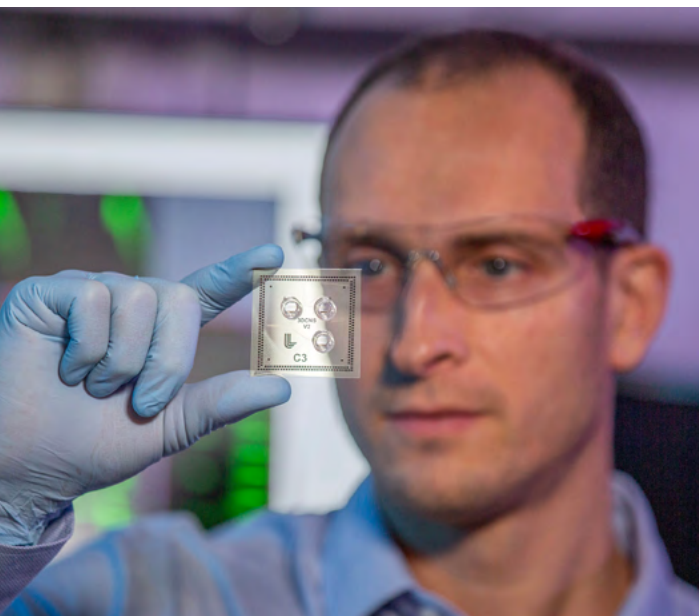


2021 ANNUAL REPORT



Livermore Lab
FOUNDATION

Building our Foundation

Key Milestones



2017 2018 2019 2020 2021

- Hosted first STEM program
 - » [Girls Who Code one-day workshop at LLNL](#)
- Hosted first public event
 - » [High School Internship Program](#)
 - » [High Energy Density Science \(HEDS\) Fellowships](#)
 - » [LLNL Summer Student Poster Symposium](#)
- Launched first research initiatives in ALS and Climate
 - Supported first full-year undergraduate fellowship (CSUEB)
 - Hired Executive Director
- Expanded climate research portfolio with publication of LLNL seminal report *Getting to Neutral*
 - Co-hosted ALS research symposium to explore leveraging Lab capabilities at scale
 - Established UC Merced fellowship program
 - Developed virtual STEM programs
 - » [Ask a Scientist](#)
 - » [Girls Who Code - BIG](#)
- Launched Carbon Cleanup Initiative and national Carbon Fellows program
 - Expanded ALS research focus to full spectrum of neurodegenerative diseases
 - Added new partners to LLF's growing STEM portfolio (Las Positas College, SMASH Rising)
 - Established first legacy funds
 - » [Kim Cupps Memorial STEM Fellowship Fund](#)
 - » [William B. Shuler Fund for Neurodegenerative Research](#)
 - Established board-designated endowment to provide for LLF's long-term financial sustainability

About the Cover

Cover photos (clockwise, left to right): LLNL researcher with the Lab's brain-on-a-chip device (photo by Julie Russell/LLNL); Livermore High School students involved in LLF's 'Climate in the Classroom' pilot; image from LLF's Carbon Cleanup Initiative website, launched in 2021.

A Year to Acknowledge, Assess, and Aspire to Greater Impact

The Livermore Lab Foundation observed an important milestone in 2021 - our five year anniversary, marking a strong and impactful commitment to advancing science, innovation and STEM activities at Lawrence Livermore National Lab. We began in 2016 with a singular focus - to attract philanthropic investments and unique public-private partnerships that could enhance the art of the possible, catalyze new ideas and build a more diverse and inclusive STEM workforce. We're proud of what's transpired.

Our anniversary year prompted us to reflect on our progress to date as we consider our next phase. Last summer we conducted a strategic listening tour, interviewing more than 50 internal and external stakeholders. Their feedback is now helping us set a deliberate and sustainable course for 2022 and beyond. Notably:

Growing Our STEM Fellowships & Partnerships

We're committed to working with the myriad of education and outreach partners in the larger STEM ecosystem, serving as a bridge to Lab opportunities. In 2022, we'll expand the number of exceptional student research and mentorship experiences - capitalizing on LLNL's multidisciplinary team science programs and commitment to cultivating future STEM leaders.

