Stanford Bio-X
PhD Fellowships
2015

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 709 Stanford Faculty and over 2,000 Stanford Scientists are affiliated with Stanford Bio-X.

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 Bio-X Bowes Fellowships and the Bio-X Stanford Interdisciplinary Graduate Fellowships (Bio-X SIGFs), have provided 198 graduate students the opportunity 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. Formal workshops help the Stanford Bio-X Fellows to improve their skills in delivering scientific presentations, writing manuscripts, writing grants, filing for patents, and creating business plans. Through the Stanford Bio-X Travel Grants, where our fellows are accepted to give talks at national and international meetings, we enable our fellows to disseminate their knowledge, learn from others, and network with leaders in their field. More informally, small-group luncheons and discussions with Nobel Laureates and other distinguished faculty, as well as industry leaders, provide Stanford Bio-X fellows with expert advice regarding their current research and future careers. 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.

The generous support from donors, including the Bowes Foundation, enables the program to grow—at any given time, Stanford Bio-X is training approximately 60 PhD fellows, and Fall 2015 will bring 25 new fellows to the program. Graduates of the program have transitioned to promising post-doctoral positions or medical training and to successful careers in academia and industry, while others have established their own start-up companies. Three of our alumni—David Camarillo, Adam de la Zerda, and Guillem Pratx—are now faculty members at Stanford University. Additionally, our fellows, past and present, publish high-impact first-author journal articles, receive grants and fellowships from Fulbright, NIH, NRSA, and NSF among others, file patent applications, and give TEDx talks, exemplifying the importance of interdisciplinary research.

We hope you enjoy reading about the research being conducted by our students.

Success at Stanford and beyond...

Adam de la Zerda, 2008 Stanford Bio-X Skippy Frank Fellow, is now an assistant professor of structural biology at Stanford. In 2012, Adam received a Stanford Bio-X IIP Seed Grant, and in 2014 he became the primary faculty mentor for Stanford Bio-X Bowes Fellow Orly Liba. He was highlighted as one of Forbes Magazine's 30 Under 30 in Science and Health-care, in 2012 and again in 2014 for the ground-breaking work in molecular imaging that he began during his Stanford Bio-X Fellowship.

Another graduate of the program, **2008 Colella Family SIGF and Stanford Bio-X Fellow Viviana Gradinaru**, is now an assistant professor at California Institute of Technology. Her work exemplifies how collaborating with faculty mentors can lead to new innovations. Viviana, alongside Karl Deisseroth and Jaimie Henderson, developed a revolutionary new Optogenetic technique that allows brain cells to be controlled by pulses of light. She now applies this technique to patients with Parkinson's disease in her own lab at CalTech.

2012 Stanford Bio-X Bowes Fellow Joel Sadler is interested in solving big problems with tiny prototypes. He is leveraging his interdisciplinary training and mechanical engineering expertise to design and distribute an affordable knee joint for amputees in developing countries. His Jaipur Knee was hailed as one of *Time Magazine*'s 50 Best Inventions in 2009. In 2013, he gave a TEDx talk in Jamaica about how big dreams and creativity can change the world.

To learn about the successes of all of our alumni, please see the "Where are they now?" section beginning on page 28.

Stanford Bio-X Fellows 2012 group photo

STANFORD BIO-X

Stanford Bio-X Graduate Fellowships 2015

Stanford Bio-X Fellows 2014 group photo

ATISH AGARWALA
Stanford Bio-X Bowes Fellow
Physics
Mentors: Daniel Fisher (Applied Physics) and Gavin Sherlock (Genetics)
Using high throughput DNA sequencing technology and genetic tools, it is now possible to conduct experimental studies of evolution. In conjunction with the Fisher and Sherlock groups, Atish works to understand the quantitative features of evolution by finding patterns in the data from such experiments. He also works on understanding the theoretical aspects of evolution, and is especially interested in the role that interactions between genes plays in determining the speed and predictability of evolution. *An understanding of evolution can one day be leveraged to design better treatments for some types of cancer where natural selection plays an important role in the progression of the disease.*

MATTHEW BULL
**Stanford Bio-X Honorary Fellow**
Applied Physics
Mentors: Manu Prakash (Bioengineering), Jan Skotheim (Biology), and Tim Stearns (Biology)
Life is the ultimate innovator. And yet, life's beautifully coordinated dynamics present many challenges to our ability to harness and mimic for societal gain. Matthew strives at the axis of experiment and theory to bridge organelle-resolved, spatiotemporal dynamics (individual cilia) with organismal decision making. This work is developing stereotype-free quantification of complex behavior, over two orders of magnitude in space and four in time, by embracing neuroscience-inspired approaches to probe the emergence of multicellular computation in a phylogenetically important living fossil. *Mapping microstate dynamics to macroscopic information processing is critical to the evolution of the neurosystem and the next-generation of adaptive technologies.*

"Being a Bio-X fellow, I got the opportunity to interact and effectively share my work with fellow researchers through poster presentations and symposia. 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."
— Pankaj Sharma, Stanford Bio-X Bowes Fellow
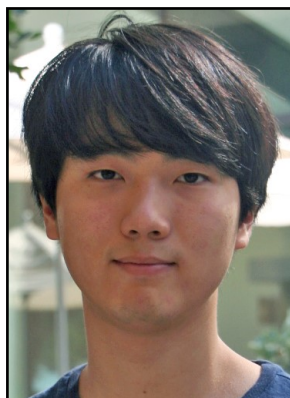
JUNHONG CHOI
Stanford Bio-X Bowes Fellow
Applied Physics
Mentors: Joseph Puglisi (Structural Biology) and Zev Bryant (Bioengineering)
In all organisms, translation is the last stage of information transfer from genes to proteins. Translation involves interactions between many factors including the messenger RNA, a carrier of genetic information from DNA, and the ribosome, a bio-machine that reads messenger RNA and synthesizes corresponding protein. During protein translation, multiple ribosomes read a single messenger RNA simultaneously to form a complex known as a polysome; yet how interactions within the polysome affect protein translation has remained uncharted. *Choi proposes to integrate multiple single-molecule biophysical tools to observe one polysome at a time and provide a richer picture of protein translation, a central process in biology.*


ANNA CUNNINGHAM
Morgridge Family SIGF, Stanford Bio-X Fellow
Chemical & Systems Biology
Mentors: Daria Mochly-Rosen (Chemical & Systems Biology) and KC Huang (Bioengineering, Microbiology & Immunology)
G6PD deficiency afflicts 400 million people worldwide, and is a risk factor for many diseases such as diabetes, bipolar disorder, and Huntington's disease. The deficiency can result from 160 different mutations in the protein glucose-6-phosphate dehydrogenase (G6PD); these mutations disable the function of G6PD in various ways. Anna plans to use a bioinformatic method to study the evolution of G6PD, learn more about the effects of known G6PD mutations, and predict the effects of new mutations. This project will advance the understanding of this essential protein and guide the identification of a drug that could rescue G6PD mutations and possibly treat G6PD deficiency.

Stanford Bio-X Bowes Fellow Eva Huang (see pg. 19 for research details)
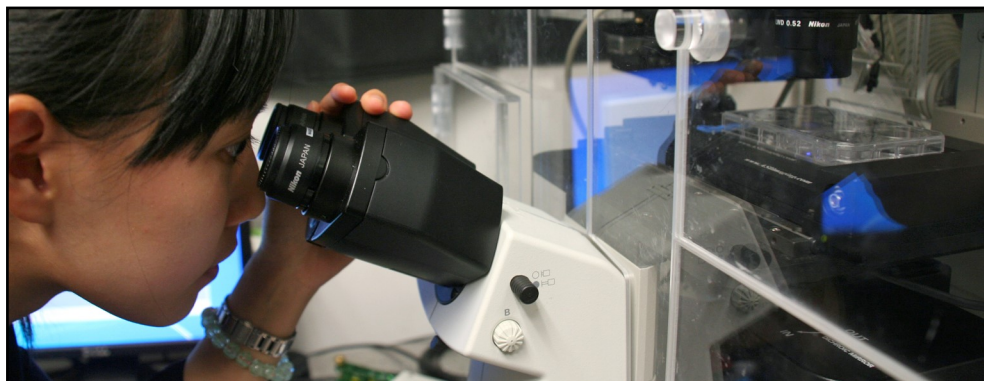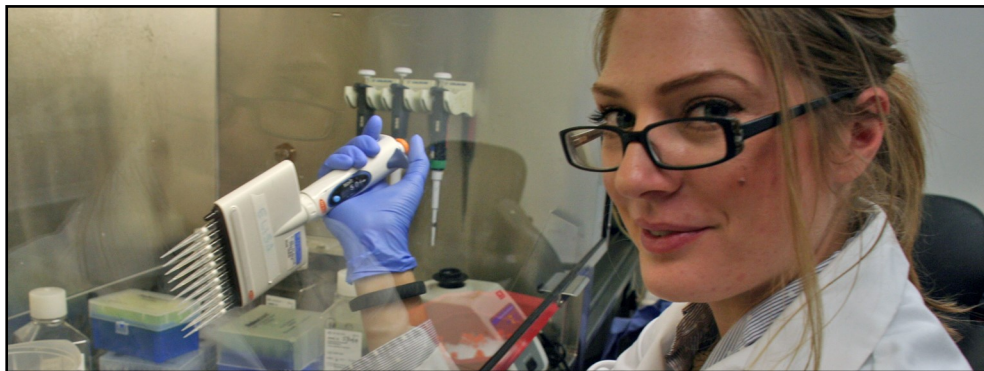
Mona M. Burgess SIGF and Stanford Bio-X Fellow Rachel Braun-Hagey (see pg. 16 for research details)

JASMINE DICKINSON
Stanford Bio-X Honorary Fellow
Biology
Mentors: Gregory Scherrer (Anesthesiology, Perioperative & Pain Medicine, Neurosurgery) and Mark Schnitzer (Biology, Applied Physics)
Pain is both a sensory and emotional experience. Using a novel behavioral paradigm of pain observation to selectively target emotional circuits, Jasmine aims to determine the precise anatomical substrates of pain-related emotion, how it's encoded in neural networks, and how these circuits can be targeted for pain relief. *By combining calcium imaging and optogenetic manipulations in animals, she will be able to "see" and alter pain in the brain. This allows us to assign objective, predictive measures of perceptual states and manipulate those states to reduce suffering.*

NIR EVEN-CHEN
Stanford Bio-X Bowes Fellow
Electrical Engineering
Mentors: Krishna Shenoy (Electrical Engineering) and Kwabena Boahen (Bioengineering)
Brain machine interfaces (BMIs) aim to improve communication ability for people with paralysis (such as via cortical control of a computer cursor). Currently, invasive BMIs are hampered by low performance. However, a BMI user has constant visual feedback about the ongoing task and any errors could potentially be reflected in his brain activity. Nir's goal is to characterize the neural activity correlated with those errors, and to incorporate them as feedback to the BMI decoder. In his preliminary experiments with monkeys, Nir utilized those signals to auto-delete failures. He will further develop these approaches to create a more natural and accurate BMI, capable of robotic-arm control.

