STRATEGIC PLAN

Livermore Lab FOUNDATION

JANUARY 2025

Foreword from the Executive Director

Sally Allen
Executive Director

Since its inception in 2016, the Livermore Lab Foundation (LLF) has remained steadfast in our mission to advance science and inspire future scientists and engineers at Lawrence Livermore National Laboratory (LLNL).

As a key philanthropic partner, LLF works collaboratively with our Lab colleagues to facilitate investments in LLNL's world-class science and technology to support cutting-edge research, student fellowships, education and community engagement to amplify the Lab's reach and impact.

This strategic plan refreshes a previous framework set in LLF's earlier stages. It aims to leverage the lessons and relationships we have gained over the past eight years to maximize our impact and remain agile in our response to emerging opportunities. Through this process, we have affirmed our strategic focus areas, encouraged by our progress to date and feedback from our donors and partners. The priorities and goals outlined here are intended to guide the organization toward even greater outcomes over the next several years as a national lab-affiliated foundation, focused on the opportunities presented by LLNL's science and technology excellence, an expanded constellation of research and educational partners, and a changing philanthropic landscape. Recognizing the dynamic and fast-evolving nature of the science driving our focus areas, we intend to review progress annually and make adjustments where needed.

The role of philanthropy in advancing scientific innovation – especially at a national laboratory – has gained increasing recognition in recent years. The establishment of several new national lab-affiliated foundations, as well as the Department of Energy's Foundation for Energy Security and Innovation (FESI), acknowledges that philanthropic partners can leverage and complement public investments in research, bridge gaps across the research, development, demonstration, and deployment (RDD&D) continuum, and engage the broader community in these efforts. LLF is honored to work alongside LLNL to pursue opportunities to apply the Lab's transformative work beyond its core national security mission, to address some of the world's greatest challenges in energy, climate resilience, healthcare, and more.

Our sincere thanks to the members of the LLF Board of Directors, staff, and the broader Foundation community for your valuable contributions to this document. We also remain indebted to our colleagues at the University of California for their continued leadership and support of LLF's work.

We encourage all to join us in collective efforts to advance our mission. Please contact us at info@livermorelabfoundation.org with any questions or feedback.

About the Livermore Lab Foundation

Our Vision

A future fueled by transformative science and technology discoveries and unique research opportunities for the next generation of scientists and engineers.

Our Mission

To advance scientific knowledge and inspire the next generation of science and technology leaders by leveraging philanthropic investments in world-class research, education, and innovation at Lawrence Livermore National Laboratory (LLNL), a U.S. Department of Energy national security laboratory.

Core Values

- Collaboration
- Connection
- Innovation
- Inclusion

The Foundation was established in 2016 to:

- ***Amplify*** the societal impact of the Lab's research and development via philanthropic investments in its unique expertise and facilities;
- ***Facilitate*** new modes of collaboration and creative public/private partnerships with philanthropy, industry and academia;
- ***Advance*** the Lab's science and technology goals and capabilities via compelling new research opportunities that address big challenges;
- ***Encourage*** a more diverse and inclusive STEM workforce through unique fellowships and programs for students who might not otherwise connect with LLNL; and
- ***Accelerate*** the Lab's ability to transition ideas, innovations and capabilities to the private sector.

"The science at Lawrence Livermore National Laboratory 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,
Former LLNL Associate Director
of Computation

Strategic Focus Areas

LLF seeks to engage, cultivate, and inspire individuals and organizations to help us pursue breakthrough medical cures, promote clean energy solutions, encourage industry-creating advances in technology, enable future generations to pursue STEM careers, and more. LLF's work can impact these areas of national and global importance while also advancing science, technology, and engineering capabilities in areas of profound importance to LLNL's missions. The Foundation adds unique value by enabling new types of funding, partnerships and programs that amplify the impact of LLNL's cutting-edge research for the greater good.

We selected our focus areas based on a number of considerations. Most notably, they represent compelling research areas – aligned with LLNL's science and technology priorities and goals – that offer the greatest promise of leveraging the Lab's unique expertise and resources for broad public benefit. Other critical factors include the engagement of Lab champions and mentors, anticipated support from academic, industry and philanthropic partners, and the continued dedication of LLF's Board, staff, volunteers, and donor community.

The following focus areas guide the Foundation's strategic direction and programs:

Focus Area 1:
Advance the Understanding of Neurodegenerative Disease

Focus Area 2:
Accelerate Climate Resilience

Focus Area 3:
Catalyze Implementation of Fusion as a Clean Energy Source

Focus Area 4:
Inspire the Next Generation of Science and Technology Leaders

Focus Area 5:
Build Capacity to Ensure Long-Term Sustainability

"Public-private philanthropic partnerships are a large part of the open research ecosystem. The Livermore Lab Foundation serves as our bridge - opening the doors to science innovation and excellence for all."

