BBB is a substantial layer of glycans, known as the glycocalyx, whose contributions to BBB integrity are poorly understood. Glycocalyx dysregulation has also been implicated in aging and neurodegenerative diseases, suggesting that aberrations in this layer may contribute to neurovascular dysfunction and, consequently, poor brain health in these states. Sophia proposes to leverage cutting-edge technologies merged from the fields of neuroscience and glycobiology to make fundamental discoveries about the role of the glycocalyx in supporting BBB function and in neurodegeneration.



PETER SUZUKI

Stanford Bio-X Bowes Fellow

Bioengineering

Mentors: Polly Fordyce (Bioengineering and Genetics) and Lacramioara Bintu (Bioengineering)

Modeling the Dynamic Function of Human Transcription Factors and Co-Factors by Combined *in vivo* and *in vitro* Kinetic Measurements

Understanding how transcription factors (TFs) regulate gene expression is central to biology, yet we currently cannot predict how TF binding kinetics to both DNA and co-factors modulate changes in gene expression. Peter proposes a systematic approach connecting these molecular interactions with gene output: in parallel, he will measure the silencing capability of thousands of TF domains in cells using a pooled approach (HT-recruit), and TF:co-factor and TF:DNA binding via microfluidics (STAMMP). Combining these results, he will test predictive models of gene silencing to further understanding of its dynamics in biology and disease, and toward developing synthetic tools for gene control.



RAMANDEEP VILKHU Stanford Bio-X Bowes Fellow Electrical Engineering

Electrical Engineering Mentors: Subhasish Mitra (Electrical Engineering and Computer Science) and E.J. Chichilnisky (Neurosurgery and Ophthalmology)

Optimization and Biophysical Modeling of Electrical Stimulation Strategies for Brain-Computer Interfaces to Enhance Stimulation at Cellular-Resolution

Brain-computer interfaces (BCIs) have the ability to revolutionize medicine by replacing degenerated neural pathways with embedded electronics. Ramandeep will focus on the design of a retinal BCI that electrically records from and stimulates retinal ganglion cells (RGCs) to reproduce vision in patients suffering from photoreceptor degenerative diseases. The restored vision produced by current retinal BCIs is limited by imperfect electrical stimulation, leading to unnatural patterns of RGC activity. He proposes to create a biophysically-based model to optimize RGC responses to spatiotemporal patterns of electrical stimulation, at single cell resolution, and test the model experimentally in a laboratory retinal BCI prototype.

JONATHAN WEISS Stanford Bio-X Honorary Fellow Bioengineering

Mentors: Mark Skylar-Scott (Bioengineering) and Joseph Woo (Cardiothoracic Surgery)

Organ-Scale Biofabrication: 3D Bioprinting of Engineered Pluripotent Stem Cells to Form a Mature Human Ventricle

3D bioprinting promises a future of organs-on-demand. However, organ engineering is stalled due to the challenge of scalable cell generation. Jonathan aims to enable the affordable culture of trillions of cells necessary for organ biofabrication. Human induced pluripotent stem cells will be engineered to eliminate reliance on expensive culture medium supplements and support efficient differentiation into cardiomyocytes, endothelial cells, and fibroblasts. To demonstrate organ-scale biofabrication, a vascularized ventricle will then be bioprinted and housed in a cardiac bioreactor for maturation. This translational and interdisciplinary work requires clinically-informed multiscale engineering expertise and will have major impacts on treating cardiovascular diseases.



Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF Haotian Du (see pg. 7 for research details)



Stanford Bio-X Graduate Fellowships 2004-2020 (in alphabetical order)



LAURA AMAYA HERNANDEZ

Stanford Bio-X Bowes Fellow 2020 Stem Cell Biology & Regenerative Medicine Mentors: Howard Chang (Dermatology and Genetics) and Bali Pulendran (Pathology and Microbiology & Immunology) "In vitro Transcription of Circular RNAs with Dual Antigen/Adjuvant Capacity for Vaccine Development"



SUHAAS ANBAZHAKAN Stanford Bio-X Bowes Fellow 2018 **Bioengineering** Mentors: Alison Marsden (Pediatrics - Cardiology, Bioengineering) and Kristy Red-Horse (Biology) "Evaluating the Impact of Coronary Collateral Flow in Adult and Neonatal Mice"



KAISHA BENJAMIN Stanford Bio-X Bowes Fellow 2019 **Bioengineering** Mentors: Andrew Endy (Bioengineering) and Bruce Buckingham (Pediatrics - Endocrinology) "Engineering a Live Bacterial Therapeutic for Type 1 Diabetes (T1D)"



PAMELA CAI

Stanford Bio-X Honorary Fellow 2019 Chemical Engineering Mentors: Andrew Spakowitz (Chemical Engineering and Materials Science & Engineering) and Sarah Heilshorn (Materials Science & Engineering) "Characterization and Modeling of Intestinal Mucus as an Anti-Microbial Barrier"



CHIEN-YI CHANG Stanford Bio-X Bowes Fellow 2020 Electrical Engineering Mentors: Fei-Fei Li (Computer Science) and Yang Hu (Ophthalmology) "Cellular in vivo Neurodegeneration Prediction Using Deep Neural Networks"



SHI-AN CHEN Morgridge Family SIGF Fellow, Stanford Bio-X SIGF 2018 Biology

Mentors: Hunter Fraser (Biology) and Michael Bassik (Genetics) "Direct Measurement of Gene-Environment Interactions by High-Throughput Precision Genome Editing"

"I have had an amazing experience with Bio-X. The program has introduced me to students, faculty, and industry leaders in departments with names I could barely recognize; it exposed me to cutting edge research and ideas that seem almost magical in their complexity; and, most importantly, it has enabled me to apply my expertise and passions in engineering to meaningful research in neuroscience. I am incredibly grateful for this opportunity provided to me by Bio-X."

- Roshni Cooper, Morgridge Family SIGF Fellow, Stanford Bio-X SIGF

ZONGHE CHUA



Lubert Stryer Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2020

Mechanical Engineering Mentors:Allison Okamura (Mechanical Engineering), Sherry Wren (Surgery – General Surgery), Jeannette Bohg (Computer Šcience), and Dorsa Sadigh (Čomputer Science and Electrical Engineering)

"Feeling through Seeing: Vision-Based Force Estimation in Robot-Assisted Surgery"



MADELINE COOPER Lavidge and McKinley Interdisciplinary Fellow, Stanford Bio-X SIGF 2020 **Biophysics**, Medicine

Mentors: Brad Zuchero (Neurosurgery) and Alex Dunn (Chemical Engineering) "Oligodendrocyte Regulation of the Axon Cytoskeleton During Myelination"



KIARA CUI Stanford Bio-X Bowes Fellow 2018 Chemical Engineering

Mentors: Alexander Dunn (Chemical Engineering), Gerald Fuller (Chemical Engineering), Kyle Loh (Developmental Biology), and David Myung (Ophthalmology) "Patterning Stem Cell Differentiation and Investigating Tear Film Stability: Fluid Mechanics-Based in vitro Models of Development and Disease"



REBECCA CULVER

Stanford Bio-X Honorary Fellow 2019 Genetics

Mentors: KC Huang (Bioengineering and Microbiology & Immunology) and Michael Fischbach (Bioengineering) "General Genetic Tools for Discovery of Functional Pathways in the Human Gut Microhiota"



MELODY DONG Stanford Bio-X Honorary Fellow 2017 Bioengineering

Mentors: Alison Marsden (Pediatrics – Cardiology, Bioengineering) and Marlene Rabinovitch (Pediatrics – Cardiology) "Computational Modeling of Pulmonary Arterial Hypertension to Determine Abnormal Hemodynamic Effects on Endothelial Gene Expression"





STEPHAN EISMANN Stanford Bio-X Bowes Fellow 2019 Applied Physics Mentors: Ron Dror (Computer Science) and Rhiju Das (Biochemistry) "RNA Structure Prediction and Design Using Deep Neural Networks"



YUHANG FAN Enlight Foundation Interdisciplinary Graduate Fellow, Stanford Bio-X **SIGF 2020 Bioengineering** Mentors: Bo Wang (Bioengineering) and James Ferrell (Chemical & Systems Biology and Biochemistry) "Wound-Induced Trigger Waves to Coordinate Tissue-Wide Regeneration Response"



COREY FERNANDEZ

Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF 2019 Neurosciences Mentors: Anthony Wagner (Psychology), Lisa Giocomo (Neurobiology), and Jay McClelland (Psychology) "An Integrated Approach to Investigating Dynamic Memory Processes in Goal-Directed Behavior'



JONAS FOWLER

Stanford Bio-X Honorary Fellow 2019 Stem Cell Biology & Regenerative Medicine Mentors: Kyle Loh (Developmental Biology) and Hiromitsu Nakauchi (Genetics)

"Combining Developmental Biology and Immunology to Efficiently Generate Human T Cells in vitro from Pluripotent Stem Cells"



TONY GINART

Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2019 **Electrical Engineering**

Mentors: James Zou (Biomedical Data Science) and Mark Schnitzer (Biology and Applied Physics) "Theory and Algorithms for Large-Scale Machine Learning Systems"



EMMA DEL CARMEN GONZALEZ GONZALEZ

Stanford Bio-X Bowes Fellow 2018 Chemical Engineering Mentors: Roseanna Zia (Chemical Engineering) and Drew Endy (Bioengineering) "Spherically Confined Colloidal Suspensions: A Model for Intracellular Transport"



AMALIA HADIITHEODOROU Stanford Bio-X Bowes Fellow 2014

Bioengineering Mentors: Julie Theriot (Biochemistry, Microbiology & Immunology), Polly Fordyce (Bioengineering, Genetics), and Robert Tibshirani (Statistics, Biomedical Data Science) "The Cytoskeletal Circuitry Underlying Directional Decisions During Neutrophil Migration"



LINDSEY HASAK Stanford Bio-X Fellow 2019 Education

Mentors: Bruce McCandliss (Education) and Anthony Norcia (Psychology) "Imaging the Emergence of Letter-Sound Cortical Associations in Children within Schools"



