2019 Summer Workshop Agenda
August 1-4, 2019
UCLA Luskin Conference Center

Thursday, August 1

2:00 PM *Exploration, Level 2*	Registration Opens
5:15 PM – 6:00 PM *Centennial CD, Level 1*	Reception
6:00 PM - 8:00 PM *Centennial CD, Level 1*	Dinner ***Engaging the World, One Conversation at a Time*** Ann Reid, Executive Director, National Center for Science Education
8:15 PM *Exploration, Level 2*	Informal Gathering and Social Time

Friday, August 2

8:00 AM – 8:45 AM *Plateia, Level 1*	Breakfast
9:00 AM – 10:00 AM *Centennial CD, Level 1*	***The Central Role of Data Driven and Quantitative Strategies in Transforming African Economics*** John Mellor, Professor Emeritus, Cornell University
10:00 AM – 10:30 AM	Coffee & Snack Break
10:30 AM – 12:00 PM *Centennial CD, Level 1*	***Science Speed Round***
12:00 PM – 1:45 PM *Centennial CD, Level 1*	Lunch ***DARPA: The Best Organization on the Planet, and How You Become Its Next Director*** Steve Walker, Director, Defense Advanced Research Projects Agency
1:45 PM – 5:45 PM	Free time
5:45 PM – 6:30 PM *Centennial, Level 1*	Reception
6:30 PM – 8:30 PM *Centennial AB, Level 1*	Dinner ***Innovation by Evolution: Bringing New Chemistry to Life*** Frances Arnold, 2018 Nobel Prize in Chemistry, Linus Pauling Professor of Chemical Engineering, Bioengineering and Biochemistry, Director of the Donna and Benjamin M. Rosen Bioengineering Center at Caltech
8:45 PM *Exploration, Level 2*	Informal Gathering and Social Time

2019 Summer Workshop Agenda
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Saturday, August 3

8:00 AM – 8:45 AM *Plateia, Level 1*	Breakfast
9:00 AM – 10:00 AM *Centennial CD, Level 1*	***Quantum Motion of Mechanical Devices: One Story of How the Quantum Technology Playbook is Still Being Written*** Cindy Regal, Associate Professor of Physics, University of Colorado, Boulder
10:00 AM – 10:30 AM	Coffee & Snack Break
10:30 AM – 11:45 AM *Centennial CD, Level 1*	***Future of Energy Panel*** Yet-Ming Chiang, Kyocera Professor of Materials Science at MIT and Co-Founder, Form Energy Patrick McGrath, Deputy Director of Technology, ARPA-e Bill Tumas, Associate Laboratory Director, National Renewable Energy Lab
12:00 PM – 1:00 PM *Plateia, Level 1*	Lunch
1:00 PM – 4:00 PM	Free time
4:00 PM – 6:30 PM *Centennial CD, Level 1*	***Drone Engineering Challenge***
6:30 PM – 8:30 PM *Centennial AB, Level 1*	Dinner ***Hertz Community Celebration and Honoring of Tom Weaver***
8:45 PM *Exploration, Level 2*	Informal Gathering and Social Time

Sunday, August 4

8:00 AM – 8:45 AM *Plateia, Level 1*	Breakfast
9:00 AM – 10:00 AM *Centennial CD, Level 1*	***Fingerprinting the Climate System*** Benjamin Santer, Atmospheric Scientist, Lawrence Livermore National Lab
10:00 AM – 10:30 AM	Coffee & Snack Break
10:30 AM – 11:15 AM *Centennial CD, Level 1*	***So, You Want to Build a Quantum Computer?*** Mollie Schwartz, Hertz Fellow
11:15 AM – 12:00 PM *Centennial CD, Level 1*	***Searching For the Invisible: How Dark Forces Shape Our Universe*** Katelin Schutz, Hertz Fellow
12:00 PM – 1:00 PM *Plateia, Level 1*	Lunch

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BIOGRAPHIES

2019 Hertz Summer Workshop
UCLA Luskin Conference Center
August 1 – August 4, 2019

Speakers and Panelists

Frances Arnold
Yet-Ming Chiang
Patrick McGrath
John W. Mellor
Cindy Regal
Ann Reid
Benjamin Santer
Katelin Schutz
Mollie Schwartz
William Tumas
Steve Walker

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Frances Arnold

California Institute of Technology
2018 Noble Prize in Chemistry
Linus Pauling Professor of Chemical Engineering, Bioengineering and Biochemistry and the Director of the Donna and Benjamin M. Rosen Bioengineering Center

Frances Arnold is the first American woman to win the Nobel Prize in Chemistry (2018). She is the Linus Pauling Professor of Chemical Engineering, Bioengineering and Biochemistry and the Director of the Donna and Benjamin M. Rosen Bioengineering Center at the California Institute of Technology, where she has been on the faculty since 1986. At Caltech, Arnold pioneered methods of directed protein evolution used to make proteins for applications in alternative energy, chemicals, and medicine. Her methods are used throughout the world to tailor proteins for consumer products, gene sequencing, clinical diagnostics, neuroscience, pharmaceuticals, textiles, agriculture and more. Arnold was the first woman to receive the Charles Stark Draper Prize of the National Academy of Engineering (2011), the Millennium Technology Prize (2016) and election to all three US National Academies of Science, Medicine, and Engineering. She received the US National Medal of Technology and Innovation from President Obama in 2013 and has been elected to the American Academy of Arts and Sciences, the American Philosophical Society, the National Inventors Hall of Fame, and is an international fellow of the UK Royal Academy of Engineering.

Yet-Ming Chiang

Massachusetts Institute of Technology
Professor of Materials Science
Co-Founder, Form Energy

Dr. Yet-Ming Chiang is Kyocera Professor in the Department of Materials Science and Engineering at Massachusetts Institute of Technology (MIT). His research focuses primarily on advanced materials and their role in energy technologies. Prof. Chiang was elected to the U.S. National Academy of Engineering in 2009, and is a Fellow of the Materials Research Society, the American Ceramic Society, and the National Academy of Inventors. Prof. Chiang has published more than 280 scientific articles and holds more than 80 U.S. patents. He serves on numerous government and academic advisory committees, and is recognized as an expert in materials science, energy technologies, and battery technology.

Prof. Chiang is active in developing technology from basic research, and has co-founded 6 companies based on work from his MIT research group. He is currently Chief Scientist at Form Energy, a company developing long-duration grid storage to smooth the output of intermittent renewables. He is also Chief Scientist at 24M Technologies, a Cambridge, MA company that is re-inventing lithium ion battery design and manufacturing. He previously co-founded A123 Systems, a developer of nanophosphate lithium ion batteries, and American Superconductor Corporation, a developer of high temperature superconductor technology. Other technology areas in which he is active include low-cost metal 3D printing, where he co-founded Desktop Metal.

Patrick McGrath

Advanced Research Projects Agency – Energy (ARPA-e)
Deputy Director

Dr. Patrick McGrath currently serves as the Deputy Director for Technology at the Advanced Research Projects Agency-Energy (ARPA-E) where he leads the technical staff in the development, launch and execution of high-risk, high-reward energy R&D programs. Prior to his appointment as Deputy Director, Dr. McGrath served as a Program Director at ARPA-E, leading the Accelerating Low-cost Plasma Heating and Assembly (ALPHA) program on low-cost development of fusion power; the Advanced Management and Protection of Energy Storage Devices (AMPED) program on advanced sensors, models, and controls for Battery Management Systems; as well as a range of materials and systems technology projects in the Modern Electro/Thermochemical Advances in Light Metals Systems (METALS), Rare Earth Alternatives in Critical Materials (REACT), and ARPA-E OPEN programs.

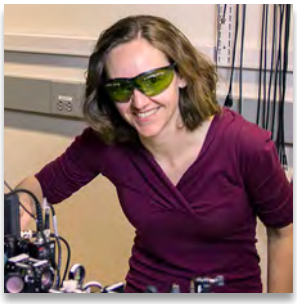
Before coming to ARPA-E, McGrath served as a technical advisor at the Defense Advanced Research Projects Agency (DARPA), where he played a central role in program development, execution, and technology transition of DARPA programs in portable fuel cells for unmanned systems, hybrid energy storage systems, new catalytic approaches and novel electrochemical systems to handle Department of Defense logistics fuels.

McGrath received his Ph.D. in Chemical Engineering from the University of California at Berkeley and his B.S. in Chemical Engineering from the University of Virginia.

John W. Mellor

Cornell University
Professor Emeritus

John W. Mellor is currently Professor Emeritus, Cornell University and President of John Mellor Associates, Inc., a policy consulting firm. Prior to that he was founding Director General of the International Food Policy Research Institute, Chief Economist of the United States Agency for International Development (USAID/Washington,) and Vice-President of Abt Associates. At Cornell University he is now Professor Emeritus, and was Professor of Agricultural Economics, Economics, and Asian Studies, Director of the Comparative Economics Program and Associate Director and Acting Director of the Center for International Studies. He received degrees from Cornell University and Oxford University. He was the recipient of the Wihuri Prize (Finland) and the Presidential Award (The Reagan White House, USA) for efforts to alleviate hunger in the World and is an elected Fellow of the American Academy of Arts and Sciences, the American Association for the Advancement of Science, and the American Agricultural Economics Association. He is the recipient of numerous awards for the quality of his research, the author and co-author of ten books, and hundreds of journal articles and conference papers (largely on economic and agricultural development.)



Cindy Regal

University of Colorado, Boulder
Associate Professor
Hertz Fellow, JILA Fellow

Cindy Regal is an Associate Professor of Physics at the University of Colorado, Boulder, and a fellow of JILA, a joint institute between the University of Colorado and the National Institute of Standards and Technology. Her research focuses on laboratory experiments in quantum physics - in which she explores diverse physical systems such as acoustical vibrations and trapped atoms as hosts of controlled quantum excitations. She is interested in building sets of interacting quantum particles to explore fundamental physics and measurement science, and for their potential as components of quantum networks or computers. Regal received her PhD as a Hertz Fellow at the University of Colorado in 2006, and her BA in Physics in Wisconsin in 2001. She was awarded a Millikan Postdoctoral Fellowship at Caltech in 2007 and started on the faculty of the University of Colorado in 2010. She is the recipient of a Packard Fellowship, a Presidential Early Career Award, and was recently an Alexander Cruickshank lecturer at the Gordon Research Conference on Quantum Sciences.

Ann Reid

National Center for Science Education
Executive Director

As executive director, Reid works to implement the organization's mission to ensure that what is taught in science classrooms and beyond is accurate and consistent with the best current understanding of the scientific community.

Climate change and evolution are challenging subjects to teach, especially in communities where distrust or rejection of these areas of science is widespread. NCSE works directly with teachers to provide them with the skills and confidence they need to cover these topics effectively, supports community members to lead fun, engaging science activities, and monitors legislative threats to science education.

Prior to NCSE, Reid was director of the American Academy of Microbiology, served as a Senior Program Officer at the NRC's Board on Life Sciences, and for 15 years worked as a research biologist at the Armed Forces Institute of Pathology, where she was responsible for sequencing the 1918 flu virus.

Benjamin Santer

Lawrence Livermore National Laboratory
Atmospheric Scientist

Ben Santer is an atmospheric scientist at Lawrence Livermore National Laboratory. He studies natural and human “fingerprints” in observed climate records. His early research contributed to the historic 1995 conclusion of the Intergovernmental Panel on Climate Change: “the balance of evidence suggests a discernible human influence on global climate”. He served as lead author of a key chapter of that report. Since 1995, Ben has identified human fingerprints in atmospheric temperature and water vapor, ocean heat content, sea surface temperature in hurricane formation regions, and many other climate variables.

Ben holds a doctorate in Climatology from the University of East Anglia, England. After completing his Ph.D. in 1987, he spent five years at the Max-Planck Institute for Meteorology in Germany, where he worked on developing and applying climate fingerprint methods. Ben joined Lawrence Livermore in 1992.

Ben has received a number of awards for his research. These include a MacArthur Fellowship (1998) and membership in the U.S. National Academy of Sciences (2011). The most significant awards are the friendships he has made during his career. In addition to his research, he cares deeply about the communication of climate science to a wide range of audiences. He writes for the Scientific American blog and has appeared on “Late Night with Seth Meyers”. Together with Chip Duncan and Dr. Hernando Garzon, Ben is a member of “The Three Tenors of Climate Change”. The Tenors are devoted to the task of improving public understanding of the science and impacts of human-caused climate change. In his spare time, Ben is an avid rock-climber and mountaineer.

Katelin Schutz

Pappalardo Fellow (Physics)
Massachusetts Institute of Technology
Hertz Fellow

Katelin Schutz is a Pappalardo Fellow in the MIT Department of Physics and a Fellow of the MIT Center for Theoretical Physics. Katelin received her PhD from UC Berkeley in 2019 with the supervision of Hitoshi Murayama. Her dissertation work focused on observational searches for "dark sectors," consisting of new particles and forces that would only interact very weakly with the visible world. These searches necessarily lie at the intersection of particle physics, astrophysics, and cosmology, and Katelin is broadly interested in using our Universe in novel ways to understand and detect exotic new physics. For example, she recently proposed a new mechanism for creating dark matter in the first moments after the Big Bang and has been exploring the implications of this mechanism for the evolution of our Universe through the present day on a vast range of scales. While primarily a theorist, Katelin has been occasionally known to get her hands dirty with the data. Her ultimate goal is to recover every bit of information about what our Universe is made of by considering how astrophysical systems would be affected with the addition of new particles and forces.

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Mollie Schwartz

MIT Lincoln Laboratory
Technical Staff Scientist
Hertz Fellow

Mollie Schwartz, PhD, is a technical staff scientist at MIT Lincoln Laboratory in the Advanced Technologies division. Her work broadly encompasses quantum hardware engineering using superconducting qubits. She designs, develops, and tests superconducting circuits and architectures that represent a promising platform for exploring scalable quantum computing. Her work focuses on 3D-integration of multi-chip modules that are compatible with long-lived qubits, scaling and automation of high-fidelity qubit readout and control, and quantum algorithm performance and benchmarking.

Mollie received her MA and PhD in Physics from UC Berkeley, where she used superconducting qubits to explore the fundamental physics of quantum-limited measurements. She graduated as the salutatorian of her class from Columbia University with a BA in chemical physics

William Tumas

Associate Laboratory Director, Materials and Chemical Science and Technology
National Renewable Energy Laboratory
Hertz Fellow

Dr. William Tumas is the Associate Laboratory Director for Materials and Chemical Science and Technology at the National Renewable Energy Laboratory (NREL), which carries out fundamental and applied R&D for renewable energy and energy efficiency including solar energy conversion for electricity and fuels, materials discovery and development for renewable energy technologies, nanoscience, energy storage, hydrogen production, and fuel cells. Bill is also the Director of the Center for the Next Generation of Materials Design (www.cngmd-efrc.org) Energy Frontier Research Center and led the Center for Inverse Design EFRC from 2011-2014. Prior to joining NREL in 2009, Bill held a number of leadership positions at Los Alamos National Laboratory for 17 years including the Program Director for Applied Energy Programs and group leader of inorganic chemistry. He started his career at Dupont Central Research after postdoctoral research at Caltech as an NIH and Chaim Weizmann Fellow. He received a Ph.D. in Organic Chemistry from Stanford University as an NSF and Hertz Graduate Fellow and a B.A in Chemistry from Ithaca College. His research activities have included materials discovery, solar energy conversion, chemical hydrogen storage, catalysis, supercritical fluids and alternate reaction media, green chemistry, and waste treatment technology development and assessment. He has over 60 peer-reviewed publications, 12 patents, and has given over 125 invited presentations.

Steve Walker

Defense Advanced Research Projects Agency (DARPA)
Director

Steve Walker became DARPA's director in November 2017. He served as the deputy director of the agency from October 2012 to December 2016, and as acting director from January 2017 through October 2017. Prior to his return to DARPA in 2012, he served as deputy assistant secretary of the Air Force for Science, Technology and Engineering, responsible for developing the technology investment strategy for the Air Force's annual $2 billion science and technology program and for providing functional management of more than 14,000 military and civilian scientists and engineers. He has more than 30 years of experience in the civil service. Steve also previously served in DARPA's Tactical Technology Office as a program manager, deputy director, and director. Steve is a member of the Senior Executive Service and a Fellow of the American Institute of Aeronautics and Astronautics; he received the AIAA Hap Arnold Award for Excellence in Aeronautical Management in 2014. He has also been awarded the Presidential Rank Award, the Air Force Meritorious Civilian Service medal, and the DoD Exceptional, Meritorious, and Distinguished Civilian Service medals. He holds a Ph.D. and B.S. in aerospace engineering from the University of Notre Dame, and an M.S. in mechanical engineering from the University of Dayton.

Attendees

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Cheri Ackerman

Postdoctoral Fellow
Broad Institute of MIT and Harvard University
Hertz Fellow

Cheri is a postdoctoral fellow working with Prof. Paul Blainey at the Broad Institute of MIT and Harvard. She is passionate about the development of new methods to study and harness complexity and heterogeneity in biological systems. Currently, she works on technologies to partition, recombine, and sort small volumes of liquids and gels in order to make combinatorial experiments high-throughput. She is applying these technologies to problems in viral detection and microbial ecology.

Cheri earned her Ph.D. in Chemistry as a Hertz Fellow under the mentorship of Prof. Christopher Chang at the University of California, Berkeley. Her graduate thesis focused on copper metabolism in vertebrates, including the development of mass spectrometry imaging methods to map copper localization in tissue and the discovery of copper-accumulating megamitochondria in zebrafish retina. Her undergraduate research included galectin nuclear-cytoplasmic transport with Prof. Eric Arnoys at Calvin College (Grand Rapids, MI) and proteins governing mitochondrial fusion-fission with Dr. Jeff MacKeigan at the Van Andel Research Institute (Grand Rapids, MI). She holds a B.S. in Biochemistry and Spanish from Calvin College.

In her spare time, Cheri spends as much time outdoors as possible and is always game for a hike or some pickup volleyball. She also loves to travel – most recently to Costa Rica to visit her sister.

Rebecca Alford

Chemical and Biomolecular Engineering
Johns Hopkins University
Hertz Fellow

From an early age, Rebecca Alford's desire to understand her visual impairment ignited her passion for science. Today, this passion drives her research in engineering computational tools to investigate biology at the molecular level. As a high school student researcher at New York University, Rebecca developed an algorithm to detect potentially disease-causing mutations, which she presented at TEDxCMU in 2013. As a visiting undergraduate researcher at Johns Hopkins, she developed a suite of tools within the Rosetta biomolecular modeling software to investigate membrane protein structure. Both of these works lay a foundation for better computational modeling of membrane proteins, a class of proteins that are targeted by 60% of drugs but are very difficult to study in the wet lab.

In 2016, Rebecca graduated from Carnegie Mellon University with a BS in Chemistry. Currently, she is pursuing a PhD at Johns Hopkins University in Chemical and Biomolecular Engineering. Her research focuses on developing physics-based models of different cell membrane environments. These models will better emulate biological membranes and accelerate membrane protein structure prediction and design. Her overall future goal is to work at the interface of computing, chemistry, and biology to investigate diseases at the molecular level and create new drugs to treat them.

Outside of the lab, Rebecca is dedicated to increasing participation in computing fields, especially for women and students with disabilities. Toward this goal, she has led various efforts including mentoring high school and undergraduate students, spearheading inclusion initiatives within the RosettaCommons, and helping to create a new summer internship program in computational biology.