Strengthening Our Climate Contributions & Connections

Climate resilience is one of the most pressing issues of our time - real progress will require effective collaboration among academic, government, industrial, philanthropic, and community partners. One of our most visible projects, the Carbon Cleanup Initiative, is facilitating and extending the Lab's uniquely qualified and committed role in collective efforts to achieve carbon neutrality throughout California and beyond.

Expanding Our Neurodegenerative Disease Research Focus

Our early investments in ALS studies are yielding important insights for a range of brain disorders and diseases (including Alzheimer's, multiple sclerosis, and Parkinson's). We are broadening our portfolio to enable more academic and clinical collaborations where LLF's resources and the Lab's expertise can accelerate progress and touch more lives.



These are just a few of the promising opportunities for the Livermore Lab Foundation in the years ahead, with LLNL's science discovery and research excellence guiding the way. Thank you for taking the time to learn more about our impact. We wish you the very best in 2022!

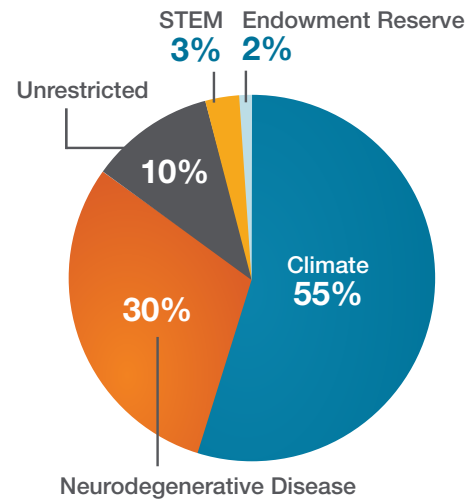
Sally Allen

Sally Allen, Executive Director

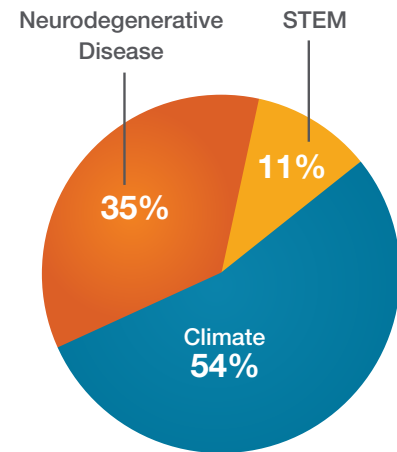
Impact by the Numbers

In our first five years, the Livermore Lab Foundation raised nearly \$3-million from our organizational and philanthropic partners, including generous gifts from our growing community of individual donors. Our affiliation with the University of California provides critical operating support that enables all contributions to directly support students, programs, and research initiatives. In 2021, we established a new board-designated endowment to begin building a reserve to provide for the Foundation's long-term financial sustainability.

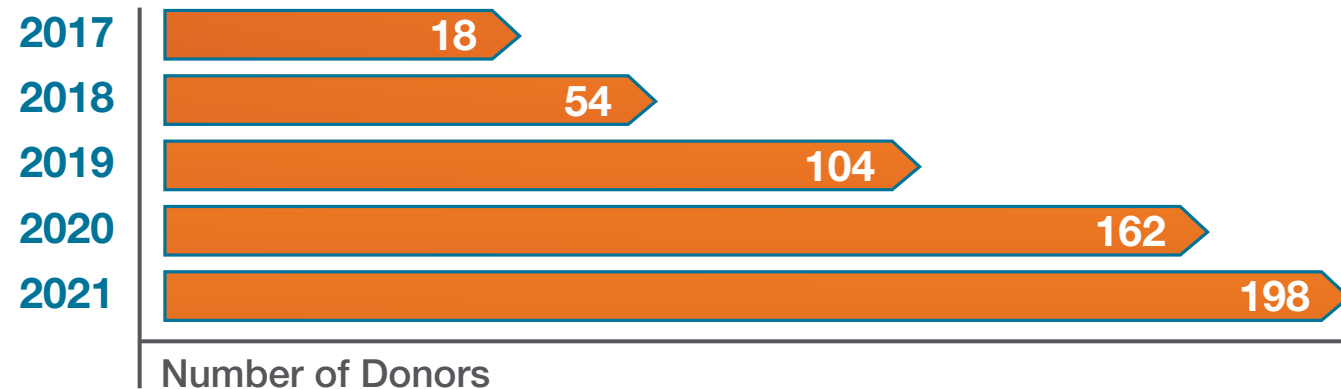
Total Funds Raised Since 2016:
\$2,860,000



Total Program Expenditures Since 2016:
\$2,290,000



Our Growing Base of Support



A Dynamic Partnership

Philanthropy Supports Science Solutions



Established in 1952, Lawrence Livermore National Laboratory (LLNL) applies science and technology to make the world a safer place. LLNL takes the tools that grew out of its nuclear mission to address some of society's greatest challenges from cybersecurity to climate resilience, interacting broadly with the scientific community. The Foundation serves as an enabler and ally, providing a pathway for philanthropy to leverage that expertise for broader societal benefit.