Stanford Bio-X Bowes Fellow Peter Suzuki (see pg. 14 for research details)



NINA HOROWITZ

Mona M. Burgess Fellow, Stanford Bio-X SIGF 2019 Chemistry

Mentors: John Sunwoo (Otolaryngology – Head & Neck Surgery) and Garry Nolan (Microbiology & Immunology) "High-Dimensional Profiling of Novel Innate Lymphoid Cells to Determine Their Function and Immunotherapeutic Potential"



YUKUN (ALEX) HAO

Stanford Bio-X Bowes Fellow 2020 Bioengineering

Mentors: Thomas Clandinin (Neurobiology), Michael Lin (Neurobiology and Bioengineering), and Surya Ganguli (Applied Physics) "Using Novel Imaging Tools to Dissect the Neuronal Mechanisms Underpinning Multisensory Integration"



SARAH HULL Rogers Family Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2019 Chemical Engineering Mentors: Sarah Heilshorn (Materials Science & Engineering) and David Myung (Ophthalmology) "Investigation of Stem Cell Regeneration of the Cornea Using Bioorthogonally Crosslinked Hydrogels"



Kwang Eun Jang Stanford Bio-X Bowes Fellow 2014 Bioengineering Mentors: Dwight Nishimura (Electrical Engineering) and Shreyas Vasanawala (Radiology) "Multichannel 3D Cone Trajectory Development for MR Abdominal/Cardiac Imaging"



YoungJu Jo Stanford Bio-X Bowes Fellow 2020 Applied Physics

Mentors: Karl Deisseroth (Bioengineering and Psychiatry & Behavioral Sciences), Surya Ganguli (Applied Physics), and David Sussillo (Electrical Engineering) "Optimal Optogenetic Control of Neural Dynamical Systems"



HANNAH KEMPTON Stanford Bio-X Honorary Fellow 2017 Bioengineering Mentors: Stanley Lei Qi (Bioengineering, Chemical & Systems Biology) and Garry Nolan (Microbiology & Immunology) "Dissecting the Role of Macrophage Polarization in the Tumor Microenvironment"



CATIE MEIS KASSE William and Lynda Steere Fellow, Stanford Bio-X SIGF 2020 Materials Science & Engineering

Mentors: Eric Appel (Materials Science & Engineering) and Peter Kim (Biochemistry)

"Injectable Supramolecular Hydrogels for Sustained Delivery of Antibodies against HIV"



BENJAMIN KNAPP

Colella Family Fellow, Stanford Bio-X SIGF 2020 Biophysics Mentors: KC Huang (Bioengineering and Microbiology & Immunology) and Elizabeth Sattely (Chemical Engineering) "Regulation of Bacterial Growth in Fluctuating Temperatures"



Elgin Korkmazhan

Stanford Bio-X Bowes Fellow 2018 Biophysics

Mentors: Alexander Dunn (Chemical Engineering) and William Weis (Structural Biology, Photon Science Directorate, Molecular & Cellular Physiology) "Investigating Cytoskeletal Repair Mechanisms upon Epithelial Cell Detachment"



BAUER LESAVAGE

Stanford Bio-X Bowes Fellow 2018 Bioengineering Mentors: Sarah Heilshorn (Materials Science & Engineering) and Theo Palmer (Neurosurgery) "Robust and Efficient Expansion of Human Neural Stem Cells for Clinical Translation"



Stanford Bio-X Bowes Fellow Joshua Sampson (see pg. 13 for research details)

HONGQUAN LI



Paul Berg Interdisciplinary Biomedical Graduate Fellow, Stanford Bio-X SIGF 2017 **Electrical Engineering**

Mentors: Manu Prakash (Bioengineering), Fabian Pease (Electrical Engineering), and Leo Hollberg (Physics) "Open, Configurable High-Throughput Imaging Platform for Diagnostics and Research"



CATHERINE LIOU Stanford Bio-X Bowes Fellow 2018 Chemical Engineering Mentors: Elizabeth Sattely (Chemical Engineering) and Justin Sonnenburg (Microbiology & Immunology) "Plant Metabolic Engineering to Quantify the Impact of Individual Dietary Nutrients on Host Biology"



CHUNZI LIU

Stanford Bio-X Bowes Fellow 2019 Chemical Engineering

Mentors: Gerald Fuller (Chemical Engineering), Carolyn Bertozzi (Chemistry), and David Myung (Ophthalmology) "Investigating the Altered Surface Properties of Mucin-Deficient Corneal Epithelium and Their Contributions to Dry Eye Disease"



KELLY MCGILL Stanford Bio-X Bowes Fellow 2017

Immunology Mentors: PJ Utz (Medicine – Immunology & Rheumatology) and Purvesh Khatri (Medicine – Biomedical Informatics, Biomedical Data Science) "Sex Affects Immune System Aging"



ORGE MERAZ

Stanford Bio-X Bowes Fellow 2018 **Civil & Environmental Engineering** Mentors: Craig Criddle (Civil & Environmental Engineering) and Eric Appel (Materials Science & Engineering) "Transformation of Greenhouse Gases into Sustainable, Biodegradable Microbial Plastics"



CAITLYN MILLER

Stanford Bio-X Honorary Fellow 2017 **Bioengineering** Mentors: Jennifer Cochran (Bioengineering) and Carolyn Bertozzi (Chemistry) "Tumor-Targeting Immunostimulants for Cancer Immunotherapy"



SEDONA MURPHY Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2020 Genetics

Mentors: Alistair Boettiger (Developmental Biology) and Andrew Spakowitz (Chemical Engineering and Materials Science & Engineering) "Linking Structure to Function: How Polycomb-Mediated DNA Folding Acts as a Novel Layer of Transcription Regulation"



DANIA NANES SARFATI Stanford Bio-X Bowes Fellow 2020 Biology Mentors: Bo Wang (Bioengineering) and Stephen Palumbi (Biology) "Regeneration with Symbiosis: Handling Stress with a Partner"



LUCERO ROGEL-HERNANDEZ Stanford Bio-X Bowes Fellow 2020 Molecular & Cellular Physiology

Mentors: Miriam Goodman (Molecular & Cellular Physiology), Elizabeth Sattely (Chemical Engineering), Sue Rhee (Carnegie Institution for Science), and Andrew Fire (Pathology and Genetics) "Determiner the Molecular Jarrets of Valorian Boot Secondary Matchelites and Valorat

"Determining the Molecular Targets of Valerian Root Secondary Metabolites and Valproate Using Caenorhabditis elegans"



ANNINA SARTOR William and Lynda Steere Fellow, Stanford Bio-X SIGF 2018 Chemistry

Mentors: W. E. Moerner (Chemistry) and Wah Chiu (Photon Science Directorate, Bioengineering, Microbiology & Immunology)

"Developing Correlative Cryogenic Superresolution Light and Electron Microscopy with Applications to the Study of Protein Aggregates in Neurological Disease"



LIYUE SHEN

Stanford Bio-X Bowes Fellow 2019 Electrical Engineering

Mentors: John Pauly (Electrical Engineering) and Lei Xing (Radiation Oncology – Radiation Physics) "Enabling Single-View Computed Tomography by Deep Learning for Image Guided Interventions"



JACK SILBERSTEIN Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2020

Immunology Mentors: Jennifer Cochran (Bioengineering) and Ronald Levy (Medicine – Oncolo-

gy) "Engineering a Designer Immune Checkpoint Inhibitor as a Novel Cancer Therapeutic"



JON STINGEL

Paul Berg Interdisciplinary Biomedical Graduate Fellow, Stanford Bio-X SIGF 2020 Mechanical Engineering

Mentors: Scott Delp (Bioengineering and Mechanical Engineering) and Maarten Lansberg (Neurology & Neurological Sciences) "Elucidating Energy Expenditure During Human Movement"



AJAY SUBRAMANIAN

Rosenberg Ach Family Fellow, Stanford Bio-X SIGF 2019 Materials Science & Engineering Mentors: Guosong Hong (Materials Science & Engineering) and Marion Buckwalter (Neurology & Neurological Sciences and Neurosurgery) "Injectable Photovoltaics for Wireless, Gliosis-Free Deep Brain Stimulation"



LAKSSHMAN SUNDARAM

Stanford Bio-X Bowes Fellow 2019 Computer Science Mentors: Anshul Kundaje (Genetics and Computer Science), William Greenleaf (Genetics), and Michael Bassik (Genetics) "Predicting Deleterious Non-Coding Rare and de-novo Sequence Variants in Neurological Disorders and Congenital Heart Disorders"



ELLA THOMSON Stanford Bio-X Bowes Fellow 2020 Electrical Engineering

Mentors: Ada Poon (Electrical Engineering), Justin Annes (Medicine – Endocrinology, Gerontology, & Metabolism), and Joseph Wu (Medicine – Cardiovascular Medicine and Radiology) "An Implantable Artificial Pancreas Using Direct Electrical Depolarization of Beta Cells to

"An Implantable Artificial Pancreas Using Direct Electrical Depolarization of Beta Cells to Control Insulin Release" Page 22



Affymetrix Bio-X Fellow, Stanford Bio-X SIGF Ana Sofia de Olazarra (see pg. 6 for research details)



VICTOR TIEU

Stanford Bio-X Bowes Fellow 2020

Bioengineering Mentors: Lei Stanley Qi (Bioengineering and Chemical & Systems Biology) and Crystal Mackall (Pediatrics – Hematology & Oncology and Medicine – Blood & Marrow Transplantation) "Reprogramming CAR-T Cells to Deliver CRISPR Payloads for Targeted Gene Therapy"



KIMBERLY VASQUEZ Stanford Bio-X Bowes Fellow 2019

Microbiology & Immunology

Mentors: KC Huang (Bioengineering and Microbiology & Immunology), Gavin Sherlock (Genetics), and Justin Sonnenburg (Microbiology & Immunology) "Tracking Evolution and Community Assembly within the Mammalian Gut"



