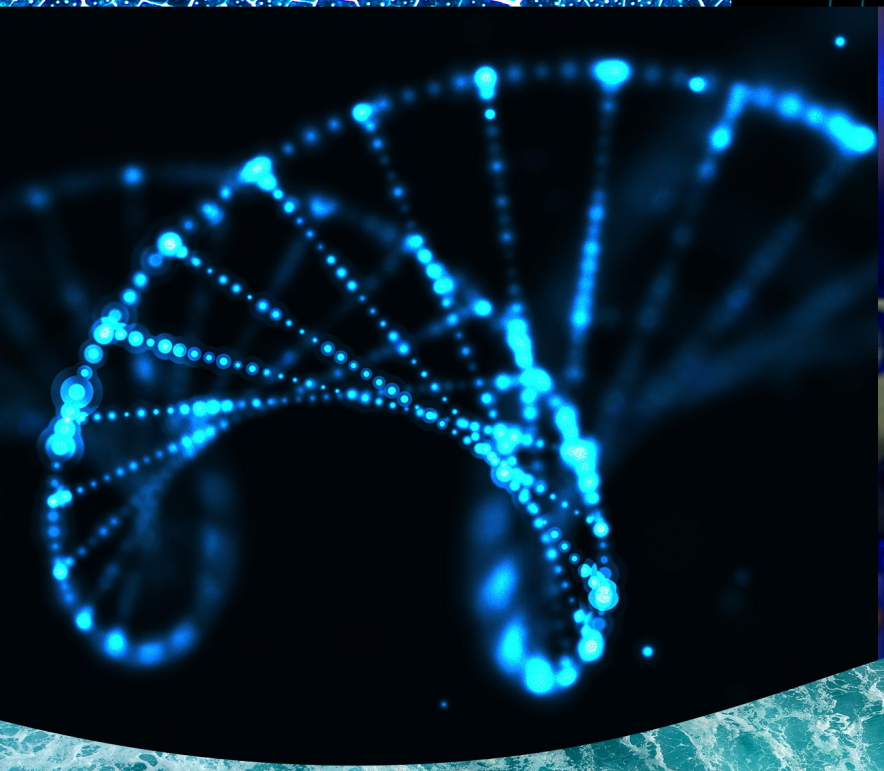
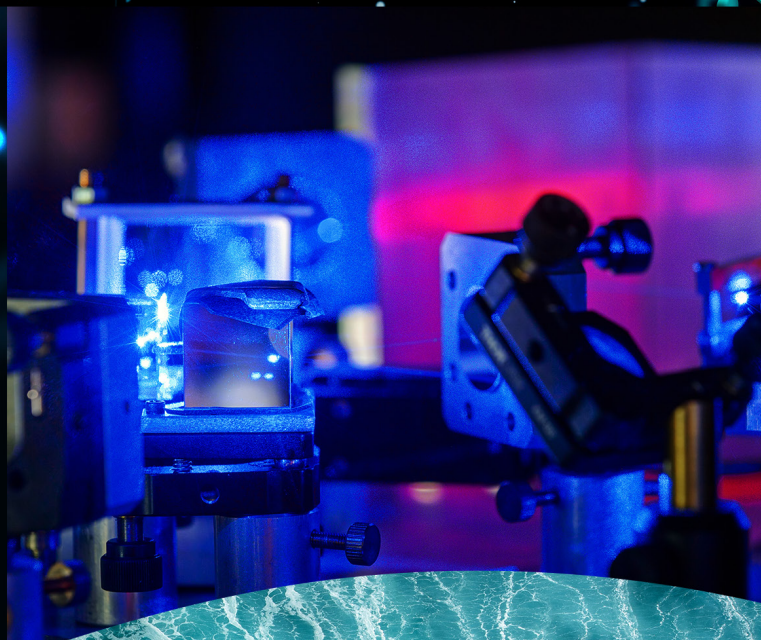
2024 Impact Report





Caltech Technology Transfer & Corporate Partnerships

COLLABORATION
INNOVATION
ENTREPRENEURSHIP

Caltech's Dynamic Collaborations with the Tech Industry

Caltech continues to strengthen its position as a leader in technological innovation through strategic partnerships with industry giants. These collaborations not only advance cutting-edge research but also provide invaluable opportunities for students and faculty.