Kimberly Budil
LLNL Director & LLF Board Director

Focus Area 1:
Advance the Understanding of Neurodegenerative Disease

Neurodegenerative disorders such as Alzheimer's, Parkinson's, Amyotrophic Lateral Sclerosis (ALS, or Lou Gehrig's Disease), and Multiple Sclerosis affect an increasing segment of our aging population. Such diseases occur when nerve cells in the brain or peripheral nervous system lose function over time and ultimately die. Although certain treatments may help relieve some of the physical or mental symptoms associated with neurodegenerative diseases and slow their progression, no cures currently exist.
Since 2019, LLF has leveraged LLNL's unique supercomputing, machine learning, brain-on-chip (BOC), and bioscience/bioinformatics capabilities to accelerate collective efforts to diagnose, understand, and treat neurodegenerative diseases. Our aim has been to develop a multi-year program focused on supporting efforts to find markers, track progression and evaluate treatments, with potential impacts on a spectrum of diseases. To date, we've funded early-stage projects involving multimodal data analytics of disease, and molecular simulations to support therapeutic interventions. Our portfolio of work has helped develop new strategies to interrogate neurological disease progression and intervention, while also providing an opportunity to engage future STEM leaders in the life sciences field.

Biology and neuroscience are more integrated in LLNL's mission space than ever before, underscored by LLNL's ongoing programs in computational design of therapeutics, application of neuronal experimental platforms, and high-performance computing dedicated to biological applications. With support from LLF, LLNL is committed to growing its footprint in neuroscience and to develop lasting partnerships with the broader neurodegenerative disease community to model disease, design new therapeutics, and evaluate treatments using its unique capabilities.

Goal

Advance the understanding of neurodegenerative disease to improve diagnoses and treatments.

Objectives

- Support the Lab's commitment to broaden its neurodegenerative disease research priorities and determine a role for philanthropic investments
- Facilitate greater access to datasets via expanded partnerships with UC, other university partners, and the Veteran's Administration to identify specific neurodegenerative disease signatures using computation and machine learning
- Identify research collaborators to tailor the brain-on-chip (BOC) platform as a tool for studying neurodegenerative disease

"I'm passionate about the public-private opportunities now emerging in science and LLF is a critical philanthropic partner. An example close to my heart is LLF being the facilitator for LLNL's world-class machine learning experts to work on solutions for neurodegenerative diseases."

Anup Singh

LLNL Principal Associate Director, Engineering

Focus Area 2:
Accelerate Climate Resilience

Climate change is the defining issue of our time. From shifting weather patterns that threaten food production, to rising sea levels that increase the risk of catastrophic flooding, the impacts of climate change are global in scope and unprecedented in scale. To keep temperature rise within 1.5 degrees C (2.7 degrees F) as outlined in the Paris Agreement and prevent the worst impacts of climate change, the world will need to reach net-zero carbon emissions by around midcentury, removing and storing as much carbon dioxide from the air as we put into the atmosphere. Climate resilience entails not only carbon removal, but also the development and deployment of new clean energy technologies and continued efforts to ensure the safety and security of our energy grid.

LLNL excels at studying and modeling the climate system, assessing the climate resilience of critical infrastructure, and developing climate change mitigation and adaptation strategies. Since funding the Lab's groundbreaking *Getting to Neutral* report in 2020, LLF has pursued strategies to leverage the Lab's demonstrated expertise in this domain to help accelerate a viable path toward achieving global climate goals. As a philanthropic and community partner, LLF is uniquely positioned to enable more research collaborations, increase public awareness and educational outreach, and engage students as Carbon Fellows to support LLNL's Carbon Initiative goals. We remain focused on working closely with LLNL to identify opportunities to build on progress in priority regions throughout California and beyond.

Goal

Accelerate climate resilience efforts to assist with the energy transformation at the local, state, and national levels.

Objectives

- Engage with philanthropic organizations to fund high-value LLNL studies, reports, technical assistance and community partnerships
- Serve as LLNL's community partner in priority regions, identifying needs and key stakeholders, making connections for LLNL scientists, and cultivating new relationships
- Secure new funding to develop and deploy educational resources and workforce development opportunities

"The Lab and the Foundation are at the forefront of some of California's most pressing issues - especially when it comes to climate change and carbon neutrality. Their technical expertise and insight are helping California identify a viable and just path forward."

Catharine Baker

Former California State Assemblymember, Director, UC Student & Policy Center & LLF Board Director

Focus Area 3:
Catalyze Implementation of Fusion as a Clean Energy Source

Fusion has the potential to provide a reliable, abundant, safe, and clean global energy source. Repeated achievement of fusion ignition at LLNL's National Ignition Facility (NIF) as part of the U.S. Department of Energy/National Nuclear Security Administration's Stockpile Stewardship Program has also established the fundamental scientific feasibility of laser-driven inertial confinement fusion as a path toward fusion energy, and set the scale toward a commercial fusion power plant. As home to the world's highest-energy laser, LLNL offers unparalleled facilities and expertise to help advance the nation's vision of commercial fusion energy.

Since the Lab's December 2022 fusion ignition milestone achievement, LLF has been working with LLNL to explore ways to promote greater public understanding of inertial fusion energy (IFE) and its potential to address national and global energy goals. Given California's likely role as a fusion leader in the U.S. (with over $750 million in annual investments among industry, the UC system, and national labs), LLF can support statewide engagement by hosting convenings, commissioning public opinion polls and related research, partnering with philanthropic, academic and industry stakeholders, providing student opportunities, and pursuing philanthropic investments in continued fusion research, outreach and education activities.