AVIN VEERAKUMAR Lubert Stryer Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2017

Bioengineering, Medicine Mentors: Mark Krasnow (Biochemistry) and David Kingsley (Developmental Biology)

ogy) "Genetic Identification of Brainstem Circuits Controlling Vocalization and Cardiac Electrophysiology"



PRANAV **V**YAS

Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2019 Bioengineering

Mentors: Manu Prakash (Bioengineering) and Christopher Lowe (Biology) "Cells to Organism: Morphogenesis, Repair and Size-Control as Emergent Properties of Cell-Scale Interactions in an Early Diverging Metazoan Trichoplax adhaerens"



Cosmos (Yuqi) Wang

Felix and Heather Baker Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2018 Neurosciences

Mentors: Thomas Südhof (Molecular & Cellular Physiology) and Axel Brunger (Molecular & Cellular Physiology, Photon Science Directorate, and Neurology & Neurological Sciences)

"CIql3 in Synapse Specification, from Molecular Structure to Olfactory Behavior"



Felix and Heather Baker Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF Fikunwa Kolawole (see pg. 9 for research details)



DAVID WANG Stanford Bio-X Bowes Fellow 2020 Biology, Medicine

Montors: Liqun Luo (Biology) and Jun Ding (Neurosurgery and Neurology & Neurological Sciences) "The Role of Embryonic Neuronal Activity in the Development of Neural Circuits and Behavior"



LUCY WANG

Stanford Bio-X Bowes Fellow 2020 Mechanical Engineering Mentors: Ellen Kuhl (Mechanical Engineering) and Miriam Goodman (Molecular & Cellular Physiology) "Predicting Failure Thresholds in Traumatic Brain Injury Using Anatomically Accurate, Ultrahigh Resolution Axon Models"



JOHN WEN Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF 2019 Neurosciences

Mentors: Thomas Clandinin (Neurobiology) and Lisa Giocomo (Neurobiology) "Bridging the Computational Gap between Vision and Navigation"



AARON WILK Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stan-

ford Bio-X SIGF 2019 Immunology, Medicine

Mentors: Catherine Blish (Medicine – Infectious Diseases), Lacramioara Bintu (Bioengineering), and Paul Wender (Chemistry)

"Single-Cell Characterization and Control of Epigenetic Regulation during Human Natural Killer Cell Response to Influenza"



Adele Xu Morgridge Family SIGF Fellow, Stanford Bio-X SIGF 2019 Genetics, Medicine Mentors: Maria Barna (Genetics) and Jonathan Pritchard (Biology and Genetics) "Regulation of Gene Translation by Alternative Ribosomal Protein Isoforms in Mammals"

YUAN XUE Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2018 **Bioengineering**

Mentors: Stephen Quake (Bioengineering, Applied Physics) and John Boothroyd (Microbiology & Immunology) "Single-Cell Profiling of Host-Pathogen Interactions"



PUMIAO YAN

Seth A. Ritch Graduate Fellow, Stanford Bio-X SIGF 2020 **Electrical Engineering**

Mentors: Boris Murmann (Electrical Engineering), Krishna Shenoy (Electrical Engineering), and Jaimie Henderson (Neurosurgery) "Efficient Machine Learning Implementations for Implantable Brain-Computer Interfaces"



ALEXANDER YOSHIKAWA Stanford Bio-X Bowes Fellow 2017

Chemical Engineering Mentors: Tom Soh (Radiology, Electrical Engineering) and Carolyn Bertozzi (Chemistry)

"Development of Highly Specific Xeno-Nucleic Acid (XNA) Aptamers to Modulate the Innate Immune System"



NOAH YOUNG

Stanford Bio-X Bowes Fellow 2012 **Bioengineering**

Mentors: Karl Deisseroth (Bioengineering, Psychiatry & Behavioral Sciences) and Gordon Wetzstein (Electrical Engineering) "Light Field Imaging for High Speed Volumetric Calcium Activity Recording in the Larval Zebrafish"



ERIC ZHAO

Donna Schweers and Thomas Geiser Fellow, Stanford Bio-X SIGF 2020 Chemical Engineering

Mentors: Nicholas Melosh (Materials Science & Engineering) and Geoffrey Gurtner (Surgery – Plastic & Reconstructive Surgery) "Development of Next Generation Peripheral Nerve Interfaces"



BIYAO ZOU

City Hill Foundation Stanford Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2020

Epidemiology & Population Health Mentors: Mindie H. Nguyen (Medicine – Gastroenterology & Hepatology) and Shan Xiang Wang (Materials Science & Engineering and Electrical Engineering) "Development and Validation of a Methylated Cell-Free DNA Biomarker Screening Panel for Hepatocellular Carcinoma Early Detection in a Multicenter Cohort"



XINZHI ZOU Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2019 **Bioengineering**

Mentors: Michael Lin (Neurobiology and Bioengineering) and Julien Sage (Genetics and Pediatrics – Hematology/Oncology)

"A Programmable System for Rewiring Aberrant Cancer Signaling to Therapeutic Effector Release'

Where are they now?

252 of our Stanford Bio-X Fellows have graduated and gone on to utilize what they have learned in the corporate, academic, and governmental sectors...

Amin Aalipour (Stanford Bio-X Fellow 2017) is a resident in internal medicine at Brigham and Women's Hospital.

Namiko Abe (Paul Berg Interdisciplinary Biomedical Graduate Fellow, Stanford Bio-X SIGF 2006) is a senior medical writer at Fishawack Health.

Shelley Ackerman (Stanford Bio-X Bowes Fellow 2014) is an associate director at Bolt Biotherapeutics, Inc., a start-up with compelling technology from Stanford that has demonstrated complete cures in numerous cancer models.

Eliza Adams (Stanford Bio-X Bowes Fellow 2017) is a Consultant at Boston Consulting Group.

Afsheen Afshar (Stanford Bio-X Bowes Fellow 2005) is the Founder and Managing Member of Pilot Wave Holdings, the first investment firm in the world dedicated to bringing world-class technologies to small businesses. He is a senior business executive and deep technical/Al expert who has extensive experience across a variety of industries and enterprises driving large-scale technological transformation associated with hundreds of millions in value. In addition, he regularly advises startups, universities, investors, enterprises, and others across the globe on how best to leverage modern technology. His current appointments include Technical Advisor to Lokavant, Inc., Aginity, Inc., and DotAlign, Inc.

Atish Agarwala (Stanford Bio-X Bowes Fellow 2015) is a research scientist at Google, where he is studying the connections between physics, evolution, and machine learning.

Rachel Agoglia (Stanford Bio-X Honorary Fellow 2016) is in the process of interviewing.

Ron Alfa (Stanford Bio-X Bowes Fellow 2011) is the Senior Vice President, Head of Research at Recursion Pharmaceuticals.

Katherine Amberg-Johnson (William and Lynda Steere Fellow, Stanford Bio-X SIGF 2016) is a senior scientist at Schrodinger, a biotechnology company that uses a physics-based computational platform to accelerate drug development.

Andrés Aranda-Díaz (Stanford Bio-X Bowes Fellow 2016) is a joint Postdoctoral Fellow with the EPPIcenter at UCSF and the Rapid Response Team at Biohub, where he is developing and implementing next generation techniques to study the genomic epidemiology of malaria.

Edith Arnold (Stanford Bio-X Bowes Fellow 2006) is working at Apple Inc. as a Senior Engineering Manager leading a biomechanics research team for product design.

Georgios Asimenos (Stanford Bio-X Bowes Fellow 2005) is the Chief Technology Officer at DNAnexus, a Stanford-spawned startup company which sits at the intersection of two of the most ground-breaking fields: cloud computing and genomics. DNAnexus powers all things genomics, including next-generation diagnostic tests, large research consortia studies, and pharmaceutical discovery. Most recently, DNAnexus has been involved in a groundbreaking project to create the UK Biobank Research Analysis Platform, an environment where thousands of researchers around the world can access and analyze phenotypic, medical, imaging, fitness and genomic data from 500,000 volunteer participants in the UK Biobank.

"Bio-X is this amazing group of people that want to change the world and actually have the capacity to do that through innovative research. The connections I have made through this award with other fellows have already affected my research tremendously and made it so fun! I can't imagine a better, more eclectic group of people to be affiliated with and do fun stuff with. Thank you, Bio-X, for welcoming me into this amazing family!" — Stanford Bio-X Honorary Fellow Adi de la Zerda **Oguzhan Atay** (Colella Family Fellow, Stanford Bio-X SIGF 2014) is the co-founder and CEO of BillionToOne, a precision molecular diagnostics company. BillionToOne has developed a molecular counter platform that increases the resolution of cfDNA diagnostics by over a thousandfold. This technology unlocks a wide range of diagnostics from noninvasive prenatal screening (commercialized) to cancer treatment monitoring (currently in clinical studies). BillionToOne's UNITY is the only test that allows detection of severe genetic disorders such as sickle cell disease and spinal muscular atrophy in the baby directly from a blood sample of pregnant mothers. It is one of the fastest-growing molecular diagnostics in the country with more than 400% YoY growth. BillionToOne has raised more than \$85M in venture capital funding and aims to make UNITY accessible and available to all as standard-of-care and to further develop and commercialize next-generation quantitative molecular diagnostic tests that truly transform oncology care.

Lawrence Bai (Stanford Bio-X Bowes Fellow 2019) is a Life Sciences Specialist at LEK Consulting, where he is working on a variety of strategy-focused projects in the life sciences industry.

Aakash Basu (Stanford Bio-X Bowes Fellow 2009) is a postdoctoral fellow in the department of biophysics at Johns Hopkins University School of Medicine.

Eva Gabriela Baylon (Stanford Bio-X Skippy Frank Fellow 2014) is a Senior Systems Engineer with Abbott.

Daniel Bechstein (Stanford Bio-X Bowes Fellow 2012) is a Sensor Architect at Apple, Inc.

Salil Bhate (Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF 2016) is a postdoctoral researcher at the Broad Institute of Harvard and MIT, working on scaling up the machine learning and conceptual tools for analyzing tissues that he developed in his thesis.

