



**Life Sciences**  
RESEARCH FOUNDATION

## **2025 Impact Report**



**ADVANCING LIFE  
SCIENCES TO  
ADDRESS  
CRITICAL GLOBAL  
CHALLENGES**

## *Our Impact*

LSRF measures its impact by monitoring the career trajectories of the LSRF fellows as a group and on an individual basis. Over its 43-year history, more than 95% of the 788 LSRF alumni have gone on to careers in scientific research, science policy, or the science-based private sector (for example, in the biotechnology and pharmaceutical industries). The thumbnail sketches of senior LSRF alumni show their remarkable accomplishments; the sketches for junior alumni demonstrate their continued bold approach to research as young independent scientists. This impact is further exemplified by the testimonials that LSRF receives from its young alumni.



## *Distinguished Senior LSRF Alumni*

### **Amara, Susan (LSRF fellow 1983-1985)**

Scientific Director, National Institute of Mental Health Intramural Research Program

National Institutes of Health

Member, National Academy of Sciences

Discovered the molecular structure and function of neurotransmitter transporters (such as the glutamate transporter). Her work revealed that these transporters act as both carriers and ion channels, which is critical for understanding how the brain regulates signaling and how drugs like antidepressants work.

### **Baker, David (LSRF fellow 1989-1991)**

Henrietta and Aubrey Davis Professor of Biochemistry

Director, Institute for Protein Design

Investigator, Howard Hughes Medical Institute

University of Washington

Member, National Academy of Sciences

Member, American Academy of Arts and Sciences

2024 Nobel Prize in Chemistry

A pioneer in computational protein design. He developed Rosetta, a software suite for predicting and designing protein structures. He was awarded the 2024 Nobel Prize in Chemistry for his work on de novo protein design, which has led to the creation of entirely new proteins for biomedical applications.

### **Banerjee, Utpal (LSRF fellow 1986-1988)**

Irving and Jean Stone Chair in Life Science

Distinguished Professor of Molecular, Cell, and Developmental Biology

University of California, Los Angeles

Member, National Academy of Sciences

Member, American Academy of Arts and Sciences

A leader in *Drosophila* hematopoiesis (blood development). He has mapped how blood progenitor cells are maintained and how metabolic signals (like oxygen or nutrient levels) control the production of different blood cell types.

### **Barres, Ben (LSRF fellow 1989-1991) (1954-2017)**

Professor of Neurobiology

Stanford Medical School

Member, National Academy of Sciences

Member, National Academy of Medicine

Member, American Academy of Arts and Sciences

Transformed the field of neuroscience by discovering the essential roles of glia (astrocytes and microglia). He showed that glia are not just “glue,” but actively control synapse formation, pruning, and neuronal survival, and play a major role in neurodegenerative diseases.

## *Distinguished Senior LSRF Alumni, continued*

### **Beachy, Philip (LSRF fellow 1985-1987)**

Ernest and Amelia Gallo Professor

Stanford Medical School

Member, National Academy of Sciences

Member, American Academy of Arts and Sciences

Discovered the Hedgehog signaling pathway, a critical regulator of embryonic development. His work showed how Hedgehog proteins control tissue patterning and how malfunctions in this pathway lead to birth defects and various cancers.

### **Bergelson, Joy (LSRF fellow 1990-1992)**

Dorothy Schiff Professor of Genomics

New York University

Member, National Academy of Sciences

Member, American Academy of Arts and Sciences

A leader in plant evolutionary genetics. She studies how plants and their pathogens co-evolve in nature and has pioneered research into the plant microbiome, exploring how external microbial communities affect plant health and fitness.

### **Brainard, Michael (LSRF fellow 1996-1998)**

Professor of Physiology and Psychiatry

Investigator, Howard Hughes Medical Institute

University of California, San Francisco

Member, American Academy of Arts and Sciences

Uses birdsong as a model to study motor learning. He discovered how the basal ganglia and other brain circuits allow the brain to use sensory feedback to correct motor errors, a process fundamental to how humans learn speech and other complex skills.

### **Church, George (LSRF fellow 1984-1986)**

Professor of Genetics

Member, Wyss Institute for Biologically Inspired Engineering

Harvard Medical School

Member, National Academy of Sciences

A founding father of modern genomics. He helped develop the first direct genomic sequencing method and was a key architect of the Human Genome Project. He is also a pioneer in CRISPR gene editing and synthetic biology, working on projects ranging from “de-extinction” to organ engineering.