William Allen

Neuroscience
Stanford University
Hertz Fellow

A *magna cum laude* and Goldwater scholar from Brown University, William Allen researches how the brain's neural circuits produce natural and pathological behaviors. His goal is to develop new physical, biological, and computational tools to help understand how the brain works in health and in disease. The results could promote more specific treatments for psychiatric and neurological disorders such as Parkinson's disease.

As an undergraduate, Will's research spanned synthetic biology, neuroscience, and machine learning. His thesis used computational analysis to study gene regulation during neural development. A Churchill Scholar at the University of Cambridge, he completed his master's research at the MRC Laboratory of Molecular Biology.

"I want to make serious progress answering questions about human psychology and animal behaviors that have been discussed fruitlessly since antiquity. The Hertz Fellowship will allow me to work across the traditional boundaries between academic disciplines, and to combine approaches from biology, physics, and computer science to build tools for understanding the brain."

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Michael Ansour

Managing Partner
March Partners, LLC
Hertz Director
Hertz Fellow

Michael Ansour is Managing Partner of March Partners LLC, an event driven investment firm, and a director of The Fannie and John Hertz Foundation, where he also serves as chairman of the Foundation's Investment Committee. He is also a member of the board of Servco Pacific Inc., one of the largest private companies in Hawaii. Previously, he worked in mergers and acquisitions at The First Boston Corporation, was an associate at Cleary, Gottlieb, Steen & Hamilton and clerked for the Honorable John J. Gibbons of the United States Court of Appeals. Michael is a Life Member of the Council on Foreign Relation (CFR). He received his BA in math and physics from MIT, Part III of the Maths Tripos (Cosmology) from Cambridge University, his PhD in mathematical physics from MIT and his law degree from Harvard Law School.

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Alex Atanasov

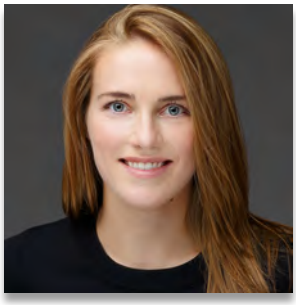
Theoretical Physics
Harvard University
Hertz Fellow

A PhD student in theoretical physics at Harvard University, Alex is fascinated by phenomena existing at vastly different scales while also adhering to common scientific principles. For example, the branches of certain plants exhibit the same splitting angles as river networks. Atanasov studies the interrelationship of these fractal-like patterns and the underlying property that characterizes them, known as *scale invariance*. He is especially interested in how scale invariance affects strongly interacting systems, such as when an ordinary metal becomes a superconductor.

He studies these systems using techniques and concepts from quantum field theory, the framework for understanding the interactions of fundamental particles. His undergraduate research at Yale used these techniques to obtain sharp bounds on a novel topological phase transition.

Alex has worked as a software engineering intern at Google, as a neuroscience researcher at Yale, and as a visiting researcher at the Perimeter Institute for Theoretical Physics. He graduated magna cum laude from Yale with a BS in Physics and an MS in Mathematics. A native of Sofia, Bulgaria, Alex migrated to the United States with his mother at age 2, where he was raised in the Washington, D.C. area.

Alex also is a classical guitarist with a passion for Bach.



Megan Blewett

Venture Capital Investor
Venrock
Hertz Fellow, Hertz Interviewer

Megan Blewett is a venture capital investor at Venrock, where she focuses on the biotech and pharmaceutical spaces. Most recently, she worked on the launch of microbiome therapeutics company Federation Bio. Prior to Venrock, Megan earned a PhD in chemistry at The Scripps Research Institute with Ben Cravatt. Her PhD work revealed novel druggable protein targets and helped form the foundation of the biotech company Vividion. Megan received an AB/AM in chemistry from Harvard University, where she worked for Nobel Laureate EJ Corey. In 2019, Megan was named to the Forbes 30 under 30 list for Healthcare. In her spare time, Megan enjoys running and picking locks.

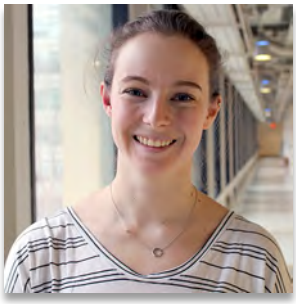
Dolev Bluvstein

Experimental Quantum Physics
Harvard University
Hertz Fellow

Dolev majored in physics at the University of California, Santa Barbara and grew up in Sunnyvale, California. He approaches nanoscale technology with the ambition to revolutionize the capacity of humans to understand the universe and master its behavior. He has joined the growing wave of research in quantum information science that could potentially transform modern computing, communications, and biological and environmental sensing. Dolev will pursue his PhD at Harvard University.

Dolev's interests involve technologically harnessing the unique rules of quantum mechanics, which dictate the laws of physics at atomic and subatomic scales, in bizarre and counterintuitive ways when compared to the classical physics that dominates the world of everyday life. His undergraduate research with Prof. Ania Bleszynski Jayich includes exploiting an atomic-sized defect in diamonds to reshape nuclear magnetic resonance technology — an advancement that could have far-reaching implications in biology and medicine. Dolev's bibliography includes lead-authorship of a publication in one of the most prestigious physics journals, Physical Review Letters. In his PhD work and beyond, he will continue developing quantum technology and searching for innovative interdisciplinary solutions.

Dolev's numerous awards include the Goldwater Scholarship, which supports undergraduates who intend to pursue research careers in the natural sciences, mathematics, or engineering. He also was selected as a U.S. delegate to the 69th Lindau Nobel Laureate Meeting. He enjoys outdoor activities such as backpacking, and swimming in the ocean.



Alexandra Brown

Chemistry
Massachusetts Institute of Technology
Hertz Fellow

Alexandra is a graduate student in chemistry at the Massachusetts Institute of Technology. She grew up in Dublin, California and received her undergraduate degree in chemistry from the University of California, Berkeley in 2017.

As an undergraduate, she worked in Professor John Arnold's group studying titanium-aluminum heterobimetallics supported by bridging hydride ligands. Her work expanded the classes of reactions these complexes are known to undergo and provided insight into titanium-doped aluminum hydrogen storage materials. This project led to her interest in understanding the often complicated electronic structure of multimetallic complexes.

Alexandra began her graduate work at MIT in 2017 with Professor Daniel Suess. Her current research is focused on the reactivity and electronic structure of synthetic metal-chalcogenide clusters, with a particular interest in iron-sulfur clusters. In biological systems, these clusters catalyze synthetically challenging reactions such as the reduction of dinitrogen to ammonia. She is interested in understanding the mechanism of these reactions and in gleaning electronic structure information which may be used to rationally design new catalysts for carrying out these reactions industrially.

Matthew Brown

Physics
University of California, Santa Barbara
Hertz Fellow

Matt is a PhD student in physics at the University of California, Santa Barbara. His interests are in theoretical and mathematical physics. In particular, he studies mathematical aspects of quantum field theory. Somewhat paradoxically, while quantum field theory is an extremely powerful collection of ideas describing phenomena as diverse as phase transitions and elementary particle collisions, a precise and complete understanding of it is still well beyond us. Attempts to obtain such an understanding involve studying provisional definitions of quantum fields and the relations between them, attempting to incorporate heuristic ideas of physicists into these definitions, rigorously constructing explicit examples, and elucidating the mathematical structures that appear along the way. Matt is interested in all these avenues and hopes that an answer to the question "What is quantum field theory?" will lead to a much deeper understanding of nature and the mathematics describing it.

Outside of physics and math, Matt loves music and enjoys playing the trumpet. He also enjoys taking drives without knowing where he is going, which maybe is some kind of metaphor for research, or something like that.

Carol Burns

Los Alamos National Laboratory
Deputy principal associate director for Science, Technology & Engineering
Hertz Fellow, Council, Interviewer

Carol Burns is a deputy principal associate director for Science, Technology & Engineering at Los Alamos National Laboratory (LANL). She has held various roles at LANL, including division leader for Chemistry, group leader for Nuclear and Radiochemistry, chemistry division deputy division leader and program manager for Advanced Concepts in Energy Technology. Carol also served as senior policy advisor in the Office of Science and Technology Policy. She was awarded the LANL Fellows Publication Prize in 2002, named a Laboratory Fellow in 2003 and named a fellow of the American Association for the Advancement of Science in 2008. Carol holds a BS in chemistry from Rice University and a PhD in chemistry from the University of California, Berkeley.

Dylan Cable

Computer Science
Massachusetts Institute of Technology
Hertz Fellow

Dylan is a first-year PhD student in computer science at MIT where he specializes in improving physical methods for biological data collection and creating mathematical methods for biological data analysis. He regards data collection and data analysis as inseparable and believes they must be interwoven to achieve deep knowledge of biological problems.

Dylan's exploration of neuroscience and biology as an undergraduate at Stanford University convinced him that life science problems are the most important issues to solve. His goal: to uncover the inner workings of vital biological processes. Cable has co-authored a recent article in the Journal of Neuroscience that examines whether single neuron recordings can be recorded from humans using functional Magnetic Resonance Imaging (fMRI), a question with major implications for studying the human brain.

Dylan grew up in Chicago where he developed a deep passion for mathematics. In high school, he took math classes at Northwestern University and worked independently with Prof. Paul Sally of the University of Chicago. He graduated from Stanford University in 2018 with a BS in mathematics. He was a recipient of the J.E. Wallace Sterling Award for Scholastic Achievement, which is given to the top 25 graduating seniors in Stanford's School of Humanities and Sciences. Dylan's outside interests include playing the guitar, improv comedy, and long conversations about science, philosophy, and life.

Rebecca Carlson

Medical Engineering and Medical Physics
Massachusetts Institute of Technology
Hertz Fellow

Rebecca Carlson is pursuing her PhD in medical engineering and medical physics at the Massachusetts Institute of Technology (MIT) in the labs of Paul Blainey and Nir Hacohen. As an undergraduate studying chemical engineering at Michigan State University (MSU), she began researching small interfering RNAs in Dr. Walton's Applied Biomolecular Engineering Lab. To satisfy her budding interest in immunology, she also did a summer research internship at the National Institutes of Health, where she studied signaling in macrophages. There, she drew on her quantitative engineering skills, teaching herself how to program in R in order to analyze high-throughput imaging data. This fueled a passion to combine computational and experimental methods in her future research. She is particularly interested in applying these methods to study autoimmune diseases such as lupus. In the future, Rebecca hopes to lead international and interdisciplinary teams to better understand and predict autoimmune disease presentation and progression. She is particularly interested in dissecting immune system variation based on sex and how this contributes to sex disparities in autoimmunity.

In addition to research, she has maintained a passion for languages: she speaks English and Italian fluently and is learning French, Chinese, and Twi (a Ghanaian language). Rebecca grew up in Italy before moving to the U.S. in high school. In her spare time, she hopes to make frequent trips to Italy, Ghana, and China, and hopefully discover a love for a few other countries along the way.

Kurtis Carsch

Inorganic Chemistry
Harvard University
Hertz Fellow

Kurtis Carsch, 25, is a graduate student at Harvard University in Cambridge, Massachusetts, where he is pursuing his doctoral degree in chemistry with an emphasis in synthesis. Under tutelage of Professor Theodore Betley and in collaboration with Professor Kyle Lancaster (Cornell), Kurtis focuses on the isolation and characterization of highly reactive molecules with atypical electronic structures pertinent to fundamental chemical transformations, such as copper-catalyzed C–N bond construction and oxygen reduction.

Kurtis received both a BS and an MS from the California Institute of Technology (Caltech) in Pasadena, California, in Spring 2016 and has conducted research at both a startup company (SAFCell) and Honeywell UOP. Kurtis' enthusiasm for research originated from his two-year, early-college experience, when he was 16 years of age at the Texas Academy for Mathematics and Science (University of North Texas). While there, he explored the transformation of natural gas into commodity chemicals by organometallic catalysts through a joint synthesis-computational endeavor. Kurtis thereafter attended Caltech and continued his research at the interface of experimental (with Professor Theodore Agapie) and theoretical chemistry (with Professor William Goddard). Through publications and national presentations, he demonstrated the improved understanding of fundamental processes in biological photosynthesis and hydrocarbon transformation through a combined computational-experimental approach. Kurtis' accomplishments include: publications in impactful science journals, numerous awards and recognitions, meeting the president of the United States through the Intel Science Talent Search, and the respect and encouragement he has garnered to formulate and pursue varied research projects.

Kurtis attributes his interest in chemistry to a Danish upbringing in which playing with Legos established a joyous foundation for his later interest in combining elements to create molecules with unprecedented properties. Kurtis is from Bellevue, Washington.

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Lillian (Lilly) Chin

Electrical Engineering and Computer Science
Massachusetts Institute of Technology
Hertz Fellow

Lillian (Lilly) Chin is a graduate student at MIT in Daniela Rus' Distributed Robotics Lab, working towards a PhD in Electrical Engineering and Computer Science. She graduated from MIT in 2017 with a Bachelors of Science in Electrical Engineering and Computer Science with minors in Mechanical Engineering and Comparative Media Studies.

Currently, Lilly's research interests are in robotics hardware and controls design, specifically developing more dexterous soft robotic actuators as well as the controls and algorithms needed to achieve complex manipulation tasks. Her ultimate career goal is to be a professor in robotics, using her broad interdisciplinary background to create more fully-integrated, self-contained robotic systems.

Outside of the lab, Lilly shoots trap with the MIT Sporting Clays Association and does informal humanities research on the intersection of old and new media forms.

Jordan Cotler

Physics and Mathematics
Stanford University
Hertz Fellow

Jordan Cotler is a PhD candidate at Stanford University, and is a Hertz Fellow and Stanford Graduate Fellow. Jordan discovered his passion for theoretical physics in high school when he performed summer research at Northwestern University and Stanford University. While still in high school, Jordan developed an original quantum cryptography protocol, earning him tenth place in the 2012 Intel Science Talent Search. At MIT, Jordan has performed research in theoretical physics, mathematics and neuroscience, resulting in several publications. His ongoing collaboration with Nobel laureate Frank Wilczek includes the discovery of entanglement enabled intensity interferometry. He is particularly interested in importing techniques from quantum information into other subfields. Jordan has a BS in physics and mathematics from MIT.

A magician since the age of eight, Jordan is internationally known for creating original card effects, sold worldwide.

Mark Cronshaw

Chief Economist
Gustavson Associates
Hertz Fellow

Dr. Mark Cronshaw is the Chief Economist at Gustavson Associates. He has over twenty-five years of experience in oil & gas, telecommunications, and academics. His economic and engineering analyses include valuation of international and domestic oil & gas properties and facilities including gas-to-liquids, valuation and due diligence for sand and gravel operations, valuation of gold and bauxite mines, energy alternatives for Cook Inlet, development of the natural gas sector in Afghanistan, determination of the economic rate of return for pipeline rehabilitation in the Republic of Georgia, tariff and cost studies for the Alaskan Natural Gas Transportation System, and enhanced oil recovery at Prudhoe Bay. He has been an expert witness concerning cost contingency. He has built economic models of production sharing contracts (PSCs) in Kurdistan, Egypt, and Albania. He was part of a team that prepared a development plan for the first underground natural gas storage in the Republic of Georgia, which led to the award of a preliminary engineering study. His capacity-building experience includes work on the monitoring and supervision of PSCs and future energy scenarios on behalf of the Hydrocarbon Unit in Bangladesh.

Education
Ph.D. Engineering-Economic Systems, Stanford University, 1989
M.B.A. Finance, Southern Methodist University, 1984
M.S. Chemical Engineering, California Institute of Technology, 1979
B.A. Chemical Engineering, Cambridge University, UK, 1976

Geographical areas of expertise
Afghanistan, Albania, Bangladesh, Botswana, Chile, Egypt, Kazakhstan, Kurdistan (Iraq), Morocco, Republic of Georgia, Russia, and United States
United States: Alaska, Colorado, Texas

Professional registrations & affiliations
Association for the Advancement of Cost Engineering
Association of International Petroleum Negotiators
US Association of Energy Economists
HONOR: Hertz Fellow 1987-89

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David Dankworth

ExxonMobil Strategic Corporate Research
Distinguished Scientific Advisor
Hertz Fellow

David Dankworth is a Distinguished Scientific Advisor at ExxonMobil Corporate Strategic Research. His work is currently focused on strategies for long term development and deployment of natural gas conversion technologies. He is also a visiting research scholar and scientific portfolio advisor for ExxonMobil's sponsored collaborative research programs at Princeton University's Andlinger Center for Energy and the Environment.

In his management career, Dankworth has led a range of global technology groups within ExxonMobil, including heat transfer, combustion, energy conservation, catalytic cracking, and hydroprocessing. He also has played roles in operations as technical manager of the Ingolstadt refinery in Germany, and managed regional engineering support for refining in both Europe and Canada. He was manager of the global Refining Process Engineering division from 2009-2013, which supported research, operations, project development and commercialization of process technology for ExxonMobil refineries and licensing customers worldwide. Most recently, he was head of strategy for EM Research and Engineering Company, working at the interface between technology development and business strategies.

Dankworth is a chemical engineer, with degrees from Rice University (B.S. 1986) University of Cambridge (CPGS 87, Churchill Scholar) and Princeton (Ph.D. 91, Hertz Fellow). He is the inventor on over 20 U.S. and international patents. His continuing interests are in the areas of chemical reactor engineering, process intensification, global energy supply, corporate and industry strategy, and technical organization effectiveness.

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Colin Defant

Mathematics
Princeton University
Hertz Fellow

Colin Defant, born on April 28, 1995 in Tampa, Florida, graduated from the University of Florida in May of 2017 with a Bachelor of Science degree in mathematics. He has written thirty articles in the areas of number theory and combinatorics (three are in production). Of these articles, Colin is most proud of one that invents new combinatorial objects that he calls "valid hook configurations." These objects have allowed Colin to gain an in-depth understanding of the postorder and preorder traversals of decreasing plane trees. Colin utilized valid hook configurations to solve an open problem from 1990. He then applied that result in order to make significant progress toward a solution to another problem from 1990 that many researchers had deemed intractable.

Colin is currently a graduate student at Princeton University, where he plans to study combinatorics and theoretical computer science. Specifically, he is interested in enumerative and algebraic combinatorics. Within the area known as "dynamical algebraic combinatorics," he is interested in sequential dynamical systems, which are models of computer simulation that have found applications in traffic simulation and molecular biology and have recently been linked to other areas of algebraic combinatorics. At the moment, Colin is working to develop a theory of valid hook configurations that links these new objects with many other combinatorial objects such as set partitions and cumulants in free probability theory.

During the summer of 2017, Colin worked as an adviser at the University of Minnesota Duluth Mathematics REU program. He is currently working as an advisor for this program for the summer of 2018. Colin plans to continue mentoring undergraduate research projects throughout his career.

In high school, Colin pole vaulted for his school's track team and taught several other students how to pole vault. He hopes to continue pole vaulting after he earns his Ph.D. In his free time, he enjoys composing electronic music and listening to music by Owl City.

Paul Dieterle

Quantum Physics
Harvard University
Hertz Fellow

Paul is a second year grad student in physics originally from Albuquerque, New Mexico. (I say "originally from" because I've moved around a lot: Champaign, IL; Albany, NY; Ithaca, NY; Madison, WI for high school; and Caltech for undergrad.) Right now I'm at Harvard, endeavoring to solve various soft matter and statistical biophysics problems. I realize that's not very specific, so please accost me in person for more details.