Goal

Catalyze understanding, awareness and investment in fusion to address global clean energy goals.

Objectives

- Educate the public and stakeholders on the potential of fusion energy
- Provide educational and training opportunities for the future fusion energy workforce, including LLF Fusion Fellowships for undergraduate and graduate students
- Facilitate and foster public/private partnerships for greater philanthropic investment in fusion research

"The Foundation can play an important role in facilitating the types of partnerships and philanthropic investments needed to support LLNL's fusion research and workforce goals. LLF's community and student engagement efforts are vital to accelerating progress toward sustainable fusion energy solutions."

John Edwards

LLNL Senior Advisor, Strategic Deterrence and Inertial Fusion Energy Institutional Initiative

Focus Area 4:
Inspire the Next Generation of Science and Technology Leaders

LLF is committed to 'opening the door' for future Science, Technology, Engineering and Math (STEM) leaders. The Foundation supports opportunities that connect aspiring scientists and engineers with LLNL's premier resources and mentors. Our STEM programs support undiscovered talent to foster the academic and professional journey of undergraduate and graduate students who are historically underrepresented in STEM fields, have low-income/financial need, are first-generation college students, and have not had a prior internship at LLNL. We typically place LLF Fellows with Lab teams engaged in our strategic research areas, to encourage ongoing collaboration.

Most LLF Fellowships include a 10-12 week paid summer internship at LLNL with dedicated mentors and access to Lab facilities and resources. We also support year-long student engagements when funding and Lab mentor availability allow. Each summer, our enriching LLF Fellows Week program facilitates connections, knowledge sharing, skill building and career development. As LLF Fellows, students become part of a cohort participating in a curated experience and forming a lasting network. Our program goes beyond building students' technical skills and exposure to world-class science; it seeks to empower our fellows to consider a rewarding and impactful STEM career, and contributes to the nation's critical science and technology workforce pipeline needed to solve issues of national and global importance.

Goal

Execute a robust fellowship program to inspire underrepresented STEM undergraduate and graduate student engagement with LLNL.

Objectives

- Create fellowship opportunities for students and academic partners aligned with LLF research areas and LLNL priorities
- Offer a curated Lab experience for students including career development, skills training and networking opportunities
- Cultivate a community of Lab mentors who embrace LLF's mission by promoting and enabling student research opportunities
- Build an active network of LLF Fellowship alumni

"As a steward of LLNL's great science, UC embraces LLF's mission to advance scientific research and inspire the next generation of scientists and engineers. Ensuring a robust future STEM workforce is a collective effort that requires contributions from a broad and diverse ecosystem of academic, government, industry, and philanthropic partners."

June Yu

Vice President of UC National Laboratories & LLF Board Director

Focus Area 5:
Build Capacity to Ensure Long-Term Sustainability

LLF understands the importance of enhancing our organizational capacity to ensure sustainable, impactful philanthropic support for LLNL. Our commitment is reflected in this strategic plan, designed to strengthen partnerships and secure resources for activities consistent with the Lab's science and technology priorities. Since its inception, LLF has benefited from financial and in-kind support from the University of California through an affiliation agreement with the UC Office of National Laboratories. This collaboration not only underscores UC's investment in the Foundation's mission, but also enables philanthropic contributions to directly support LLF's programs rather than administrative costs.

As we pursue a sustainable path forward for the Foundation, we are focused on expanding and diversifying resources and partnerships, and ensuring our operational efficiency and financial resilience to support impactful initiatives well into the future. As always, LLF's efforts are aligned closely with the Lab's broader goals and priorities, supporting its national security mission by fostering innovation, collaboration, and sustainable partnerships. By strengthening our organizational capacity, the Foundation not only ensures our own longevity, but also contributes to LLNL's ability to address complex national security challenges, ultimately advancing science and technology innovation for all.

Goal

Build organizational capacity and ensure long-term operational sustainability to advance LLF's mission.

Objectives

- Expand and diversify funding sources
- Pursue new strategic partnerships with organizations whose interests and activities help advance LLF's mission and priorities
- Strengthen LLF's alignment with LLNL and UC strategic priorities and plans
- Ensure efficient and effective internal operations and sound governance

"Great science and engineering can directly and immediately impact people's lives. Whether through its support of aspiring students, its medical research, or climate studies, LLF is bringing the unique power of the Lab to bear on some of today's highest priority scientific problems."

Bill Goldstein

Former LLNL Director &
Former LLF Board Director

"Our ability to handle today's pressing issues, from providing energy security, to curing illnesses, to living sustainably in a finite world, will require the innovations that arise from science. Science is a system for exploring, and for innovation. It can fuel our nation's economic growth. It can form a path for our young people in a competitive global marketplace. And it can fire our imagination."

— **Mariette DiChristina,**
Editor-in-Chief of Scientific American

7000 East Avenue, B661/L-794
Livermore, CA 94550

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

info@livermorelabfoundation.org
livermorelabfoundation.org