Renewed Partnership with Amazon in Quantum Computing

Caltech has renewed its multi-year strategic partnership with Amazon, focusing on sponsored research and workforce development. The collaboration includes research on superconducting quantum circuits, error correction, and related areas. In marrying Caltech's scientific expertise with Amazon's resources, this partnership aims to advance quantum computing technologies while also addressing fundamental questions in quantum physics.

New Partnership with Meta on Augmented Reality Research

In an exciting new venture, Caltech has partnered with Meta to advance augmented reality (AR) research. This partnership includes the establishment of a state-of-the-art Meta lab on Caltech's campus, designed to foster close interaction between Caltech researchers and Meta scientists. The lab will serve as a hub for pioneering AR technologies that could revolutionize how we interact with the digital world.

First Annual Caltech-Broadcom Quantum Symposium

Highlighting its commitment to quantum science, Caltech recently hosted the first annual Caltech-Broadcom Quantum Symposium. This event marks the beginning of a five-year partnership with Broadcom, aimed at advancing quantum research and fostering collaboration among leading scientists in the field. The symposium provided a platform for sharing groundbreaking research and discussing the future of quantum technologies.

These partnerships underscore Caltech's dedication to driving innovation and maintaining strong ties with the tech industry, ensuring that our scientific and technological advancements are incorporated into the products and services of the future.

Introducing:
The Bill Gross Prize for Entrepreneurship

Commencing during the 2023-2024 school year, the Bill Gross Prize for Entrepreneurship opened with students submitting over 80 novel business ideas for the competition in its inaugural year.

Established from a gift from IdeaLab founder, entrepreneur, and Caltech alumnus and Trustee Bill Gross (BS ’81), the Prize aims to foster the entrepreneurial innovations of current Caltech students and provide a means by which to make their ideas a reality.

The competition clearly spoke to the entrepreneurial interest on campus. During the informational session for the Prize, held at the Caltech Innovation Center in November 2023, more than 50 students came to learn more about the competition, share ideas, and hear Gross speak. By the time the submission deadline came around in January 2024, OTTCP had received 81 entries for the competition, making it difficult for the Entrepreneurship Team to narrow them down. In the end, they chose 15 teams – eight undergraduate, seven graduate – to proceed to the finalist stage.

2024’s first place team, CAD.it, presenting to the judges

Each finalist team partook in an initial mentorship meeting with Mr. Gross himself, before OTTCP reached out to its global network to pair teams with an industry mentor in appropriate fields. Six industry mentors volunteered their time and expertise to help students hone their business models, identify their best target markets, and, of course, perfect their pitches in the two months leading up to the final competition.

OTTCP and Advancement and Alumni Relations (AAR) worked together to facilitate the competition itself, which took place at the Chen Building in April 2024. Three judges from the Caltech community – Ajay Kshatriya, partner at Wilson Hill Ventures; Amanda Cashin (PhD ‘06), advisor at Wilson Hill Ventures; and Dave Licata, president and CFO of TORL BioTherapeutics and executive chairman of 1200 Pharma – undertook the challenging task of deciding on the top three teams.

However, in a surprise for all finalists, sister firms Sunstone Management, Inc. and American Lending Center (ALC) contributed an additional donation of $100,000 to allow every finalist team in the inaugural competition to walk away with a prize of at least $10,000.

Since then, first place winner CAD.it has received further funding as a result of the competition. Second place winner Luria Health – originally named Chiron – went on to take part in the Timothy D. Ryan Summer Entrepreneurship Program, which third place winner String had participated in through OTTCP the year before.