"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!"
— Adi de la Zerda, Stanford Bio-X Honorary Fellow

"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 and Stanford Bio-X Fellow

PEYTON GREENSIDE
Morgridge Family SIGF, Stanford Bio-X Fellow
Biomedical Informatics
Mentors: Anshul Kundaje (Genetics, Computer Science) and Thomas Quertermous (Cardiovascular Medicine)
The majority of genetic variants associated with disease phenotypes fall in regions of the genome that do not code for proteins. A large barrier to understanding the genetic basis of disease is understanding the functional implications and mechanisms by which these non-coding variants disrupt normal cellular function. *Using machine learning methods, Peyton is developing computational models to understand how non-coding variants lead to disease.* She is particularly interested in learning gene regulatory programs that become altered in disease development and how variants identified through genome-wide association studies (GWAS) may alter these regulatory programs.

KEVIN HART
Anonymous Donor SIGF, Stanford Bio-X Fellow
Biology
Mentors: James Nelson (Biology, Molecular & Cellular Physiology), Beth Pruitt (Mechanical Engineering), William Weis (Structural Biology, Molecular & Cellular Physiology, Photon Science), and Alex Dunn (Chemical Engineering)
During tissue and organ development, cells experience changes in their mechanical environment. Cells can sense and respond to these changes through cell-cell junctions, and defects in these molecular complexes lead to developmental defects and/or cancer. *Kevin is collaborating with mechanical engineers to study changes of the cell-cell junctions due to mechanical force and the underlying sensing mechanisms.*

Stanford Bio-X Bowes Fellow Jun Woo Kim (see pg. 19 for research details)

BRIAN HSUEH
Bruce and Elizabeth Dunlevie SIGF, Stanford Bio-X Fellow
Neurosciences, MSTP

Mentors: Karl Deisseroth (Bioengineering, Psychiatry & Behavioral Sciences), Seung Kim (Developmental Biology), Krishna Shenoy (Electrical Engineering), and David Lyons (Psychiatry & Behavioral Sciences)

Developmental biology and clinical pathology have been limited by the need to cut samples into thin sections in order to analyze their structural and molecular properties. Brian is developing new chemical methods for transforming tissues into optically transparent hydrogels, which will enable scientists and clinicians to view single cells deep within solid, intact, 3-dimensional blocks of tissues without cutting them open - a class of technologies and associated computational tools known as CLARITY. *Brian will use this to study a variety of biological problems relevant to embryonic development and clinical diagnostics.*


IVAN IVANOV
Tusher Family SIGF, Sanford Bio-X Fellow
**Chemical Engineering**

Mentors: Zev Bryant (Bioengineering), Andrew Spakowitz (Chemical Engineering), Chaitan Khosla (Chemistry, Chemical Engineering), W. E. Moerner (Chemistry), and Adam de la Zerda (Structural Biology)

The DNA double helix is continually bent, stretched, and unwound by protein machines involved in reading, packaging, and editing the genome. Ivan is developing new sensitive methods for monitoring these deformations in individual DNA molecules in real time. This will allow him to elucidate mechanistic details on the dynamic behavior of nucleoprotein complexes. *His work may lead to medical advances such as the development of novel antibiotics that target this molecular machinery.*

Stanford Bio-X Bowes Fellow Gabriela Fragiadakis (see pg. 18 for research details)
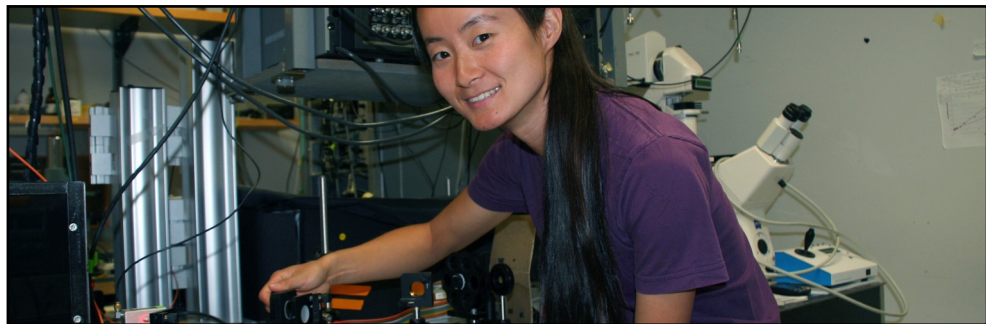
Anonymous Donor SIGF and Stanford Bio-X Fellow Chao Liu (see pg. 10 for research details)
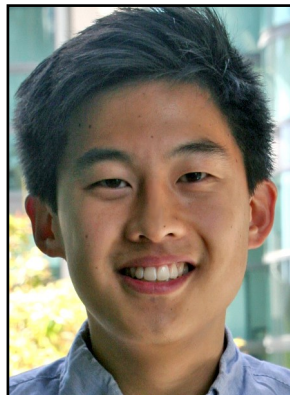
DANIEL KIM
Stanford Bio-X Bowes Fellow
Biomedical Informatics, Medicine

Mentors: Anshul Kundaje (Genetics, Computer Science), Paul Khavari (Dermatology), Will Greenleaf (Genetics), and Howard Chang (Dermatology)

An important goal of genomics is to understand how genes interact with each other and influence each other's activity, *which leads to a better understanding of human development and disease.* Understanding these interactions requires building gene networks, which encode global programs of gene activities. However, many gene networks are built on correlation, not causation. To improve these networks, Daniel is working on an iterative model of computational modeling of gene networks and biological validation; this approach will allow for the discovery of causal relationships and for the creation of more accurate gene networks. He specifically works on these models within skin biology.

BENJAMIN KOTOPKA
Stanford Bio-X Bowes Fellow
Bioengineering

Mentors: Christina Smolke (Bioengineering) and Rhiju Das (Biochemistry)

Using engineered microbes to produce scarce natural compounds could potentially increase their availability, but the complex genetic pathways required to do this are difficult to construct with available tools. In particular, only a few natural promoter sequences are available to drive strong expression of heterologous enzymes. Promoters are DNA sequences composed of short, specific protein-binding motifs separated by "spacer sequences"; redesigning the spacer sequences using biophysical models to generate new sequences with similar properties to the originals could provide new promoters. Ben will use a high-throughput screening approach to simultaneously test multiple biophysically informed approaches to artificial promoter generation.

"The support of the Bio-X SIGF and the Bio-X community has meant so much to me in my graduate school career. Because of Bio-X, I've been able to take more ownership over the path of my Ph.D. and pursue work that crosses traditional disciplinary boundaries. I was also able to take some time off during graduate school when an opportunity arose for me to work in industry, confident that my funding would still be there on my return. That experience was so valuable to me professionally and it never would have been possible without Bio-X."
— Bethany Percha, Morgridge Family SIGF and Stanford Bio-X Fellow

"I love that you can walk by a Bio-X fellow's physical space, and in passing might see surgical robots, beating heart cells, and glowing proteins - all within 10 paces of each other. Bio-X is a model community for radical cross-discipline innovation."
— Joel Sadler, Stanford Bio-X Bowes Fellow

BRAD KRAJINA
Stanford Bio-X Bowes Fellow
Chemical Engineering

Mentors: Andrew Spakowitz (Chemical Engineering), Sarah Heilshorn (Materials Science & Engineering), Sebastian Doniach (Applied Physics, Physics, Photon Science), and Joseph Wu (Cardiovascular Medicine, Radiology)

Human gene therapy offers a multitude of clinical opportunities for the treatment of a variety of diseases, including cancer and genetic disorders. However, despite persistent efforts to realize the therapeutic potential of gene therapy, there is still no delivery system that provides safe, efficient, and enduring gene delivery. Brad is working to combine physical molecular simulations, advanced structural characterization, and live cell experiments to develop an interdisciplinary rational framework for designing therapeutic gene delivery systems that are engineered from *molecular principles*, rather than trial-and-error techniques.

DEEPAK KRISHNAMURTHY
Stanford Bio-X Bowes Fellow
Mechanical Engineering

Mentors: Manu Prakash (Bioengineering) and Giulio de Leo (Biology)

Schistosomiasis is a neglected tropical disease responsible for the deaths of an estimated 200,000 people each year, and is caused by a blood fluke worm. Infectious forms of the worm, known as cercariae, are present in freshwater and seek human hosts by swimming and detecting chemical cues emitted by humans. Since cercariae have only a limited time to find humans before they perish, this host-seeking stage is a critical and unexploited weak link in disease transmission. Using a fundamental understanding of the biophysics of swimming and host-seeking, Deepak will explore a novel strategy to disrupt this process and thus prevent infection.

CHAO LIU
Anonymous Donor SIGF, Stanford Bio-X Fellow
**Biochemistry**

Mentors: James Spudich (Biochemistry), Beth Pruitt (Mechanical Engineering), Daniel Bernstein (Pediatrics - Cardiology), and Euan Ashley (Cardiovascular Medicine, Genetics)

Mutations in cardiac myosin cause hypertrophic cardiomyopathy, the most common inherited disease of the heart muscle that can lead to heart failure and sudden cardiac death, yet the underlying disease mechanisms are unclear. Cardiac myosin is the force-producing molecular motor driving heart muscle contraction, so mutations in myosin may change fundamental parameters of force production. Chao measures these parameters for single mutant and wildtype myosin molecules using the optical trap. The rationale is that once it is known how mutations affect these parameters, myosin force production may be re-normalized pharmacologically, creating drugs that treat the cardiomyopathy at the source.
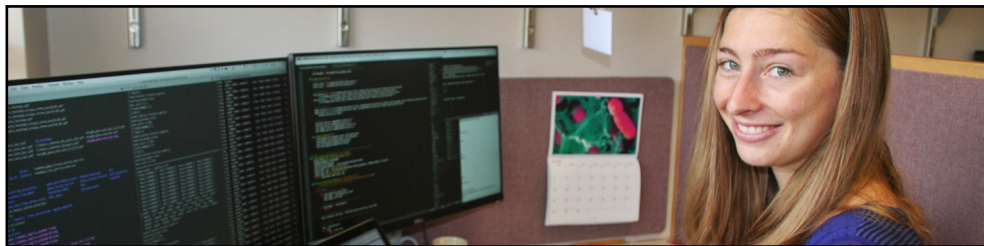
Morgridge Family SIGF and Stanford Bio-X Fellow Peyton Greenside (see pg. 7 for research details)
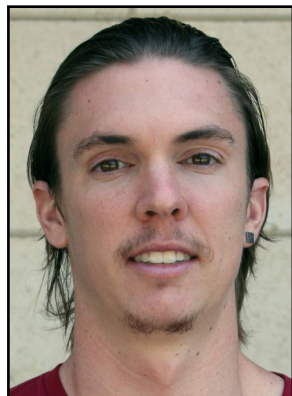
AARON MAYER
Stanford Bio-X Honorary Fellow
Bioengineering
Mentors: Sam Sanjiv Gambhir (Radiology), Irving Weissman (Pathology, Developmental Biology), Polly Fordyce (Genetics), and Mark Davis (Microbiology & Immunology)
Immunotherapy has the potential to become the new paradigm of cancer treatment. While anatomic imaging has been the gold standard to monitor treatment efficacy based upon decreases in tumor size, patients treated with immunotherapies often present with a period of apparent tumor growth before prolonged regression. Due to the high cost and delayed response time, there exists a compelling need to accurately predict which patients are most likely to benefit from immune-based treatment strategies. *Aaron proposes the development of a novel molecular imaging toolkit that could enable effective monitoring of clinical cancer immunotherapies.*