As LLNL's premier philanthropic partner, LLF works closely with LLNL to translate innovation into impact by:

- » Amplifying the societal impact of the Lab's R&D via philanthropic investments in its unique assets
- » Facilitating new modes of public/private collaboration with philanthropy, industry and academia
- » Advancing the Lab's science & technology capabilities with compelling research to address complex challenges
- » Encouraging a more diverse and inclusive STEM workforce



"It is a privilege to continue my support, through the Foundation, to the Lab's incredible staff, and help them stretch their talents in important directions."

— Bill Goldstein, Former Director,
 Lawrence Livermore National Laboratory

Empowering the Next Generation of STEM Leaders

Since our inception, LLF has worked closely with our colleagues at Lawrence Livermore National Lab to support unique educational and professional STEM experiences for high school through postdoctoral students. With a special focus on students historically excluded from many STEM disciplines, LLF connects young people with the Lab's world-class innovation, technology, and research capabilities through meaningful hands-on learning experiences and fellowships. Working closely with nationally recognized Lab mentors on research projects with real-world applications, our students gain exposure to opportunities that position them for continued learning and success in their chosen STEM fields.



In 2021, LLF established the [Kim Cupps Memorial STEM Fellowship Fund](#), partnering with the Pedrozzi Foundation and the family of Kim Cupps to honor [Kim's life and legacy at LLNL](#). During her 29-year career, Kim particularly enjoyed the opportunity to mentor many talented individuals she worked with, especially those early in their careers. Our dedicated legacy fund supports paid summer internships at LLNL for recipients of the Pedrozzi Foundation's Kim Cupps Memorial STEM Scholarship when he or she is a rising undergraduate junior or senior.

[Learn More](#)



Our Growing STEM Portfolio

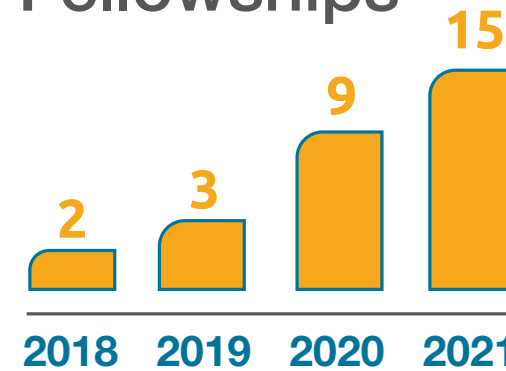
Our STEM programs are made possible with the strong support of our partners, both inside and outside of LLNL. In 2021, we continued our collaborations with Livermore Valley Joint Unified School District and UC Merced, while building new connections with Las Positas College, the Pedrozzi Foundation, and SMASH Rising. We're committed to contributing to the Tri-Valley's larger STEM ecosystem by providing one-of-a-kind opportunities to pursue science in the national interest at LLNL.



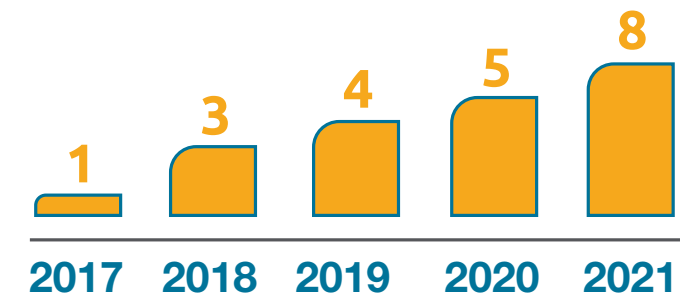
"Over the past five years, LLF has opened many doors to education and research. They've helped build the future scientists and engineers who will lead LLNL missions."