### **Collins, Kathleen (LSRF fellow 1992-1994)**

Walter and Ruth Schubert Family Professor

University of California, Berkeley

Member, National Academy of Sciences

Member, American Academy of Arts and Sciences

Focuses on the structure and regulation of telomerase, the enzyme that maintains chromosome ends. Her work has elucidated how telomerase is assembled and how its dysfunction leads to human diseases like bone marrow failure and cancer.

## *Distinguished Senior LSRF Alumni, continued*

### **Dan, Yang (LSRF fellow 1995-1997)**

Senior Principal Investigator

Shenzhen Medical Academy of Research

Member, National Academy of Sciences

Research focuses on the neural circuits of sleep. She has mapped out specific neurons in the brainstem and hypothalamus that act as “switches” between REM sleep, non-REM sleep, and wakefulness. She has also made important contributions to understanding visual cortical processing.

### **Deng, Xing-Wang (LSRF fellow 1989-1991)**

Dean, School of Advanced Agricultural Sciences

Peking University

Member, National Academy of Sciences

Known for his work on light signaling in plants. He discovered the COP/DET/FUS proteins, which act as a central switch to repress light-mediated development when a plant is in the dark, a discovery fundamental to plant genomics.

### **Han, Min (LSRF fellow 1988-1990)**

Distinguished Professor

University of Colorado

Member, American Academy of Arts and Sciences

Studies development and metabolism in *C. elegans*. He has made key discoveries regarding diet-microbe interactions, showing how specific nutrients from bacteria (like Vitamin B12 or iron-scavenging siderophores) influence development, growth, and health.

### **Joyce, Gerald (LSRF fellow 1985-1987)**

President, Salk Institute

Member, National Academy of Sciences

Member, National Academy of Medicine

Member, American Academy of Arts and Sciences

Renowned for his work on the “RNA World” hypothesis and directed evolution. He was the first to create an RNA enzyme (ribozyme) that can catalyze its own replication, providing insights into the origin of life and the transition from RNA to DNA-based organisms.

### **Ngai, John (LSRF fellow 1988-1990)**

Director, NIH Brain Research Through Advancing Innovative Neurotechnologies

National Institute of Neurological Disorders and Stroke

National Institutes of Health

A leader in the olfactory system and single-cell transcriptomics. He has identified how odorant receptors are organized in the brain and is a major figure in the BRAIN Initiative, working to map every cell type in the mammalian brain.

## *Distinguished Senior LSRF Alumni, continued*

### **Sapolsky, Robert (LSRF fellow 1984-1986)**

John A. and Cynthia Fry Gunn Professor  
Stanford University

MacArthur Fellow (“Genius Award”)

A leading expert on stress and the brain. He discovered that prolonged exposure to glucocorticoids (stress hormones) can physically damage the hippocampus, leading to memory impairment and neurotoxicity, particularly in the context of aging and neurological insult.

### **Shokat, Kevan (LSRF fellow 1992-1994)**

Professor and Chair, Cellular Molecular Pharmacology

Investigator, Howard Hughes Medical Institute

University of California, San Francisco

Member, National Academy of Sciences

Member, National Academy of Medicine

Member, American Academy of Arts and Sciences

A pioneer in chemical genetics. He developed the “analog-sensitive” kinase technology to study specific signaling enzymes. He discovered the first small molecule to successfully inhibit KRAS, a “previously undruggable” oncogene central to many cancers.

### **Yellen, Gary (LSRF fellow 1983-1985)**

George Packer Berry Professor of Neurobiology

Harvard Medical School

Member, National Academy of Sciences

Member, American Academy of Arts and Sciences

Investigates neuronal metabolism. He discovered the link between the ketogenic diet and reduced brain excitability, showing that ketone bodies can open K(ATP) potassium channels to slow down overactive neurons, explaining why the diet helps treat epilepsy.

### **Zamore, Phillip (LSRF fellow 1993-1995)**

Gretchen Stone Cook Professor in Biomedical Sciences

University of Massachusetts Chan Medical School

Member, National Academy of Sciences

Member, National Academy of Medicine

Member, American Academy of Arts and Sciences

A leader in the study of RNA interference (RNAi). He helped define the biochemical mechanisms by which small RNAs (like siRNA and miRNA) silence gene expression, specifically the assembly and function of the RISC (RNA-induced silencing complex).