In a previous life, the occasional foray into theory notwithstanding, I focused my energy on experimental (quantum) optics. I had a lot of fun with the electronics and cleanroom equipment, but grew tired of the usual paradigm — first the Hamiltonian, then the ad hoc experiment — and decided this spring to try something new.

Outside of work — am I allowed to admit I do things outside of work? — I have a several hobbies, most notably climbing. Unfortunately, since my triumphant high-school years, I have withered on the vine and now find myself injured 50% of the time and out of shape 100% of the time. (Not that I'm complaining, I had a lot of fun in undergrad.) I also follow the NBA, cook every day, and (to the extent that I can at all) read as much as possible.

Allow me to finish this biography by throwing in a few provocative "hot takes" (in case flying off the top rope and slamming quantum optics wasn't enough) that will hopefully result in some fun discussions. Fermi, Jerry West, cauliflower, bread, skirt steak: underrated. Einstein, Kobe Bryant, kale, quinoa, filet mignon: overrated. Betzig: best Nobel Lecture I've read. de Gennes: worst Nobel Speech I've read. Lorentz: most incorrect Nobel Lecture I know of. LA: my favorite city. LA traffic: overstated. Eastern Sierra: my favorite place to climb. Noise-canceling headphones: essential. Economists: more rational than scientists.

Jordan Doman

Chemistry and Chemical Biology
Harvard University
Hertz Fellow

Jordan is originally from Monroeville, Pennsylvania and obtained her BA in Biochemistry and her MS in Chemistry from the University of Pennsylvania in 2017. She is currently pursuing her PhD in Chemistry and Chemical Biology at Harvard University. Having just completed her first year as a graduate student in David Liu's lab at the Broad Institute, Jordan is interested in genome editing. Specifically, her research focuses on base editing. This type of genome editing consists of making chemical modifications directly on DNA bases in vivo to generate mutations, as opposed to creating double-stranded DNA breaks. She is interested in developing this technology further and applying it to therapeutically relevant mutations. Outside of the lab, Jordan enjoys musicals, reading, and exploring Boston.

Jordan Edmunds

Electrical Engineering
University of California, Berkeley
Hertz Fellow

Jordan is a PhD student in electrical engineering at the University of California, Berkeley. He specializes in the fabrication of neural interfaces— tools for studying and interacting with the brain.

Jordan was born in Payson, Utah, and grew up in San Diego, California. As an undergraduate at the University of California, Irvine, where Jordan earned dual degrees in electrical engineering and biological sciences, he created devices that connect with the human nervous system. The work included developing an electrical stimulator to elicit muscle contractions and restore movement to paraplegics. Work on the full system continues at the UCI Brain-Computer Interface Lab. He now works closely with Michel Maharbiz, the co-inventor of tiny, wireless sensors called “neural dust” for use as biomedical implants. After earning his PhD, Jordan plans to continue his research on neural interfaces and teach as a professor of electrical engineering.

A passionate educator, Jordan has created more than 120 videos on key topics in electrical engineering, many of which are the most-viewed for their topic on YouTube. As a member of the “Be A Scientist Program” at Berkeley, he also enjoys helping local middle schoolers conduct their own science experiments. His favorite student quote, for its eloquence and accuracy: “I was amazed how messy science really is.”

Benjamin Eysenbach

Machine Learning
Carnegie Mellon
Hertz Fellow

Ben is a first-year PhD student at Carnegie Mellon University who teaches computers to make smart decisions that help humans. His research uses tools from statistics and machine learning to make robots safer and enabling them to learn autonomously, with less human engineering effort.

Before his PhD, Ben spent a year conducting robotics research at Google Brain, teaching simulated robots to do backflips and learning how to avoid breaking themselves. Ben studied mathematics as an undergraduate at the Massachusetts Institute of Technology where he was elected to Phi Beta Kappa. As an undergraduate researcher, he taught computers to understand images and videos using machine learning and computer vision. For this work Ben received the annual award for Outstanding Undergraduate Research Project in Artificial Intelligence from the MIT Computer Science and Artificial Intelligence Laboratory. Outside of class, Ben contributed to augmented reality devices, drones for measuring water quality, and a sensor for the rocket team. Ben plans to stay in academia after he completes his PhD, designing the next generation of safe machine learning algorithms and teaching the next generation of scientists.

Growing up outside San Francisco instilled in Ben a love of the outdoors. If he’s not at his desk, he's probably running in the mountains.

Zhou Fan

Assistant Professor
Yale University
Hertz Fellow

Zhou has broad interests in statistical theory, methodology, applications to the sciences, and related areas of probability theory and machine learning. He recently finished his PhD in Statistics at Stanford University, supported by the Hertz Fellowship. Following a brief foray into statistical genetics this summer, he will be starting as an assistant professor in Statistics and Data Science at Yale University in the fall. Before Stanford, Zhou worked for two years at D. E. Shaw Research, developing software tools and statistical analysis procedures for molecular dynamics simulations of protein molecules.

In his spare time, Zhou enjoys eating and cooking Sichuan Chinese cuisine, and listening to Romantic concertos and symphonies.

Alex Ferris

Bioengineering
Stanford University
Hertz Fellow

Alex Ferris is a graduate student in the bioengineering department at Stanford University, where they study maize pathogens in Virginia Walbot's group. Specifically, they study the interactions between maize anthers and the fungal pathogen *U. maydis* using scRNA-seq and confocal microscopy to characterize the infection progress and develop better tools to quantify infection severity. Alex also works with Chris Gilligan's group at the University of Cambridge to develop stochastic, field level models of cassava brown streak disease to make recommendations about how to manage and detect the disease in sub-Saharan Africa. In their free time, Alex enjoys playing banjo and doing tech for community theater.

Lydia Finney

Argonne National Laboratory
Director of University Partnership and Women in Science and Technology Program, Physicist
Hertz Fellow, Hertz Council

Lydia Finney is the women in science and technology program initiator, the university partnership program manager, and a physicist in the Leadership Institute at Argonne National Laboratory. While at Argonne, she has developed new ways to use x-ray fluorescence to investigate the biological roles of metals. Lydia has nearly 50 peer-reviewed works, which have been cited in over 800 other publications. She received her BS in chemistry from SUNY Albany, and as a Hertz Fellow, her PhD in inorganic chemistry from Northwestern University.

Bailey Flanigan

Computer Science
Carnegie Mellon University
Hertz Fellow

Bailey plans to work at the interface of theoretical and applied problems in algorithms, machine learning, and game theory as a PhD student in computer science.

In her research, Bailey, a native of Madison, Wisconsin, aims to combine approaches from computer science, economics, and the physical sciences to address disparities and complex problems. As an undergraduate studying biomedical engineering at the University of Wisconsin-Madison, she conducted undergraduate research in cancer genetics, heart disease, and functional magnetic resonance imaging before broadening her focus to include social and economic systems. After graduation, Bailey completed a yearlong research fellowship at Yale University's Department of Economics.

Outside of research, Bailey managed a team of engineers that designed and implemented a potable water system in rural Ecuador. She has also served as a consulting scientist for a court case with the Wisconsin Innocence Project, which seeks to exonerate wrongly convicted individuals. Her honors include a Goldwater Scholarship, which supports undergraduates who intend to pursue research careers in the natural sciences, mathematics, or engineering. In 2017, she gave the UW-Madison Engineering Commencement address, in which she discussed the importance of scientists lending their expertise to causes outside of STEM.

In her free time, Bailey enjoys teaching mathematics, writing fiction, and bicycle riding.

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David Galas

Principal Scientist
Pacific Northwest Research Institute
Chairman of the Board, Hertz Council, Hertz Interviewer
Hertz Fellow

David J. Galas is the principal scientist for the Pacific Northwest Research Institute (PNRI) and the chair of the board for the Fannie and John Hertz Foundation. He is an internationally recognized expert in molecular biology and human genetics. Prior to PNRI, David worked at the Institute for Systems Biology, Battelle Memorial Institute, Keck Graduate Institute of Applied Life Sciences, the U.S. Department of Energy's Office of Science, the University of Southern California and the University of California's Lawrence Livermore National Laboratory. He is a lifetime associate of the National Academy of Sciences and received the Smithsonian Institution-Computer World Pioneer award. David received his undergraduate degree in physics from the University of California, Berkeley and his MS and PhD degrees in physics from the University of California, Davis-Livermore.

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Randy Garrett

Chief Data Scientist
Change Dynamix
Guest Speaker

Randy Garrett, PhD, is the chief data scientist for Change Dynamix, a company offering security and risk behavioral analytics. He brings an extensive amount of cybersecurity experience from the Department of Defense and the Intelligence Community as well as corporate management. He developed and lead multiple programs in big data analytics for cybersecurity while at DARPA (Defense Advanced Project Agency) and helped pioneer initial cloud deployments to the Army, Navy, and Air Force. In other government service, Dr. Garrett worked at the National Security Agency and as the Senior Science Advisor to the Army Deputy Chief of Staff for Intelligence and for the Commanding General, U.S. Army INSCOM. In addition, Dr. Garrett has held the positions of Director of Science and Technology at General Dynamics and Senior Director of Information Systems at Rockwell. He has a PhD and an MS in Computer Engineering from Florida Atlantic University and undergraduate degrees in Physics and Mathematics from MIT.

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Cameron Geddes

Lawrence Berkeley National Laboratory,
Staff Scientist
Hertz Fellow, Hertz Council

Cameron Geddes is a staff scientist in the BELLA Center at Lawrence Berkeley National Laboratory, where he is investigating the use of laser driven plasma waves to build compact next-generation particle accelerators and photon sources. Cameron is the recipient of several honors, including the Hertz Foundation Thesis Prize, the American Physical Society (APS) Apker Award, fellow of APS, and the APS John Dawson Award for Excellence in Plasma Physics Research. Cameron holds a BA in physics from Swarthmore College and a PhD in physics from the University of California, Berkeley.

Grant Gillary

Booz Allen Hamilton
Senior Data Scientist
Hertz Fellow

Grant has spent most of his adult life jumping between academia and the military. He has degrees from the United States Naval Academy, The University of Oxford, and The Johns Hopkins University School of Medicine. He spent his twenties as a ground intelligence officer in the United States Marine Corps where he deployed to Iraq as an intelligence advisor with the Iraqi military and to Afghanistan as a reconnaissance platoon commander with 1st Reconnaissance Battalion.

After completing his service Grant began a Ph.D. in Ernst Niebur's laboratory for computational neuroscience. He completed his Ph.D. in 2017 and has since been working as a data scientist with Booz Allen Hamilton. He has supported DARPA as a contractor helping manage and design programs such as HIVE, SDH, L2M, and GARD. He is currently a data science technical lead and spends his time designing NLP solutions in distributed production environments.

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Noah Golowich

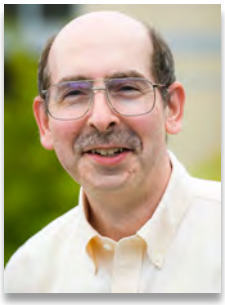
Mathematics and Computer Science
Massachusetts Institute of Technology
Hertz Fellow

As a senior at Harvard University, Noah completed a joint AB/SM degree in Mathematics and Computer Science. He is developing a greater understanding of the theoretical reasons behind the success of today's deep learning methods. These methods use neural networks to perform tasks that could revolutionize technologies as seemingly unrelated as language translation and self-driving cars. Noah will pursue his PhD at Massachusetts Institution of Technology.

Noah has also applied neural networks to learn algorithms for social choice that maximize social welfare while respecting the incentives of individuals who provide inputs to the algorithms. He has further contributed to the theory of communication complexity, which involves structuring communication between computers in the most efficient way to solve a given problem. Some of his work in communication complexity is motivated by cryptography – generating efficient algorithms for two parties to communicate securely and efficiently.

In 2015 Noah won the First Place Medal of Distinction for Basic Research in the Intel Science Talent Search, the nation's oldest and most prestigious pre-college science and mathematics competition. His honors also include a Goldwater Scholarship for undergraduate students who intend to pursue careers in science, mathematics, or engineering.

Noah is a New Jersey native who grew up in Lexington, Massachusetts. He was a member of the Harvard club tennis team and plays piano.



Daniel Goodman

Director of Advanced Technology
TEL NEXX Inc.
Hertz Director, Hertz Council, Hertz Interviewer
Hertz Fellow

I am the director of advanced technology at TEL NEXX Inc., a company which manufactures semiconductor capital equipment. I am also a director of the Hertz Foundation. Earlier in my career, I was a co-founder and president of Electron Solutions Inc. and also worked at MKS Instruments and Science Research Laboratory. For many years, I was a visiting scientist at the MIT Plasma Science and Fusion Center, where I did my Ph.D. work. I am also an active musician, well known to Boston audiences for performances on piano, cello and accordion. I received my BSE in electrical engineering and computer science from Princeton University and my PhD in physics from MIT.

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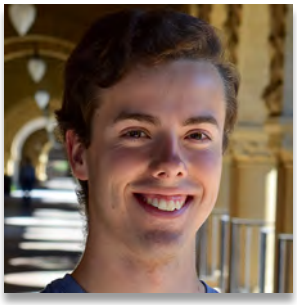


Cole Graham

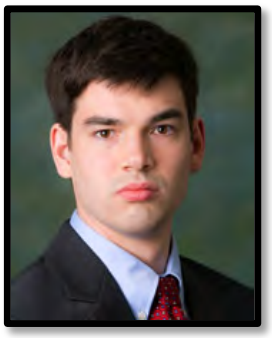
Mathematics
Stanford University
Hertz Fellow

I've always been drawn to a variety of scientific disciplines, but a high school summer program at the University of Washington focused my attention on mathematics. Inspired by a book on complex variables, I was particularly drawn to analysis — the study of convergence, limits, and continuous change.

As an undergraduate at MIT, I pursued these interests through a double major in mathematics and physics. This background in physics has been an invaluable source of intuition and inspiration in my mathematical work. I continue to be drawn to problems with strong physical connections, and I take great satisfaction in mathematical explanations for physical phenomena.

Upon completing my studies at MIT, I exchanged one Cambridge for another, in a yearlong master's program in the UK. At Trinity College, Cambridge, I took a wide variety of mathematical courses when I wasn't learning to row with the college boat club. Ra Ra First and Third.

I am exceedingly grateful for my time at Cambridge, but I was happy to return home to the West Coast, where I began my PhD studies at Stanford. Under the direction of Lenya Ryzhik, I am studying the theory of partial differential equations. I have primarily focused on propagation phenomena in reaction-diffusion systems, which model spreading phase changes in chemical or biological media. Beyond this, my interests include mathematical fluids, probability, and harmonic analysis.



Kettner Griswold

Synthetic Biology
Massachusetts Institute of Technology
Hertz Fellow

Kettner Griswold Jr. is a research fellow at the George Church Lab at Harvard Medical School, and a research affiliate at the Ed Boyden Lab at MIT. His current work focuses on developing new tools and methods in synthetic biology, such as new ways to scale de novo DNA Synthesis, and library-on-library interaction profiling and evolution strategies. As a Hertz Fellow, he will pursue his PhD at the MIT Media Lab under the joint guidance of George Church and Hertz Fellow Ed Boyden.

In 2015, Kettner was named an Emerging Leader in Biosecurity Fellow by the UPMC Center for Health Security and advised on dual use issues in synthetic biology. As a Draper Fellow at the Charles Stark Draper Laboratory, he will develop new tools to address problems in the field.

In his sophomore year at the Georgia Institute of Technology (Georgia Tech), Kettner and his roommate Paul Sebexen were awarded Thiel Fellowships, and left Georgia Tech to co-found Evolutionary Solutions, a biotechnology startup developing a novel error-checked long-write DNA synthesis technology for rapid, cheap development cycles in synthetic biology. During the Thiel Fellowship, Kettner was a research affiliate at Lawrence Berkeley National Laboratory, where most of the technology development for Evolutionary Solutions was performed.

Prior to leaving Georgia Tech, Kettner was a material science and engineering major, with a biomaterials concentration. While at Georgia Tech, he led an iGEM team in 2011 developing a conjugating CRISPR-CAS plasmid as a strategy to counter antimicrobial resistance. Prior to college, he performed independent research within the J. Craig Venter Institute's Synthetic Biology department.

Kettner is from Bethesda, Maryland

Linus Hamilton

Applied Mathematics
Massachusetts Institute of Technology
Hertz Fellow

Linus Hamilton is trying to understand what makes neural networks tick. He graduated with a degree in mathematics from Carnegie Mellon University, and is now enjoying MIT as a grad student. He wants to give researchers guidelines to guess which problems are amenable to deep learning. He also wants to invent tools to help researchers poke inside and understand the neural networks they train.

When he's not doing math, you can find Linus square-dancing, reading computer-generated poems, or designing games. You can play a bullet-dodging computer game he created at www.linushamilton.com/obobobo. You can also read his game-inspired complexity theory paper 'Braid is undecidable' online. Linus grew up in College Park, Maryland.

Kirk Haselton

Owner/Consultant
Haselton IP
IP Checkups, patent strategy and IP operations
Hertz Fellow

Kirk Haselton, PhD, works with companies on patent strategy and operations. Kirk is an applied physicist trained at the California Institute of Technology (BS 84) and Cornell University (MS 89, PhD 01). As an undergraduate, Kirk pursued research in optics and semiconductors as well as managing a student project which conceived, financed, built and flew a small, self-contained payload on the Space Shuttle. Before starting graduate school he supported a project at the Lawrence Livermore National Laboratory in the direct writing of polysilicon lines on gate arrays.

His graduate research first sought to realize micro, electromechanical systems using tungsten and standard silicon processing, then moved on to femtosecond spectroscopy using ring-dye lasers, before concluding with the reprocessing of passive microwave satellite data from the Defense Meteorological Satellite Program to establish new rainfall data at high temporal and spatial resolution in mountainous regions. Kirk moved to Germany in 1996 and continued the rainfall research, establishing a remote sensing and geographic information systems laboratory at the University of Potsdam, a new university in the region. While at Potsdam he taught classes in remote sensing and GIS and conducted research in paleoseismology and quaternary landscape evolution with fieldwork in the Andes and Tien Shan. He then spent some years in the communications industry with Siemens Mobile and Nokia Siemens Networks. In 2008 he began working with inventions, technology development and intellectual property, breaking new ground for institutions in Berlin with record income from patent sales and licensing which continue to generate revenue and achieving the first project financed by a new IP development fund there. Since 2013 he's been working as an independent consultant in IP strategy and patent analysis, also partnering with IP Checkups in Berkeley, California.

Favorite quote:
"When the going gets weird, the weird turn pro."

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Continuous learning.

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Rosemarie B. Havranek

Philanthropist
Hertz Director

Rosemarie B. Havranek is a philanthropist and a director of The Fannie and John Hertz Foundation. She has served on various charitable committees and boards in the Seattle area, including the Lakeside School Board, the Woodland Park Zoo Safari Club board, and volunteered for the Red Cross WIC program. Rosemarie was a Princeton-in-Asia teaching fellow at the International Christian University in Japan, and also worked for NHK television. She has a deep personal connection to the Hertz Foundation and its mission: both her husband, Nathan Myhrvold, and son, Cameron A. Myhrvold, are Hertz Fellows. Rosemarie holds a BA in Spanish and Business/Economics from Fordham University, cum laude, and an MA in Romance Languages and Literature from Princeton University.