— David Rakestraw, Senior Science Advisor & STEM Mentor
Lawrence Livermore National Laboratory

Fellowships

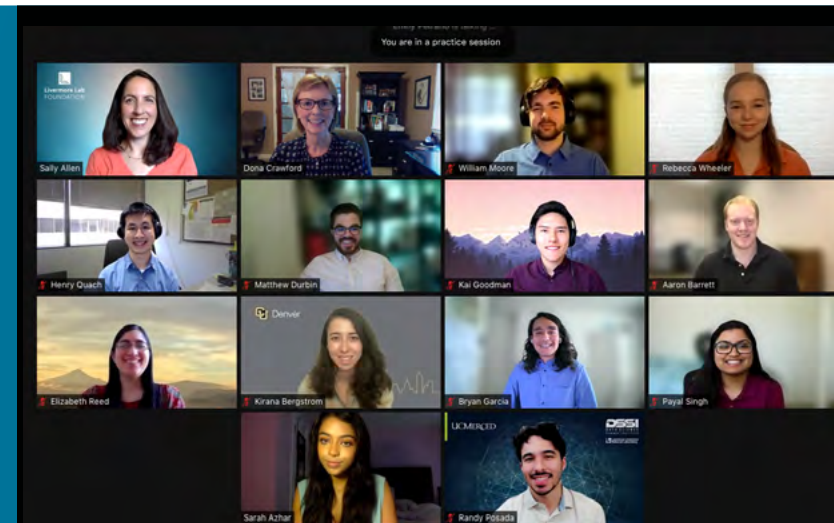


STEM Programs



2021 Programs:

- Carbon Cleanup Initiative Fellows
- High Energy Density Science Fellows
- High School Summer STEM Workshop
- Kim Cupps STEM Fellows
- Las Positas College Fellow
- SMASH Rising Partnership
- Summer SLAM - Special Edition
- UC Merced Fellows



Our Future STEM Leaders

2021 Fellows & Interns



Yaye Hamidou Badjo
Florida A&M University



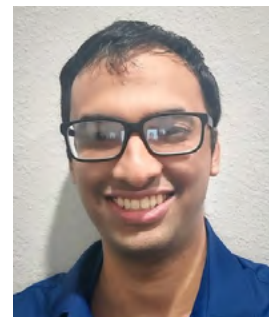
Derrick Boston, III
Howard University



Jerry Clark
Florida A&M University



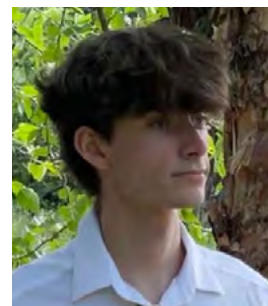
Alexis Diaz
UC Berkeley



Andrew George
University of Houston



Brooklyn James
UC Merced



Avery Kempton
Las Positas College



Darry'elle Lee
UC Irvine



Rohan Mahnot
Columbia University



Ouyanatu Maina
Amherst College



Oscar Matousek
UC Berkeley



Randy Posada
UC Merced



Jason Van Tuinen
UC Merced



Melianna Ulfah
University of Texas at Austin



Mercedes Vasquez
UC Berkeley

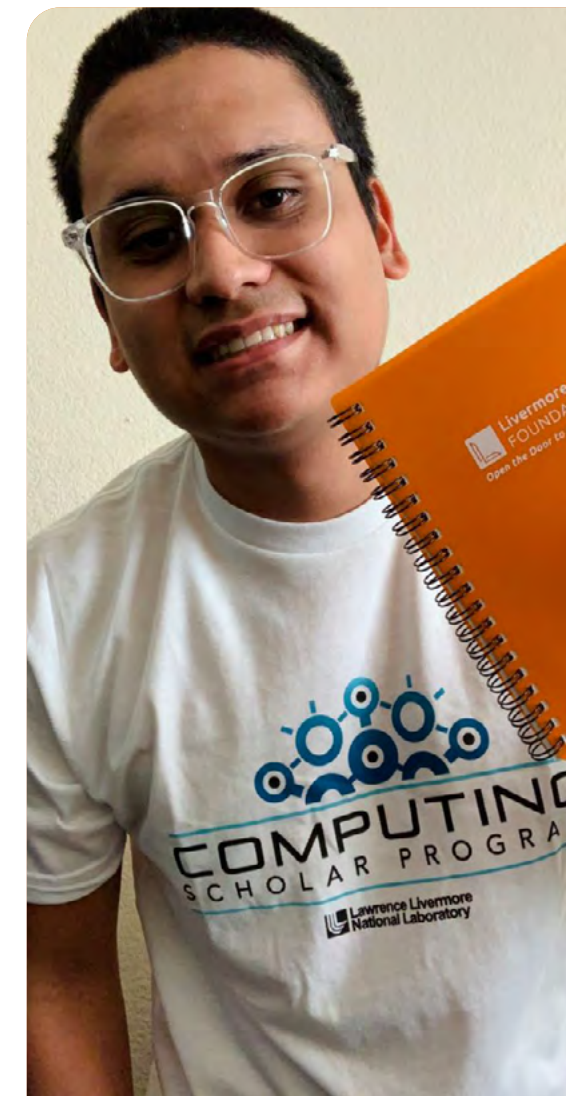
Spotlight: Jose Garcia-Esparza, UC Merced Fellow