Elsa Birch (Stanford Bio-X Bowes Fellow 2009) is a software engineer at Pinterest working in Business Intelligence.

Johannes Birgmeier (Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2017) is working for Citadel Securities in Zurich.

Jennifer Brady (Stanford Bio-X Skippy Frank Fellow 2010) is a scientist at 23andMe, working as a project team lead for a therapeutic program.

Relly Brandman (Stanford Bio-X Bowes Fellow 2004) is a project lead at GoogleX.

Matthew Bull (Stanford Bio-X Honorary Fellow 2015) is a postdoctoral student in Manu Prakash's lab at Stanford.

David Camarillo (Stanford Bio-X Bowes Fellow 2004) is an associate professor in the bioengineering department at Stanford University.



Stanford Bio-X Bowes Fellow Rachael Kretsch (see pg. 9 for research details)

Shengya Cao (Morgridge Family SIGF Fellow, Stanford Bio-X SIGF 2013) is a Senior Scientist heading up the Receptor Discovery Group at Genentech in South San Francisco.

Mindy Chang (Stanford Bio-X Bowes Fellow 2005) is a research consultant at Hopelab.

Binbin Chen (Stanford Bio-X Bowes Fellow 2018) finished his MD/PhD training in 2021. He is now a co-founder and CEO of Vcreate, Inc. focusing on computationally linking T-cell receptors and antigen targets for immunotherapies.

Elizabeth Chen (Rogers Family Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2013) is an Applications Scientist at Tempus Labs. She improves processes in Tempus's platforms of DNA and RNA sequencing of cancer, COVID, and eventually mental health disorders.

Ian Chen (Stanford Bio-X Bowes Fellow 2006) is a staff cardiologist at the VA Palo Alto Health Care System. In 2018, Ian received an American Heart Association Career Development Award.

Jin Chen (Lubert Stryer Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2012) is an assistant professor at UT Southwestern Medical Center.

Junhong Choi (Stanford Bio-X Bowes Fellow 2015) is a postdoctoral fellow in Dr. Jay Shendure's group at the University of Washington.

Fang-Chieh Chou (Stanford Bio-X Fellow 2012) is a tech lead manager at Perception, Aurora.

Vincent Chu (Stanford Bio-X Pfizer Fellow 2005) is the CTO and co-founder of HomeVision.

Virginia Chu (Stanford Bio-X Bowes Fellow 2005) is an assistant professor of occupational therapy at Virginia Commonwealth University.

Kelsey Clark (Stanford Bio-X Bowes Fellow 2007) is an instructor at Montana State University.

Roshni Cooper (Morgridge Family SIGF Fellow, Stanford Bio-X SIGF 2012) is a software engineer at Waymo, Alphabet's self-driving car company. She is developing machine learning and computer vision techniques to enable cars to perceive the world around them.

Robert Coukos (Stanford Bio-X Skippy Frank Fellow 2019) is a postdoctoral fellow in the lab of Professor Dimitri Krainc, MD, PhD, Chair of the Department of the Neurology in the Feinberg School of Medicine at Northwestern University.

Jing-yu Cui (Stanford Bio-X Bowes Fellow 2011) is working at Google as a software engineer.

Anna Cunningham (Morgridge Family SIGF Fellow, Stanford Bio-X SIGF 2015) is a software engineer at Freenome, a mid-size biotech startup developing a blood-based assay for early detection of colorectal cancer.

Sanjay Dastoor (Stanford Bio-X Bowes Fellow 2006) is the CEO and cofounder at Skip, designing a network of lightweight electric vehicles.

Olivia de Goede (Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2019) is a science policy fellow at the British Columbia Ministry of Health.

Adam de la Zerda (Stanford Bio-X Skippy Frank Fellow 2008) is an associate professor of structural biology at Stanford University and the Founder and CEO of Visby Medical.

Adi de la Zerda (Stanford Bio-X Fellow 2013) is doing project management and business strategy at Applied Materials. Previously, she was a lecturer of materials science and engineering at Stanford.

Christopher Dembia (Stanford Bio-X Bowes Fellow 2016) is a software engineer developing simulation software for autonomous vehicles at Applied Intuition in Mountain View.

Sarah Denny (Stanford Bio-X Honorary Fellow 2013) is a Principal Investigator with Scribe Therapeutics. She leads the Molecular Engineering team to develop new CRISPR tools for therapeutic applications.

Darrel Deo (Mona M. Burgess Fellow, Stanford Bio-X SIGF 2016) is a postdoctoral scholar for BrainGate in the Neural Prosthetics Translation Laboratory (NPTL) directed by Dr. Krishna Shenoy and Dr. Jaimie Henderson at Stanford University.

Mario Diaz de la Rosa (Stanford Bio-X Bowes Fellow 2008) is a senior data scientist at Deloitte Consulting.

Rebecca DiMarco (Stanford Bio-X Bowes Fellow 2009) is working on earning a master's degree in counseling.

Sheng Ding (Stanford Bio-X Bowes Fellow 2007) works at Gilead, one of the world's leaders in the biopharma industry, as a senior scientist focusing on antibody based therapeutics.

Sarah Divel (Stanford Bio-X Bowes Fellow 2016) is a Project Manager in Clinical Validation at RapidAI.

Graham Dow (Stanford Bio-X Bowes Fellow 2009) is a senior scientist in the department of environmental system sciences at ETH Zurich.

Karen Dubbin (Stanford Bio-X Bowes Fellow 2013) is a senior scientist at Obsidio.

Remy Durand (Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF 2010) is the Chief Business Officer at Alpine Immune Sciences (NASDAQ:ALPN) and a Principal on the investment team at Alpine BioVentures.

Anna Elleman (Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF 2018) is a postdoctoral fellow in the molecular and cell biology department at the University of California, Berkeley.

Christopher Emig (Stanford Bio-X Bowes Fellow 2011) is the CEO of Augmenta Bioworks, Inc. and a scientific advisor to Chimera Bio.

Nir Even-Chen (Stanford Bio-X Bowes Fellow 2015) is a neuroengineer at Neuralink.

Gabriela Fragiadakis (Stanford Bio-X Bowes Fellow 2013) is faculty at the University of California, San Francisco in systems immunology and data science.

Limor Freifeld (Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF 2010) is a senior lecturer (a position equivalent to assistant professor) at the Faculty of Biomedical Engineering at the Technion, Israel Institute of Technology.



Stanford Bio-X Honorary Fellow Jonathan Weiss (see pg. 15 for research details)



Stanford Bio-X Bowes Fellow Yi Shiou Duh (see pg. 7 for researh details)

Stephen Fried (Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2012) is an assistant professor at Johns Hopkins University in the departments of Chemistry and Biophysics. His lab develops new approaches to explore protein folding globally, sensitively, and *in vivo* using mass spectrometry proteomics.

Julia Fukuyama (Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2014) is an assistant professor in the department of statistics at Indiana University.

Xiaojing Gao (Enlight Foundation Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2012) is an assistant professor of chemical engineering at Stanford.

Pablo Garcia-Nieto (Stanford Bio-X Bowes Fellow 2017) is working for the Chan Zuckerberg Initiative as a computational biologist on the Human Cell Atlas project.

Courtney Gegg (Stanford Bio-X Bowes Fellow 2016) is an associate at Headland Strategy Group.

David R. Glass (Morgridge Family SIGF Fellow, Stanford Bio-X SIGF 2018) is a postdoc in the Fred Hutchinson Cancer Research Center.

David S. Glass (Stanford Bio-X Bowes Fellow 2013) is a postdoc in Uri Alon's lab at the Weizmann Institute with a Zuckerman Postdoctoral Fellowship.

Caleb Glassman (Stanford Bio-X Honorary Fellow 2017) defended his thesis in the summer quarter. He will be joining Steve Elledge's lab at HMS as a postdoc in January 2022.

Peyton Greenside (Morgridge Family SIGF Fellow, Stanford Bio-X SIGF 2015) is the Founder and CSO at BigHat Biosciences.

Viviana Gradinaru (Colella Family Fellow, Stanford Bio-X SIGF 2008) is a professor of neuroscience and biological engineering at the California Institute of Technology (Caltech). She is also an investigator at Heritage Medical Research Institute, and the director of the Center for Molecular and Cellular Neuroscience.

Alex Grant (Stanford Bio-X Bowes Fellow 2010) is Director of Software and Systems Engineering at the startup Ceribell, Inc.

Adam Grossman (Stanford Bio-X Bowes Fellow 2004) is a co-founder and VP of Emerging Risk at Praedicat, Inc., a company that brings the world's scientific literature to bear in risk management and product stewardship, enabling a transformation of underwriting and risk management for liability insurance and corporate product stewardship practices by using big data approaches to model and understand the science that drives our understanding of risks to human health and the environment. Gunsagar Gulati (Stanford Bio-X Bowes Fellow 2018) is a first-year resident in the Internal Medicine program at Brigham and Women's Hospital.

Lisa Gunaydin (Stanford Bio-X Bowes Fellow 2008) is an assistant professor in the department of psychiatry and behavioral sciences at the University of California, San Francisco. She is also a Chan Zuckerberg Biohub Investigator.

Mary Hall (Stanford Bio-X Bowes Fellow 2018) has recently graduated and will begin working in the fall.

Shuo Han (Stanford Bio-X Bowes Fellow 2017) is a postdoctoral researcher in Dr. Philip Beachy's lab at Stanford. He received the Damon Runyon Cancer Foundation Fellowship and the Stanford School of Medicine Dean's Fellowship to support his work.

Kevin Hart (Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2015) is a scientist at IGM Biosciences.

Fidel Hernandez (Stanford Bio-X Honorary Fellow 2013) is an associate partner at McKinsey & Company.