The finalists with their prizes, Bill Gross, & Sunstone and ALC representatives

For those who missed out on attending the inaugural year’s event, not to worry – the Prize will be funding the competition for another three years: an exciting opportunity for the Caltech community to celebrate the innovation happening at the student level.

The Caltech Seed Fund

The Caltech Seed Fund invests in startups based on all areas of technology from Caltech and JPL. The investments follow research where strong comercialization opportunities exist. Current investments include:

Esperto Medical is a medical device company based on research from the Caltech lab of Yaser Abu-Mostafa, Caltech's Professor of Electrical Engineering and Computer Science. Esperto's Resonance Sonomanometry™ technology uses multiple frequency bands of sound to determine artery shape and resonant frequences, allowing for blood pressure to be measured by means of arterial tension. This technology offers a non-invasive update to an essential medical task, providing continuous vital sign monitoring with improved accuracy. Esperto launched with CEO Aditya Rajagopal (BS '08, MS '10, PhD '13), with seed funding from the Caltech Seed Fund, along with other venture investors.

Persperity Health is a women's health device company from the Caltech lab of Wei Gao, Caltech's Professor of Medical Engineering; Investigator, Heritage Medical Research Institute; and Ronald and JoAnne Willens Scholar. Key to Persperity's wearable medical device is their patented nanobiosensor, which is engineered to have subpicomolar sensitivity to provide highly precise results. Combining microfluidic sweat sampling with immediate electrochemical monitoring, the device non-invasively delivers its users with continuous and real-time data on their hormone levels. Persperity launched with CEO Shiv Shukla, with seed funding from the Caltech Seed Fund, Wilson Hill Ventures, and Freeflow.

Tera AI is a robotics company from the Caltech lab of Pietro Perona, Allen E. Puckett Professor of Electrical Engineering. The company is developing zero-shot navigation software, providing visual navigation for autonomous robots that already possess a camera and a graphics processing unit. Tera's aim is to provide affordable spatial reasoning AI and navigation software that will enable new abilities—such as automated driving, mobile robotics, and robotic manipulation—for pre-existing and smaller robots. Tera AI launched with CEO Tony Zhang (PhD '22), with seed funding from the Caltech Seed Fund, Wilson Hill Ventures, Felicis, Inovia, and Naval Ravikant.

ZeoDAC is a carbon capture and sequestration company from the Caltech lab of Mark E. Davis, Caltech's Warren and Katharine Schlinger Professor Emeritus of Chemical Engineering. ZeoDAC's carbon capture technology utilizes zeolites, a mineral with porous, crystalline structures, to selectively capture CO_2 but allow other components of air to pass through unhindered. ZeoDAC has identified the ideal zeolite structure to create a molecular sieve process to capture CO_2, which can then be repurposed for other uses—for carbonation, chemical manufacturing, or sequestration. ZeoDAC launched with CEO Christopher Jones (MS '97, PhD '99), with seed funding from the Caltech Seed Fund, Wilson Hill, Freeflow, ACCELR8, Coca-Cola Europacific Partners, and Global Brain.

Innovation.
Entrepreneurship.
Collaboration.

Our mission is to drive the transfer of scientific and engineering knowledge created by our researchers to maximize societal impact by developing partnerships with industry through the creation of new ventures, collaborations with corporations, and transfer of intellectual property while nurturing an entrepreneurial environment.