TERESA PURZNER
Felix and Heather Baker SIGF, Stanford Bio-X Fellow
Developmental Biology
Mentors: Profs. Yoon-Jae Cho (Neurology), Josh Elias (Chemical & Systems Biology), and James Chen (Chemical & Systems Biology, Developmental Biology)
Tumors form by hijacking cellular and molecular signals that drive growth during normal tissue development. When these same signals are re-activated later in life, cells begin to divide in an uncontrolled fashion thereby forming tumors. Teresa is applying cutting-edge techniques in mass spectrometry to determine how certain signals are activated and inactivated during normal brain development. By better understanding how these signals are controlled, *she has been able to create drugs that specifically target brain tumors while avoiding damage to normal brain.* She is particularly interested in studying childhood brain tumors, where this targeted approach is especially important given a child's greater suscepti-bility to current non-targeted therapies.

Stanford Bio-X Fellows 2011 group photo

"Bio-X funding has enabled me to propose and pursue high-risk, high-reward interdisciplinary research that would be difficult in a traditional funding framework. Catching up with my peers at Bio-X sponsored events has sharpened my understanding of other disciplines and has guided my research through valuable feedback. I greatly appreciate the opportunities that Bio-X has afforded me during my years at Stanford, and I am proud to be part of a program that is doing so much to improve the human condition."
— Christopher Emig, Stanford Bio-X Bowes Fellow

ADAM RUBIN
William and Linda Steere SIGF, Stanford Bio-X Fellow
Stem Cell Biology & Regenerative Medicine
Mentors: Paul Khavari (Dermatology) and Anshul Kundaje (Genetics, Computer Science)
Cancer arises from the misregulation of complex molecular controls in normal cells. While progress has been made in describing events which occur when normal cells are transformed into cancer cells, we still have a very limited understanding of the broad mechanisms that allow a normal cell to lose its identity. Adam will use novel technologies to characterize hundreds of thousands of molecular features of human skin tumors. *The large amount of information will require implementation of computational techniques for large datasets and will reveal new genes controlling cancer cells.*
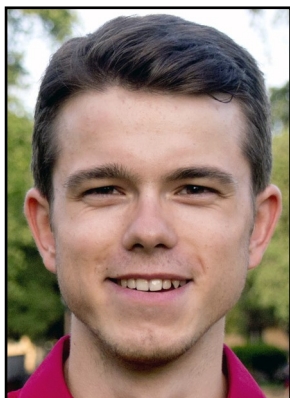
TIM SCHNABEL
Stanford Bio-X Bowes Fellow
Bioengineering
currently in rotation
Tim Schnabel begins his graduate research in Fall 2015. His undergraduate research in the Swartz lab at Stanford focused on producing hydrogen as a renewable fuel directly from sunlight. He is looking forward to broadening problem solving and creative thinking skills so that he can tackle new challenges in the years ahead and will be doing quarterly rotations in different laboratories during his first year to define his research interests. He is starting work in the biosynthesis group of the Smolke laboratory. *The goals of this research include the discovery of complex plant biosynthetic pathways for high value, biologically active compounds, and optimizing their production in* Saccharomyces cereviciae.

2014 Stanford Bio-X Bowes Fellow Lyndia Wu (see pg. 26 for research details)

2015 Stanford Bio-X Bowes Fellow Junhong Choi (see pg. 5 for research details)

JOHANNA SWEERE
Lubert Stryer SIGF, Stanford Bio-X Fellow
Immunology

Mentors: Paul Bollyky (Medicine - Infectious Diseases), Lynette Cegelski (Chemistry), Denise Monack (Microbiology & Immunology), Geoffrey Gurtner (Surgery), Gina Suh (Medicine - Infectious Diseases) and David Stevens (Medicine - Infectious Diseases)

Pseudomonas aeruginosa *is a major human pathogen and an important cause of morbidity and mortality in wound infections.* With the increasing prevalence of antibiotic-resistant bacterial strains, new treatment strategies are required. *P. aeruginosa*'s survival is predicated on its ability to form biofilms, slimy layers of sugars and lipids that encase the microbial community and protect it from immune clearance. Johanna uses models of human wound healing and biochemical tools to study how the biofilm composition mediates immune suppression. Ultimately, her research will improve the understanding behind the regulation of inflammatory immune responses during biofilm infections and yield novel therapeutic targets.

MATTHEW TITCHENAL
Stanford Bio-X Bowes Fellow
Mechanical Engineering

Mentors: Constance Chu (Orthopaedic Surgery), Thomas Andriacchi (Mechanical Engineering, Orthopaedic Surgery), Garry Gold (Radiology), and William Robinson (Medicine - Immunology & Rheumatology)

One in nine Americans suffer from osteoarthritis (OA), a debilitating joint disease characterized by pain, swelling, and thinning of joint cartilage. Its symptoms are not present early in the disease, so it's usually diagnosed after already reaching an irrecoverable advanced state. Anterior cruciate ligament (ACL) tears greatly accelerate the development of knee OA, and reconstructive surgery has not been successful in preventing it. *Matt's project integrates methods in biomechanics, imaging, and joint biology to study early events leading to OA following ACL reconstruction, with the ultimate goal of developing clinical methods for early detection and prevention of OA, when disease modification is still feasible.*

Stanford Bio-X Bowes Fellow Paola Moreno-Roman (see pg. 22 for research details)

GRAHAM WALMSLEY
Stanford Bio-X Fellow
Stem Cell Biology & Regenerative Medicine, Medicine
Mentors: Irving Weissman (Pathology, Developmental Biology), Michael Longaker (Surgery), Hermann Peter Lorenz (Surgery), and Geoffrey Gurtner (Surgery)

Over 100 million patients acquire scars in the industrialized world each year. The global incidence of scarring is even greater, extending to significant numbers of burn and other trauma-related wounds. Beyond aesthetic considerations and potential disfigurement, scarring can result in restriction of movement and reduced quality of life. *Graham's research is centered on developing novel therapeutic approaches to scarring and fibrosis through the characterization and targeted inhibition of embryonic fibroblast lineages in the skin.*

WANXIN WANG
Stanford Bio-X Bowes Fellow
Bioengineering
Mentors: Stephen Quake (Bioengineering, Applied Physics), Carlos Simon (OB-GYN/Reproductive, Perinatal & Stem Cell Biology Research), and Barry Behr (OB/GYN)

A successful cycle of in vitro *fertilization and embryo transfer requires both high-grade embryos and receptive endometrium. While more options are becoming clinically available in developing healthier embryos, a reliable quantitative diagnostic metric with sufficient metric resolution and complexity for evaluating endometrial receptive status remains lacking. Wanxin proposes using single-cell RNA-seq and bioinformatics tools to characterize endometrial receptivity with both higher resolution and a less invasive procedure. The deliverable will be a diagnostic platform that is directly translatable into clinics.*

"Bio-X has been my guide and resource to leading world experts and big-bet disruptive research across various disciplines. Not only has Bio-X expressed confidence and belief in my abilities, they have encouraged me to try new things, helped me find my true passion, and set meaningful professional goals. I am very fortunate to be part of the Bio-X family."
**— Denitsa Milanova, Stanford Bio-X Medtronic Fellow**

ANDREW YANG
Stanford Bio-X Honorary Fellow
Bioengineering

currently in rotation

Despite the explosion of scientific knowledge across therapeutic areas, the development of new breakthrough therapies has not kept up. Reconciling this mismatch requires new ways to drug the "undruggable" without compromising our ability to predict efficacy and toxicity. Andrew hopes to contribute to ongoing efforts in this area by engineering a new foundational technology that could serve as the backbone for multiple biologic drug candidates in areas of unmet clinical need. Specifically, *he plans to engineer proof-of-concept targeted delivery platforms that could be differentiated against antibody-drug conjugates in oncology and used for the oral delivery of sensitive payloads in rare diseases.*

DANQING ZHU
Xu Family SIGF, Stanford Bio-X Fellow
Bioengineering

Mentors: Fan Yang (Bioengineering, Orthopaedic Surgery), Sarah Heilshorn (Materials Science & Engineering), R. Lane Smith (Orthopaedic Surgery)

Osteoarthritis represents one of the most common joint degenerative diseases in the western world, affecting ~50% of the population above the age of 65. Cartilage is an avascular tissue characterized by zonal organizations, which play an important role in maintaining cartilage structure and functions. There remains a critical need to develop enabling novel technologies for regenerating cartilage with tissue-mimicking zonal organization; current bottlenecks in stem cell biology and tissue regeneration cannot be addressed using the existing models and paradigms. *Bonnie's proposed research will enable regeneration of cartilage with tissue-mimicking zonal structure and functions, and facilitate high-throughput screening of stem cell-niche interactions using novel gradient hydrogels.*