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Alex Hegyi

Surgical Vision Technologies
CTO
Hertz Fellow, Hertz Interviewer

Alex Hegyi is working on a new invention that aims to make hyperspectral imaging (HSI) an ubiquitous technology. A hyperspectral image is an image where a full optical spectrum (in this case, from the near-UV to the near-IR) is sampled at each point in an image. Alex's invention has the potential to radically simplify HSI technology, enabling HSI systems that add minimal cost and bulk to existing camera sensors without sacrificing software adaptability to specific applications (a feature not possible with competing lower-cost approaches). An HSI sensor that is cheap and small enough to be incorporated on cell phones would find significant application in fields such as medicine, agriculture, security, defense, and even cosmetics.

In 2008, Alex graduated with a BS in physics, with honors and distinction. In 2013, with his Hertz Fellowship, he then went to UC Berkeley and obtained his PhD in electrical engineering, advised by Professor Eli Yablonovitch. Alex took full advantage of the freedom afforded to him by the Hertz Fellowship to independently invent and develop a novel medical imaging concept called nanodiamond imaging, a kind of functional biomedical imaging (like PET or SPECT) that uses biologically-tagged nanodiamonds containing nitrogen-vacancy centers as a contrast agent. By taking advantage of optically-detected magnetic resonance of the nitrogen-vacancy centers, nanodiamond imaging has the potential to image with a combination of high spatial resolution and high sensitivity, features that are incompatible in existing imaging modalities except at the shallowest imaging depths.

Olivia Hendricks

Exponent
Scientist
Hertz Fellow

Olivia Hendricks specializes in thin-film deposition techniques and surface characterization methods. In 2018, she completed her Ph.D. in Chemistry at Stanford University. Her research bridged the fields of chemistry and materials science to study the corrosion resistance, catalytic activity, and electrical properties of transition metal oxide alloys for solar driven water oxidation. Currently, Olivia is a Scientist at Exponent, where she leverages her expertise in surface-sensitive analytical methods to analyze failed components of consumer electronic and medical devices.

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Steven Herbst

Electrical Engineering
Stanford University
Hertz Fellow

Steven Herbst is an electrical engineering Ph.D. student at Stanford. The goal of his research is to enable wider participation in mixed-signal integrated circuit (IC) design by reducing design time and costs and improving design abstractions. As a member of Dr. Mark Horowitz's group, he is currently exploring methods to accelerate the simulation of mixed-signal circuits by using field-programmable gate arrays (FPGAs) to model both analog and digital parts of a chip design. Steven is also collaborating with Dr. Tom Clandinin's neurobiology lab to develop FlyVR, a large-area virtual reality environment for studying visual computation in the Drosophila brain.

Previously, he was a hardware designer at Apple (2013-2016), where he helped to develop the electrical architecture of the Apple Watch inductive charger. He also worked as an IC designer at Intersil (2011-2013), where he contributed to projects in optical sensing and power management. Steven's industry work has led to his co-authorship of seven US patents and six US patent applications.

Originally from Falls Church, Virginia, Steven earned degrees in electrical engineering from MIT (B.S. 2010, M.Eng. 2011). His M.Eng. thesis focused on the application of dynamic element matching to voltage reference circuit design as a means to reduce noise and drift. While at MIT, he also served as president of the institute-wide 6.270 Autonomous Robot Design Competition (2009-2010). Outside of engineering, Steven enjoys hiking, cooking, and has been learning to play piano.

Felipe Hernandez

Mathematics
Stanford University
Hertz Fellow

My interest in mathematics began in numerical analysis, when my dad helped me write a simple simulation of a ball rolling down a ramp. My high school physics teacher then helped me write a few more complicated simulations, including a fluid solver. Since then I've been interested in applied math and ways that theoretical mathematics can contribute to our understanding of the real world. At MIT I learned about some interesting applications in material science and optics. Then I went to a computational chemistry company (DE Shaw Research) where I was first exposed to statistical mechanics and the difficulties involved in simulating large molecules.

Now I am a graduate student of mathematics at Stanford, where I hope to use as inspiration these and other applications of mathematics to find interesting questions to work on. Right now I am trying to understand Ohm's law, what happens when you put a bunch of charged particles in a box, and what happens when you make whipped cream.

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John Hilbing

Project Leader
The MITRE Corporation
Hertz Fellow

John is a project leader at the MITRE Corporation, a not-for-profit company that operates multiple federally funded research and development centers. He currently supports government sponsors at the United States Transportation Command and the U.S. Air Force's Air Mobility Command.
Prior to joining MITRE, John served for over 25 years as an active duty military officer. He held numerous technical, programmatic, leadership, and operational positions, to include several overseas deployments.

John received his undergraduate degree in computer science, physics, and mathematics from the United States Air Force Academy. He received a master's degree in computer science from the University of California, where he was supported by the Hertz Foundation. John plans to return to the academic world as his next career.

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John Holzrichter

Lawrence Livermore Lab, Retired
Senior Scientist
Hertz Fellow and President Emeritus

Dr. John F. Holzrichter is a former president of the Fannie and John Hertz Foundation. He served as president from 1999-2009. Prior to becoming president of the Hertz Foundation, Dr. Holzrichter directed the Lawrence Livermore National Laboratory's internal research program, and its inertial confinement laser-fusion programs. He also continues to serve as a senior scientist at the Lawrence Livermore National Laboratory, and as a research professor at the University of California at Davis. Dr. Holzrichter is an AAAS Fellow. He has published over 100 papers, monographs, and lectures on lasers, fusion, speech recognition, and research management. He has been granted 10 patents. His present work is concerned with optimizing R&D investments in the public sector. Dr. Holzrichter received a BS with honors in applied mathematics and engineering physics from the University of Wisconsin in 1964 and an MS and PhD in Physics from Stanford University in 1971. He received an A. E. Sloan Fellowship, a Fulbright Fellowship (Heidelberg 1965), and a Hertz Foundation Fellowship at Stanford, 1969-1971.

Sarah Hooper

Electrical Engineering
Stanford University
Hertz Fellow

Sarah has just finished her first year at Stanford University in the Electrical Engineering PhD program. As a native Texan, she did her undergraduate studies at Rice University where she obtained a BS in electrical engineering and a minor in global health technologies.

Her research focuses on improving healthcare both domestically and abroad. In the past, she has worked on creating a seizure prediction device as well as multiple devices to prevent neonatal hypothermia in low resource settings. At Stanford, she is exploring the many ways we can use machine learning to improve medical imaging. She hopes to develop new imaging devices and data-driven computational tools to expand healthcare access to patients in low resource healthcare systems. After earning her Ph.D., Sarah plans to continue using her career to help reduce the global burden of noncommunicable disease.

This summer, Sarah is interning at the Bill and Melinda Gates Foundation with the Malaria team and the Innovative Technology Solutions team. She is working to better understand noninvasive malaria diagnostic tools as well as exploring how Bayesian approaches can be used to improve current diagnostic methods.

Outside of the lab, Sarah enjoys traveling, drawing, and exploring the outdoors. She has recently embarked on a journey to learn to make good sourdough bread, but that is still a work in progress.

Red Howard

Clinical Professor of Anesthesiology
University of California, San Diego
Hertz Fellow

Hertz Fellow 1972-1977. BS 1972 in physics from Harvey Mudd College. PhD 1978 in Oceanography from the Scripps Institution of Oceanography at UCSD. ONR science advisor for US Navy Special Forces in Coronado until 1983. MD 1985 from Univ. of Miami (completed medical school in 2 years). Anesthesiologist at UC Davis and at the Royal Newcastle Hospital in Australia; then at the Naval Medical Center San Diego as clinical instructor from 1991 to 2016, including aboard USNS Mercy on humanitarian missions in the South Pacific islands. Now semi-retired and working part-time as a Clinical Professor of Anesthesiology at UCSD, while continuing to provide anesthesia at a private surgicenter for the overflow of Naval Medical Center surgical procedures. Chief anesthesiologist with Interfacekids.org providing thrice-yearly surgical humanitarian missions in Mexico. Anesthesia-related publications include analysis of post-dive blood-nitrogen wash-out to determine lung collapse depth in freely diving dolphins; use of processed EEGs as indicators of unihemispheric sleep in dolphins; measurement of blood oxygen levels in freely diving emperor penguins in Antarctica, as well as in freely diving sea lions and elephant seals offshore California. JD 1983 from Univ. of San Diego. Judge pro tempore for San Diego Municipal Court 1994 - 1998. Certified SCUBA instructor. 1st diver compressed to 1,000 feet in less than 15 minutes. Diving-related publications include studies of early decompression computers, and the only cookbook on abalone. FAA airplane flight instructor (instrument, multiengine) for over 40 years, and still actively teaching in San Diego with one of the world's largest private flying clubs.

Neil Jablon

Qualcomm technologies, Inc.
Senior Director of Product Management
Hertz Fellow

Neil has held leadership roles in telecommunications with top global companies since 1986. Neil is fluent in Chinese (Mandarin dialect), and since 2006 has concentrated on expanding Qualcomm's business in China and elsewhere.

Neil is senior director, product management at Qualcomm Technologies, Inc., in San Diego, responsible for global partnerships that help Qualcomm rapidly grow its Internet of Things (IoT) chipset, software, and services businesses. Neil and his team work closely with numerous business and technical leads, as well as Qualcomm's internal units, joint ventures, and other partners in China, Taiwan, Korea, Japan, the Americas, Europe, and other regions. From 2011-2018, Neil established, and then led product management for Qualcomm's Snapdragon™ (mobile processor) third-party hardware component ecosystem (e.g., memories, cameras, displays, sensors, etc.). Neil's (mostly China-based) team verified over a thousand third-party hardware components for inclusion in a preferred vendor list targeted to Android smartphone OEMs in China and other world regions. Neil also led Snapdragon™ product development platform product management and worked closely with the executive team to start up a third-party application software ecosystem.

From 2010-2011, after first joining product management, Neil initiated and led the divisional foundation work in hardware component ecosystem strategy that suggested a new approach to building a hardware ecosystem (the basis for the aforementioned work). Right after joining Qualcomm in 2006, he was the global financial modeling lead for the Qualcomm MediaFLO Technologies Division ("multichannel pay TV on a cellular handset"), completing 35 MediaFLO Service Operator business cases covering 17 countries within all major world regions.

Neil was executive consultant at IBM Global Services (Communications Sector), Beijing (2003-2006). Before that, he was director, regional strategy, Vodafone Group, Tokyo (2000-2002), delivering a new corporate and business strategy framework to the J-Phone Group (now Softbank Mobile). Neil was at AirTouch Communications, Walnut Creek, California (1994-2000), where he co-founded the Mobile Satellite Services Group (Globalstar Exclusive Service Provider), starting up five technical functional areas from scratch.

Neil received his PhD in electrical engineering from Stanford University (thesis: smart antennas). He subsequently received his MBA in general management from the UCLA Anderson School. Neil was a Hertz Fellow and Tau Beta Pi Fellow at Stanford University (1981-1985), where he also studied Chinese. Later on, Neil studied Japanese, achieving intermediate-to-advanced proficiency. Neil is an IEEE Senior Member. His outside interests include China, Japan, economics, travel, and hot yoga. Neil is a Yoga Alliance-certified yoga instructor (RYT-200).

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Diane Isonaka

Retired

Diane Isonaka has spent her professional career working in business development, scientific program management, strategic planning, and scientific education and training. One of Diane's early career opportunities at Resources for the Future in Washington, D.C. provided training in resource and economic development working with such international entities as the World Bank, OECD, and the International Institute for Applied Systems Analysis. Diane's specific interest in genetic research began when she was appointed by the Governor of Utah to create the business, legal, and ethics infrastructure for the Utah Resource for Genetic and Epidemiologic Research (now the Utah Population Database), one of the first genetics data resources in the world. She went on to manage the Genome Program at the Howard Hughes Medical Institute in the Washington, D.C. area during which time the HHMI played a significant role in the development of the Human Genome Project. She was also the co-founder and U.S. Director of the international Human Genome Organisation (HUGO) and the Director of Scientific and Technology Development at Darwin Molecular (later Celltech).

She was a consultant to the Keck Graduate Institute of Applied Life Sciences in Claremont, California where she was responsible for the creation of an applied bioscience business ethics center. The center conducted business ethics research and provided special consulting for biotechnology companies. Diane spent six years as the Senior Director of Strategic Initiatives at the Institute for Systems Biology in Seattle. At ISB, she initiated and managed a number of special collaborative projects and was instrumental in securing the $100 million dollar relationship with the Grand Duchy of Luxembourg. Diane was recently the owner of DRI Consulting, LLC, a strategy provider working in the area of scientific and business partnership and project development located on Bainbridge Island, Washington.

In addition to the science and business interests, Diane has spent a number of years working in the area of applied ethics as practiced in industrial, private not-for-profit institutions and academia as focused on the life sciences. She spent time training and working with the Center for Ethics in Science and Technology in San Diego, California.

David D. Jackson

Department of Earth, Planetary and Space Sciences
University of California, Los Angeles
Hertz Fellow

Professional Preparation:

- B.S., Department of Physics, California Institute of Technology,1965
- Ph.D, Department of Earth and Planetary Science, MIT, 1969
- Appointments:
- Professor of Geophysics, UCLA 1969 – 2011
- Distinguished Professor of Geophysics, Emeritus, UCLA 2011 - present
- Awards and Honors:
- National Science Foundation Graduate Fellowship, 1966-1968
- Fannie and John Hertz Foundation Fellowship, 1967-1969
- National Academy of Sciences/Natural Research Council, Senior Resident Research

Associateship, 1981-1982

- Elected to Steering Committee, University NAVSTAR Consortium (UNAVCO) 1987, 1988, 1989, 1990, 1991, 1992.
- Elected Secretary, Seismology Section, American Geophysical Union, 1989.
- Elected President, Seismology Section, American Geophysical Union 1991.
- Fellow, American Geophysical Union 1993.
- Elected Chair, US National Committee for the International Union of Geodesy and Geophysics (IUGG). 1999-2003.
- Elected Secretary, USNC/IUGG 2003-2007.
- Elected to Finance Committee, IUGG 2003-2007.
- Appointed Chair, Dept. Earth and Space Sciences, UCLA 2004-2007.
- Elected to Bureau of IUGG, 2007 – 2011.

Service:

- CA Earthquake Prediction Evaluation Council, Off. of Emergency Services, State of CA 1984-2002.
- Committee on Seismology, National Academy of Sciences, National Research Council.
- Panel on Crustal Movement Measurements, Committee on Geology, National Academy of Sciences/National Research Council (NAS/NRC).
- Panel on Science of Earthquakes, NAS/NRC 1996-2003,
- Chair, Committee on Public Affairs, American Geophysical Union 1996-1998,
- Science Director, Southern California Earthquake Center 1996-1999.
- U. S. National Committee for IUGG 1995-2007.
- National Earthquake Prediction Evaluation Council, 2007 – 2014. Appointed International Association for Seismology and Physics of the Earth's Interior (IAPEI) Liaison to Georisk Commission, 2007-2015

Lily Kim

Scientific Director
OS Fund
Hertz Director, Hertz Council, Hertz Interviewer
Hertz Fellow

Lily Kim is a consultant on emerging biotechnology landscapes and a director of the Fannie and John Hertz Foundation. Previously, she worked on early stage technology commercialization at the Wyss Institute for Biologically Inspired Engineering at Harvard and founded FluidicMEMS, a resource for the microfluidics commercialization community. Lily has served on the MIT Enterprise Forum Innovation Series Committee and was selected as one of Mass High Tech's "Women to Watch" in 2013. She received her BS and MEng in electrical engineering from MIT and her PhD in biomedical engineering from the Harvard-MIT Division of Health Sciences and Technology.

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Max Kleiman-Weiner

Co-Founder and Chief Scientist
Diffeo
Hertz Fellow

Max Kleiman-Weiner is co-founder and chief scientist of Diffeo. He was a Hertz Fellow at MIT in Computational Cognitive Science and Artificial Intelligence where he earned his PhD. He finished his MSc from University of Oxford in Applied Statistics in 2011 where he was a Marshall Scholar and BS in Neurobiology from Stanford University in 2009 where he was a Goldwater scholar. His research develops novel algorithms and representations for reverse engineering human cooperation by building intelligent artificial agents that cooperate in stochastic games both with each other and with human partners. In particular Max builds formal mathematical models of Theory-of-Mind (ToM), the ability to infer latent mental states such as beliefs and abstract desires or goals from sparse and noisy observations of actions and outcomes. He applied these models to both game theoretic abstract environments as well as daily work tasks where machines can collaborate with humans. Previously, he has worked as an associate at McKinsey & Company and as a Fulbright Scholar in Beijing.

Robbee Baker Kosak

President
Fannie and John Hertz Foundation

Robbee Kosak was named president of the Fannie and John Hertz Foundation in 2015.
Prior to assuming the presidency at Hertz, Kosak served in administrative leadership roles at prominent U.S. research universities. During the 15 years she served as vice president at Carnegie Mellon University, she led significant growth in the university's activities in philanthropy, global brand awareness, and alumni engagement. Notable among these successes is leadership of the university's first billion-dollar fundraising campaign. Previously she served as vice president for advancement at RPI and Bucknell University, and as assistant vice president at Northwestern University.

Kosak is a member of the prestigious International Women's Forum, the Executive Leadership Board for the UC Davis Viticulture & Enology department, and the American Middle East Institute (founding member). Previous board memberships include: the Council for Advancement and Support of Education (CASE), the Urban League of Greater Pittsburgh, the Pittsburgh Parks Conservancy, and VisitPittsburgh.

She is a summa cum laude graduate of the Pennsylvania State University, attended the Harvard Institute for Higher Education Management, and is a member of the Phi Kappa Phi and Omicron Nu honor societies, and the Duquesne Club.

Kosak resides in Pleasanton, California, with her husband, Tom, an award-winning graphic designer.

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Leonid Kruglyak

Professor & Chair, Department of Human Genetics
Professor, Department of Biological Chemistry
David Geffen School of Medicine at UCLA
Hertz Fellow

Dr. Leonid Kruglyak received his A.B. degree in physics from Princeton University and his M.S. and Ph.D. degrees, also in physics, from the University of California at Berkeley. After postdoctoral fellowships at the Institute for Advanced Study in Princeton and at Oxford University, he joined the Whitehead Institute/MIT Center for Genome Research as a research scientist. Subsequently, Dr. Kruglyak held a faculty position in the Human Biology Division at the Fred Hutchinson Cancer Research Center in Seattle, where he was also an Investigator of the Howard Hughes Medical Institute and an Affiliate Professor of Genome Sciences at the University of Washington. In 2005, Dr. Kruglyak returned to Princeton University as a Professor in the Department of Ecology and Evolutionary Biology and the Lewis-Sigler Institute for Integrative Genomics. In 2008, he was again selected an Investigator of the Howard Hughes Medical Institute. In 2010, Dr. Kruglyak was named the inaugural William R. Harman ’63 and Mary-Love Harman Professor in Genomics. He also chaired the Graduate Program in Quantitative and Computational Biology at Princeton. In 2013, Dr. Kruglyak moved to the David Geffen School of Medicine at UCLA, where he holds appointments in the Departments of Human Genetics (serves as Chair since July 2016) and Biological Chemistry and continues to serve as an Investigator of the Howard Hughes Medical Institute. He is also a founding member of the Computational Biosciences Institute.

Dr. Kruglyak is a recipient of many awards, including a James S. McDonnell Centennial Fellowship in Human Genetics, a Burroughs Wellcome Fund Innovation Award in Functional Genomics, a MERIT award from the National Institutes of Health, and an Agilent Thought Leader Award. In 2007 he was named a Highly Cited Researcher in Molecular Biology and Genetics by ISI Thomson Scientific and elected a Fellow of the American Association for the Advancement of Science “for distinguished contributions to the study of variation in the human genome and for pioneering genetic studies of gene expression variation.” His research interests focus on understanding the genetic basis of complex phenotypes. In 2015, Dr. Kruglyak was the recipient of the Curt Stern Award from the American Society of Human Genetics and the Edward Novitski Prize from the Genetics Society of America in 2016.