In 2020, LLF partnered with UC Merced and LLNL's Data Science Institute to establish a year-long fellowship program for rising undergraduate seniors seeking to advance their educational and professional STEM goals. Scholar Jose Garcia-Esparza was one of two students selected for LLF's inaugural UC Merced Fellowship during the 2020-21 academic year. Jose shares his experience below:

"Growing up in a low-income, single parent, Hispanic household, and as a first-generation college student, I faced several difficulties. Not having educated mentors or financial resources meant at times I was making decisions without guidance, or prioritizing hours at work over studying because I needed the income. The LLF fellowship set me up for success in the field of Computer Science. The skills, wisdom, and connections I made will follow me forever. Working under the bright minds of LLNL is what gave me the inspiration and confidence I needed to pursue graduate school."

"To the LLF community of supporters, thank you. This fellowship was a tremendous blessing which allowed me to drop the multiple jobs I had to have as an undergraduate. I was able to prioritize my mental health, academics, and the future I envisioned for myself. This support, along with the Lab experience, had a snowball effect, which allowed me to attain a fellowship from the [National GEM Consortium](#), admittance to graduate school at the University of Southern California, and hopefully a future job at LLNL."

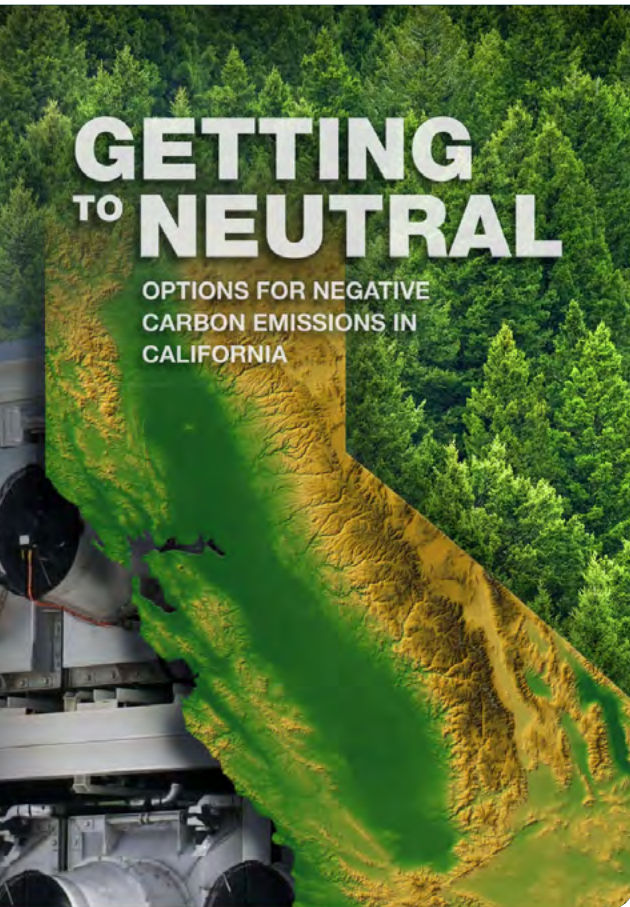
Jose graduated from UC Merced in May 2021 with a B.S. in Computer Science and Engineering. In summer 2022, he plans to return for his third internship at LLNL, working on polymer data collection and property prediction.