Stanford Bio-X Bowes Fellow Matthew Titchenal (see pg. 13 for research details)
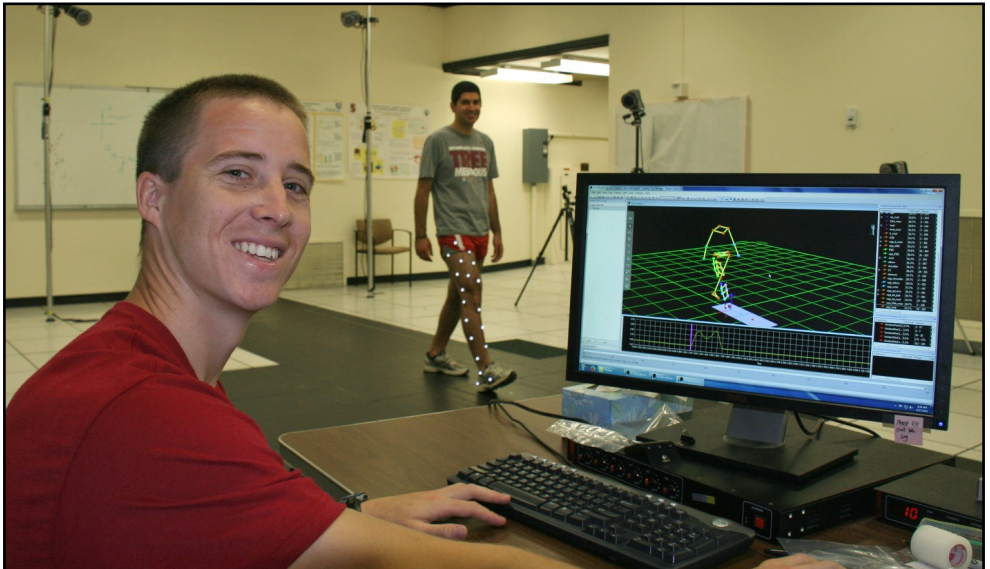
Stanford Bio-X Graduate Fellowships 2004-2014
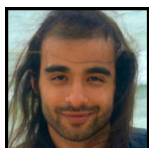## (in alphabetical order)

SHELLEY ACKERMAN
Stanford Bio-X Bowes Fellow 2014
Bioengineering
Mentors: Edgar Engleman (Pathology), Mehrdad Shamloo (Neurosurgery), Gerald Grant (Neurosurgery), and Edward Graves (Radiation Oncology)
"Immunotherapy for the treatment of neurological disease"

OGUZHAN ATAY
Colella Family SIGF, Stanford Bio-X Fellow 2014
Biology
Mentors: Jan Skotheim (Biology), Daniel Fisher (Applied Physics), and Marcus Feldman (Biology)
"A novel framework for the analysis of principles of cellular signaling"

EVA GABRIELA BAYLON
Stanford Bio-X Skippy Frank Fellow 2014
Mechanical Engineering
Mentors: Marc Levenston (Mechanical Engineering) and Garry Gold (Radiology)
"Characterization of the role of osmotic swelling stress in the mechanical behavior of meniscus fibrocartilage"

DANIEL BECHSTEIN
Stanford Bio-X Bowes Fellow 2012
Mechanical Engineering
Mentors: Shan Wang (Materials Science & Engineering and Electrical Engineering) and Juan Santiago (Mechanical Engineering)
"Microfluidic protein bioassays using Giant Magnetoresistive sensors"
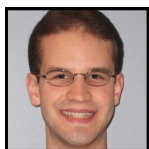
CRAIG BUCKLEY
Stanford Bio-X Bowes Fellow 2011
Chemical Engineering
Mentors: Alex Dunn (Chemical Engineering), James Nelson (Molecular & Cellular Physiology), and William Weis (Structural Biology)
"The minimal cadherin-catenin complex binds to F-actin under force"

RACHEL BRAUN-HAGEY
Mona M. Burgess SIGF, Stanford Bio-X Fellow 2014
Microbiology & Immunology
Mentors: Jeffrey Glenn (Microbiology & Immunology) and Rhiju Das (Physics)
"Identification and targeting of a novel pangenotypic RNA secondary structural element that mediates influenza A virus packaging and disease"

SHENGYA CAO
Morgridge Family SIGF, Stanford Bio-X Fellow 2013
Biochemistry
Mentors: Aaron Straight (Biochemistry) and Andrew Spakowitz (Chemical Engineering)
"Finding the mechanistic role of Cenp-N in centromere assembly"

Stanford Bio-X Bowes Fellow Deepak Krishnamurthy (see pg. 10 for research details)

ELIZABETH CHEN
Rogers Family SIGF, Stanford Bio-X Fellow 2013
Stem Cell Biology and Regenerative Medicine
Mentors: Michael Clarke (Medicine) and Stephen Quake (Bioeng. and Applied Physics)
"Developing a small-scale chIP-seq method to probe epigenetic regulation of self-renewal processes in mammary stem cells"

ROSHNI COOPER
Morgridge Family SIGF, Stanford Bio-X Fellow 2012
Electrical Engineering
Mentors: Kang Shen (Biology) and Mark Horowitz (Electrical Engineering)
"Exploring the nervous system more effectively with electrical engineering"

ADI DE LA ZERDA
Stanford Bio-X Honorary Fellow 2013
Materials Science & Engineering
Mentors: Manish Butte (Pediatrics), Sarah Heilshorn (Materials Science & Engineering), and Paul Bollyky (Medicine)
"3D biomimetic structure to test the nano-mechanical and molecular cues for T cells activation in diabetes"

SARAH DENNY
Stanford Bio-X Honorary Fellow 2013
Biophysics
Mentors: William J. Greenleaf (Genetics), Rhiju Das (Biochemistry), and Aaron Straight (Biochemistry)
"Dissecting RNA tertiary structure with millions of measurements at a time"

KAREN DUBBIN
Stanford Bio-X Bowes Fellow 2013
Materials Science & Engineering
Mentors: Sarah Heilshorn (Materials Science & Engineering), Giles Plant (Neurosurgery), and Andrew Spakowitz (Chemical Engineering)
"Protein-engineered matrix for controlled delivery of bioactive cargo"

CHRISTOPHER EMIG
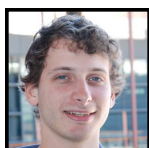**Stanford Bio-X Bowes Fellow 2011**
Bioengineering
Mentor: Stephen Quake (Bioengineering and Applied Physics)
"Immune repertoire analysis, cloning and engineering"

GABRIELA FRAGIADAKIS
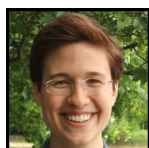**Stanford Bio-X Bowes Fellow 2013**
Microbiology & Immunology
Mentors: Garry Nolan (Microbiology & Immunology), Martin Angst (Anesthesia), Robert Tibshirani (Biostatistics and Statistics), and Mark Davis (Microbiology & Immunology)
"Single-cell profiling to refine the framework of immune system dynamics and structure"

JULIA FUKUYAMA
Anonymous Donor SIGF, Stanford Bio-X Fellow 2014
Statistics
Mentors: Susan Holmes (Statistics), David Relman (Microbiology & Immunology), and Catherine Blish (Infectious Diseases)
"Sparse methods for ecological data"

DAVID GLASS
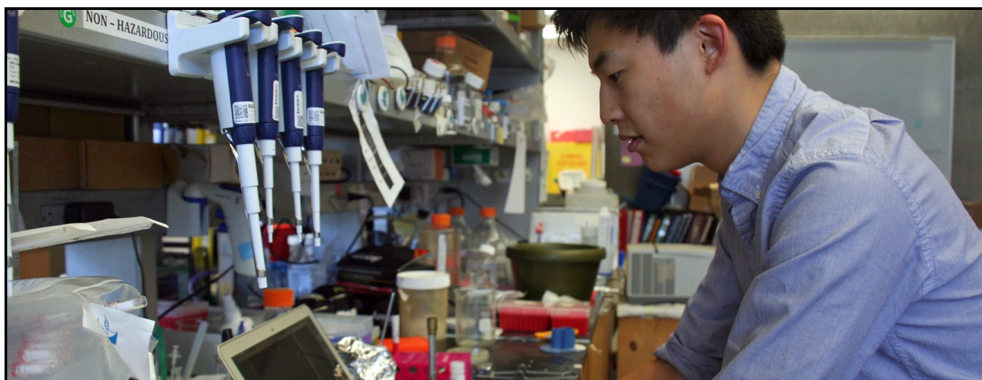**Stanford Bio-X Bowes Fellow 2013**
Bioengineering
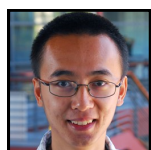Mentors: Ingmar Riedel-Kruse (Bioengineering) and KC Huang (Bioengineering)
*"Engineering emergent multicellular behavior through synthetic adhesion programs"*

AMALIA HADJITHEODOROU
Stanford Bio-X Bowes Fellow 2014
Bioengineering
currently in rotation
"Developing high-throughput microfluidic tools to study mosquito-borne infectious diseases"

FIDEL HERNANDEZ
Stanford Bio-X Honorary Fellow 2013
Mechanical Engineering
Mentors: David Camarillo (Bioengineering) and Gerald Grant (Neurosurgery)
"The biomechanics of mild traumatic brain injury: measurement, modeling, and prevention"

Stanford Bio-X Bowes Fellow Daniel Kim (see pg. 9 for research details)

ZAHID HOSSAIN
Morgridge Family SIGF, Stanford Bio-X Fellow 2014
Computer Science
Mentors: Ingmar Riedel-Kruse (Bioengineering) and David Dill (Computer Science)
"Cloud experimentation system for biology: System architecture and utility in education"

EVA HUANG
Stanford Bio-X Bowes Fellow 2014
Chemical Engineering
Mentors: Alexander Dunn (Chemical Engineering) and Vittorio Sebastiano (OB/GYN)
"Role of hippo pathway-mediated mechanical signaling in human embryonic stem cell self-renewal"
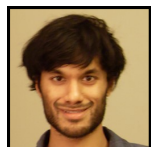
HAISAM ISLAM
Stanford Bio-X Bowes Fellow 2010
Bioengineering
Mentors: Gary Glover (Radiology) and John Pauly (Electrical Engineering)
"Reduced FOV imaging methods for functional MRI applications"

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"

XIAOFAN JIN
Stanford Bio-X Bowes Fellow 2014
Bioengineering
Mentors: Ingmar Riedel-Kruse (Bioengineering) and Alfred Spormann (Civil & Environmental Engineering)
"Biofilm patterning for engineered microbial consortia"
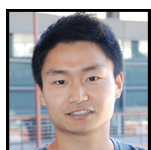
JUN WOO KIM
Stanford Bio-X Bowes Fellow 2013
Bioengineering
Mentors: Jennifer Cochran (Bioengineering), Alejandro Sweet-Cordero (Pediatrics), and Calvin Kuo (Medicine)
"Development of a novel therapy for lung cancer using CLCF1 trap as a CLCF1 inhibitor that targets cytokine signaling in the tumor microenvironment"

RYOSUKE KITA
Stanford Bio-X Bowes Fellow 2013
Biology, MSTP
Mentors: Hunter Fraser (Biology) and David Stevens (Medicine)
"Genetic basis of S. cerevisiae *pathogenicity"*
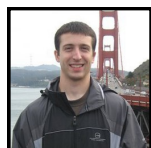
THOMAS LAMPO
Anonymous Donor SIGF, Stanford Bio-X Fellow 2013
Chemical Engineering
Mentors: Andrew Spakowitz (Chemical Engineering) and Aaron Straight (Biochemistry)
*"Physical modeling of chromosome dynamics"*