Jennifer Hicks (Stanford Bio-X Bowes Fellow 2007) serves as a Deputy Director of the Wu Tsai Human Performance Alliance At Stanford University, Director of Data Science of the Mobilize Center at Stanford University, and the associate director of the Restore Center, an NIH-funded center also at Stanford that brings state-of-the-art engineering tools to rehabilitation scientists. She oversees the center's Visiting Scholar Program, Pilot Projects, workshops, webinars, and online resources, and is the research and development manager for the OpenSim software platform.

Tyler Hillman (Stanford Bio-X Bowes Fellow 2008) is an assistant professor of gynecologic oncology & reproductive medicine at the University of Texas MD Anderson Cancer Center. His lab focuses on the genetics of rare gynecologic malignancies.

Timothy Horton (City Hill Foundation Stanford Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2017) is a postdoctoral fellow in the Radiation Oncology department at the University of Miami Miller School of Medicine.

Zahid Hossain (Morgridge Family SIGF Fellow, Stanford Bio-X SIGF 2014) is an applied research scientist and tech lead manager at Facebook AR/VR.

Brian Hsueh (Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF 2015) is a resident physician in neurosurgery at the Massachusetts General Hospital.

Eva Huang (Stanford Bio-X Bowes Fellow 2014) is a Senior Scientist at PACT Pharma.

Jacob Hughey (Stanford Bio-X Bowes Fellow 2007) is an assistant professor of biomedical informatics and biological sciences at Vanderbilt University.

Haisam Islam (Stanford Bio-X Bowes Fellow 2010) is a software development engineer at Amazon.



Stanford Bio-X Fellows Group Photo 2016

Johnny Israeli (Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF 2016) is a manager of Genomics and Proteomics at NVIDIA.

Ivan Ivanov (Tusher Family Stanford Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2015) is a research and development engineer at the Chan Zuckerberg Biohub.

Xiaofan Jin (Stanford Bio-X Bowes Fellow 2014) is a postdoc in Dr. Katie Pollard's lab at the Gladstone Institute at the University of California, San Francisco.

Rachel Kalmar (Stanford Bio-X Bowes Fellow 2005) is a Data Scientist and Product Management Director at Tableau Software.

Mihalis Kariolis (Stanford Bio-X Bowes Fellow 2008) is an antibody and protein engineering scientist at Denali Therapeutics.

Jasmine Kaslow (Stanford Bio-X Honorary Fellow 2015) is a senior data scientist at Earnin.

Katy Keenan (Stanford Bio-X Bowes Fellow 2006) is the Project Leader in Quantitative MRI at the National Institute of Standards and Technology (NIST) in Boulder, Colorado.

Margarita Khariton (Lavidge and McKinley Interdisciplinary Fellow, Stanford Bio-X SIGF 2017) recently graduated and is continuing research and developing tools for cellular analysis with biotech startups in the area.

Carolyn Kim (Mona M. Burgess Fellow, Stanford Bio-X SIGF 2017) is a research scientist in Genesis Therapeutics.

Daniel Kim (Stanford Bio-X Bowes Fellow 2015) is an Internal Medicine resident at Stanford Health Care.

Jongmin Kim (Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF 2011) is a postdoctoral fellow in Professor Robert Kingston's lab at Massachusetts General Hospital.

Jun Woo Kim (Stanford Bio-X Bowes Fellow 2013) is a postdoc with Dr. Julien Sage at Stanford.

Samuel Kim (Stanford Bio-X Bowes Fellow 2004) is a biomarker scientist at Gilead Sciences.

Yoon Seok Kim (Stanford Bio-X Bowes Fellow 2016) is a postdoctoral research fellow in the Neurology & Neurological Sciences department at Stanford.

Daniel Kimmel (Affymetrix Bio-X Fellow, Stanford Bio-X SIGF 2006) recently received a K-award grant from The National Institute of Mental Health (NIMH) to study the neural basis of abstract reasoning in humans at Columbia University, where he is an assistant professor of clinical psychiatry. In addition to research and teaching, he continues to practice psychiatry.

Ryosuke Kita (Stanford Bio-X Bowes Fellow 2013) is a data scientist at Notable Labs.

Benjamin Kotopka (Stanford Bio-X Bowes Fellow 2015) is the Head of Data Science at Antheia, a startup enabling the discovery and production of plant-inspired drugs through a pioneering approach to bioengineering and fermentation.

Brad Krajina (Stanford Bio-X Bowes Fellow 2015) is a postdoctoral researcher in Dr. Kevin Cheung's lab at the Fred Hutchinson Cancer Research Center in Seattle.

Deepak Krishnamurthy (Stanford Bio-X Bowes Fellow 2015) is a postdoctoral Schmidt Science Fellow at UC Berkeley.

Gaurav Krishnamurthy (Stanford Bio-X Medtronic Fellow 2008) is the VP of Engineering and Operations at Half Moon Medical (a startup out of the Foundry, a preeminent medical device incubator in the Bay Area).

Thomas Lampo (Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2013) is a data scientist at Uber.

Frances Lau (Stanford Bio-X Bowes Fellow 2007) is an R&D manager at Facebook, working on human-computer interaction for AR/VR.



Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF Veronica Li (see pg. 9 for research details)

Melinda Cromie Lear (Paul Berg Interdisciplinary Biomedical Graduate Fellow, Stanford Bio-X SIGF 2008) is a Staff Systems Engineer in Robotics and Digital Solutions at Johnson & Johnson (formerly Auris Robotics). She is the systems engineering team lead for the robotic bronchoscopy and biopsy product currently in the market.

Paul Lebel (Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2011) is a staff R&D engineer at the Chan Zuckerberg Biohub.

Andrew Lee (Stanford Bio-X Bowes Fellow 2010) is the founder and managing director of the StartX-QB3 joint technology venture, a co-founder of StartX Med, and also a co-founder of the biotech spin-out startup, Stem Cell Theranostics.

Austin Lee (Stanford Bio-X Bowes Fellow 2011) is a Senior Director of Strategy and Business Development with ResMed in San Diego, CA. He was previously a Principal with the health care practice of the Boston Consulting Group.

Hong-Pyo Lee (Stanford Bio-X Bowes Fellow 2017) is a founder and CTO at MEDiC Life Sciences.

Soah Lee (Stanford Bio-X Bowes Fellow 2012) is a postdoctoral student in Dr. Sean Wu's lab at Stanford Cardiovascular Institute. Her postdoctoral research focuses on studying molecular mechanisms of abnormal heart rhythm in patients with devastating heart muscle diseases (e.g. hypertrophic cardiomyopathy) using patient-derived stem cells and bioengineering tools. After her postdoctoral training, Soah aims to become an independent multi-disciplinary researcher in the cardiovascular field with her solid knowledge base and skills in stem cell biology, cardiac development, and bioengineering. She received an NIH F-32 postdoctoral fellowship to support her work until 2021.

Stephen Lee (Stanford Bio-X Bowes Fellow 2005) is the VP of Portfolio Strategy & Innovation for the EMEA region at Discovery, Inc., based in London.

Michael Leung (Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2016) is a founding engineer at a stealth startup company in Palo Alto with the goal of preventing blindness by converting primary care nurses into ophthalmologists using a telemedicine-enabled camera.

Steven Leung (Stanford Bio-X Bowes Fellow 2013) is working as an engineer at a local stealth startup.

Ye (Henry) Li (William and Lynda Steere Fellow, Stanford Bio-X SIGF 2013) is a senior data scientist at Bigeye.

Liang Liang (Lubert Stryer Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2009) is an assistant professor of neuroscience at Yale University.

Orly Liba (Stanford Bio-X Bowes Fellow 2014) works at Google as a senior research scientist developing computational photography algorithms.

Prasheel Lillaney (Stanford Bio-X Bowes Fellow 2005) is an Associate Director of Customer Journey Innovation at Jazz Pharmaceuticals.

Sungwon Lim (Stanford Bio-X Bowes Fellow 2011) is the Founder and CEO of ImpriMed, Inc., a start-up that develops an Al-driven precision medicine service for pets with cancer.

Chao Liu (Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2015) is a postdoc at the Lawrence Livermore National Lab.

Andreas Loening (Stanford Bio-X Bowes Fellow 2004) is an assistant professor in the department of radiology at Stanford University.

Mark D. Longo (Morgridge Family SIGF Fellow, Stanford Bio-X SIGF 2011) is the Chief Technology Officer at Sirona Medical, where he is helping to build a next generation Al-powered radiologist workstation.

Molly Lucas (Stanford Bio-X Bowes Fellow 2019) is a Data Scientist at Janssen Pharmaceuticals (within Johnson & Johnson). Her work focuses on using machine learning and digital health strategies to improve patient tracking and pharmacological development. Additionally, Molly is a Lecturer at Columbia University, where she teaches graduate-level AI & Ethics.

Bertrand Lui (Lubert Stryer Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2006) is a co-founder and the Chief Product Officer at SetSail.

Li Ma (Larry Yung Fellow, Stanford Bio-X SIGF 2009) is an associate professor of statistical science at Duke University. Li received an NSF Career Award in 2018.

Niru Maheswaranathan (Stanford Bio-X Honorary Fellow 2013) is a research scientist at Facebook Reality Labs working on neural interfaces.

Caitlin Maikawa (Stanford Bio-X Bowes Fellow 2019) is a postdoctoral fellow at the Brigham and Women's Hospital in the labs of Jeffrey Karp and Yuhan Lee, where she works on designing materials for drug delivery.

Amanda Malone (Stanford Bio-X Bowes Fellow 2004) is the CSO for Eupraxia Pharmaceuticals, Inc.

Ian Marshall (Stanford Bio-X Bowes Fellow 2008) is an assistant professor (tenure track) at the Section for Microbiology, Department of Biology, at Aarhus University in Denmark.

Payton Marshall (Stanford Bio-X Bowes Fellow 2017) defended his PhD in Immunology in the summer of 2020 and transitioned back to clerkship years of medical school at Stanford, with an expected MD graduation year of 2022.

Trevor Martin (Stanford Bio-X Bowes Fellow 2012) is the CEO and a co-founder of Mammoth Biosciences. They have raised over \$70M to build the next generation of CRISPR products in diagnostics and therapeutics. Trevor has been honored with a variety of awards for his entrepreneurial and scientific work including Forbes's 30 Under 30 and Fortune's 40 Under 40 lists.