"Academic partnerships and student opportunities supported by LLF are a critical part of LLNL's commitment to diversity, equity & inclusion, as well as our long-term workforce development goals."

— Marisol Gamboa, Computing Workforce Manager
Lawrence Livermore National Laboratory

Accelerating Climate Resilience



Thanks to visionary support from [The Clean and Sustainable Energy Fund \(CASE\)](#), the Foundation was able to launch [The Carbon Cleanup Initiative \(CCI\)](#) in Fall 2021.

This science toolkit features a website and targeted classroom lessons designed to serve as a relevant, public resource on climate change, carbon neutrality and mitigation. It specifically follows the recommendations outlined in [Getting to Neutral](#), LLNL's 2020 seminal report on how California can achieve carbon neutrality by 2045.

"We are proud to partner with Livermore on the execution of the Carbon Cleanup Initiative. Capturing CO₂ is critical to our future. This science tool kit sets the stage for greater understanding of the possible solutions," said Renze Hoeksema, CASE Fund president.



"Today's climate reality necessitates an approach that utilizes all available tools. We need to deploy all possible solutions."

— George Peridas, Director, Carbon Management Partnerships
Lawrence Livermore National Laboratory

[Learn More](#)



Spotlight: Climate in the Classroom

As part of the project, academic partners at the San Joaquin County Office of Education created more than 14 hours of Next Generation Science Standards (NGSS) based [experiential lessons](#) for high school and college students. CCI student fellows from UC Merced and University of Texas provided research for the project.

In Fall 2021, 30 educators were selected in Kern County, the San Joaquin Delta and greater Bay Area to share the lessons with their students. Preliminary feedback from both students and educators has been overwhelmingly positive. The Foundation hopes to expand the lessons, complementing academic guided pathways, internship and workforce development opportunities in 2022.



"My students were very invested in finding solutions. The real-world applications of the lessons allowed them to see the problem first hand."

— Joey Rodriguez, Biology & Conceptual Physics Teacher
Livermore High School

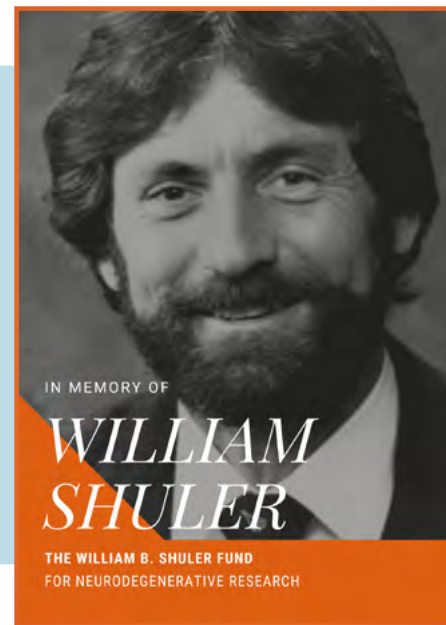
What's Next?

LLF is engaging leaders and educators both inside the Lab and across California to amplify the impact of the groundbreaking work of LLNL's Carbon Initiative team. In 2022, we're extending our reach by launching two new partnerships (with Climate Now and Kern Community College District) to help bring Livermore's world-class science expertise to even more classrooms and communities throughout the State and beyond. Stay tuned!

Advancing the Fight Against Neurodegenerative Disease

Since 2019, LLF has sought to leverage LLNL's computing, bioengineering, and biosciences core competencies to accelerate collective efforts to diagnose, understand, and treat neurodegenerative diseases like Amyotrophic Lateral Sclerosis (ALS), Alzheimer's, Multiple Sclerosis, and Parkinson's. With support from partners like the ALS CURE Project and our generous donor community, we've seeded nearly \$1-million in early-stage research projects focused on biomarker identification, disease mechanisms, genetic influences, and therapeutic interventions.

LLF's early investments in ALS-related projects have yielded important insights into the many neurological diseases affecting a growing portion of our aging population.



In 2021, LLF established the [William B. Shuler Fund for Neurodegenerative Research](#), a restricted endowment designed to focus on the Lab's unique capabilities in neurodegenerative diseases. With our growing community of research partners and donors, we hope to leverage LLNL's exceptional biosciences expertise and data analytics to better understand disease progression and evaluate new treatment strategies. Bringing the Lab's world-class science and technology into the fight against these elusive and devastating diseases can advance research discovery and ultimately impact countless lives.