SOAH LEE
Stanford Bio-X Bowes Fellow 2012
**Materials Science & Engineering**
Mentors: Fan Yang (Bioengineering) and Sean Wu (Cardiovascular Medicine)
"Biophysical regulation of human pluripotent stem cells"

JONATHAN LEONG
Stanford Bio-X Bowes Fellow 2010
Neurosciences, MSTP
Mentors: Thomas Clandinin (Neurobiology) and Steven Boxer (Chemistry)
"Functional imaging in the visual system of Drosophila melanogaster*"*
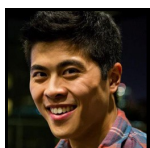
STEVEN LEUNG
Stanford Bio-X Bowes Fellow 2013
Bioengineering
Mentors: Kim Butts Pauly (Radiology) and Gary Glover (Radiology)
"Localization of low intensity focused ultrasound in the patient brain"
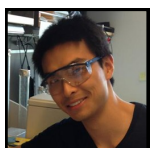
YE (HENRY) LI
William and Lynda Steere SIGF, Stanford Bio-X Fellow 2013
Structural Biology
Mentors: Wing Wong (Statistics and Biostatistics), Michael Levitt (Structural Biology), Garry Nolan (Microbio. & Immun.), and Chiara Sabatti (Biostatistics and Statistics)
"High-dimensional single-cell expression study of perturbed stem cell states" and *"5hmC acquisition during bone development"*

ORLY LIBA
Stanford Bio-X Bowes Fellow 2014
Electrical Engineering
Mentors: Adam de la Zerda (Structural Biology) and Sanjiv Sam Gambhir (Radiology)
"A new in vivo *molecular imaging technology with single cell resolution based on optical coherence tomography"*

SUNGWON LIM
Stanford Bio-X Bowes Fellow 2011
Bioengineering
Mentor: Jennifer Cochran (Bioengineering)
*"Development of protein-based therapeutics targeting c-Met overexpressing cancers"*

NIRU MAHESWARANATHAN
Stanford Bio-X Honorary Fellow 2013
Neurosciences
Mentors: Surya Ganguli (Applied Physics) and Stephen Baccus (Neurobiology)
"Understanding retinal computations in response to natural scenes"

"I am extremely grateful to be part of the Bio-X community. Not only did I become closer with existing friends via poster sessions and outreach events, I also befriended numerous enthusiastic and talented young scientists. I look forward to the coming years with Bio-X and I am excited to meet the new generations of fellows!"
      — Eva Huang, Stanford Bio-X Bowes Fellow
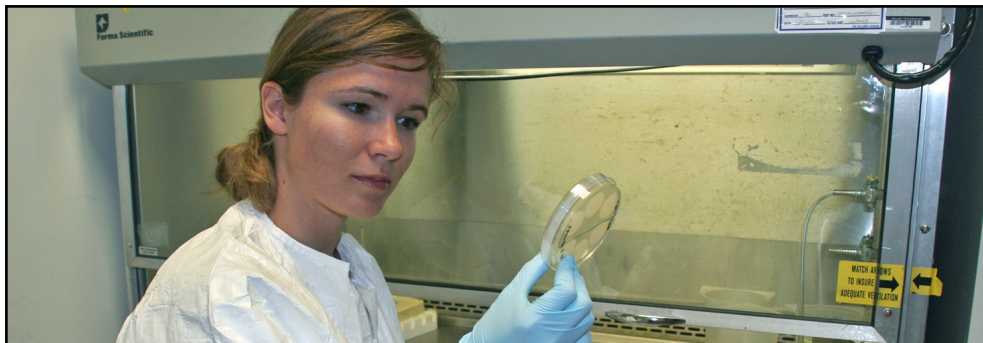
Lubert Stryer SIGF and Stanford Bio-X Fellow Johanna Sweere (see pg. 13 for research details)
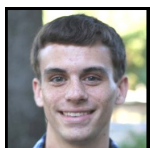
TREVOR MARTIN
Stanford Bio-X Bowes Fellow 2012
Biology
Mentors: Hunter Fraser (Biology) and Susan Holmes (Statistics)
"Connecting genotype to phenotype through novel statistical methods that leverage gene expression"

MELINA MATHUR
Stanford Bio-X Bowes Fellow 2010
Bioengineering
Mentor: Christina Smolke (Bioengineering)
"A RNA-based control platform for dynamically programming protein function"

ALLISTER MCGUIRE
Stanford Bio-X Bowes Fellow 2013
Chemistry
Mentors: Bianxiao Cui (Chemistry), Yi Cui (Materials Science & Engineering), and Zhenan Bao (Chemical Engineering)
"Development of nanostructured electrodes for sensitive, non-invasive electrophysiology"

SAMIR MENON
Colella Family SIGF, Stanford Bio-X Fellow 2011
Computer Science
Mentors: Oussama Khatib (Computer Science) and Kwabena Boahen (Bioengineering)
"Elucidating how the brain coordinates the musculoskelal system"

AMANDA MIGUEL
Stanford Bio-X Honorary Fellow 2013
Bioengineering
Mentor: KC Huang (Bioengineering)
"High-throughput exploration of the phenotypic space in Escherichia coli *shape mutants"*

### DENITSA MILANOVA
Stanford Bio-X Medtronic Fellow 2011
Mechanical Engineering
Mentors: Juan Santiago (Mechanical Engineering), Annelise Barron (Bioengineering), and Michael Snyder (Genetics)
"Single cell fractionation and analysis of nuclear versus cytoplasmic nucleic acids"

"Bio-X has been instrumental to my success as a graduate student researcher. Being chosen as a Bio-X fellow gave me the confidence I needed to work on my own research interests, knowing that my ideas are worth pursuing. As part of the Bio-X family I am surrounded by academic and industry leaders who not only serve as amazing role models because of the science they do, but also act as our biggest cheerleaders as they empower us to continue advancing science."
— Eva Gabriela Baylon, Stanford Bio-X Skippy Frank Fellow
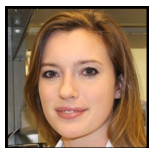
KATE MONTGOMERY
Stanford Bio-X Bowes Fellow 2009 and William and Lynda Steere SIGF, Stanford Bio-X Fellow 2012
Bioengineering
Mentors: Scott Delp (Bioengineering and Mechanical Engineering), Karl Deisseroth (Bioengineering and Psychiatry), and Ada Poon (Electrical Engineering)
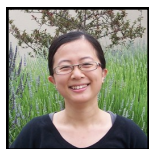*"Optogenetic control of neurons beyond the brain: Modulating pain and motor function"*

PAOLA MORENO-ROMAN
Stanford Bio-X Bowes Fellow 2014
Biology
Mentor: Lucy O'Brien (Molecular & Cellular Physiology)
*"Role of septate junctions in stem cell fate decisions during renewal of the* Drosophila *intestine"*

WENDY NI
Bruce and Elizabeth Dunlevie SIGF, Stanford Bio-X Fellow 2012
Electrical Engineering
Mentors: Greg Zaharchuk (Radiology), Dwight Nishimura (Electrical Engineering), and Michael Moseley (Radiology)
"High-resolution brain oxygenation measurement with magnetic resonance imaging"
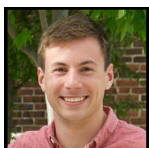
JAMES NOTWELL
Affymetrix Stanford Bio-X SIGF 2013
Computer Science
Mentors: Gill Bejerano (Developmental Biology, Computer Science, and Pediatrics), Susan McConnell (Biology), and Philippe Mourrain (Psychiatry & Behavioral Sciences)
"The genomics of neurodevelopment: transcriptional networks underlying the developing neocortex"

Stanford Bio-X Bowes Fellow Brad Krajina (see pg. 10 for research details)

Bruce and Elizabeth Dunlevie SIGF and Stanford Bio-X Fellow Patrick Ye (see pg. 26 for research details)

CARMICHAEL ONG
Stanford Bio-X Bowes Fellow 2011
Bioengineering
Mentor: Scott Delp (Bioengineering and Mechanical Engineering)
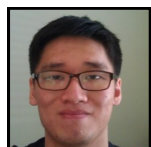*"Using optimal control theory to understand and improve human movement"*

PATRICIA ORTIZ-TELLO
Stanford Bio-X Bowes and Stanford Bio-X Amgen Fellow 2011
Genetics
Mentors: Carlos D. Bustamante (Genetics) and Julie Baker (Genetics)
"Genetic basis of preeclampsia in populations adapted to high altitude"
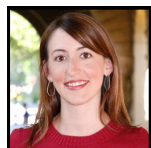
SUNG JIN PARK
Stanford Bio-X Bowes Fellow 2013
Bioengineering
Mentor: Jennifer Cochran (Bioengineering)
"Engineering protein scaffolds for targeted therapeutics"

BETHANY PERCHA
Morgridge Family SIGF, Stanford Bio-X Fellow 2013
Biomedical Informatics
Mentors: Russ Altman (Bioeng.), Chris Potts (Linguistics), and Daniel Rubin (Radiology)
"Learning the structure of biomedical relationships from unstructured text"

BENJAMIN POOLE
The Seth A. Ritch SIGF, Stanford Bio-X Fellow 2014
Computer Science
Mentors: Surya Ganguli (Applied Physics) and Thomas Clandinin (Neurobiology)
"Computational tools for large-scale calcium imaging of neural systems"

JEFFREY QUINN
Stanford Bio-X Bowes Fellow 2012
Bioengineering
Mentors: Howard Chang (Dermatology) and Asifa Akhtar (Epigenetics and Max Planck Institute)
"Decoding the sequence-structure-function relationship of lncRNAs"

JOEL SADLER
Stanford Bio-X Bowes Fellow 2012
Mechanical Engineering
Mentors: Sakti Srivastava (Surgery), Larry Leifer (Mechanical Engineering), and Paulo Blikstein (Education)
"A modular mechatronic platform for flexible device prototyping"

ANDREW SAVINOV
**Paul Berg SIGF, Stanford Bio-X Fellow 2014**
Biophysics Program
Mentors: Steven Block (Biology and Applied Physics) and William Greenleaf (Genetics)
"Single-molecule force spectroscopy and high-throughput mutational landscape analysis of glmS *ribozyme folding and catalysis"*

JAKE SGANGA
Stanford Bio-X Bowes Fellow 2014
Bioengineering
Mentors: David Camarillo (Bioengineering) and Paul J. Wang (Cardiovascular Medicine)
"Catheter-based surgical robotics"