Barbara Kurtin

Barbara has been married to a Hertz Fellow for 50+ years. She graduated from MIT with a BS in Metallurgy – one of 17 coeds in the class of 1966, and the only coed in Metallurgy. Barbara is the proud mother to two daughters, and equally proud grandma to five assorted grandkids. She currently works, part time, at an aerospace company managing a materials lab …and mentoring younger engineers.

Stephen Kurtin

President
Lane Research
Hertz Fellow

Stephen Kurtin is the President of Lane Research. He holds simultaneously awarded S.B. and S.M. degrees from MIT, and a Ph.D. in Applied Physics & Physics from Caltech. Stephen has been a Howard Hughes Doctoral Fellow, a Hertz Foundation Fellow, a founder of three start-ups, and the Chief Executive of a public tech company. He has consulted with a wide variety of clients (improbably including not only top-tier venture capital firms, but also Aston Martin Lagonda Limited); is a named inventor for more than 45 US patents, most of which have been successfully licensed; is the lead author of many peer-reviewed technical papers; and received the Wall Street Journal Technology Innovation Award.

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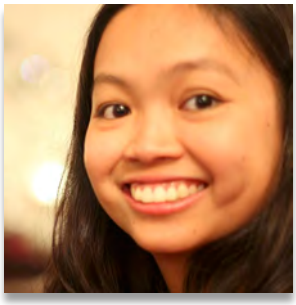
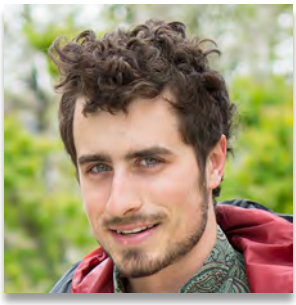


Ruby Lai

Physics
Stanford University
Hertz Fellow

Ruby Lai is a Stanford Physics PhD student, who works in the group of Yi Cui in Materials Science. Her PhD research work focuses crystalline silicon photovoltaics applications, specifically on the fabrication and processability of ultrathin crystalline silicon, kerfless wafering with metal-assisted chemical wet etching, and nanophotonics design of solar cell contacts. She has also done experimental research in low-temperature carbon nanotube quantum devices and ultracold Rb atom trapping. She cares deeply about the renewable energy future, and is very interested in exploring other areas where technical expertise meets real-world impact.



Ethan Lake

Physics
Massachusetts Institute of Technology
Hertz Fellow

I am a first-year PhD student at MIT, where I study physics. I am interested in many aspects of theoretical physics, but over the past few years I have focused on condensed matter theory and its overlap with high energy theory and quantum information theory. I love almost anything related to quantum field theory, which never ceases to fascinate and confuse me, and which is a subject I hope to be learning new things about for the rest of my career. I have a proclivity for cool, powerful mathematics, but I still like to stay somewhat grounded in my research, and so I've found condensed matter theory to be the perfect subject to study. Before starting my PhD I earned bachelors degrees in physics and math from the University of Utah, where I did research in astrophysics and math before settling upon condensed matter theory. One of my favorite undergrad research projects involved demonstrating how asteroid belts in extrasolar star systems could be observed with gravitational microlensing. Outside of physics my main interest is music, and I enjoy playing all varieties of stringed instruments. I also have a long history with climbing and skiing, thanks to growing up in the beautiful landscapes of Utah.

Hannah Larson

Mathematics
Stanford University
Hertz Fellow

Hannah Larson is a senior studying mathematics at Harvard University. She was born in Seattle, Washington, but spent most of her childhood in Eugene, Oregon. Hannah fell in love with math during her junior year of high school, when she took an abstract algebra class at the University of Oregon and became involved in a research project on fusion categories with Professor Victor Ostrik (a project for which she won 4th place at the Intel Science Talent Search and a Davidson Fellowship).

Throughout college, Hannah has worked on research in number theory and algebraic geometry. During three summers spent at Professor Ken Ono's Number Theory REU (Research Experience for Undergraduates), she published seven papers, on modular forms, q-series identities, partitions, and moonshine. She will return to the program as an instructor in the summer of 2017. At Harvard, Hannah is currently working with Professor Joe Harris on her senior thesis about parameter spaces of certain lines on hypersurfaces. In January 2017, Hannah was awarded the Alice T. Schafer Prize by the Association for Women in Mathematics in recognition of her undergraduate work.

In graduate school and beyond, Hannah plans to continue research in number theory and algebraic geometry and pursue a career in academia. Having studied general relativity and quantum field theory in college, Hannah is also excited to explore connections between mathematics and other areas of science, such as physics.

Hannah is also an avid musician, playing cello with the Harvard-Radcliffe Orchestra and piano with the Harvard-Radcliffe MIHNUET (a volunteer group that performs at nursing homes and hospitals). In her free time, she enjoys running, swimming, and playing soccer and ultimate frisbee in Harvard's undergraduate intramural league.

Katherine Lawrence

Biophysics
Massachusetts Institute of Technology
Hertz Fellow

Katherine Lawrence is interested in developing a quantitative understanding of evolutionary dynamics, using both theoretical models of population genetics and experimental evolution in yeast cells. She is a PhD candidate in the lab of Michael Desai at the Harvard FAS Center for Systems Biology.

Katherine received her BS in Physics from Yale University, where she began research in high-energy particle physics. She spent several summers working on the ATLAS experiment at CERN's Large Hadron Collider, witnessing the discovery of the Higgs boson, before moving into atomic, molecular, and optical (AMO) physics. After deciding to pursue a PhD in Physics at MIT, she spent her first several years working on an AMO experiment at the MIT-Harvard Center for Ultracold Atoms, using many-body quantum simulation to study strongly correlated fermionic matter. However, she found herself increasingly interested in biological systems rather than condensed matter systems, due to the wealth of open questions and many recently developed experimental advances, and so she transitioned once again to biophysics. In the Desai lab, she is leveraging next-generation sequencing and lineage tracking approaches to explore the effects of interactions between mutations, fluctuating and complex environments, and recombination on the dynamics of evolutionary adaptation.

Born and raised near Boulder, Colorado, Katherine enjoys hiking, snow sports, yoga, baking, and traveling during her free time. She is committed to expanding opportunities for underrepresented groups, especially women, in physics and other STEM fields.

Yuri Lensky

Theoretical Physics
Stanford University
Hertz Fellow

Yuri Lensky is particularly interested in understanding large-and strongly-correlated quantum systems, where many such simple puzzles lead to profound insights and connections. An example from his current research, just asking why, when, and how the standard thermal ensemble of quantum mechanics work has led connections to random matrix theory, quantum chaos, and even potentially quantum gravity.

His first exposure to physics was at a local library, two words he had only seen as props in Sherlock Holmes stories, “chemistry and physics” (not the CRC handbook), adorned the cover of a textbook. His studies of carbon nanotube manufacture in high school led to his first exposure to MIT and research-grade theoretical physics at the Research Science Institute program, where he tested classical methods of optimizing quantum information channels. As an undergraduate he explored research in computer science and math, but finally returned to physics under Professor Wolfgang Ketterle.

In the spring of his junior year, while doing what was a standard numerical calculation for the lab, he noticed there was not a systematic way to construct maximally localized wave functions (MLWFS) that were needed for the simulations. At the same time, he was beginning a study of graphene physics under Professor Leonid Levitov. In the middle of the summer the topic of MLWFs came up, and Professor Levitov pointed out that this was a new method altogether, and of use to other groups! That same summer he and Professor Levitov worked out a novel solution to another simply stated problem (an electron in an electric field!). These experiences focused him on learning the deep structure of physics by seriously studying questions at least anyone in the field could ask. Now at Stanford University, as a first year graduate student, Yuri is pursuing his PhD in theoretical physics, with the support of the Fannie and John Hertz Foundation Fellowship.
While born in Russia, Yuri is from New York City, New York

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Tianhui “Michael” Li

The Data Incubator
Founder and CEO
Hertz Fellow

Michael Li, PhD, is the founder of The Data Incubator, an education startup training STEM PhDs to be data scientists and quants. He has worked at Foursquare, Google, A16Z, NASA, JPMorgan, and D.E. Shaw. He is a Hertz, NSF, and Marshall Scholar and is an alumnus of Princeton and Cambridge. Michael founded a student-run conference in quant trading that features leading industry figures and raises money for educational non-profits like America Needs You.

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Kyle Loh

Assistant Professor
Stanford University School of Medicine
Hertz Fellow

Kyle Loh is an Assistant Professor and The Anthony DiGenova Endowed Faculty Scholar at Stanford University, where he is a member of the Department of Developmental Biology and the Institute for Stem Cell Biology & Regenerative Medicine. His team focuses on generating pure batches of human tissue progenitors—including blood, heart, liver and bone—in a Petri dish from embryonic stem cells. In the future, it could be possible to simultaneously replace a patient's tissues and immune system with healthy replacements derived from embryonic stem cells.

Kyle is grateful for the Hertz Foundation's tight-knit community and its support for his Ph.D. research, which was conducted at Stanford University (advised by Irv Weissman). He has been recognized as a Pew Scholar, Human Frontier Science Program Young Investigator and Baxter Foundation Faculty Scholar and by the NIH Director's Early Independence Award, Forbes 30 Under 30, Hertz Foundation Thesis Prize and Harold Weintraub Graduate Award.

Po-Shen Loh

Professor
Carnegie Mellon University
Hertz Interviewer
Hertz Fellow

Po-Shen Loh is a social entrepreneur, working across the full spectrum of mathematics and education, all around the world. He is the founder of the free personalized learning platform expii.com, a social enterprise supported by his series of online math courses that reinvent the middle school math curriculum with a focus on creative thinking. He is also a math professor at Carnegie Mellon University and the national coach of the USA International Mathematical Olympiad team.

As an academic, Po-Shen has numerous distinctions, from an International Mathematical Olympiad silver medal to the Presidential Early Career Award for Scientists and Engineers. His scientific research considers a variety of questions that lie at the intersection of combinatorics (the study of discrete systems), probability theory, and computer science. As an educator, he led Carnegie Mellon University's math team to its first-ever #1 rank among all North American universities and led the USA Math Olympiad team to its first-ever back-to-back #1-rank victories in 2015 and 2016. His research and educational outreach take him to cities across the world, reaching over 10,000 people each year through public lectures and events, and he has featured in or co-created videos totaling over 5 million YouTube views.

Po-Shen received his undergraduate degree in mathematics from Caltech in 2004, graduating first in his class. He received a master's degree in mathematics from the University of Cambridge in 2005, where he was supported by a Winston Churchill Foundation Scholarship. He continued his studies at Princeton, supported by a Hertz Foundation Fellowship and a National Science Foundation Graduate Research Fellowship, where he completed his Ph.D. in mathematics at the end of 2009. He has been on the faculty at Carnegie Mellon University ever since.

Melissa Mai

Biophysics
Harvard University
Hertz Fellow

Born and raised in San Jose, California, Melissa is finishing her Bachelor's in Biophysics and Mathematics at Johns Hopkins University. She began conducting research in Prof. Richard Cone's group at JHU studying the stability of the vaginal microbiota. Melissa continued to pursue experimental research projects studying gene expression and development at the National Institutes of Health and protein evolution and structural biology at JHU.

Under the guidance of Prof. Brian Camley, she currently examines eukaryotic cell motility through computational mathematical modeling. She has developed a broad interest in quantitative, physics-based approaches to biologically relevant problems. She has also helped develop visualization tools for large clinical trial datasets as part of Pfizer's Pharmacometrics group. Her honors include election to Phi Beta Kappa and the Astronaut Scholarship, which recognizes undergraduates demonstrating initiative, creativity, and excellence in STEM.

This fall, Melissa will begin her PhD studying biophysics at Harvard University. In her graduate work, she hopes to integrate both experiment and theory to delve further into cellular biophysics on a population scale. In her free time, Melissa enjoys painting and caring for her houseplants, and she has managed to nurture her sourdough starter – the fermented dough that makes sourdough bread rise – for nearly three years.

Nitya Mani

Mathematics and Computer Science
Massachusetts Institute of Technology
Hertz Fellow

As an undergraduate at Stanford University, Nitya studied mathematics and computer science. She explored the underlying properties of networks, called graphs, which characterize transportation systems, social media, biological systems, and other aspects of modern life. She is particularly interested in how nodes in a graph can be grouped to have many internal connections or to influence the rest of the network.

Nitya also uses machine learning (teaching computers to learn from experience) on networks with applications that include finding new diseases that an existing drug can treat. She also grapples with the challenging optimization problems that reside at the intersection of mathematics and computer science. Many everyday questions, including finding optimal pharmaceutical treatments and processing images, are optimization problems that are difficult to solve using current techniques. Nitya will pursue her PhD at the Massachusetts Institute of Technology.

Nitya's honors include the Goldwater Scholarship, which supports undergraduates who intend to pursue research careers in science, mathematics, or engineering. She has also received the Karl Menger Award from the American Mathematical Society, and an honorable mention for the Alice T. Schafer Mathematics Prize for her undergraduate research contributions. Outside of class, she teaches mathematics and computer science to middle schoolers, high schoolers, and college students. Mani, who grew up in the San Francisco Bay Area, enjoys cooking, reading, and yoga.

Max Mankin

Co-Founder and CTO
Modern Electron
Hertz Interviewer
Hertz Fellow

Max Mankin is a co-founder and the CTO of Modern Electron, an energy technology startup based in the Seattle area, whose mission is to generate cheap, scalable, and reliable electricity for all. He has nearly a decade of experience designing, fabricating, and characterizing semiconductors and functional nanomaterials. Max is an inventor on 25+ patents and patents pending. Max is the co-recipient of the 2016 Strauss Award for his work at Modern Electron in revolutionizing electric power generation. In 2016, Max joined co-founder Tony Pan, also a Hertz Fellow, on the Forbes 30 Under 30 list, and in 2017 Inc. Magazine named Max one of the 30 Most Brilliant Entrepreneurs Under 30. Max earned a BS with honors in chemistry from Brown University and a PhD in physical chemistry from Harvard University, where he held fellowships from both the Hertz and the National Science Foundations.

Thomas E. McCann

President and Founder
McTech LLC
Hertz Council, Hertz Interviewer
Hertz Fellow

Thomas E. McCann is the president and founder of McTech LLC and a former director of the Fannie and John Hertz Foundation, where he also participates on the Graduate Fellowship Selection Committee and Thesis Prize Committee. Previously, Tom was the senior vice president of engineering for Walt Disney Imagineering, technical director at Raytheon Systems Corporation and a senior scientist for the Extended Air Defense Testbed (EADTB) program at Hughes Aircraft Corporation. Dr. McCann was on active duty with the U.S. Air Force for 21 years, retiring as a lieutenant colonel in 1986. He holds a BS in mathematics and MS in physics from the University of North Texas and a PhD in engineering and applied science from the University of California, Davis.

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Neil McCasland

Applied Technology Associates
Director of Technology
Hertz Fellow, Hertz Council, Hertz Interviewer

Retired Major General Neil McCasland is director of technology at Applied Technology Associates, where he is responsible for technology identification and development across the range of ATA competencies and applications and sets the vision and strategy for technology development in participation with the directors of strategic development and business development. Previously, Neil served for 35 years on active duty in the U.S. Air Force, most recently as the commander of the Air Force Research Laboratory, Wright-Patterson Air Force Base, Ohio, in the grade of Major General. He is a senior member of the Institute of Electrical and Electronics Engineers (IEEE) and an associate fellow of the American Institute of Aeronautics and Astronautics (AIAA). He was commissioned in 1979 after graduating from the U.S. Air Force Academy with a BS in astronautical engineering. Neil earned his PhD in astronautical engineering from the MIT, studying as a Hertz Fellow.

Sarah McFann

Chemical and Biological Engineering
Princeton University
Hertz Fellow

Sarah McFann is pursuing a PhD in chemical and biological engineering at Princeton University. In 2016, Sarah received her BS in chemical engineering with minors in chemistry, biology, and computer-based research from the University of Alabama. Her primary research interest is the development of a whole embryo model of cell signaling in Drosophila melanogaster. As an undergraduate, Sarah developed computational cellular models to aid in the optimization of bacterial cells for biobutanol production and designed and built an automated iPad-based microscope and app to inexpensively and effectively track tissue development. Currently, she is employing optogenetics to study crosstalk between signaling pathways in the early Drosophila embryo and is developing kinetic and control theoretical models to better understand how mutations affect signaling events. She believes that the development and application of mathematical models and computational resolution techniques to data generated by developing organisms, both normal and diseased, will help elucidate mechanisms of cancer and developmental disease progression.

Through experiences conducting research in Japan and completing her capstone experimental design course at the Vienna University of Technology in Austria, Sarah has discovered a penchant for traveling and exchanging ideas with people from diverse cultures. In her free time, as a formerly trained classical ballerina and an avid lover of the arts, Sarah enjoys choreographing and writing. Through tutoring and outreach, she inspires those underrepresented in STEM-related careers to pursue science and engineering. Sarah is from Arlington, Tennessee.

Richard B. Miles

University Distinguished Professor
Texas A&M University,
Robert P. Patterson Professor Emeritus
Princeton University
Hertz Director, Chair of Hertz Council, Hertz Interviewer
Hertz Fellow

Richard B. Miles is a professor emeritus and senior scholar at Princeton University as well as a Distinguished Professor at Texas A&M and a director of the Fannie and John Hertz Foundation. Richard has served as the chairman of engineering physics at Princeton and the director of Graduate Studies for the Mechanical and Aerospace Engineering Department. He holds nine patents and has more than 360 publications and published conference manuscripts. Richard is also an independent director at Precision Optics Corp., Inc. and Director-Applied Physics Group at Princeton University. He is the recipient of the 2000 AIAA Aerodynamic Measurement Technology Award and the 2011 AIAA Plasma Dynamics and Lasers Award. Richard received his BS, MA and PhD in electrical engineering, all from Stanford University.

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Stephen Miller

Electrical Engineering and Computer Science
Stanford University
Hertz Fellow

Stephen Miller, Hertz Fellow 2011, has a passion for making robots interact with the real world. As an undergraduate at UC Berkeley he focused on physical manipulation of deformable objects, training a Da Vinci-style surgical robot to autonomously tie sutures, and the Willow Garage PR2 to pair socks and fold laundry. By grounding his research in practical applications, he hoped to identify crucial bottlenecks in current robotics research.

Now a PhD student at Stanford, his interests have shifted to what long nights of debugging have convinced him is the biggest bottleneck: visual perception. While research in the field has classically been split between 2D images (“Computer Vision”), synthetic meshes (“Computer Graphics”), and expensive laser range finders (“Robotics”), the lines are beginning to blur. The past few years have seen an outbreak in inexpensive sensors like the Microsoft Kinect, which provide registered color and depth images at real time speeds. These RGB-D (Red, Green, Blue, Depth) sensors have made it possible for consumer-grade products to reason about the 3D world explicitly, replacing “pixels” with “centimeters” for roughly the cost of a point-and-shoot camera.