[Learn More](#)



Spotlight: Brain-on-a-Chip

In 2021, LLF added a new project to our portfolio involving LLNL's unique 3D "brain-on-a-chip" device, which enables scientists to study living brain cell cultures outside of the body. This technology can be used to predict the effects of exposure to toxins and test pharmaceutical drugs on the brain without the need for human or animal subjects.

With LLF support, Lab scientists are evaluating the applicability of this platform to help identify and assess ALS therapeutics and drug treatments. Because patients with ALS and other neurodegenerative diseases often present abnormal protein aggregation at a cellular level, researchers hope this in vitro model can be used to evaluate induced protein aggregation as a functional surrogate, exploring the ability to therapeutically prevent or even reverse disease progression. This powerful tool holds great promise to help accelerate the development of new ALS therapies.

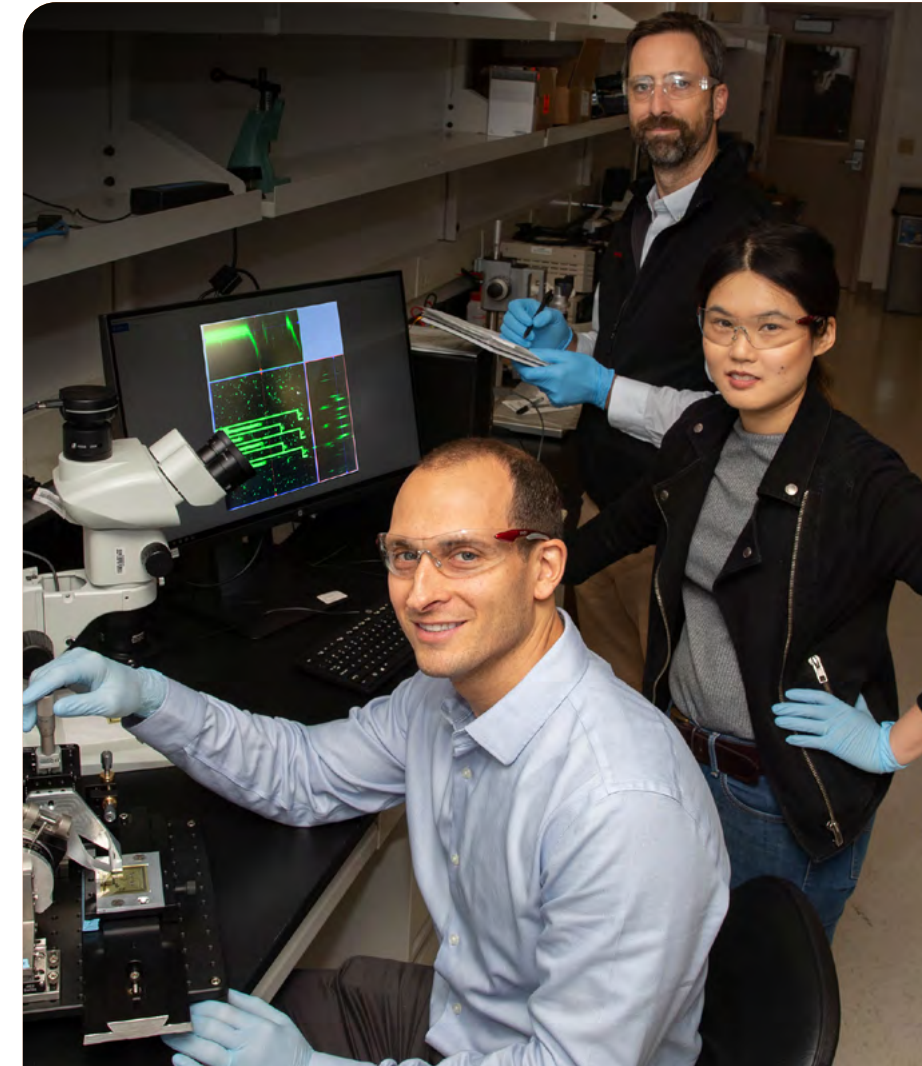


Photo by Julie Russell/LLNL

What's Next?