Rebecca Marton (Seth A. Ritch Graduate Fellow, Stanford Bio-X SIGF 2017) is a Principal Scientific Researcher at Genentech.

Melina Mathur (Stanford Bio-X Bowes Fellow 2010) is the Product Manager for Biopharma at Twist Bioscience.

Joanna Mattis (Stanford Bio-X Bowes Fellow 2010) completed her neurology residency and epilepsy fellowship at the University of Pennsylvania. She is now an Instructor in the Department of Neurology at Penn.

Aaron Mayer (Stanford Bio-X Honorary Fellow 2015) is co-founder and chief scientific officer of Enable Medicine, a biopharma company that is building biological maps to guide better medicine.

Jennifer McCaney (Stanford Bio-X Bowes Fellow 2006) is the co-executive director of the University of California, Los Angeles Biodesign Program. She has a dual appointment as an Adjunct Assistant Professor at the UCLA Anderson School of Management and the UCLA David Geffen School of Medicine's Department of Medicine in the Division of Pulmonology and Critical Care. Jennifer is an Associate Director of the UCLA Clinical Translational Science Institute and the faculty lead of the MBA Healthcare Specialization at UCLA Anderson. Jennifer is the PI of two federal grants from the U.S. Economic Development Administration to advance medical technology entrepreneurship and was most recently recognized by Diversity in Action Magazine for her work in promoting diversity and equity in healthcare innovation.

Allister McGuire (Stanford Bio-X Bowes Fellow 2013) is a lead hardware engineer at Twenty Twenty Therapeutics in South San Francisco.

Cory McLean (Stanford Bio-X Bowes Fellow 2007) leads the genomics team in Google Health, located in Cambridge, Massachusetts.

Arek Melkonian (Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2016) is a resident in clinical pathology at Brigham and Women's Hospital in Boston, MA.

Leslie Meltzer (Stanford Bio-X Bowes Fellow 2004) is the Chief Medical Officer at Orchard Therapeutics.

Samir Menon (Colella Family Fellow, Stanford Bio-X SIGF 2011) is the founder and CEO of Dexterity, Inc., a start-up focused on robotics solutions for logistics, warehousing, and supply chain operations.

Amanda Miguel (Stanford Bio-X Honorary Fellow 2013) works for the application company Steady as a senior data scientist.

Denitsa Milanova (Stanford Bio-X Medtronic Fellow 2011) is a technology development fellow at Harvard's Wyss Institute.

Murtaza Mogri (Stanford Bio-X Bowes Fellow 2006) is the Director of Business Development and Market Access for V-Wave, a start-up developing minimally-invasive implantable devices for treating patients with chronic heart failure.V-Wave has received strategic investments from Johnson & Johnson and Edwards Lifesciences, and raised \$70M in Series C funding to support a pivotal study of their heart failure therapy.

Kate Montgomery (Stanford Bio-X Bowes Fellow 2009 and William and Lynda Steere Fellow, Stanford Bio-X SIGF 2012) is the manager of clinical and medical affairs at Enspectra Health.The company's technology, minimally invasive cellular imaging, was supported as an academic project by a Stanford Bio-X grant when it was early stage and high-risk, and is now being commercialized to improve human health.

Sergio Moreno (Stanford Bio-X Bowes Fellow 2004) is currently searching for job opportunities.

Paola Moreno-Roman (Stanford Bio-X Bowes Fellow 2014) is currently the Director of Strategic Partnerships at Foldscope Instruments, Inc., where she works on bringing powerful low-cost tools to communities around the world.

Mira Moufarrej (Stanford Bio-X Bowes Fellow 2018) is a Swanson Fellow at The Column Group, a science-driven venture capital firm, where she is focused on early-stage drug discovery company creation.

David Myung (Stanford Bio-X Bowes Fellow 2005) is currently an assistant professor of ophthalmology at the Byers Eye Institute (BEIS) and the VA Palo Alto Health Care System, and, by courtesy, of chemical engineering at Stanford. He is also a Director of the Ophthalmic Innovation Program and the Director of the Stanford Automated Teleophthalmology and Universal Screening (STATUS) Program, which oversees a Bay Area-wide remote diabetic retinopathy testing program. David's laboratory is focused on ophthalmic regenerative medicine and drug delivery, specifically directed at the treatment of severe corneal and ocular surface injury and disease, as well as digital health and telemedicine in ophthalmology. He is the recipient of grants from the Matilda Ziegler Foundation for the Blind, the Department of Veterans Affairs, and the SPARK program at Stanford, as well as Career Development Awards from the National Eye Institute at the NIH and Research to Prevent Blindness.

Daniel Newburger (Morgridge Family SIGF Fellow, Stanford Bio-X SIGF 2011) works as a software engineer at Google.

Elaine Ng (Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF 2016) is a postdoctoral fellow in Dr. Shan X. Wang's lab, co-mentored by Dr. Jianghong Rao, working on *in vivo* and *in vitro* therapy monitoring in advanced stage lung cancer patients.

Wendy Ni (Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF 2012) is a data scientist at Reddit in trust and safety. Her work focuses on strategic insights, product improvements, and better enforcement against bad content and bad behavior.

William Noderer (Stanford Bio-X Bowes Fellow 2010) is working for the Boston Consulting Group as a partner.

James Notwell (Affymetrix Bio-X Fellow, Stanford Bio-X SIGF 2013) is the head of informatics at MapLight Therapeutics, which was founded by Stanford Bio-X faculty members Dr. Karl Deisseroth and Dr. Robert Malenka.

Johanna O'Day (Stanford Bio-X Bowes Fellow 2017) is a Scientific Program Manager at the Wu Tsai Human Performance Alliance, a collaborative center working to discover the unknown principles of peak performance and translate them to enable optimal health and well-being for all.

Abdulmalik Obaid (Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF 2018) is working at a stealth startup developing microelectronic devices in the Bay Area.

Peter Olcott (Presidential Fellow, Stanford Bio-X SIGF 2009) is working as a fellow at Reflexion Medical, developing the next generation of radiotherapy devices for the treatment of cancer.

Carmichael Ong (Stanford Bio-X Bowes Fellow 2011) is a research engineer with the Mobilize and Restore Centers at Stanford University, and a consultant for applying simulation and machine learning methods in biomechanical applications.

Shawn Ouyang (Affymetrix Bio-X Fellow, Stanford Bio-X SIGF 2009) is a principal scientist at the biotech startup SUMO Biosciences and a Principal Investigator of three NIH SBIR grants.

Sung Jin Park (Stanford Bio-X Bowes Fellow 2013) is a manager at Amgen, working on business analytics for pharmaceutical products.

William Parsons (Presidential Fellow, Stanford Bio-X SIGF 2010) is an assistant professor of chemistry and biochemistry at Oberlin College.

Christine McLeavey Payne (Stanford Bio-X Bowes Fellow 2009) is a research scientist and team lead at OpenAI, an AI research company focused on developing a path to safe artificial general intelligence. After Stanford, she worked for six years as a classical pianist, and co-founded Ensemble SF with members of the SF Symphony and Ballet.

"I am very grateful for being part of the Bio-X community. Bio-X has helped me connect with inspiring scientists from various fields, which broadened my knowledge and contributed to my PhD research [and] provided multiple opportunities for showcasing my work which was very beneficial for expanding my academic network and generating ideas." — Orly Liba, Stanford Bio-X Bowes Fellow **Bethany Percha** (Morgridge Family SIGF Fellow, Stanford Bio-X SIGF 2013) is the Senior Vice President of Data Science at Summit Health, a health system based in New Jersey, and an adjunct assistant professor at Mount Sinai.

Petar Petrov (Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2017) is a postdoctoral scholar in the physics department at the University of California, Berkeley.

Steven Petsche (Stanford Bio-X Bowes Fellow 2011) works as a software engineer for Google in Irvine, California.

Samantha Piekos (Tusher Family Stanford Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2018) is a postdoctoral scholar in Dr. Lee Hood's laboratory at The Institute of System Biology. She is identifying novel biomarkers to predict negative pregnancy outcomes like preterm birth.

Benjamin Poole (Seth A. Ritch Graduate Fellow, Stanford Bio-X SIGF 2014) is a research scientist at Google Brain.

Arjun Prabhakar (Affymetrix Bio-X Fellow, Stanford Bio-X SIGF 2016) is a Scientist in R&D at Pacific Biosciences.

Guillem Pratx (Stanford Bio-X Bowes Fellow 2006) is an associate professor in radiation oncology at Stanford University. His research focus is on biomedical imaging for radiotherapy.

Teresa Purzner (Felix and Heather Baker Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2015) is a neurosurgeon, developmental neurobiologist, and co-founder and CSO of Cerebelly, a brain-focused nutritious baby food line that she started while at Stanford, which can now be found in over 4,500 stores nation-wide.

Jeffrey Quinn (Stanford Bio-X Bowes Fellow 2012) is a Senior Scientist at Inscripta, Inc. in Boulder, Colorado.

Amanda Rabe (Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2016) is a scientist in the Bay Area, currently exploring employment opportunities in local BioTech and start-up industries.

Ashwin Ramachandran (Stanford Bio-X Bowes Fellow 2017) is a postdoctoral researcher at Princeton University, where he studies mechanosensing in bacteria.

Alexander Ratner (Morgridge Family SIGF Fellow, Stanford Bio-X SIGF 2017) is the co-founder and CEO at Snorkel AI, a startup supporting and commercializing the open source Snorkel framework (snorkel.org) for programmatically building and managing training data for machine learning, which he developed as part of his thesis work. He is an assistant professor in computer science at the University of Washington in Seattle.



Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF Kristjan Eerik Kaseniit (see pg. 8 for research details)

Manuel Rausch (Affymetrix Bio-X Fellow, Stanford Bio-X SIGF 2012) is an assistant professor in the department of aerospace engineering & engineering mechanics at University of Texas at Austin. Manuel has received the American Heart Association Career Development Award, the Moncrief Grand Challenge Award, the NSF Career Award and recently been awarded the Cockrell School of Engineering Award for Outstanding Engineering Teaching by an Assistant Professor.