PANKAJ SHARMA
Stanford Bio-X Bowes Fellow 2012
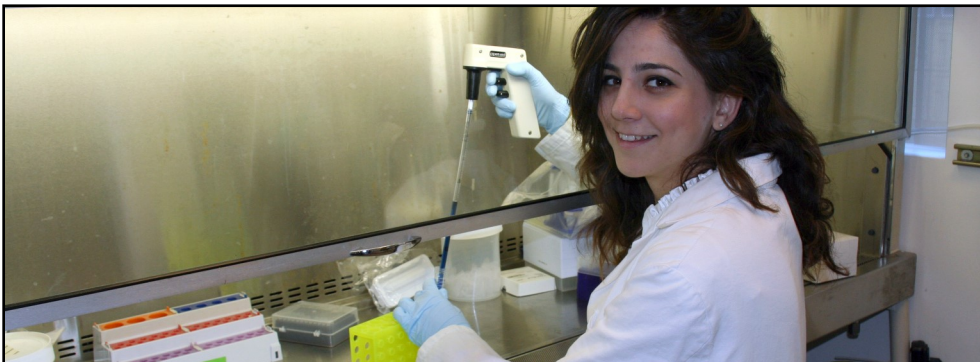**Electrical Engineering**
Mentors: Sakti Srivastava (Surgery), Krishna Shenoy (Electrical Engineering), and Kenneth Salisbury (Computer Science and Surgery)
"Objective assessment of manual dexterity for surgeons"
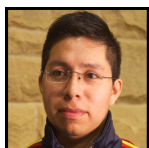
HERBERT SILVA
Stanford Bio-X Bowes Fellow 2013
Mechanical Engineering
Mentors: Drew Nelson (Mechanical Engineering), Jason T. Lee (Vascular & Endovascular Surgery), and Staff Scientist Apurva Mehta (SLAC)
"A novel approach for studying the mechanical behavior of atherosclerotic plaque"

STEVEN SLOAN
Stanford Bio-X Bowes Fellow 2014
Neurobiology, Medicine
Mentors: Ben Barres (Neurobiology), Sergiu Pasca (Psychiatry), Gerald Grant (Neurosurgery), and Melanie Hayden-Gephart (Neurosurgery)
"Understanding the role of human astrocytes in health and disease"

Stanford Bio-X Honorary Fellow Adi de la Zerda (see pg. 17 for research details)

JIONGYI TAN
Enlight Foundation SIGF, Stanford Bio-X Fellow 2014
Biophysics Program
Mentors: James Nelson (Biology), Alexander Dunn (Chemical Engineering, and William Weis (Structural Biology)
"Biophysics of cadherin-catenin complexes and the actin cytoskeleton"

BARIS UNGUN
Stanford Bio-X Bowes Fellow 2014
Bioengineering, Medicine
Mentors: Lei Xing (Radiation Oncology) and Stephen Boyd (Electrical Engineering)
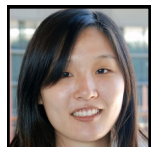*"Radiation therapy treatment planning using convex optimization"*

MATHIAS VOGES
Stanford Bio-X Bowes Fellow 2013
Bioengineering
Mentor: Elizabeth Sattely (Chemical Engineering)
"Engineering interactions between plants and plant growth-promoting microbes"

CHRISTINE WANG
Bruce and Elizabeth Dunlevie SIGF, Stanford Bio-X Fellow 2014
Bioengineering
Mentors: Fan Yang (Bioengineering and Orthopaedic Surgery), Gerald Grant (Neurosurgery), and Michelle Monje (Neurology)
"Engineering 3D cancer models to decipher brain tumor-niche interactions"
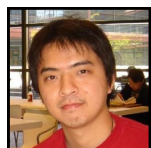
YEN-HSIANG WANG
Stanford Bio-X Bowes Fellow 2009
Bioengineering
Mentor: Christina Smolke (Bioengineering)
"A generalizable synthetic genetic system for dynamic control in metabolic engineering"

LUCIEN WEISS
Stanford Bio-X Bowes Fellow 2012
Chemistry
Mentors: W. E. Moerner (Chemistry) and Matthew Scott (Developmental Biology)
"Intracellular transport and trafficking in hedgehog signal transduction"

Stanford Bio-X Bowes Fellow Baris Ungun (see pg. 25 for research details)

ANDREW WEITZ
Stanford Bio-X Bowes Fellow 2012
Bioengineering
Mentor: Jin Hyung Lee (Neurology and Bioengineering)
"Dissection of large-scale brain networks using optogenetic fMRI"

REMUS WONG
Stanford Bio-X Bowes Fellow 2010
Bioengineering
Mentors: Christina Smolke (Bioengineering) and Michele Calos (Genetics)
"Genetic engineering of T cells using RNA regulatory elements"
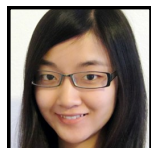
LYNDIA WU
Stanford Bio-X Bowes Fellow 2014
Bioengineering
Mentors: David Camarillo (Bioengineering), Gerald Grant (Neurosurgery), and Joyce Liao (Ophthalmology)
"A real-time screening tool for mild traumatic brain injury"

HELEN YANG
The Lavidge and McKinley SIGF, Stanford Bio-X Fellow 2014
Neurobiology
Mentors: Thomas Clandinin (Neurobiology), Michael Lin (Pediatrics and Bioengineering), and Stephen Baccus (Neurobiology)
"Optical recording of Drosophila *early visual neurons to reveal neuronal computations"*

ANNE YE
Stanford Bio-X Bowes Fellow 2012
Bioengineering
Mentor: Jennifer Cochran (Bioengineering)
*"Engineering and characterization of VEGF mutants for modulation of angiogenesis"*

PATRICK YE
Bruce and Elizabeth Dunlevie SIGF, Stanford Bio-X Fellow 2013
Bioengineering
Mentors: Kim Pauly (Radiology) and William Newsome (Neurobiology)
"Elucidating the mechanisms of in vivo *ultrasound neuromodulation"*

MICHAEL YIP
Stanford Bio-X Bowes Fellow 2013
Bioengineering
Mentors: David Camarillo (Bioengineering), Paul Wang (Medicine), and Kenneth Salisbury (Computer Science and Surgery)
"Robotic control of flexible ablation catheters for treating atrial fibrillation"

JENNIFER YONG
Morgridge Family SIGF, Stanford Bio-X Fellow 2012
Mechanical Engineering
Mentors: Scott Delp (Bioengineering and Mechanical Engineering) and Michael Fredericson (Orthopaedic Surgery)
"Barefoot running: changes in injury mechanisms between forefoot and rearfoot strikers"

RYAN YORK
Stanford Bio-X Bowes Fellow 2013
Biology
Mentors: Hunter Fraser (Biology) and Russell Fernald (Biology)
"Castles made of sand: gene expression evolution and behavior in cichlid fish"

NOAH YOUNG
Stanford Bio-X Bowes Fellow 2012
Bioengineering
Mentors: Karl Deisseroth (Bioeng.and Psychiatry) and Surya Ganguli (Applied Physics)
"Observing and perturbing dynamics with calcium imaging, optogenetics, and virtual reality in zebrafish"

BO ZHANG
Mona M. Burgess SIGF, Stanford Bio-X Fellow 2013
Chemistry
Mentors: Hongjie Dai (Chemistry), Brian Feldman (Pediatrics), Paul Utz (Medicine), and Samuel Strober (Medicine)
"A plasmonic chip for biomarker discovery and diagnosis of Type-1 diabetes"

XIAOXUE ZHOU
Larry Yung SIGF, Stanford Bio-X Fellow 2010
Chemistry
Mentors: Julie Theriot (Biochemistry and Microbiology & Immunology) and KC Huang (Bioengineering and Microbiology & Immunology)
"Role of mechanical forces and cell wall hydrolases in S. aureus daughter cell separation"

Stanford Bio-X Fellows 2012 group photo

Where are they now?

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

Namiko Abe (Paul Berg SIGF, Stanford Bio-X Fellow 2006) is working in project management at the New York Genome Center.

Jaimie Adelson (Stanford Bio-X Honorary Fellow 2006) completes her Fulbright at the end of September 2015 and will then begin a postdoctoral position in Gary Westbrook's lab at Oregon Health Sciences University's Vollum Institute in Portland, Oregon.

Afsheen Afshar (Stanford Bio-X Bowes Fellow 2005) is a managing director at the Goldman Sachs Group, leading multiple teams that centralize, analyze, and present large financial data sets in order to reduce cost, mitigate risk, improve client service, and maximize profitability.

Ron Alfa (Stanford Bio-X Bowes Fellow 2011) is in medical school to complete the MD portion of the MD/PhD program.

Edith Arnold (Stanford Bio-X Bowes Fellow 2006) is working at Apple, Inc. as a scientist in the wireless technologies division.

Georgios Asimenos (Stanford Bio-X Bowes Fellow 2005) is director of science and clinical solutions at DNAnexus, a startup company originally founded by two Stanford faculty members (Serafim Batzoglou and Arend Sidow) and a former student of Serafim Batzoglou's, Andreas Sundquist.

Aakash Basu (Stanford Bio-X Bowes Fellow 2009) is a a postdoctoral associate in the Department of Physics at the University of Illinois, Urbana-Champaign.

Elsa Birch (Stanford Bio-X Bowes Fellow 2009) is currently a Senior Associate at Exponent Failure Analysis Associates in the Thermal Sciences practice.

Jennifer Blundo (Stanford Bio-X Bowes Fellow 2006) is a visiting assistant professor at the UCLA David Geffen School of Medicine and a lecturer at the Anderson School of Management. She oversees the UCLA Business of Science Center MedTech Innovation Program for innovation and entrepreneurship in medical devices and teaches classes on healthcare technology, entrepreneurship, and medtech. Jennifer also serves as the Director of the MedTech Innovator Competition and Accelerator, an industry-driven platform for medtech and digital health start-ups.

Jennifer Brady (Stanford Bio-X Skippy Frank Fellow 2010) has a postdoctoral position at Stanford University with Monte Winslow (Genetics). She is working on mechanisms of tumor progression to metastasis using mouse models of lung cancer.

Relly Brandman (Stanford Bio-X Bowes Fellow 2004) is a product manager at Google.

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

Mindy Chang (Stanford Bio-X Bowes Fellow 2005) is working at Intel Corporation in the Perceptual Computing Group.

Ian Chen (Stanford Bio-X Bowes Fellow 2006) is a cardiology fellow at Stanford University.

Jin Chen (Lubert Stryer SIGF, Stanford Bio-X Fellow 2012) is a postdoctoral student at Jonathan Weissman's lab at University of California-San Francisco.

Fang-Chieh Chou (Stanford Bio-X Fellow 2012) is working at Yelp as a data mining engineer.

Vincent Chu (Stanford Bio-X Pfizer Fellow 2005) is a platform engineer at Expedite Financial in San Francisco.

Virginia Chu (Stanford Bio-X Bowes Fellow 2005) is a pediatric occupational therapist in a private clinic in Chicago. She also has a part-time research appointment at the University of Illinois at Chicago to study sensorimotor integration in children with autism and developmental movement and sensory disorders.