### **Zhu, Jian-Kang (LSRF fellow 1994-1996)**

Director, Institute of Advanced Biotechnology

Southern University of Science and Technology

Member, National Academy of Sciences

A pioneer in plant stress biology. He discovered many of the key genes and signaling pathways (such as the SOS pathway) that allow plants to survive salt, drought, and cold. He is also a leader in plant epigenetics and DNA methylation.

# Recent Alumni

Summarized below is the groundbreaking research of three recent LSRF alumni who have established independent laboratories and developed vigorous and impactful research programs.

**Priya Rajasethupathy**  
(LSRF fellow 2013-2017)  
**Jonathan Nelson Family Associate Professor, Rockefeller University**

The Rajasethupathy lab explores the dynamic and distributed nature of memory from inception to long-term stabilization. Using memory tasks and genetically diverse outbred mice, the Rajasethupathy lab has identified a single genetic locus of large effect that codes for an orphan G-protein coupled receptor. Building on this work, the lab has established a previously unappreciated role for the thalamus in memory stabilization.

Terceros A, Chen C, Harada Y, Eilers T, Gebremedhin M, Hamard PJ, Koche R, Sharma R, Rajasethupathy P. (2026) Thalamocortical transcriptional gates coordinate memory stabilization. *Nature* 649:1254-1263.

Toader AC, Regalado JM, Li YR, Terceros A, Yadav N, Kumar S, Satow S, Hollunder F, Bonito-Oliva A, Rajasethupathy P. (2023) Anteromedial thalamus gates the selection and stabilization of long-term memories. *Cell* 186:1369-1381.

Yadav N, Noble C, Niemeyer JE, Terceros A, Victor J, Liston C, Rajasethupathy P. (2022) Prefrontal feature representations drive memory recall. *Nature* 608:153-160.

Hsiao K, Noble C, Pitman W, Yadav N, Kumar S, Keele GR, Terceros A, Kanke M, Conniff T, Cheleuitte-Nieves C, Tolwani R, Sethupathy P, Rajasethupathy P. (2020) A Thalamic Orphan Receptor Drives Variability in Short-Term Memory. *Cell* 183:522-536.

**Dipti Nayak (LSRF fellow 2015-2017)**  
**Assistant Professor**  
**Molecular and Cell Biology**  
**University of California, Berkeley**

The Dipti laboratory studies Archaea, the least studied of the three major groups of free-living organisms on Earth. The Dipti laboratory has recently developed high-throughput CRISPR-Cas mediated genome editing tools for facile and rapid genetic manipulation of Archeal methanogens, thus far the first application of Cas9-mediated genome editing in the Archaea. The lab is using these approaches to explore questions of gene regulation, signaling with host organisms, and metabolism.

Medina Ferrer F, Nayak DD. (2025) An archaeal transcription factor bridges prokaryotic and eukaryotic regulatory paradigms. *Cell* 188:7366-7377.

Gropp J, Bill M, Lloyd MK, Stein RA, Nayak DD, Stolper DA. (2025) Modulation of methyl-coenzyme M reductase expression alters the isotopic composition of microbial methane. *Science* 389:711-715.

Shalvarjian KE, Chadwick GL, Pérez PI, Woods PH, Orphan VJ, Nayak DD. (2025) Methanogenic archaea encoding Pyrrolysine maintain ambiguous amber codon usage. *Proc Natl Acad Sci USA* 122:e2517473122.

Gupta D, Shalvarjian KE, Nayak DD. (2022) An Archaea-specific c-type cytochrome maturation machinery is crucial for methanogenesis in *Methanosarcina acetivorans*. *Elife* 11:e76970.

**Nicholas Bellono (LSRF Fellow 2017-2019)**  
**Associate Professor**  
**Molecular and Cellular Biology**  
**Harvard University**

The Bellono laboratory studies how organisms adapt to their ecological or behavioral niche, focusing on specialized, unconventional systems that reveal fundamental concepts of signal transduction, ion channel biophysics, and evolution. The Bellono laboratory discovered the molecular basis of the chemosensory system used by cephalopods (e.g., on the underside of an octopus's tentacles). Most recently, the lab has discovered that flying beetles use heat-sensitive ion channels to detect infra-red light produced during precisely timed periods of nocturnal heat production from the plant species that they pollinate.

Valencia-Montoya WA, Liénard MA, Rosser N, Calonje M, Salzman S, Tsai CC, Yu N, Carlson JR, Cogni R, Pierce NE, Bellono NW. (2025) Infrared radiation is an ancient pollination signal. *Science* 390:1164-1170.