Andreas Rauschecker (Stanford Bio-X Bowes Fellow 2008) is an assistant professor in neuroradiology (Department of Radiology & Biomedical Imaging) at the University of California, San Francisco.

Heather Rogan (Rogers Family Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2016) is an Engagement Manager at Headland Strategy Group, a biotech consulting firm focused on assisting healthcare companies with commercial, corporate (BD/M&A), and portfolio and R&D strategy.

Adam Rubin (William and Lynda Steere Fellow, Stanford Bio-X SIGF 2015) is a postdoc at the Broad Institute in the labs of Dr.Aviv Regev and Dr.Alex Shalek.

Sanaz Saatchi (Stanford Bio-X Amgen Fellow 2009) is the Director of New Business Development at Intuitive Surgical, the pioneer and leader of robotic surgery. Collaborating with the internal Strategy, Venture, and Research organizations, she is focused on leading Intuitive's corporate development efforts by idenfitying and developing opportunities for new technology initiatives at Intuitive. Prior to Intuitive Surgical, Sanaz was the Director of Product Strategy at Arterys, which has developed a cloud-based medical imaging software that uses AI to facilitate medical imaging analysis. She led a team focused on defining the product pipeline and developing strategic partnerships for technology development. Prior to Arterys, Sanaz was the Co-Founder and President of CrownPoint Medical, LLC (CPM), which provides strategic services that accelerate healthcare innovation and commercialization, working at the intersection of R&D and Marketing to help clients understand the product-customer interface and product manager and led a cross-functional and multi-company team through needs finding, product development, and commercial global launch of two cardiovascular medical devices. Sanaz also participated in Medtronic's Global Innovation Fellowship program, with a project focused on improving diabetes awareness and detection in South Africa.

Joel Sadler (Stanford Bio-X Bowes Fellow 2012) has co-founded and is president of a creative computing startup, Piper Inc., which aims to inspire kids to make electronic devices that "spark every child's inner inventor" in education. Joel's company was inspired by his Stanford Bio-X research and PhD thesis on the "Anatomy of Creative Computing".

Rachel Hagey Saluti (Mona M. Burgess Fellow, Stanford Bio-X SIGF 2014) is currently a staff scientist in Jeffrey Glenn's lab at Stanford, working towards bringing novel antiviral therapeutics against influenza and SARS-CoV-2 that she designed and patented into the clinic.

Jayodita Sanghvi (Stanford Bio-X Bowes Fellow 2007) is the director of data science for Grand Rounds, a start-up in San Francisco aiming to navigate patients to more relevant and high-quality healthcare.

Andrew Savinov (Paul Berg Interdisciplinary Biomedical Graduate Fellow, Stanford Bio-X SIGF 2014) is an NIH F32 postdoctoral fellow in Dr. Gene-Wei Li's lab at the Massachusetts Institute of Technology.



Nicole Schiavone (Stanford Bio-X Bowes Fellow 2019) is a scientific reviewer at the FDA in the Division of Circulatory Support, Structural and Vascular Devices in the Office of Cardiovascular Devices.

Tim Schnabel (Stanford Bio-X Bowes Fellow 2015) is a freshly minted PhD from the department of Bioengineering, currently exploring what his next step will be. His passion is early stage research and discovery, creatively building biotechnological solutions to challenges in planet and human health.

Alia Schoen (Stanford Bio-X Bowes Fellow 2009) recently joined Stanford's Research Development Office, where she will support faculty teams from across the University with a focus on large, collaborative research proposals in the STEM fields and with emphasis on climate and sustainability research. Prior to this new position, she worked as a public policy manager at Bloom Energy, a stationary fuel cell manufacturer whose vision is to make clean, reliable energy affordable for everyone in the world. Dr. Schoen leveraged both her interdisciplinary education as well as her time in the California State Assembly as a CCST Science Policy Fellow in her career in policy and will continue to do so in her new role at Stanford.

Mark Sellmyer (Stanford Bio-X Bowes Fellow 2008) is an assistant professor of radiology with a secondary appointment in biochemistry and biophysics at the University of Pennsylvania. His lab focuses on molecular and chemical tool development for applications in cancer biology and infectious disease. Clinically, Mark is an attending physician in nuclear radiology. He was recently awarded the Burroughs Wellcome Fund Career Award for Medical Scientists (CAMS) and the NIH Director's Early Independence Award (DP5).

Jake Sganga (Stanford Bio-X Bowes Fellow 2014) is a co-founder and CTO of Remedy Robotics, a surgical robotics startup.

Pankaj Sharma (Stanford Bio-X Bowes Fellow 2012) is a R&D staff engineer at Stryker Corporation.

Anna Shcherbina (Stanford Bio-X Bowes Fellow 2017) is a machine learning engineer at insitro, a start-up focused on high throughput drug target discovery and development.

Handuo Shi (Rosenberg Ach Family Fellow, Stanford Bio-X SIGF 2016) is a postdoctoral scholar in Dr. Justin Sonnenburg's lab at Stanford. Her research focuses on the biophysical modeling of human gut bacterial communities.

Avanti Shrikumar (Stanford Bio-X Bowes Fellow 2016) is a Stanford Data Science postdoctoral fellow applying machine learning to study oceanic nutrient cycling with Professor Karen Casciotti.

Steven Shuken (Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2017) is a postdoctoral research fellow in the Gygi Laboratory in the Department of Cell Biology at Harvard Medical School in Boston, MA. The Gygi Lab develops novel methodologies in mass spectrometry-based proteomics.

Herbert Silva (Stanford Bio-X Bowes Fellow 2013) is working at Johnson Space Center (NASA) as a structural dynamics analyst.

Joo Yong Sim (Stanford Bio-X Bowes Fellow 2010) works in the department of Mechanical Systems Engineering at Sookmyung Women's University, South Korea.

Steven Sloan (Stanford Bio-X Bowes Fellow 2014) is an assistant professor in the department of human genetics at Emory University.

Ruth Sommese (Paul Berg Interdisciplinary Biomedical Graduate Fellow, Stanford Bio-X SIGF 2011) is a principal scientist at Pfizer.

Min-Sun Son (Stanford Bio-X Bowes Fellow 2007) is an R&D manager at Abbott Laboratories.

Ryan Squire (Stanford Bio-X Bowes Fellow 2010) is the owner of Lembas Data Science, a consulting practice focused on statistics and geospatial data science for internet technology companies.

Alice Stanton (Stanford Bio-X Bowes Fellow 2017) is a postdoctoral fellow at MIT in Robert Langer's laboratory.

Lyndsay Stapleton (Affymetrix Bio-X Fellow, Stanford Bio-X SIGF 2018) is a Manager of Strategy and Operations at Calcilytix, a BridgeBio Company.

Jaimie Steinmetz (Stanford Bio-X Honorary Fellow 2010) is a Managing Research Scientist on the Global Burden of Disease Study at the University of Washington Institute for Health Metrics and Evaluation.

Pakpoom Subsoontorn (Stanford Bio-X Bowes Fellow 2008) is a lecturer in the department of biochemistry, faculty of medical science, at Naresuan University in Thailand.

Patricia Suma (Stanford Bio-X Bowes and Stanford Bio-X Amgen Fellow 2011) is the CA Reproductive Health Equity Project Specialist at Health Connected, a non-profit that teaches age appropriate and comprehensive sexual and reproductive health and is concurrently pursuing a master of arts in secondary education from the Teacher Residents program at Columbia Teachers College in biology and special education.

Jong Min Sung (Stanford Bio-X Bowes Fellow 2009) is a principal data scientist at Roche Sequencing Solutions, Santa Clara.

Johanna Sweere (Lubert Stryer Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2015) graduated in January of 2019. The main body of her research was published in *Science* in March of 2019, and was highlighted in the June edition of the microbiology podcast "This Week in Microbiology", for which Johanna was interviewed by the president of the American Society for Microbiology. Johanna has since also authored additional work appearing in *Science Translational Medicine*, *Advances in Wound Care*, and other publications. She currently works as a consultant at a life sciences consulting firm in San Francisco.

Jiongyi Tan (Enlight Foundation Interdisciplinary Graduate Fellow, Stanford Bio-X SIGF 2014) is a research scientist at Nautilus Biotechnology.

Grace Tang (Stanford Bio-X Bowes Fellow 2008) is a senior staff machine learning engineer (trust and fairness Al) at LinkedIn.

Alexander Tarashansky (Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2018) is a data scientist at CZ Biohub.

Noureddine Tayebi (Stanford Bio-X Bowes Fellow 2009) is a senior research scientist and team lead at Intel Research Labs, Intel Inc.

Rebecca Taylor (Stanford Bio-X Bowes Fellow 2007) is an associate professor of mechanical engineering at Carnegie Mellon University. She received the Air Force Office of Scientific Research Young Investigator Program Award in 2018 and the NSF Faculty Early Career Development Program (CAREER) Award in 2020. In 2021 she was named a CMU CIT Dean's Early Career Fellow.

Terence Theisen (Colella Family Fellow, Stanford Bio-X SIGF 2017) is a scientist at Nanostring, a biotech company in Seattle, WA.

Matthew Titchenal (Stanford Bio-X Bowes Fellow 2015) is continuing his post-graduate career as a technical consultant at InSciTech in Los Altos, California. Matt is working with the team at InSciTech to provide rigorous, accurate, and reliable analyses of technical problems involving injury biomechanics and accident reconstruction. Matt is also continuing to stay involved with the research being done by his advisers at Stanford, Dr. Constance Chu of Orthopaedic Surgery and Dr. Tom Andriacchi of Mechanical Engineering, by assisting in the analysis and preparation of manuscripts for publication.

Carolina Tropini (Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF 2011) is an assistant professor in the school of biomedical engineering and the department of microbiology and immunology at the University of British Columbia.