Kelsey Clark (Stanford Bio-X Bowes Fellow 2007) is an assistant research professor in the cell biology and neuroscience department at Montana State University.

Melinda Cromie (Paul Berg SIGF, Stanford Bio-X Fellow 2008) has a postdoctoral position in the neurology department at Stanford and the VA in Palo Alto with Thomas Rando. She is working on tissue engineering of human skeletal muscle to repair large wounds that result in loss of significant amounts of muscle tissue.

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

Sanjay Dastoor (Stanford Bio-X Bowes Fellow 2006) is co-founder at Boosted, where they design fun, fast, and simple electric vehicles.

Adam de la Zerda (Stanford Bio-X Skippy Frank Fellow 2008) is an assistant professor of structural biology at Stanford University.

Mario Diaz de la Rosa (Stanford Bio-X Bowes Fellow 2008) is an adjunct instructor at Career Education Corporation.

Rebecca DiMarco (Stanford Bio-X Bowes Fellow 2009) is an associate in the Biomedical Engineering Practice at Exponent, in their Menlo Park office.

Sheng Ding (Stanford Bio-X Bowes Fellow 2007) works for Amunix, a biotech start-up company, as a research scientist focusing on developing protein therapeutic drugs with extended half-life.

Graham Dow (Stanford Bio-X Bowes Fellow 2009) is a NOAA Climate and Global Change Postdoctoral Fellow in Andrew Richardson's lab at Harvard University.

Remy Durand (Bruce and Elizabeth Dunlevie SIGF, Stanford Bio-X Fellow 2010) works for Frazier Healthcare's Life Sciences Venture Capital team where he focuses on investment identification, due diligence, and deal closing.

Limor Freifeld (Bruce and Elizabeth Dunlevie SIGF, Stanford Bio-X Fellow 2010) has a Simons postdoctoral fellowship at the Massachusetts Institute of Technology. She is a part of Ed Boyden's synthetic neurobiology group, co-advised by Hazel Sive, in the Media lab.

Stephen Fried (Anonymous Donor SIGF, Stanford Bio-X Fellow 2012) is a junior research fellow at the University of Cambridge (King's College). Stephen focuses on chemical and synthetic biology in the research group of Jason Chin at the MRC laboratory of molecular biology.

Xiaojing Gao (Enlight Foundation SIGF, Stanford Bio-X Fellow 2012) is working with Prof. Elowitz as a postdoctoral student in the Biology department at Caltech.

Viviana Gradinaru (Colella Family SIGF, Stanford Bio-X Fellow 2008) is an assistant professor of biology and biological engineering at California Institute of Technology (Caltech).

Alex Grant (Stanford Bio-X Bowes Fellow 2010) is currently working as an engineer at the startup CeriBell, Inc.

Adam Grossman (Stanford Bio-X Bowes Fellow 2004) is co-founder and metainformation scientist at Praedicat, Inc., a company transforming the underwriting and risk management of liability insurance by using big data approaches to model and understand the science that drives products liability.

Lisa Gunaydin (Stanford Bio-X Bowes Fellow 2008) is a postdoctoral fellow in Anatol Kreitzer's laboratory at the Gladstone Institute of Neurological Disease at University of California-San Francisco.

Jennifer Hicks (Stanford Bio-X Bowes Fellow 2007) serves as the associate director of the National Center for Simulation in Rehabilitation Research, an NIH-funded center 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 a resident in obstetrics/gynecology at University of California-San Diego and plans to eventually pursue specialty training in gynecologic oncology.

Jacob Hughey (Stanford Bio-X Bowes Fellow 2007) is a postdoctoral fellow in Atul Butte's lab at the Institute for Computational Health Sciences at University of California-San Francisco.

Rachel Kalmar (Stanford Bio-X Bowes Fellow 2005) is a data scientist and leader in the wearables space. She is currently doing data freelance work while working on a stealth project. Rachel is also one of the founders of Dr. Brainlove, a science education non-profit and giant climbable brain jungle gym. She is an alumna of Singularity University, Rock Health, and Misfit Wearables.

Mihalis Kariolis (Stanford Bio-X Bowes Fellow 2008) is a postdoctoral student in Amato Giaccia's lab at Stanford University.

Katy Keenan (Stanford Bio-X Bowes Fellow 2006) finished her NRC postdoctoral scholar position and is now a staff engineer at the National Institute of Standards and Technology (NIST) in Boulder, Colorado.

Xu Family SIGF and Stanford Bio-X Fellow Danqing Zhu (see pg. 15 for research details)

Jongmin Kim (Bruce and Elizabeth Dunlevie SIGF, Stanford Bio-X Fellow 2011) is starting as a postdoctoral fellow in Professor Robert Kingston's lab at the Massachusetts General Hospital in October 2015.

Samuel Kim (Stanford Bio-X Bowes Fellow 2004) is a postdoctoral researcher in Professor Adam Abate's group at the University of California-San Francisco.

Daniel Kimmel (Affymetrix Stanford Bio-X SIGF 2006) is a resident in psychiatry and research fellow at Columbia University where he aims to combine his interest in the neural basis of decision-making with the treatment of psychiatric disease.

Gaurav Krishnamurthy (Stanford Bio-X Medtronic Fellow 2008) is a staff R&D engineer at Altura Medical.

Frances Lau (Stanford Bio-X Bowes Fellow 2007) is an engineer at Apple Inc.

Paul Lebel (Anonymous Donor SIGF, Stanford Bio-X Fellow 2011) is a postdoctoral associate at Google[x], Life Sciences.

Andrew Lee (Stanford Bio-X Bowes Fellow 2010) is currently on leave from the Stanford MD program and is working on Stem Cell Theranostics, a biotech spin out startup (currently 10+ employees).

Stephen Lee (Stanford Bio-X Bowes Fellow 2005) works for a telecommunications firm working on mobile financial services in Africa.

Austin Lee-Richerson (Bio-X Bowes Fellow 2011) is a consultant with the Boston Consulting Group, where he focuses on projects in the Med Tech industry.

Liang Liang (Lubert Stryer SIGF, Stanford Bio-X Fellow 2009) is in Chinfei Chen's and Mark Andermann's labs at Boston Children's Hospital as a postdoctoral fellow.

Prasheel Lillaney (Stanford Bio-X Bowes Fellow 2005) is an associate consultant at Campbell Alliance in the medical practice area.

Andreas Loening (Stanford Bio-X Bowes Fellow 2004) is a clinical instructor in the department of radiology at Stanford University.

Mark Longo (Morgridge Family SIGF, Stanford Bio-X Fellow 2011) is working as a data scientist at Quid, Inc., an analytics start-up in San Francisco. On the side, he is working on publishing my thesis research and developing a combinatorial approach to genotype-phenotype mapping (looking at correlations between sets of genes and phenotypes versus current approaches which focus on one gene at a time).

Bertrand Lui (Lubert Stryer SIGF, Stanford Bio-X Fellow 2006) is a member of the SMB Revenue Innovations team at Google.

Li Ma (Larry Yung SIGF, Stanford Bio-X Fellow 2009) is an assistant professor in the department of statistical science at Duke University.

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

Ian Marshall (Stanford Bio-X Bowes Fellow 2008) is a postdoctoral fellow in the Center for Geomicrobiology at Aarhus University in Denmark.

Joanna Mattis (Stanford Bio-X Bowes Fellow 2010) is in her first year of a neurology residency at the University of Pennsylvania.

Cory McLean (Stanford Bio-X Bowes Fellow 2007) is a software engineer in the life sciences division of Google[x].

Christine McLeavey (Stanford Bio-X Bowes Fellow 2008) is a pianist and co-founder of Ensemble SF.

Leslie Meltzer (Stanford Bio-X Bowes Fellow 2004) is the Director of US Medical Affairs - Multiple Sclerosis Franchise at Biogen Idec in Cambridge, Massachusetts.

Murtaza Mogri (Stanford Bio-X Bowes Fellow 2006) is the director of product management at Stanson Health, a health care IT start-up building next-generation clinical decision support software that is designed to safely reduce the cost and potential for harm from unnecessary care.

Sergio Moreno (Stanford Bio-X Bowes Fellow 2004) is working in Michael Levitt's lab while he is in the process of interviewing.

David Myung (Stanford Bio-X Bowes Fellow 2005) co-founded Biomimedica, a biomaterials-focused orthopaedic startup company after finishing his Stanford Bio-X fellowship and is doing his ophthalmology residency at the Byers Eye Institute at Stanford.

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

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

Shawn Ouyang (Affymetrix Stanford Bio-X SIGF 2009) is a postdoctoral fellow with Jack Taunton at University of California-San Francisco.

William Parsons (Presidential Stanford Bio-X SIGF 2010) is a postdoctoral fellow at the Scripps Research Institute, working in the lab of Benjamin Cravatt.

Steven Petsche (Stanford Bio-X Bowes Fellow 2011) works as a Development Engineer for MSC Software in Newport Beach.

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

Manuel Rausch (Affymetrix Stanford Bio-X SIGF 2012) is a postdoctoral associate at Yale University studying the spatio-temporal evolution of thrombus in abdominal aortic aneurysms.

Andreas Rauschecker (Stanford Bio-X Bowes Fellow 2008) is in the residency program in radiology at the University of Pennsylvania.

Sanaz Saatchi (Stanford Bio-X Amgen Fellow 2009) is an R&D engineering manager in the CardioVascular group at Medtronic. After leading a global research effort and opportunity assessment to identify new areas for cardiovascular medical device innovation, she has been the technical lead on a cross-functional team driving these product concepts towards commercialization. Sanaz also participated in Medtronic's Global Innovation Fellowship program which focuses on expanding healthcare to under-served populations. Her project focused on improving diabetes awareness and detection in South Africa.

Jayodita Sanghvi (Stanford Bio-X Bowes Fellow 2007) is a data scientist for Grand Rounds, a health start-up in San Francisco.