Allard CAH, Herbert AL, Krueger SP, Liang Q, Walsh BL, Rhyne AL, Gourlay AN, Seminara A, Baldwin MW, Kingsley DM, Bellono NW. (2024) Evolution of novel sensory organs in fish with legs. *Curr Biol* 34:4349-4356.

Allard CAH, Kang G, Kim JJ, Valencia-Montoya WA, Hibbs RE, Bellono NW. (2023) Structural basis of sensory receptor evolution in octopus. *Nature* 616:373-377.

van Giesen L, Kilian PB, Allard CAH, Bellono NW. (2020) Molecular Basis of Chemotactile Sensation in Octopus. *Cell* 183:594-604.

# *In Our Fellows' Own Words...*

**Jorge Almagro Santiago, PhD (LSRF class of 2023):** "LSRF gave me the means and the freedom to pursue a bold project that combines biophysics, neuroscience and cancer biology which other funding entities would consider too unconventional to fund. Their dedication to support out-of-the-box research makes LSRF fellows and alumni a unique family of creative researchers who are making a difference in life sciences."

**Samhita Banavar, PhD (LSRF class of 2023):** "I will be eternally grateful for my LSRF fellowship, which allowed me to take a truly independent path in my research."

**Kate Baumler, PhD (LSRF class of 2025):** "The LSRF Fellowship has provided the opportunity to pursue research that excites me and to gain experience in grant management, which helps me look towards my future career with confidence knowing that I am practicing critical skills."

**Karishma Bisht, PhD (LSRF class of 2023):** "The LSRF fellowship has shaped my path by surrounding me with a generous scientific community and enabling me to explore how temperature affects viral behavior, work I simply couldn't have pursued without its support."

**Joël Bloch, PhD (LSRF class of 2023):** "The LSRF fellowship provided the independence and stability required to pursue a high-risk, long-term basic science research project."

**Jack Bowler, PhD (LSRF class of 2024):** "Since becoming an LSRF Fellow, the support has meaningfully reduced funding related stress, expanded my ability to share and learn at conferences, and, through the annual LSRF meeting, encouraged conversations across life sciences disciplines that have broadened my perspective on my own work in neuroscience."

**Brian Carrick, PhD (LSRF class of 2025):** "The LSRF Fellowship has given me the intellectual freedom and stability to pursue ambitious, high-risk research questions that I would not otherwise have been able to explore at this stage of my career."

**John Alan Ciemniecki, PhD (LSRF class of 2025):** "Beyond allowing me to focus exclusively on my own research passion, LSRF's support fosters the creative freedom and risk-taking capacity that I hope will change minds and initiate consequential fields of study; generous support of basic science has historically had this effect within biology, and to my knowledge, few organizations recognize this principle as well as LSRF."

**Karen Cunningham, PhD (LSRF class of 2024):** "I am incredibly grateful to LSRF for this funding - which is especially impactful given that our lab is quite young - as well as for the opportunity to engage with a group of scientists who are working on such an inspiring range of novel, creative, and important projects."

**Lachlan Deimel, PhD (LSRF class of 2025):** "The LSRF fellowship was pivotal in accelerating my transition to research independence by supporting bold, mechanistic work that now defines my scientific program."

**Yaara Finkel, PhD (LSRF class of 2025):** "The support from LSRF came at a critical moment in my career and provided the resources and stability needed to pursue ambitious research rigorously and without compromise."

**Changhao He, PhD (LSRF class of 2024):** "A vibrant research and career community has connected me with outstanding mentors and alumni and fostered lasting professional connections."

**Tyler Hill, PhD (LSRF class of 2025):** "The LSRF fellowship has positively impacted my career through providing funding stability in uncertain times and facilitating new connections with a peer group of early-career researchers."

**Jason P. Johansen-Leete, PhD (LSRF class of 2025):** "The Life Sciences Research Foundation Postdoctoral Fellowship has provided me with the freedom and support to conduct impactful research at a world-class institution, enabling me to explore and develop technically challenging and innovative approaches to fundamental biological questions."

# *In Our Fellows' Own Words...*

**Sharon Kaisari, PhD (Class of 2023):** "The LSRF fellowship set in motion a ripple effect that shaped every dimension of my scientific life- from a single lab bench to a nationwide scientific family- showing me that home in science isn't about geography, but about the people who believe in your potential."

**Nicholas George Karavolias, PhD (LSRF class of 2025):** "LSRF has empowered me to pursue a bold research program from which I can build an ambitious career."