FY 2024:

112
Invention Disclosures
(campus only)

151
U.S. Patents Issued

2,040
Active U.S. Patents

59
Licenses Granted
(including options)

8
Startup Companies

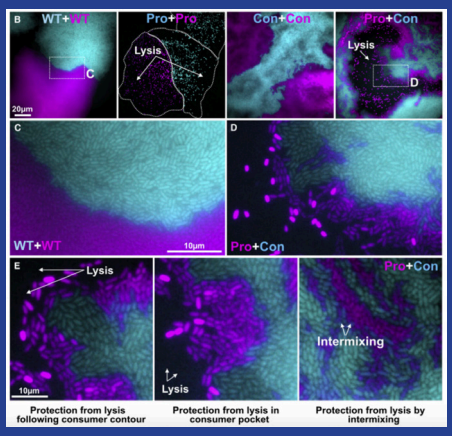
44
Companies
Sponsoring Research

61
Companies Giving Gifts

$68M
Corporate Contracts & Gifts

Ideas in the Lab

Rothenberg Innovation Initiative (RI²) 2024 Awards



Microbial growth images from the Newman Lab

A gift from Caltech Trustee James F. Rothenberg and his wife Anne launched the Caltech Innovation Initiative (CI²) in 2009 to provide essential seed funding for early-stage research that addresses pressing problems and could lead to marketable technologies that benefit society. Each RI² award provides up to two years of support, with up to $125,000 in funding per year, to help Caltech professors, students, and post-docs mature their research beyond the conceptual stage to the point that the innovations are attractive to outside investors for further development of the technologies. Bolstered by an additional $15M gift in 2017 and renamed the Rothenberg Innovation Initiative (RI²), the program funded six new projects and four renewal projects in 2024.

Biological Circuits for Robust Control of Expression Levels in Gene Therapy (new)
Michael Elowitz, Roscoe Gilkey Dickinson Professor of Biology and Bioengineering; Investigator, Howard Hughes Medical Institute

A Wearable Aptamer Nanobiosensor for Non-Invasive Female Hormone Monitoring (renewal)
Wei Gao, Professor of Medical Engineering; Investigator, Heritage Medical Research Institute; Ronald and JoAnne Willens Scholar

Non-Surgical Refractive Correction Using Therapeutic Microparticle Delivery to the Cornea (new)
Julie Kornfield, Elizabeth W. Gilloon Professor of Chemical Engineering

Development of a Highly-Scaled InP Transistor Amplifier with Outstanding Noise Performance and Stability for Commercial Remote Sensing Applications (new)
Austin J. Minnich, Professor of Mechanical Engineering and Applied Physics; EAS Division Deputy Chair

Novel Formulations and Strategies to Treat Chronic Wound Infections with Chlorate (new)
Dianne Newman, Gordon M. Binder/Amgen Professor of Biology and Geobiology; Merkin Institute Professor

Directed Evolution of Algal Communities for Gigaton Scale Carbon Capture and Sequestration (new)
Victoria Orphan, James Irvine Professor of Environmental Science and Geobiology; Allen V. C. Davis and Lenabelle Davis Leadership Chair, Center for Environmental Microbial Interactions; Director, Center for Environmental Microbial Interactions

Development and Benchmarking of a Measurement Device Independent Quantum Key Distribution (MDIQKD) Pre-Prototype System (renewal)
Maria Spiropulu, Shang-Yi Ch'en Professor of Physics

Discovery of Small Molecule Inhibitors of MTCH2 (renewal)
Rebecca Voorhees, Assistant Professor of Biology and Biological Engineering; HHMI Freeman Hrabowski Scholar

Design and Construction of Chimeric Bacterial Nanoparticles as Biological Control Agents (new)
Kaihang Wang, Assistant Professor of Biology and Biological Engineering

Cancer Prognosis Prediction through Integrated Codesign in Prep, Hardware and Deep Neural Network (renewal)
Changhuei Yang, Thomas G. Myers Professor of Electrical Engineering, Bioengineering, and Medical Engineering; Investigator, Heritage Medical Research Institute; Executive Officer for Electrical Engineering

Caltech Technology Transfer & Corporate Partnerships
1200 East California Boulevard | MC 6-32 | Pasadena, California 91125 | (626)395-3066

COLLABORATION INNOVATION ENTREPRENEURSHIP