But with this new modality comes new challenges: how to compensate for poor depth quality with an abundance of data, and how to adapt Vision, Graphics, and Robotics techniques to use it. To tackle these problems, Stephen's work has ranged from low-level data processing to high-level semantic understanding. At the lowest level he is interested in calibration, developing techniques to both intrinsically calibrate a moving sensor and extrinsically register multiple static sensors. On the semantic level, he has looked at unsupervised object discovery and instance recognition. His current focus is on surface reconstruction.. In all of this, he hopes to develop usable tools, which make reasoning about the 3D world simple and intuitive: for consumer-grade product designers, frustrated Computer Vision students, and laundry-folding robots.

Stephen's research has been published in the *International Journal of Robotics Research* (IJRR), as well as the proceedings of the International Conference on Robotics and Automation (ICRA), International Conference on Intelligent Robots and Systems (IROS), Robotics Science and Systems (RSS), and the Workshop on the Algorithmic Foundations of Robotics (WAFR). His work has been featured on the Discovery Science Channel, CBS Smart Planet, and the *New York Times*; and parodied on *Attack of the Show*. When not programming he enjoys traveling, reviewing movies, and playing acoustic guitar.

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Kelly Moynihan

Associate
Third Rock Ventures
Hertz Fellow

Kelly completed her Ph.D. in Biological Engineering at MIT as a Hertz Foundation Fellow, NSF Fellow, and Siebel Scholar in 2017. Her thesis focused on designing improved immunotherapies for the treatment of cancer. Prior to that, Kelly received her B.S. in Biomedical Engineering from the University of Texas at Austin.

Kelly is interested in STEM outreach and education; while in graduate school, she developed and taught numerous extracurricular science and engineering courses for K-12 students through The Innovation Institute in Newton, MA.

Kelly now works as an Associate at Third Rock Ventures (alongside 2012 fellow Vyas Ramanan!) on building and launching new biotech companies. She contributed to building Celsius Therapeutics, a single cell RNA-seq focused company that launched in May of 2018, and she is now working to build a new company in the cell therapy space.

Kelly has a newfound interest in urban farming and is raising chickens in her yard in Allston, MA.

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Mark Muntean

Founder and President
Windy Hill Ventures, Inc.
Hertz Fellow

Mark Muntean is the founder and president of Windy Hill Ventures, Inc., a registered investment advisory firm. The company provides comprehensive wealth management services, financial planning, and business consulting services. The company was founded in 1993.

Mark was born and raised in Southern California. He received a B.S. in Physics from Harvey Mudd College. He received a Hertz Foundation Fellowship in 1979 and attended Stanford University to study physics. He received his M.S. and completed the Ph.D. qualifying exams. His interests however shifted from physics to computers and his research involved early work in modeling neural networks.

To further pursue his interest in computers he left Stanford in 1981 and went to work at Hewlett-Packard. Over the course of his twelve-year career at HP he held positions in hardware and software development, and served as the Support Engineering Manager for the HP3000 product family, and later as the Major Accounts Manager for the product line.

Mark left Hewlett-Packard in 1993 and founded Windy Hill Ventures, Inc. In the early years the focus was on evaluating start-up companies, assisting angel investors, and advising the management teams of start-up companies. The company has since transitioned into a full service wealth management / investment advisory practice serving high net worth families.

Mark has always had active interests in various creative arts, including painting, glass blowing, and photography. Along the way, Mark took a “time-out” from the investment business and worked full time as a professional photographer specializing in equestrian sports and portraits from 2002 to 2006.

Mark’s still continues to work as a part time professional photographer. He is also enjoys flying and is a 900 hour instrument rated commercial pilot currently flying Cirrus aircraft. Other hobbies include woodworking, and supporting his wife in her work as a canine agility handler and competitor. While not a practicing scientist, he enjoys following wide areas of technology and science.

Mark currently resides in Redwood City California with his wife Jolyn Montgomery and their three Papillion dogs and three cats.

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Cameron Myrvold

Postdoctoral Fellow
Sabeti Lab, Broad Institute
Hertz Fellow

Cameron Myhrvold is a postdoctoral fellow in the Sabeti lab at the Broad Institute in Cambridge, MA. In 2016, Cameron received a PhD in systems biology from Harvard University. In 2011, Cameron graduated from Princeton University, majoring in molecular biology with a certificate in quantitative and computational biology.

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Amir Nashat

Polaris Venture Partners
Managing Partner
Hertz Fellow, Hertz Council

Amir Nashat is managing partner at Polaris Venture Partners, and currently serves on the boards of several biotechnology companies, including AgBiome, Fate Therapeutics, Selecta Biosciences, BIND Therapeutics and aTyr Pharma. His doctoral research focused on information flow through neurons, neural implants and neural tissue engineering. Amir holds a BS and MS in materials science and mechanical engineering from the University of California, Berkeley, as well as a PhD in chemical engineering from the Massachusetts Institute of Technology.

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Lila Neahring

Development & Stem Cell Biology
University of California, San Francisco
Hertz Fellow

Lila Neahring is a graduate student in the Developmental & Stem Cell Biology program at UC San Francisco, where she studies self-organization in biological systems. Working in collaboration with the labs of Sophie Dumont at UCSF and Manu Prakash at Stanford University, Lila is developing techniques to study the simplest animal, Trichoplax adhaerens. Bridging experimental accessibility and the biological richness of living organisms, Lila uses Trichoplax as a model system to study key transitions at the origin of multicellularity. Her goal is to uncover design principles that govern tissue architecture, advancing our knowledge of development, evolution, and tissue engineering. As an undergraduate Lila majored in Biology at Stanford University, graduating in 2015. While at Stanford, Lila studied the molecular mechanisms of Hedgehog signal transduction in the laboratory of Philip Beachy. Outside of the lab, Lila is usually found rock climbing in the Sierra Nevada or training in San Francisco's climbing gyms.

Carla Newman

Founder
Three Thought, LLC
Hertz Director

Carla Newman is an active entrepreneur and investor and a director of the Fannie and John Hertz Foundation. She recently founded Three Thought, LLC, which is focused on working with start-ups and early stage companies in an advisory capacity to help grow their organizations and position them for eventual sale. She has been a founding member or early-stage executive with several startup businesses in medical devices, software development, consulting and media. She is also a member of the Blackstone Entrepreneurial Network in Denver. Carla received her BS in television, radio and film management from Syracuse University and her Executive MBA from the University of Denver.

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Harold J. Newman

Principal
Harold J. Newman LLC
Hertz Director

Harold Newman is principal of Harold J Newman LLC, a firm he started in 2010 upon retiring as managing director of Neuberger Berman LLC, with which he had been associated for 33 years. Previously, he was chief investment officer of Donaldson, Lufkin & Jenrette and before that was a founder of Hawthorn Partners, and Hawthorn International, hedge funds, started in 1966 and prior to that was with Goldman Sachs & Co. With investments in China, India and the former Soviet Union, he has been investing in the Asian securities market for nearly 50 years. From 1980 to the present Harold has been personally involved in private equity and venture capital both in the U.S. and Asia.

In private equity he was primary involved in cable systems and biotech startups. In venture capital his major involvement was as a director of an oil exploration company in Kazakstan, which was sold to Russian and Chinese companies in 2004.

Harold earned a BS in geography from the University of Oklahoma, where he now serves as a board member of the College of International Studies. He and his wife, Ruth, have an ongoing association with the University, creating and endowing the Institute of U.S.-China Issues, which focuses on important topics of relevance to the two countries, including trade, the economy, natural resources, the environment, and industrial and political policy. Each year the Institute for U.S.-China Issues has a meeting between middle level members of China's Foreign Ministry and members of the U.S. State and Defense Department. One year they meet in China and then the other in the United States. They also established a prize for modern Chinese literature to be awarded to a living Chinese writer. The first prize given was awarded to Mo Yan. Three years later in 2012, Mo Yan won the Nobel Prize for Literature.

Harold and his wife Ruth have had a continual nearly 30 year involvement as trustees and trustee emeritus of the Asia Society. He has been a director of the East West Institute, the Fannie & John Hertz Foundation, at Hunter College – Endowed the Harold & Ruth Newman chair of the School of Arts & Sciences, as well as a member of the New York Historical Society Chairman's Council and a director of the Hirshhorn Museum. His interests include a Nashville music company, an off-Broadway theatre group where he is vice chairman, American and Asian history, and Asian-American Geopolitics. He also backed a number of Broadway shows, which have won several Tony Awards. He currently is involved with the musical play Hamilton.

In addition to his undergraduate degree from the University of Oklahoma, Harold has an MBA from the Harvard Business School and an MA from the University of Pennsylvania School of South Asian Studies. He taught geography at the Wharton School at the University of Pennsylvania.

Harold served in the Strategic Intelligence branch of the U.S. Army at the time of the Korean War.

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Joseph Nilsen

Lawrence Livermore National Laboratory
Physicist
Hertz Fellow

Dr. Nilsen has a B. S. in Engineering Physics from Cornell University and a Ph. D. in Physics from the California Institute of Technology where he was a Hertz Fellow and did a thesis on Phase Conjugation via Four Wave in a Resonant Medium under the supervision of Professor Amnon Yariv. He is a Fellow of the Optical Society of America and a Fellow of the American Physical Society for his pioneering work in the development of X-ray lasers and their applications. At Lawrence Livermore National Laboratory, Dr. Nilsen has spent the last three decades designing X-ray lasers, published more than 250 papers, and holds three X-ray laser patents. His work has resulted in the demonstration of the world's shortest wavelength, highest energy experimentally demonstrated laser. For the last decade he has led the plasma science effort in opacity and equation of state research at LLNL.

David Palmer

Computer Science
Massachusetts Institute of Technology
Hertz Fellow

David Palmer is a first-year doctoral student in computer science at MIT, where he does research in applied geometry under Professor Justin Solomon.

David became obsessed with differential geometry at an early age, initially wanting to learn the language of general relativity. A side interest in computer generated art led him to explore the computational applications of differential geometry. At Harvard, David pursued a broad course of study in computer science and mathematics. He had the great opportunity to study geometry and computer graphics under Professor Steven Gortler. This led to a senior thesis on a path toward computing quasiconformal maps between surfaces via discrete measured foliations.

After earning his bachelor's degree in computer science at Harvard, David went on to intern at Pixar Research, where he worked with Fernando de Goes on tools for manipulating discrete vector fields and on a fluid simulator based on power diagrams. In order to deepen his background in pure mathematics, David spent a year studying toward a master's in math at the University of Cambridge, generously supported by a Herchel Smith fellowship. There he focused on differential geometry and topology.

David's current research aims to ensure topological correctness of brain surfaces reconstructed from medical MRIs. While at MIT, he hopes to hone his curiosity in search of connections between disparate fields. Following graduate school, David will pursue a career in research and innovation.

David was born in Chicago, Illinois and spent his childhood in Deerfield, Illinois. He enjoys singing, baking sourdough bread, and keeping bees.

Tony Pan

Co-Founder & CEO
Modern Electron
Hertz Fellow

Hertz Fellow 2010-2013, Ph.D. Physics, Harvard. Chief Executive Officer and Co-founder, Modern Electron. Inventor of 250+ patents pending. Member of Global Future Councils: Entrepreneurship / Energy, World Economic Forum. Advisor, Bezos Center for Innovation, MOHAI. Formerly: Pro bono external consultant on global health and development, Bill & Melinda Gates Foundation; WEF Global Shaper; Strategist at Goldman Sachs. National fellowships: Hertz, Soros and National Science Foundations. Graduate, Stanford; PhD in Physics, Harvard University. Named to Forbes 30 under 30, Business Journal 40 under 40.

Christopher Panuski

Quantum Photonics
Massachusetts Institute of Technology
Hertz Fellow

Christopher received a BS in Electrical Engineering and Physics from the United States Naval Academy in 2017. During his time at Academy, Chris worked on the development of radar signal processing algorithms as an intern at MIT Lincoln Laboratory, created digital image reconstruction techniques at the DoD Cyber Crime Center, and began initial research in photonics. His senior research thesis focused on the development of a mechanically mediated RF-to-optical transducer using integrated photonics. Following graduation, he was commissioned as a cryptologic officer in the United States Navy and, with the support of the Hertz Fellowship and the MIT Jacobs Presidential Fellowship, joined the Quantum Photonics Group as a PhD student. At MIT, he is excited to continue exploring integrated photonics in an effort to advance the fields of quantum cryptography, communications, and enhanced sensing.

Outside of the lab, Chris shares his passion for aviation as a volunteer flight instructor, and enjoys investigating the relationship between leadership and innovation in technical organizations.

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Sabrina Pasterski

High Energy Physics
Harvard University
Hertz Fellow

Sabrina Pasterski is a proud first-generation Cuban-American & Chicago Public Schools alumna who, by 16, had built & flown her own airplane. She became the first MIT freshman named to the NASA January Operational Internship and earned the inaugural MIT Freshman Entrepreneurship Award. After a summer at Phantom-Works, excelling at MIT and being hired by CERN-CMS, she was named a Lindau Nobel Young Researcher. She graduated #1 at MIT-Physics, matriculated into Harvard's PhD program and was awarded her SB while still a teenager. Sabrina was named to Scientific American's 30 under 30 in 2012 as well as the 2015 Forbes 30 under 30 Science list.

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Elizabeth Qian

Computational Engineering
Massachusetts Institute of Technology
Hertz Fellow

Elizabeth Qian holds bachelor's and master's degrees in Aerospace Engineering from MIT and is currently pursuing her PhD in the MIT Center for Computational Engineering. Her research in numerical methods and engineering computation has included work in model reduction, optimization, and uncertainty quantification. Most recently, she has turned her attention to physics-informed machine learning, where the goal is to leverage both data and physical principles to develop efficient engineering simulations.

Elizabeth is committed to combating sexual harassment and gender bias in STEM fields. At MIT, she has served on the executive board of the Graduate Women in Aerospace Engineering group for three years. She has additionally served on the Institute Committee on Sexual Misconduct, Prevention, and Response as well as the Presidential Women's Advisory Group committee.

In her free time Elizabeth enjoys reading, cooking, and board games.

Scott L. Rakestraw

President and Managing Director, The Branta Group, LLC
Hertz Director
Hertz Fellow

Scott Rakestraw is president and managing director of The Branta Group LLC, a healthcare company formation, capital investment, and strategic advisory firm. Over the past 15 years, The Branta Group LLC and its family of companies have been instrumental in 11 successful IPOs, the development and registration of several new biopharmaceutical medicines, and the acquisition of multiple biopharmaceutical companies. He currently serves on the board of directors of Sojournix, Inc, an asset-focused biopharmaceutical company that he co-founded in 2016. Dr. Rakestraw received his bachelor's of science from the University of Illinois, and as a Hertz Fellow, his PhD in chemical engineering from MIT.

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Vyas Ramanan

Senior Associate
Third Rock Ventures
Hertz Fellow

Vyas Ramanan grew up in Cerritos, CA, and dealt with his chronic indecision by attending a dual degree Management & Technology (M&T) program at the University of Pennsylvania. At Penn, his thesis on light-responsive electrospun polymer mats resulted in one paper and three shocks from a 25 kilovolt power supply. Vyas rounded out his college experience by singing parodies on stage in a gecko suit. He received his PhD in Medical Engineering and Medical Physics (MEMP) in the Harvard-MIT Health Sciences and Technology (HST) program within MIT's Institute for Medical Engineering and Science (IMES), combining his affinity for acronyms with an interest in improving human health. His work in Dr. Sangeeta Bhatia's lab spanned virology & immunology, genome editing, single-cell analysis, and tissue engineering, which he turned into a somewhat-coherent thesis. During his time in HST, Vyas also worked as part of a team using drones to improve vaccine delivery in the developing world, which (to his knowledge) does not involve actually vaccinating patients from a drone... yet. His thesis defense contained multiple puns, one of which got him loudly booed.

After MIT, Vyas joined Third Rock Ventures to help build the next generation of biotech companies, though many of his coworkers are convinced that he joined mostly to take advantage of the near-unlimited supply of espresso. During his time at Third Rock, Vyas has successfully helped orchestrate one spontaneous photo-op with the 3 Hertz Fellows working at the firm, one spontaneous prank switching two co-workers' offices, and one non-spontaneous cross-country heist of a silver couch. At Third Rock, Vyas has been working across multiple areas broadly focused around the advancement of human genetics-enabled approaches to drug discovery, from target identification through therapeutics. Vyas recently moved to Third Rock's San Francisco office ("TRV Wild West") from Boston after his east coast colleagues decided they couldn't take any more of his punishment.

Suhas Rao

Quantitative Biology
Stanford University
Hertz Fellow

Suhas is the son of Indian immigrants, both of which were chemists before becoming software engineers so he grew up immersed in science and developed a love for the pursuit of knowledge and discovery as a young child. While working at the Broad Institute as a Harvard undergraduate, Suhas became invigorated by the potential of the 'genomics revolution' to drive forward a new age in precision medicine and patient care. However, his experience as a staff member at the Harvard Square Homeless Shelter taught him that revolutions in health care weren't particularly useful if they weren't accessible to those who need it most. It was this realization and his desire to be at the forefront of biomedical research while also working to effectively translate research into clinical practice that led him toward a career as a physician-scientist.

After graduating from Harvard, Suhas continued his research on the three dimensional structure of the genome at the Broad Institute and Baylor College of Medicine, resulting in two co-first authored publications in Cell and PNAS. This work, which resulted in the highest resolution maps of the three-dimensional genome to date and revealed numerous structural principles of genome folding, was featured in TIME, NPR, The Atlantic, Forbes, and Scientific American, and was lauded on the floor of the United States House of Representatives.

Suhas is currently pursuing an MD/PhD at Stanford University School of Medicine and he will continue to pursue his PhD in quantitative biology at Stanford as a Hertz Fellow. In addition to the Hertz Fellowship, Suhas is supported by the Paul and Daisy Soros Fellowship. "Ultimately, he hopes to tackle the fundamental problem of deciphering the information contained in the genome and translating that into more precise modalities of patient care as a physician-scientist.

Suhas was born in Massachusetts.

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Grant Remmen

Miller Postdoctoral Fellow, Theoretical Physics
University of California, Berkeley
Hertz Fellow

Grant Remmen is a Miller Fellow at the University of California, Berkeley, where he is conducting his postdoctoral work in theoretical physics. At the Berkeley Center for Theoretical Physics, he undertakes research on problems including the Weak Gravity Conjecture, bounding quantum corrections to Einstein's equations, proving theorems in general relativity, reformulations of graviton perturbation theory, cosmic inflation, and testing conjectures for emergent spacetime, gravity, and holography.

In 2017, Grant received his PhD in physics from the California Institute of Technology, where he was a Hertz Fellow and National Science Foundation Graduate Research Fellow. While at Caltech, Grant received the John Stager Stemple Memorial Prize in Physics for outstanding research. He was honored by the American Physical Society with the J. J. and Noriko Sakurai Dissertation Award in Theoretical Particle Physics. Grant's PhD advisors at Caltech were Professor Clifford Cheung and Professor Sean Carroll.

In 2012, Grant graduated summa cum laude with high distinction from the University of Minnesota - Twin Cities with a triple major B.S. in physics, astrophysics, and mathematics (GPA 4.0). He was named a United States Presidential Scholar in 2008, a Goldwater Scholar in 2010, and received the Chambliss medal for exemplary student research from the American Astronomical Society in 2011. As an undergraduate, Grant received the Dean’s Summer International Student Scholarship from University College London, enabling him to conduct research on multi-body relativistic gravitational systems at Mullard Space Science Laboratory in 2011.