**Yoonji Kim, PhD (LSRF class of 2025):** "I am grateful for the LSRF's generosity in supporting my independent, interdisciplinary research, which has allowed me to ask and pursue bold questions in biology!"

**Unghwi Lee, PhD (LSRF class of 2024):** "I am deeply honored to be part of the LSRF fellowship, which has been a steadfast supporter of my early postdoc career, providing not only the foundation to grow beyond the bench into a world-class scientist but also the invaluable community connections that have elevated my perspective on leading scientific progress to an entirely new level."

**Miao Liu, PhD (LSRF class of 2025):** "The LSRF fellowship provides me with the intellectual independence to pursue fundamental questions in cancer biology, laying an essential foundation for my development as an independent investigator."

**Ryan Moreira, PhD (LSRF class of 2023):** "With the support of LSRF, I have the opportunity to pursue my scientific curiosity without barriers."

**Christopher Nardone, PhD (LSRF class of 2025):** "The LSRF Fellowship provided the scientific independence and credibility that were pivotal in shaping my transition to an independent research career."

**Dinh Thanh Nguyen, PhD (LSRF class of 2025):** "The support from LSRF and HHMI has driven my path to research independence by providing stable funding, resources, and mentorship for me to pursue ambitious ideas and build the foundation for the next stage of my academic career."

**Sang Woo Park, PhD (LSRF class of 2024):** "The LSRF Fellowship gave me the intellectual freedom to pursue ideas I am deeply passionate about, providing the early-career support needed to establish my research direction in infectious disease modeling and to transition confidently into a faculty position."

**Ethan Perets, PhD (LSRF class of 2025):** "LSRF gave me the resources I needed to integrate cutting-edge technologies into my research and the freedom that I needed to bridge disciplines, including neuroimmunology and the biology of aging. No matter where I find myself in the world, encountering another LSRF fellow or alumnus immediately establishes a connection that cuts across generations and geographies and, without fail, leads to an exciting exchange of scientific ideas."

**Diego Pacheco Pinedo, PhD (LSRF class of 2023):** "For me, as a first-generation and international scientist, the LSRF Fellowship has been transformative - providing the freedom, support, and community to build my independent research program and accelerate my career in neuroscience."

**Jiaxuan Qi, PhD (LSRF class of 2025):** "The LSRF Fellowship has profoundly shaped my career by providing the independence, mentorship, and resources needed to grow into an intellectually confident and creative scientist."

**Lijun Qi, PhD (LSRF class of 2025):** "The LSRF fellowship was very important in shaping my career by providing the independence and resources that allowed me to pursue high risk, mechanism driven research and establish my scientific direction as an independent investigator."

**Isobel Ronai, PhD (LSRF class of 2023):** "My LSRF fellowship has been instrumental in advancing my mission to reduce suffering from tick-associated diseases globally, by enabling me to investigate the fundamental biology of ticks."

**Dayeon Shon, PhD (LSRF class of 2024):** "The LSRF fellowship gave me the freedom to pursue bold, high-risk ideas early in my career and it helped build a strong foundation for my growth as an independent scientist."

## *In Our Fellows' Own Words...*

**Daphne Siciliani, PhD (LSRF class of 2025):** “The LSRF fellowship gave me the freedom, confidence, and sense of community that fundamentally shaped my growth as a young scholar and supported my continued pursuit of a research career.”

**Jacob Steenwyk, PhD (LSRF class of 2023):** “The LSRF Fellowship gave me the intellectual freedom, mentorship, and community support to pursue a breadth and depth of research that have been foundational to my development as a scientist.”

**Sherzod Tokamov, PhD (LSRF class of 2025):** “The LSRF provided me with financial and moral support to pursue my ambitious research objectives with the confidence and independence that every scientist should have.”

**Erik Toraason, PhD (LSRF class of 2025):** “The LSRF fellowship has transformed my career trajectory not only by financially supporting my postdoctoral research, but also by connecting me with a vibrant community of scientists within LSRF, my sponsor, and previous LSRF fellows who are now faculty.”

**Renée Wang, PhD (LSRF class of 2025):** “Receiving the LSRF Fellowship has greatly benefitted my career - not only does it allow me to continue my research for another three years; it has also connected me to a vast network of other talented postdocs who will be my colleagues in the future.”

**Ziyi Zhang, PhD (LSRF class of 2024):** “The LSRF Fellowship has allowed me to take on challenging fundamental research and grow with confidence as an independent scientist, and I am truly grateful for the support.”