Through our continued partnership with the ALS CURE Project, the Foundation anticipates funding two new projects in 2022 to support innovative, international collaborations aimed at identifying the ALS disease progression mechanism. Together with partners in the United Kingdom and the Netherlands, lead researchers at LLNL will utilize the Lab's machine learning approaches and 3D recordings to model cellular and molecular processes affecting ALS patients. We're proud to help bring LLNL's unique tools into the collective fight against devastating brain diseases, and look forward to more progress in the years ahead.

Our Community

Donor contributions bring transformative research initiatives to life and enable young scholars to access LLNL mentors, facilities, and resources essential to their ultimate success as STEM leaders. We're grateful to work with the dedicated staff at LLNL, our partner organizations, and a growing circle of supporters who are enabling science solutions for a better tomorrow. You can join us in making an impact by providing a one-time or monthly gift, establishing a STEM fellowship, supporting LLF's endowment, or including the Foundation in your estate. Thanks to our strong community, we are 'opening the door to the future' together!

"Enhancing and growing our community is important to UNCLE. And supporting the Livermore Lab Foundation is part of our strong commitment to 'people helping people'."

HAROLD ROUNDTREE
President & CEO,
UNCLE Credit Union



"After thirty five years at LLNL, I can't think of a better way to give back than to support LLF. We are extremely honored to be able to play a small part in the advancement of research and science education through our donation."

AL RAMPONI
Retired, Chief of Staff
Lawrence Livermore National Lab



"I invest in science through the Livermore Lab Foundation to support the world-class innovation and research at LLNL that focuses on society's greatest challenges. Together, we are making the world a better place."

MIKE CARTER
LLF Board of Directors
Retired Program Director
Dept. of Defense Technology
Programs at LLNL



"We are fortunate to live in a community that advances science and engineering. The Foundation's exceptional programs engage young people, especially those in underrepresented populations, in STEM education and careers - with the goal of developing the next generation of scientists and engineers."

ANN WILLOUGHBY
Retired, Chief of Staff
University of California
Office of National Labs



LLF Leadership

Board of Directors:

Dona Crawford,
Board Chair, Former LLNL Associate Director of Computation

Greg Suski,
Board Secretary/Treasurer, Former LLNL Associate Deputy Director for Science & Technology

Catharine Baker,
Former Assemblymember (CA-16) and Special Counsel to Hoge Fenton Jones & Appel

Kim Budil,
Ex Officio Director, LLNL Director

Michael Carter,
Former LLNL Program Director for DoD Technology Programs

Brett Henrikson,
Chief of Staff & Director of National Laboratory Governance, UC Office of the President

Anantha Krishnan,
Senior Vice President, General Atomics and Former LLNL Associate Director of Engineering

Craig Leasure,
Vice President for National Laboratories

Emily Wu,
Senior Managing Director, First Republic Bank

Charlene Zettel,
Regent Emerita, UC Board of Regents and Former Assemblymember (CA-75)

Our Team:

Sally Allen, Executive Director

Emily Peirano, Development Associate

Susan Houghton, Communications Consultant and Carbon Cleanup Initiative Project Manager

Lori Taylor, Operations and Marketing Consultant

"I'm often asked why the Livermore Lab Foundation and LLNL are so important to me. My answer is simple. The science at the Lab gives us a better understanding of the world we live in. As co-founder of the Livermore Lab Foundation, I'm proud to pay it forward and support these achievements."

DONA L. CRAWFORD
LLF Co-Founder and Board Chair
Retired, Associate Director of Computation, LLNL



"I have been most impressed by the Foundation's incredible work in expanding STEM education access and climate research with the unique capability to collaborate with the Lawrence Livermore National Laboratory. I am proud to be a supporter of the Foundation."

EMILY WU
LLF Board of Directors & Senior Managing Director,
First Republic Bank



[Learn More](#)





Connect with us



www.livermorelabfoundation.org



925-453-9382



info@livermorelabfoundation.org



[Join our mailing list](#)

The Livermore Lab Foundation advances scientific knowledge and inspires the next generation of science and technology leaders by leveraging philanthropic investments in world-class research, education, and innovation at Lawrence Livermore National Laboratory.



Livermore Lab
FOUNDATION

© 2022 Livermore Lab Foundation.

The Livermore Lab Foundation is a 501(c)(3) nonprofit organization, EIN #81-2567763.