Grant was born and raised in Detroit Lakes, Minnesota. Growing up, he was always fascinated with physics for its ability to explain the most extreme phenomena of the Universe, from the powerful gravitation of black holes to unraveling the details of the Big Bang. Grant plans to pursue a career in academic research, allowing him to investigate solutions to the most important and fundamental problems in theoretical physics, with applications to astrophysics and cosmology, such as dark matter, dark energy, quantum gravity, and black holes.

Outside of physics, Grant is an enthusiastic musician and, with his brother Cole, has written and composed a two-act Star Trek musical parody called *Boldly Go!*, which premiered as Caltech’s mainstage production in 2016. At Caltech, Grant served as a Physics Representative on the Graduate Student Council Board of Directors and Academics Committee. In his youth, Grant was also an avid aficionado of words and spelling, competing three times in the National Spelling Bee on ESPN.

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Edward Richley

Chief Scientist
Zebra Enterprise Solutions Division
Hertz Fellow

Ed Richley is the chief scientist at Zebra Technologies' Zebra Enterprise Solutions Division. Most recently Ed has worked developing short-pulse technology for tracking of valuable assets. Prior to this he was at the Xerox Palo Alto Research Center developing various technologies for displays, printing, and mobile computing.

Ed's research background includes the development of computational algorithms for the analysis of electric arcs, glow discharges, and ionic fluids. Ed received his PhD from Carnegie-Mellon in '84, MS in '80, and BS in '79 also from CMU. In his off-hours, Ed is an avid biker.

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Cooper Rinzler

Partner
Breakthrough Energy Ventures
Hertz Fellow, Hertz Director

Cooper is technologist and entrepreneur with a history of building and leading teams to develop and commercialize technologies in early stage ventures in the energy, materials, and food/ag sectors.

Cooper has more than 70 patent filings totaling more than 4,000 claims in the energy, materials, food/ag, semiconductor, hardware, and consumer products sectors.

Cooper is a Hertz Fellow with a PhD in Materials Science and Engineering from MIT and an AB in Physics and Engineering Physics from Harvard University.

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Samuel Rodriques

Neuroscience and Neuroengineering
Massachusetts Institute of Technology
Hertz Fellow

Samuel Rodriques grew up in Cambridge, Massachusetts, and received a BSc in physics from Haverford College, followed by an M.Phil. in Engineering from the University of Cambridge. As an undergraduate, Sam developed new techniques and algorithms for studying quantum entanglement in systems of many interacting particles. Realizing the extraordinary challenges facing neuroscience today, and the potential of neuroscience to discover cures for debilitating diseases like autism and Alzheimer's, Sam transitioned into neuroscience and neuroengineering for his graduate training. Working with Professor Edward Boyden in the Media Lab at MIT, he has invented new processes for nanofabrication that could one day be applied for making brain implants, and he has designed a new kind of fiber optic recording device that could be inserted into the brain through the blood vessels, to enable the recording of neural activity deep in the human brain without damaging tissue. Sam believes that the key to understanding the brain lies in being able to track the activity of large populations of neurons in both healthy and diseased states, and he now works on methods for recording neural activity without implanting devices in the brain. In addition to his research, Sam helped found the Cost-effective Healthcare Initiative at MIT, which promotes the development of new medical technologies that achieve similar performance to existing technologies, but that are capable of being deployed in low-resource settings. Sam has received several honors for his research, including support from the Barry M. Goldwater Scholarship, Beckman Scholarship, Churchill Scholarship, National Science Foundation Graduate Research Fellowship Program, and the Hertz Foundation Graduate Fellowship.

Reuben Saunders

Biophysics
University of California, San Francisco
Hertz Fellow

Reuben Saunders is a graduate student at UC San Francisco, where he studies biophysics and quantitative cell biology in Jonathan Weissman's lab. He is currently spending the summer working on maternal and childhood nutrition at the Gates Foundation. Last year, he studied biochemistry at the University of Cambridge. Reuben's undergraduate studies, pursued at MIT, were in chemistry.

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Judy Savitskaya

Synthetic Biology
University of California, Berkeley
Hertz Fellow

Judy is studying synthetic biology at UC Berkeley. She is interested in applications in energy, agriculture, and human health. She completed her undergraduate degree in computational biology at Carnegie Mellon University where she did research in neuroscience. Judy is from New Jersey. She spends her weekends skiing, hiking, climbing, dancing, and enjoying all of the oddities to be found in the Bay Area.

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Nicole Schauser

Materials Science
University of California, Santa Barbara
Hertz Fellow

Nicole Schauser gained an appreciation for nature and the environment from a young age. Combining her love for the environment with her passion in electrochemistry and materials science, Nicole has made it her life's mission to make an impact in the renewable energy transformation that our society needs to mitigate climate change. Specifically, she is interested in the development of affordable, safe and reliable energy storage solutions. Her motivation to pursue energy storage came after traveling to Australia for the World Solar Challenge, a 1,900-mile solar car endurance race through the Australian outback. After witnessing another university team's lithium ion battery pack catch fire, she realized that current energy storage is not good enough.

During her undergraduate career at UC Berkeley, Nicole became heavily involved in research on rechargeable solid-state lithium metal anode batteries and, with the support of a UC Regents' and Chancellor's Fellowship and Goldwater Fellowship, published a first-author paper detailing the link between dendrite growth in liquid and solid polymer electrolyte systems. Nicole hopes to continue studying rechargeable energy storage materials, with a focus on both fundamental electrochemical as well as practical device-scale aspects of next generation battery materials. Specifically, she hopes to concentrate on the utilization of abundant and inherently safer energy storage materials with only minimal compromises in performance in an effort to enable the renewable energy transformation. With her Hertz Foundation Fellowship, Nicole will pursue her PhD at UC Santa Barbara in materials science.

When not working in the lab, Nicole spends her time outdoors hiking, biking, backpacking, surfing and traveling to explore the natural wonders our world has to offer and immerse herself in cultures from around the world. Nicole is from Santa Barbara, California.

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Peter Scherpelz

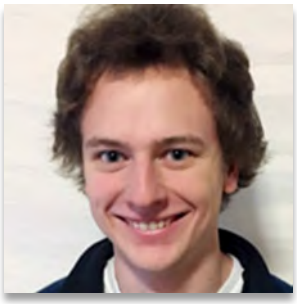
Computational Physicist
Modern Electron
Hertz Fellow

Peter Scherpelz is a computational physicist with Modern Electron, a startup co-founded in 2015 by two Hertz Fellows. Modern Electron seeks to develop thermionic generators to convert heat to electricity, with the goal of developing the technology to replace mechanical generators with devices that are more compact, more efficient, and have no moving parts. Peter's work focuses on device design and simulation, interfacing closely with coworkers who fabricate and test the devices.

Peter did both his graduate work and a postdoc at the University of Chicago. For his postdoc he was an Intelligence Community Postdoctoral Research Fellow, working with Professor Giulia Galli in the Institute for Molecular Engineering. His primary project focused on the use of silicon systems, doped with precisely-placed phosphorous and boron atoms, for quantum information. Peter's work explored the detailed electronic properties of both the atomically-precise lithography method, and the resulting device configurations. Peter also worked on improvements to many-body perturbation theory (MBPT) calculations for materials, extending code for large-scale MBPT calculations to support spin-orbit coupling effects.

Peter did his Ph.D. work in the Department of Physics at the University of Chicago with Professor Kathy Levin. Peter's work focused on two related systems: high-temperature superconductors, and trapped, ultracold atomic gases. His thesis work, which he finished in the winter of 2014, focused on the pseudogap state of these systems, in which particles seem to form pairs at anomalously high temperatures. Peter also studied trapped atomic gases through simulations. Current experiments allow for many approaches to creating and probing non-equilibrium dynamics of these fluids, including observing the behavior of vortices and solitons. He was able to use simulations to correctly identify a puzzling object seen in experiments on clouds of ultracold fermionic atoms in 2013. This identification as a single vortex line, which depended on properly capturing symmetry-breaking disorder that is unavoidable experimentally, was independently verified by concurrent experiments.

Peter grew up in Kennewick, Washington, where he enjoyed a diverse set of activities including Science Bowl, Lincoln-Douglas debate, and playing cello in the symphony orchestra. He entered Harvey Mudd College in 2004. At Harvey Mudd, his research experience included an HMC computer science REU focusing on approximation algorithms for network routing applications. He subsequently pursued research in quantum optics with Professor Theresa Lynn, which led to a senior thesis on the implementation of, and attacks against, a single-qubit quantum secret sharing protocol. Outside of physics, Peter likes to focus on hobbies with his wife, Kathryn, including music performance, cooking, and hiking. He also enjoys other outdoor activities including gardening and landscape photography.



Joseph Scherrer

Biophysics
Massachusetts Institute of Technology
Hertz Fellow

Joseph (Joe) Scherrer grew up in Nashville, Tennessee, making homemade rocket fuel and particle accelerators from parts on eBay. In high school, Joe was taken in by the Wikswo Lab at Vanderbilt University and assigned to a DARPA biodefense grant, where he learned how to be both an effective and a socially responsible scientist while co-authoring two patents and a first-author publication on microfluidics.

As an undergraduate at Princeton, Joe has spent time in physics labs across various disciplines. He developed a new method for measuring very high energy levels of lithium atoms and contributed previously unmeasured spectroscopic data to the atomic physics community (paper in preparation). Additionally, he has conducted machine learning analyses of fruit fly behavioral data while building a deuterium fusion reactor for the physics teaching lab.

In graduate school, Joe hopes to apply his physics education and experimental expertise to developing new biophysics tools. He finds applications to neuroscience problems particularly interesting, both because the brain is a fascinating piece of hardware waiting to be reverse-engineered, and because a fuller understanding of it promises to transform the human condition. With his Hertz Foundation Fellowship, Joe will pursue a PhD in biophysics.

Outside the lab, Joe spends his free time on marksmanship, the saltwater aquarium hobby, and high voltage projects.

Thomas Segall-Shapiro

Synthetic Biology
Massachusetts Institute of Technology
Hertz Fellow

Thomas Segall-Shapiro attended Rice University, where he earned a BS in biochemistry and cell biology and a BSB in bioengineering. Enamored by the promise of reprogramming living organisms, he joined the Rice iGEM (International Genetically Engineered Machines) team and worked on wildly overambitious projects, including: bacteria that seek and destroy pathogens, 'smarter' bacteriophages, and the production of high-value phytochemicals from low-tech fermentations (or, uh, BioBeer). In addition, he pursued more down-to-earth research on protein engineering, exploring how proteins tolerate being split into multiple pieces. Thomas also interned at the J. Craig Venter Institute for two summers, where his work on genome modification included a very small contribution to the creation of the first organism controlled by a synthetic genome, dubbed 'synthetic life.'

Now at the Synthetic Biology Center at MIT, Thomas continues to pursue the goal of reprogramming organisms for biological discovery and practical applications. His PhD work In Chris Voigt's lab focused on building genetic control systems that regulate how engineered bacteria respond to their environment and implement complex functions. By engineering new activities into natural regulatory proteins, he developed a number of new tools that can control gene expression in previously unexplored ways. Most recently, Thomas has built genetic circuits that integrate ideas from control theory to stabilize gene expression against perturbations in their context, paving the way for more predictable outcomes from engineered organisms.

Thomas is from Washington, D.C.

Favorite quote:
"What am I living for and what am I dying for are the same question." - Margaret Atwood

What sparks your creativity?
Good science fiction. Bad ideas. Coffee.

Dina Sharon

D. E. Shaw Research
Hertz Fellow

Dina Sharon is eager to develop and apply computational methods in order to investigate and design proteins. As a Princeton University undergraduate, Dina conducted computational chemistry research on carbon-hydrogen bond activation in Professor John Groves' group. This research involved a collaboration with the Center for Catalytic Hydrocarbon Functionalization, a national consortium of institutions funded by the Department of Energy. The experience fostered Dina's enthusiasm for using computation to help explain experimental results and to make predictions. At Princeton, Dina also enjoyed helping co-found the Women in Science Colloquium and organizing events for the Princeton University Chemical Society.

After obtaining her bachelor's degree in chemistry summa cum laude from Princeton, Dina conducted research on a Fulbright Grant, in Professor Sason Shaik's group at the Hebrew University of Jerusalem. She determined the electronic structure of a model of an artificial metalloenzyme and the mechanism by which it mediates a pharmaceutically relevant reaction. This resulted in a first author publication in the Journal of the American Chemical Society. Dina then worked in consulting at Oliver Wyman. Dina is currently working at the company D. E. Shaw Research, in New York City, where she is applying her knowledge of chemistry and computer science to biochemical problems. At D. E. Shaw Research, Dina has been involved in a drug discovery project, using long-timescale molecular dynamics simulations to understand allosteric modulation of a signaling protein target.

Dina plans to combine her interests in reactivity, in protein structure, and in computational research by employing computational methods to study existing enzymes and design novel enzymes in a Ph.D. program. Furthermore, she hopes to enhance the accuracy and speed of computational techniques used to study enzymes. Designed enzymes could be used themselves as therapeutics, or accomplish reactions that traditional synthetic methods cannot effectively carry out, thus facilitating the syntheses of pharmaceutical compounds.

Dina was born in New Jersey.

Ravi Sheth

Systems Biology
Columbia University
Hertz Fellow

Ravi is a Systems Biology PhD student & Hertz/NSF fellow at Columbia University. He is working on developing new techniques to understand and engineer gut microbial ecosystems, such as profiling them over time (using an engineered CRISPR 'tape recorder'), at micron spatial scales (using high-throughput droplet microfluidics), and developing high-throughput methods for microbial species isolation, banking and functional characterization. Ravi grew up in Cincinnati, OH (as well as Manila & Beijing), and received an undergraduate degree in Bioengineering from Rice University in 2015. Outside of the lab Ravi is interested in food, fermenting things, and growing weird organisms.

Ray Sidney

Co-Owner
Ritz-Carlton Residences, Dove Mountain
Hertz Director
Hertz Fellow

Ray Sidney is co-owner of the Ritz-Carlton Residences, Dove Mountain. He is an angel investor and the owner of the real estate investment company Big George Ventures, and he sits on the board of directors of xG Technology. Ray also serves on various committees at the Massachusetts Institute of Technology and is a member of the XPRIZE Foundation's Vision Circle. He is an enthusiastic winter sports participant and a co-founder of Lake Tahoe Epic Curling. Ray holds an AB in mathematics from Harvard University, a PhD in mathematics from MIT, and an MBA from UC Berkeley's Haas School of Business.

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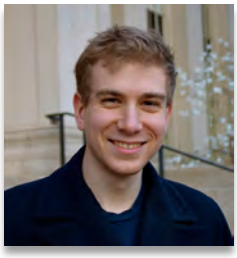

Alex Siegenfeld

Physics
Massachusetts Institute of Technology
Hertz Fellow

Born in New York City and raised in Connecticut, Alex Siegenfeld developed early interests in chemistry, physics, and math. As an undergraduate at MIT, he majored in physics and mathematics and conducted theoretical research on a variety of solid-state systems. Alex is currently pursuing a PhD in physics at MIT. Originally interested in combining chemical intuition with mathematical rigor to further the understanding of materials with exotic and useful properties, he spent his first graduate year working on topological superconductors and Fermi liquid theory. He has since shifted his focus to applying concepts and methods from statistical physics to further the understanding of social and political phenomena.

He is conducting research at the MIT Media Lab's Laboratory for Social Machines and the New England Complex Systems Institute, where he has conducted research on the spatial variation in political polarization and the mathematical properties of political representation in democratic voting systems. His current projects include exploring questions related to macroeconomic development, how toxic political rhetoric is influenced by geographical political segregation, and the mathematical fundamentals of complex systems science.

Aman Sinha

Mechanical and Aerospace Engineering
Stanford University
Hertz Fellow

From Ivyland, PA, Aman's interest in engineering began at age seven when he attempted to invent a novel clothes dryer that almost burnt down his house. As a mechanical and aerospace engineering major at Princeton, he combined his penchant for mechanics with an ever-increasing interest in scientific computation and its role in the analysis and control of dynamical systems. His senior thesis studied distributed consensus protocols in networks using techniques inspired by models of biological group behavior, such as flock migrations and bee swarms.

Aman spent a year at the University of Cambridge, where he combined techniques from control theory and machine learning towards building robust and scalable automated prediction systems. Now at Stanford, he approaches this problem as well as other "big-data" problems through the lens of optimization. In particular, he works on extending the theory of convex optimization to very large-scale systems, with applications including the control of epidemics in networks, guaranteeing safety/performance of autonomous vehicles, and learning how to detect diseases from accelerometer data.

In addition to his academic pursuits, Aman is an avid runner and soccer player. He also enjoys playing his roommate's guitar and dabbles in developing iOS apps.

Fred Skiff

Professor of Physics
University of Iowa
Hertz Fellow

Professor Skiff is Chair of the Department of Physics and Astronomy at the University of Iowa and served as Chair of the APS-DPP in 2012

Education

- BS, with distinction, Applied and Engineering Physics, Cornell U. 1979
- MA in Physics, Princeton U., 1981
- Ph.D. Physics, Princeton U. 1984

Professional Experience

- Research Scientist, CRPP-EPFL Switzerland 1985-1989
- Assistant Professor of Physics, University of Maryland, 1989-1994
- Associate Professor of Physics, University of Maryland, 1994-1998
- Associate Professor of Physics, University of Iowa, 1998-2000
- Professor of Physics, University of Iowa, 2000-present

Awards and Honors

- Graduated with distinction (GPA 4.0) Cornell University
- Elected to Tau Beta Pi, engineering honor society, 1979
- Fannie and John Hertz Foundation Fellow 1979-1984
- National Science Foundation, Presidential Young Investigator Award 1990-1995
- Alfred P. Sloan Foundation Fellow 1990-1992
- Elected to fellowship in the American Physical Society, 1999
- *Research Interests*
- Experiments and theory on physics of plasma waves
- Laser and optical plasma diagnostics
- Nonlinear dynamics of plasmas
- Wave absorption plasma diagnostics
- Plasma kinetics

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Jacob Steinhardt

Assistant Professor
University of California Berkeley
Hertz Fellow

Jacob Steinhardt is a professor of statistics at UC Berkeley. His main research goal is to make the conceptual advances necessary for machine learning systems to be reliable and aligned with human values. This includes topics such as robustness and security, reward specification and learning human values, and macroeconomic equilibria of ML systems. Outside of research, Jacob is a technical advisor to the Open Philanthropy Project, and loves to play ultimate frisbee.

Adam Stooke

Physics
University of California, Berkeley
Hertz Fellow

Adam is a PhD candidate in Computer Science at UC Berkeley, where he is advised by Professor Pieter Abbeel. Adam received BS and MS degrees in physics from the US Air Force Academy (Class of 2008) and UC Berkeley, respectively. Subsequently, he developed space communication technology at the Air Force Research Lab in Albuquerque, NM and served as a liaison at the Advanced Research Projects Agency—Energy in Washington, D.C. Adam returned to graduate school and joined the deep learning community in 2015. As for something fun, he's learning to surf—take him to the water!

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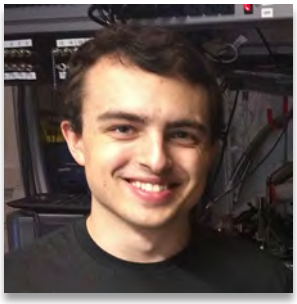

Andrey Sushko

Experimental and Applied Physics
Harvard University
Hertz Fellow

Andrey has a passion for understanding how complex phenomena arise from relatively basic underlying principles; whether it be the diverse dynamics of fluid surfaces that result from simple energy minimization, or the remarkable engineering solutions produced by evolutionary algorithms. As a Stanford undergraduate, Andrey explored the host of phenomena that emerge in seemingly simple condensed matter systems. Working with Prof. Goldhaber-Gordon, he probed the interactions of electrons in moiré graphene - a regime where the addition of a hexagonal superlattice over the graphene lattice produces a fractal electronic energy structure.