Alia Schoen (Stanford Bio-X Bowes Fellow 2009) completed a CCST Science and Technology Policy Fellowship in the State Assembly last year and has returned to Stanford to work as program manager for the ChEM-H Institute. She is currently engaged in establishing ChEM-H's educational program portfolio.
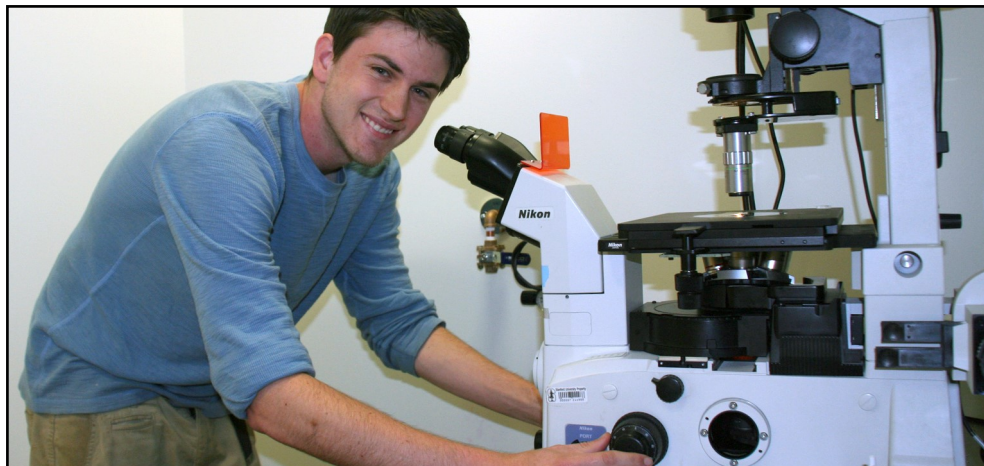
Stanford Bio-X Honorary Fellow Matthew Bull (see pg. 4 for research details)

Mark Sellmyer (Stanford Bio-X Bowes Fellow 2008) is in his second year of radiology residency in a research track at the University of Pennsylvania. His research is on small molecule optical and nuclear tools for disease diagnosis and treatment.

Joo Yong Sim (Stanford Bio-X Bowes Fellow 2010) is working in the biomedical IT convergence research department of the Electronics and Telecommunications Research Institute, a Korean national laboratory.

Ruth Sommese (Paul Berg SIGF, Stanford Bio-X Fellow 2011) is a postdoctoral student with Sivaraj Sivaramakrishnan at the University of Minnesota.

Min-Sun Son (Stanford Bio-X Bowes Fellow 2007) is working for Exponent, Inc., an engineering and scientific consulting company.

Ryan Squire (Stanford Bio-X Bowes Fellow 2010) is working for Lumosity as a data scientist.

Pakpoom Subsoontorn (Stanford Bio-X Bowes Fellow 2008) has a postdoctoral position with the Haseloff lab in the department of plant science at the University of Cambridge.

Jong Min Sung (Stanford Bio-X Bowes Fellow 2009) has a postdoctoral position with Ron Vale's lab at University of California-San Francisco.

Grace Tang (Stanford Bio-X Bowes Fellow 2008) is a security data scientist for LinkedIn.

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 a biochemistry postdoctoral fellow in James Spudich's lab at Stanford University. In August of 2016, she will begin a tenure-track position in the mechanical engineering department at Carnegie Mellon University.

Carolina Tropini (Bruce and Elizabeth Dunlevie SIGF, Stanford Bio-X Fellow 2011) has a postdoctoral position with Justin Sonnenburg at Stanford funded by the McDonnell postdoctoral fellowship on complex systems.

Jules VanDersarl (Stanford Bio-X Bowes Fellow 2005) works at Meso Scale Diagnostics as an engineering scientist.

Aaron Wang (Stanford Bio-X Bowes Fellow 2006) is currently attending Johns Hopkins University for his residency in ophthalmology.

Jack Wang (Stanford Bio-X Bowes Fellow 2011) begins a neurology residency at University of California-Los Angeles in fall 2015.

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

Aaron Wenger (Morgridge Family SIGF, Stanford Bio-X Fellow 2010) is a research associate at Stanford University, developing clinical applications for human genomics.

Kitchener Wilson (Stanford Bio-X Bowes Fellow 2007) is an instructor in pathology at Stanford with a specialization in molecular genetic pathology. He plans to one day direct a clinical genome sequencing laboratory while continuing his basic science research on human iPS cells and DNA/RNA biology as an NIH-funded Investigator. iPS cells present an opportunity to rapidly phenotype the genome and have revolutionized biomedicine by giving scientists a relatively quick and cheap method for discovering patient-specific therapies. Kitch's ultimate goal is therefore "Precision" Medicine that takes advantage of these 21st century technologies: "-omic" data and knowledge gained from patient-specific and disease-specific iPS cells.

Brian Wilt (Stanford Bio-X Bowes Fellow 2008) is a principal data scientist for Jawbone in San Francisco. There, he incubates new data products around his passions of health, fitness, and coaching.

Angela Wu (Stanford Bio-X Bowes Fellow 2006) completed her PhD and brief postdoctoral position in Professor Stephen Quake's group. Currently, she is a founding team member of Agenovir, an anti-viral therapeutics start-up. In addition to her role as Scientist at Agenovir, she also contributes to the business development and fund-raising efforts of the company. In 2016, she will be starting a position at the Hong Kong University of Science and Technology (HKUST) as assistant professor in the life science division. Her research group will study cellular heterogeneity in biological systems and disease, as well as develop novel technologies for biological and translational research.

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

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 working on supply chain management optimization for Oracle Corporation.

Sara Z. Yao (Stanford Bio-X Bowes Fellow 2004) founded DeviceDebut, LLC after exploring medical device R&D for over 5 years. DeviceDebut helps US medical device manufacturers register with CFDA, enter the Chinese market, and receive funding from the Chinese investors.

Stanford Bio-X Bowes Fellow Nir Even-Chen (see pg. 6 for research details)
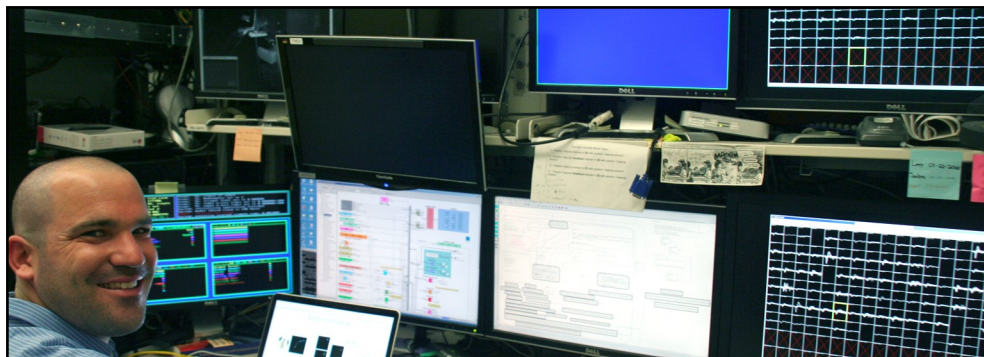
Stanford Bio-X Postdocs

The Stanford Bio-X Postdoctoral Fellowships are made possible through the support of our industry contacts. To date, seven students have been postdoctoral fellows, and those who ended their appointments have transitioned to successful careers.

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

Subhaneil Lahiri (Stanford Bio-X Genentech Postdoctoral Fellow 2013) is in his third year of his Bio-X Fellowship in the applied physics department. With the guidance of Surya Ganguli (Applied Physics) he is working on his research entitled, *"Learning and memory with complex synaptic plasticity".*

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

Elena Rykhlevskaia (Stanford Bio-X Lubert Stryer Interdisciplinary Postdoctoral Fellow 2008) is an analytics manager at comScore, Inc.

Shilpa Sambashivan (Stanford Bio-X Genentech Postdoctoral Fellow 2008) is a senior scientist at Amgen, Inc.

Sergey Solomatin (Stanford Bio-X Postdoctoral Fellow 2005) is a scientist at Impossible Foods, a recent start-up founded by Stanford biochemistry professor, Pat Brown. The company's goal is to revolutionize the food industry and to roll back the adverse effects that factory farming of animals 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.

Stanford Bio-X Fellows 2013 group photo
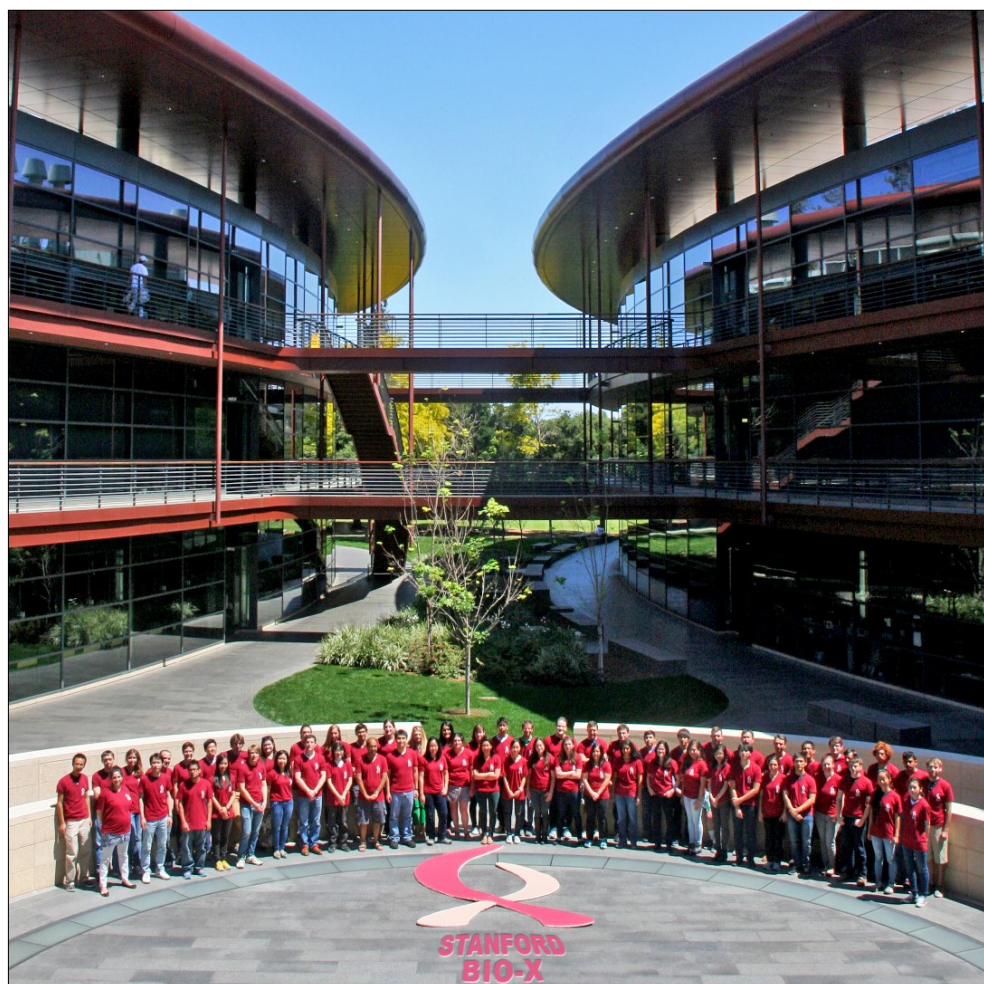
Stanford Bio-X PhD Fellowships 2015

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