Baris Ungun (Stanford Bio-X Bowes Fellow 2014) is a lead Machine Learning Engineer at insitro.

Jules VanDersarl (Stanford Bio-X Bowes Fellow 2005) works at Meso Scale Diagnostics as a Senior Director of Engineering.

Mathias Voges (Stanford Bio-X Bowes Fellow 2013) is a machine learning engineer at Google X.

Michael Wainberg (Stanford Bio-X Bowes Fellow 2016) started a postdoc with Dr. Shreejoy Tripathy at the Centre for Addiction and Mental Health.

Graham Walmsley (Stanford Bio-X Fellow 2015) is a co-founder and Managing Partner of Logos Capital, a fundamental biotechnology-focused investment fund that seeks to combine in-house data analytics with scientific and clinical expertise to identify transformative therapies in healthcare.

Aaron Wang (Stanford Bio-X Bowes Fellow 2006) is part of a private practice in Pittsburgh, Pennsylvania, as a corneal specialist. He is working on commercializing a new ophthalmic imaging device, for which he recently obtained a patent. He is also developing new surgical instruments.

Christine Wang (Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF 2014) is currently working in consulting at IQVIA.

Jack Wang (Stanford Bio-X Bowes Fellow 2011) is a neurocritical care physician at the Stanford University Medical Center.

Jiarui Wang (Mona M. Burgess Fellow, Stanford Bio-X SIGF 2018) has joined Berkeley Lights as an R&D scientist.

Larry Wang (Stanford Bio-X Bowes Fellow 2007) is a launch program manager at Pebble Technology.

Wanxin Wang (Stanford Bio-X Bowes Fellow 2015) is a postdoctoral fellow at the University of California, San Francisco in Linda Giudice's lab in the department of obstetrics and gynecology.

Yen-Hsiang Wang (Stanford Bio-X Bowes Fellow 2009) is the Head of Strategy and BD at Antheia.

Aaron Wenger (Morgridge Family SIGF Fellow, Stanford Bio-X SIGF 2010) is a bioinformatics research scientist at Pacific Biosciences, developing applications of long-read genome sequencing.

Lucien Weiss (Stanford Bio-X Bowes Fellow 2012) is an assistant professor of engineering physics at Polytechnique Montreal.

Andrew Weitz (Stanford Bio-X Bowes Fellow 2012) is a data scientist at Edge Analytics, a boutique technical consulting firm that partners with startups and Fortune 500 companies to turn ideas into products.

Kitchener Wilson (Stanford Bio-X Bowes Fellow 2007) is the co-founder and CEO of a stealth startup.

Brian Wilt (Stanford Bio-X Bowes Fellow 2008) is a senior manager in Data Science at Facebook.

Yonatan Winetraub (Stanford Bio-X Bowes Fellow 2016) won the NIH Director's Early Independence Award in 2021 and will start an instructor position in structural biology department this fall. His lab will explore how to detect cancer non-invasively by combining optical coherence tomography and machine learning.

Katrina Wisdom (Stanford Bio-X Honorary Fellow 2016) is a Bioengineering Investigator of Complex In Vitro Models at GlaxoSmithKline.

Remus Wong (Stanford Bio-X Bowes Fellow 2010) is a senior scientist at Nkarta Therapeutics, where he performs IND-enabling research and process development activities on engineered NK cells.

Angela Wu (Stanford Bio-X Bowes Fellow 2006) is an assistant professor in the division of life science and the department of chemical and biological engineering at Hong Kong University of Science and Technology (HKUST). Angela is passionate about the development of new technologies at the interface of basic biology and engineering, and using these interdisciplinary approaches to investigate biological mechanisms and human diseases. Early in her scientific career, she was named a Siebel Scholar in 2010, and was also awarded a Bio-X Bowes Fellowship for her research. In 2015, Angela also co-founded Agenovir Corporation, a CRISPR-based therapeutics company targeting infectious diseases for a complete cure. While at Agenovir, she helped to successfully raise Series A venture capital funding of US\$10.6M.Agenovir was recently acquired.As recognition of her achievements in technology and innovation, Dr. Wu was named one of MIT Technology Review Innovators under 35 Asia in 2016, and a World Economic Forum Young Scientist in 2018.

Lyndia Wu (Stanford Bio-X Bowes Fellow 2014) has started a tenure-track assistant professor position in the mechanical engineering department at the University of British Columbia in Vancouver, Canada.

Nan Xiao (Stanford Bio-X Bowes Fellow 2007) works for Heartflow, Inc. in Redwood City as a computational scientist.

Andrew Yang (Stanford Bio-X Honorary Fellow 2015) is a postdoctoral scholar in Stanford's Neurology department.

Helen Yang (Lavidge and McKinley Interdisciplinary Fellow, Stanford Bio-X SIGF 2014) is a postdoctoral scholar at Harvard Medical School with Dr. Rachel Wilson.

Renzhi Yang (Stanford Bio-X Bowes Fellow 2016) is a post-doctoral researcher in Stanford at Dr. Nirao Shah's group, studying neural mechanisms underlying social behaviors.

Yufeng Yang (Stanford Bio-X Bowes Fellow 2005) is a professor/investigator in the Institute of Life Sciences at Fuzhou University.

Peggy Yao (Stanford Bio-X Bowes Fellow 2006) is an Engineering Manager of a machine learning team at Facebook.

Sara Z.Yao (Stanford Bio-X Bowes Fellow 2004) founded DeviceDebut, LLC after exploring medical device R&D for over 5 years. DeviceDebut helped U.S. and EU medical device manufacturers register with CFDA, enter the Chinese market, and receive funding from the Chinese investors. Since late 2020, Sara has shifted her career focus to the local Bay Area, and has been a Realtor serving the local communities. Coupled with her project management and critical thinking skills, Sara's international business background provides a distinct edge in a competitive housing market.

Anne Ye (Stanford Bio-X Bowes Fellow 2012) is working in Atreca's Epitope ID team in San Carlos.

Patrick Ye (Bruce and Elizabeth Dunlevie Fellow, Stanford Bio-X SIGF 2013) is a principal scientist at BillionToOne, a molecular diagnostics startup in Menlo Park, CA.

Michael Yip (Stanford Bio-X Bowes Fellow 2013) is an associate professor in the department of electrical and computer engineering and Director of Medical Robotics Collaboratory at the Contextual Robotics Institute in the University of California, San Diego.

Jennifer Yong (Morgridge Family SIGF Fellow, Stanford Bio-X SIGF 2012) is a Human Factors Researcher at Google.

Ryan York (Stanford Bio-X Bowes Fellow 2013) is a postdoc in Dr. Tom Clandinin's lab at Stanford.

Bo Zhang (Mona M. Burgess Fellow, Stanford Bio-X SIGF 2013) is the VP of chemistry and cofounder of Apostle, Inc. Apostle is a biotechnology company in Sunnyvale, California, which has been accepted by the Stanford StartX accelerator. It's in the business of the research, development, licensing, and sales of novel MiniMax magnetic nanoparticle technology, Triton cancer genome deep learning technology, Al-enabled nanoDiagnostics (AID) technology, and the related intellectual properties, products, and services for diagnosis and treatment of human diseases, to fundamentally improve the accuracy of cancer diagnosis at early stage. Bo is also an associate professor at Southern University of Science and Technology of China.

Xiaoxue Zhou (Larry Yung Fellow, Stanford Bio-X SIGF 2010) is a postdoctoral associate in Angelika Amon's lab at MIT. She received a Helen Hay Whitney Postdoctoral Fellowship to support her work.

Danqing Zhu (Stanford Interdisciplinary Graduate Fellow (Anonymous Donor), Stanford Bio-X SIGF 2015) works in Dr. David Schaffer's group at University of California, Berkeley as a postdoctoral scholar.

Stanford Bio-X Postdocs

The Stanford Bio-X Postdoctoral Fellowships are made possible through the support of our industry contacts. To date, eight students have been postdoctoral fellows, all of whom are now making an impact in academia and industry.

Tiffany Chung (Stanford Bio-X Postdoctoral Fellow 2005) is a chemist for the Hong Kong government.

Anna Geraghty (Stanford Bio-X Genentech Postdoctoral Fellow 2015) is an Instructor in the Department of Neurology and Neurological Sciences. Under the supervision of her primary faculty mentor Dr. Michelle Monje-Deisseroth she is researching the long-term cognitive consequences of CAR T-cell immunotherapy for pediatric and spinal cord brain tumors.

Subhaneil Lahiri (Stanford Bio-X Genentech Postdoctoral Fellow 2012) is a research associate in Surya Ganguli's group in the applied physics department at Stanford University.

Yu-Shan Lin (Stanford Bio-X Postdoctoral Fellow 2009) is an associate professor of chemistry at Tufts University.

Elena Rykhlevskaia (Stanford Bio-X Lubert Stryer Interdisciplinary Postdoctoral Fellow 2008) is a decision science manager at Facebook leading marketing analytics solutions team.

Shilpa Sambashivan (Stanford Bio-X Genentech Postdoctoral Fellow 2007) is the Senior Vice President of Biology and Translational Sciences at Nura Bio, Inc.

Sergey Solomatin (Stanford Bio-X Postdoctoral Fellow 2005) is the VP of Research, Materials & Texture at Impossible Foods Inc., a company that was founded by Stanford biochemistry professor emeritus, Pat Brown, and has raised over \$1.5 B (according to Reuters). Its goal is to revolutionize the food industry and to roll back the adverse effects that industrial scale animal farming has on the environment and on us.

Tristan Ursell (Stanford Bio-X Genentech Postdoctoral Fellow 2009) is an assistant professor of physics at the University of Oregon working on microbial community biophysics.



Morgridge Family SIGF Fellow, Stanford Bio-X SIGF Yuan Jia (see pg. 8 for research details)

Stanford Bio-X PhD Fellowships 2021



William and Lynda Steere Fellow, Stanford Bio-X SIGF Carlos Alvarado Acosta (see pg. 4 for research details)

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