Andrey graduated from Stanford in 2016 with a BS in theoretical physics and a BS in mathematics. He is currently pursuing his PhD at Harvard, working to develop controllable, engineered, quantum systems by leveraging techniques from both condensed matter and AMO physics. In particular, he is working towards making quantum dots that can be both deterministically positioned on a 2D material via electrostatic gating and optically controlled for fast state manipulation. He hopes the work will eventually provide new platforms for experimental quantum physics and photonic technologies.

Outside of the lab, Andrey has led numerous engineering projects including a recently record-breaking high altitude balloon system for low cost atmospheric research. He also enjoys sailing, skiing, and other activities that bring him in contact with water.

Andrey was born in St. Petersburg, Russia and spent nine years in the United Kingdom before moving to the United States in 2009.

Lee Swanger

Director
Exponent Failure Analysis Associates
Hertz Fellow

Dr. Lee A. Swanger is the Director of the Exponent Failure Analysis Associates Miami, Florida, office and investigates issues related to failure analysis of materials and mechanical systems, as well as analyzing devices and procedures with respect to patent infringement and patent validity. Additionally, Dr. Swanger investigates equipment and process issues in applications including manufacturing facilities, fossil and nuclear power plants, transportation systems, and dry-cleaning establishments. He received a U.S. Patent for his engine bearing material and fabrication process. In his thirty-five years with Exponent Dr. Swanger has given over 500 depositions and testified in trials and arbitrations over 100 times.

Lee's particular interest is in diesel engine design and analysis. He has testified in front of the U.S. Nuclear Regulatory Commission regarding emergency diesel generators at commercial nuclear power plants. He has also assisted the U.S. Navy and the U. S. Coast Guard solve challenging performance and durability issues with diesel engines serving as primary propulsion engines on ships and cutters. Additionally, he has investigated issues with diesel engines in fleets of buses and trucks, including delivery trucks for a popular brand of carbonated beverages.

Prior to joining Exponent Failure Analysis Associates in 1983, Dr. Swanger worked for General Motors Research Labs and Gould Inc. He has been an adjunct faculty member in Mechanical Engineering at Cleveland State University and at the University of Miami.

His educational background is as follows:
B.S., Metallurgy, Case Institute of Technology (with highest honors), 1968
M.S., Materials Science and Engineering, Stanford University, 1969
Ph.D., Materials Science and Engineering, Stanford University (with distinction), 1972
M.B.A., Marketing/Finance, Cleveland State University, 1982

Dr. Swanger is a registered professional mechanical and metallurgical engineer in ten states: Alabama, California, Florida, Georgia, Louisiana, Mississippi, New York, Ohio, Virginia and Wyoming.

In addition to being a former interviewer for the Hertz Foundation, and a current financial supporter, Dr. Swanger is a certified gearhead, and has driven his Corvette convertible at 174 mph.

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Gabrielle Tender

Chemistry
Stanford University
Hertz Fellow

Gabrielle (Gabby) Tender was raised in Bethesda, MD and received her B.S. in chemistry from Caltech. Gabby is enthusiastic about research that lies at the interface between biology and chemistry, and she is particularly interested in questions with medicinal applications. During summers in high school, she worked at the Naval Research Laboratory, investigating electron transport in microbial fuel cells under the direction of Dr. Sarah Glaven. Loving this experience, she spent her senior year working at the National Institutes of Health, researching tyrosyl-DNA phosphodiesterase inhibitors (potential chemotherapy agents) under the direction of Drs. Yves Pommier and Christophe Marchand. At Caltech, Gabby spent four years conducting research under the direction of Professor Dennis Dougherty, investigating ligand binding to nicotinic acetylcholine receptors. After her freshman year, she spent a summer performing research at the University of Cambridge. Under the direction of Professor Sarah Lummis, she researched intramolecular interactions in ligand gated ion channels.

Gabby is pursuing her PhD in chemistry at Stanford as part of the ChEM-H CBI program, an interdisciplinary program focused on chemical biology with human health applications. This will allow her to use chemical tools to study the underlying biological mechanisms driving human disease, and she is excited about the varied opportunities to approach these diseases from both medicinal and basic science perspectives.

Jacqueline Turner

Biochemistry and Physiology
University of Colorado, Denver
Hertz Fellow

Jacqueline was born in Boulder, Colorado, and grew up in nearby Louisville. She is training to become a clinician scientist at the University of Colorado School of Medicine.

Jacqueline studied biochemistry and integrative physiology as an undergraduate at the University of Colorado Boulder. Her work in Prof. Russell Moore's Cardiac Laboratory first sparked her research interest. She now aspires to translate laboratory research results directly into clinical practice for improved cancer patient care. Working with Profs. William Robinson and Kasey Couts at the International Melanoma Biorepository and Research Laboratory at the University of Colorado Denver, fueled her scientific curiosity and a love for clinically translational research. Her work on gene rearrangements in tumor cells has already helped introduce basic scientific research into the clinical setting, starting with the successful treatment of a stage IV melanoma patient. Jacqueline then identified novel therapies for three other stage IV melanoma patients. For her PhD she will work with Profs. Isabel Schlaepfer and Raul Torres to investigate the role of immunological and metabolic processes in cancer. Her goal is to develop methods that will impact the treatment and prevention of tumor formation.

Jacqueline enjoys skiing, rock climbing, backpacking, playing The Settlers of Catan, and salsa dancing.

James Valcourt

Systems Biology
Harvard University
Hertz Fellow

James Valcourt is a Ph.D. student in the Systems Biology program at Harvard University. In Sharad Ramanathan's lab group, he studies when and how human stem cells commit to a lineage during early germ layer cell fate decisions. By using two fluorescently-tagged transcription factors as a reaction coordinate, he monitors the dynamics of differentiation in real time with live cell microscopy. This approach shows that cells commit to the neural/ectodermal lineage days before canonical fate markers are expressed. Using the fluorescent reporter cell line, James isolates cells pre- and post-commitment for further analysis. He is currently investigating the mechanisms of this lineage commitment, though he is disappointed to report it is unlikely that his dissertation advisory committee will let him title his thesis, "Commitment Issues."

James completed his undergraduate studies in molecular biology with a certificate in quantitative and computational biology at Princeton University in 2012, where he received the Pyne Prize. He spent his college years researching quiescence, post-transcriptional regulation, and the best ways to belittle Yale in the pages of a college humor magazine. After college, he worked at D.E. Shaw Research in New York City doing long-timescale molecular dynamics simulations of biological systems; he studied the mechanisms of allostery in G protein-coupled receptors. He is the author of a recent book about systems biology for non-scientists, "Systematic: How Systems Biology is Transforming Modern Medicine." James also enjoys the distinction of being the only athlete in his high school's history to be cut from a non-cut sport.

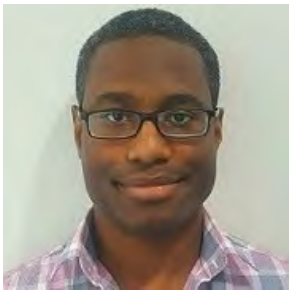
In his spare time, James enjoys backpacking, making dumb puns, and preparing 250-word summaries of his accomplishments.

Floris van Breugel

Postdoctoral Fellow
California Institute of Technology
Hertz Fellow

Floris van Breugel, PhD, is a postdoctoral fellow at Caltech, where he studies how flies and mosquitoes use odor, vision, and other sensory cues, to search for food. He designs and builds his own experiments, relying on computer-controlled hardware and computer vision to automatically collect and analyze large volumes of data. His experiments are designed to reveal underlying aspects of the neural architecture in insects, which he has applied to (and plan to continue applying to) robotic applications.

As an undergraduate at Cornell University, Floris was awarded a Cornell Presidential Research Scholarship, which funded his undergraduate research project to design the first passively stable flapping hovering machine at the Cornell Computational Synthesis Lab. In 2013 as a Hertz Fellow, Floris received the named Jane and John Mather Fellowship to pursue his PhD in control and dynamical system at the California Institute of Technology. In 2016, his work with Hertz Fellow Brian von Herzen on a startup, TinyHerds, a company developing non-traditional protein sources for sustainable global food security in the form of cricket ranching technology that automates the livestock-raising process and locally produces feed with renewable energy sources, was awarded the Newman Entrepreneurial Initiative.



David Van Valen

Junior Faculty, Biology and Bioengineering
California Institute of Technology
Hertz Fellow

David Van Valen is junior faculty in the Division of Biology and Bioengineering at the California Institute of Technology. His research group's long term research interests is to develop a quantitative understanding of how living systems process, store and transfer information and how this information processing is perturbed in human disease states. Specifically, he is focused on enumerating all the host-virus interactions that occur during bacteriophage infection and understanding information processing in the signaling networks that underlie the immune system's response to viral infections. To that end, his group leverages the latest advances in imaging, genomics, and machine learning to produce quantitative measurements with single-cell resolution as well as predictive models of these systems.

David's past research projects have explored how organisms process and transfer information. His work has demonstrated how signaling proteins can use flexible chains of amino acids to modulate how they respond to chemical stimuli. He has also applied single-molecule techniques to the study of bacterial viruses. In particular, he developed a single-molecule Hershey-Chase experiment, enabling the first visualization of single viruses infecting single bacterial cells in real time.

David is the recipient of a number of awards, including the Johns Hopkins Mathematics Talent Search, Honors at the National Chemistry Olympiad, a NIH MSTP Fellowship, and a Fannie and John Hertz Yaser Abu-Mostafa Graduate Fellowship.

Thomas Weaver

Hertz Senior Fellowship Interviewer Emeritus
Astrophysicist, Lawrence Livermore National Laboratory (Retired)
Hertz Fellow

Dr. Thomas Weaver is the former Senior Fellowship Interviewer for the Fannie and John Hertz Foundation, as well as a former member of the Board of Directors. In this capacity, he coordinated the process for selecting the Graduate Fellowships in the applied physical sciences and engineering offered by the Foundation, as well as the mentoring of in-school Hertz Fellows.

Tom is also well known for his pioneering research in understanding the evolution of massive stars and supernova, as well as the production of the chemical elements in such stars and the design of and demonstration of x-ray lasers. He has received many honors for his work, including the Department of Energy's E.O. Lawrence Award.

Tom worked for 28 years in the Physics Department at the University of California's Lawrence Livermore National Laboratory, where in addition to his research, he served as the Leader of the X-ray Laser Program and the General Studies Division Leader. His current research interests have expanded to include theoretical biology and an exploration of the evolution and nature of complex systems, mind/brain operation and the associated phenomena of consciousness.

Tom also consults for Intellectual Ventures on the development of a broad range of new ideas and inventions in physics, engineering and biology, including the TerraPower initiative for the development of advanced nuclear reactors.

Charles Westbrook

Division Leader
Lawrence Livermore National Laboratory
Hertz Fellow

Dr. Charles Westbrook graduated as valedictorian in the class of 1967 from Harvey Mudd College with a BS in physics and was awarded a Fannie and John Hertz Fellowship for graduate study in applied science and engineering at the University of California at Davis/Livermore. He carried out graduate research in computational astrophysics, earning a PhD and joining the physics department at the Lawrence Livermore National Laboratory. During the past 45 years at LLNL, Dr. Westbrook has carried out research and was division leader of the Computational Physics Division, the Applied Physics Division, the Chemistry and Chemical Engineering Division, and the Chemical Biology and Nuclear Chemistry Division.

Dr. Westbrook's research has been primarily in the area of chemical kinetic modeling of combustion of hydrocarbon and related fuels, with extensive collaboration and funding from the U.S. Department of Energy, U.S. Department of Defense, and corporations that produce and use transportation fuels, including both auto and truck makers and oil refining companies. He has been a consultant with U.S. companies and with national oil companies in Brazil (Petrobras) and Saudi Arabia (Saudi Aramco). He pioneered application of computer simulations to kinetic analysis of complex fuels including gasoline, diesel fuel, jet fuel and natural gas. He led a project that used kinetic models to explain for the first time in fundamental terms, the connections between hydrocarbon fuel molecular size and structure and their macroscopic properties such as octane number and cetane number. His models for combustion kinetics of practical fuels are used all over the world today in university and industrial combustion research.

Charlie is a fellow of the Society of Automotive Engineers (SAE), and he has received the Horning Memorial Award and the Arch Colwell Award of Merit from the SAE for outstanding contributions to understanding the interactions between fuels and engines. He also received the Thomas Midgley Award from the American Chemical Society, the Wilhelm Jost Memorial Award from the Deutsche Bunsengesellschaft für Physikalische Chemie and the Akademie der Wissenschaften zu Göttingen. Dr. Westbrook recently completed a four-year term as president of the Combustion Institute, an international association of combustion researchers, and he was awarded the 2008 Bernard Lewis Gold Medal from the Combustion Institute. In 2010, he received an award of Docteur Honoris Causa from the Institute National Polytechnique de Lorraine and the Universite de Nancy for his career-long research in combustion chemistry.

Charles lives "off the grid" in a solar-powered ranch in the hills south of Livermore, California where his family has an olive orchard and make high quality extra virgin olive oil from Spanish arbequina olives.

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John Whitehead

Mechanical Engineering
University of California Davis
Hertz Fellow

John Whitehead, PhD, is an aerospace engineer who currently works to advise a diplomatic team dedicated to reducing the proliferation of destructive technologies around the world. In recent years he also has applied his expertise in orbital dynamics and space propulsion to the challenge of maintaining satellite safety as earth orbit becomes more crowded.The freedom to pursue his own interests as a Hertz Fellow helped to start him on a varied career somewhat outside the mainstream.

A passion to build tiny 100-mile-per-gallon cars circa 1980, combined with the stimulus of graduate coursework in dynamics and controls, led John to an improved understanding of steering stability. He published new equations and diagrams that explain a contributing physical reason why it is easy for drivers of wandering vehicles to "overcorrect" from a steering error and run off the road on the opposite side. Such single-vehicle crashes appear regularly in news articles, with little in the way of explanation. In the absence of an easy fix, the natural characteristic inherent to cars and trucks has not been widely discussed.
Earlier while an undergraduate in biology at Caltech, learning about the great discoveries of the past impressed upon John the value of seeking simple explanations for seemingly complex phenomena. After a switch to engineering, graduate school at UC Davis provided exposure to the notion that mathematical modeling should include as much detail as possible, in order to be most realistic. In all subsequent work, he has sought a balance between the two approaches.

In subsequent years he realized that his effort was on a path to enable NASA's long sought but elusive dream to analyze Mars geology samples in labs on Earth. As explained in his publications, the latter mission needs a launch vehicle the size of a person that can quickly reach a very high velocity to depart from a planet, far more difficult than lunar return. Circa 2005, NASA funded two years of his work at LLNL. While the National Academy of Sciences has since designated Mars Sample Return as the highest priority for planetary science, there is still no sustainable research community focused on this particular rocket challenge.

Starting in the late 1990's, some of John's laboratory efforts were dedicated to propulsion for smaller satellites using reduced-hazard propellants. Connecting to the small satellite community, he helped to inspire others' efforts toward maneuvering propulsion on cubesats, and for tiny rockets to launch cubesats. Both remain topics for research and development, while being somewhat elusive goals, to this day.

In a 2007 paper, Dr. Whitehead explained the fundamental limits on the speed of aircraft powered by combustion using atmospheric oxygen, and particularly why we should not expect airplanes to ever fly to orbit. The air capture area has to increase as speed squared, exceeding vehicle drag area above roughly one quarter of orbital speed. Given realistic drag coefficients, the air inlet would have to be larger than the whole vehicle. In the field of hypersonics, this fundamental limit to flight speeds has largely been overlooked during fifty years of research in supersonic combustion and high-temperature materials.

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Eli Weinstein

Biophysics
Harvard University
Hertz Fellow

Eli Weinstein is pursuing his PhD in biophysics at Harvard University. His broad interest is in developing new theoretical tools for detecting and characterizing structured variation in biological systems. His current research is focused on building search algorithms for finding proteins whose parts can be rearranged to do something different.

As an undergraduate at Harvard University, Eli conducted research under the guidance of Hertz Fellow Adam E. Cohen, developing computational tools to interpret high-throughput neuronal electrophysiology measurements. His methods led to novel insights into an induced pluripotent stem cell model of amyotrophic lateral sclerosis.

Outside of his scientific research, Eli also maintains an interest in the history of science. Eli is from South Pasadena, California.

Christian T. Wentz

Entrepreneur
Hertz Fellow

Wentz is a serial technology entrepreneur. He is currently founder and CEO of a venture backed stealth mode startup building the infrastructure to power Web 3.0 - the scalable, secure decentralized internet.

Previously, Wentz founded Kendall Research Systems (KRS), a neural interface company -- based on his work as a student with Prof. Ed Boyden -- developing optical brain interfaces and high bandwidth neural data processors. In 2017, KRS' neurotechnology program was acquired by Kernel, a human intelligence company, where Wentz assumed the role of VP of Product.

Prior to KRS, Wentz held early stage technical roles at Misfit Wearables (acquired by NADSAQ: FOSL) and Cerenova, Inc., a spin-out company from Massachusetts General Hospital which he co-founded with functional neurosurgeon Emad Eskandar.

Wentz was named to the inaugural Forbes 30 under 30 list in Science & Innovation, for his work on low power electronics and neurotechnology, at the age of 25. He holds an M.Eng in Electrical Engineering and Computer Science and S.B. in Electrical Science and Engineering, both from the Massachusetts Institute of Technology (MIT).

As of 2017, Wentz is on leave from his PhD at MIT, which was supported by the prestigious Hertz Foundation Myhrvold & Havranek Family Fellowship in the applied sciences.

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Thomas Wu

Life Fellow, American College of Obstetrics and Gynecology

Born Hong Kong China, undergraduate Washington State University, medical degree University of Washington, intern/residency University of Wisconsin Madison. Life Fellow American College of Obstetrics and Gynecology, member Continental Gynecological Society, board member NAT Dx, San Diego CA.

Shannon Yee

Assistant Professor
G.W.W. School of Mechanical Engineering
Georgia Institute of Technology
Hertz Council
Hertz Fellow

Shannon Yee is an Assistant Professor at the G.W.W. School of Mechanical Engineering at the Georgia Institute of Technology. Dr. Yee joined Georgia Tech in January of 2014 directly from his PhD at the University of California Berkeley where he studied under Prof. Arun Majumdar, Prof. Rachel Segalman, and Prof. Chris Dames. In the midst of his studies in 2010, he joined the US. Dept. of Energy's Advanced Research Projects Agency for Energy (ARPA-E) during its inaugural year as the first ARPA-E Fellow. Dr. Yee completed his MS in Nuclear Engineering in 2008 and his BS in Mechanical Engineering in 2007 both from The Ohio State University. He currently holds a visiting scientist position at Lawrence Livermore National Laboratory and works within the Physics directorate. In 2008, he was awarded a prestigious Hertz Fellowship, which supported his graduate studies. In 2015, Dr. Yee was selected for an AFOSR Young Investigator Award. Dr. Yee is the recipient of the 2017 ASME Pi-Tau-Sigma Gold Medal award for outstanding contributions to Mechanical Engineering since graduation.