MIT Media Lab

In summer 2018, the MIT Media Lab co-founded the Council on Extended Intelligence with the Institute of Electrical and Electronics Engineers (IEEE) Standards Association, to guide a new narrative for intelligent and autonomous technologies inspired by principles of systems dynamics and design; reclaim our digital identity in the algorithmic age; and rethink our metrics for success. Comprising a diverse array of global thought leaders, the council aims to move society beyond the human-versus-machine narrative to transform the reductionist thinking of the past into a holistic, forward-looking vision of tomorrow, to ensure humans and technology work in sync to realize a more positive, prosperous future.

Along with the MIT Press, the Media Lab launched the Knowledge Futures Group (KFG), a first-of-its kind collaboration to transform how research information is created and shared. The KFG seeks to redefine research publishing in a closed, sequential process to an open, community-driven one. The goal is to develop and deploy technologies that form part of a new, open-knowledge ecosystem that fully exploits the capabilities of the web to accelerate the discovery and transmission of knowledge.

In FY2019, we established two new research groups: Poetic Justice and Nano-Cybernetic Biotrek. Led by assistant professor of media arts and sciences Ekene Ijeoma—who works at the intersection of design, architecture, music, performance, and technology—Poetic Justice merges art, data, and personal experience with diverse artistic and academic practices to produce interdisciplinary works that embody our human conditions, engage people in social transformation, and imagine and realize change. Nano-Cybernetic Biotrek, which will carry out transdisciplinary research fusing engineering, applied physics, and biology, aims to bridge the gap between nanotechnology and synthetic biology to develop disruptive technologies for nanoelectronic devices and create new paradigms for human-machine symbiosis. The group's director, Deblina Sarkar, is currently a postdoctoral associate in the Synthetic Neurobiology group, and will join the lab as an assistant professor in the fall.

Media Lab researchers testified before congressional committees in FY2019: graduate student Joy Buolamwini spoke to the House Committee on Oversight and Reform on the impact of facial recognition technology on civil rights, and to the House Science, Space, and Technology Committee on the social and ethical implications of artificial intelligence. Research scientist Katy Croff Bell testified to the House Science, Space, and Technology Committee on ocean exploration.

In June 2019, the Media Lab welcomed 11 new members of the Director's Fellows program, including NBA star Jaylen Brown; marine biologist Ayana Elizabeth Johnson; entrepreneur and sustainability expert Nonabah Lane (co-founder of Navajo Ethno-Agriculture, which was selected for Solve-MIT's Indigenous Communities Fellowship); Stockton, California mayor Michael Tubbs; poet Kathy Jetñil-Kijiner; and Polynesian voyager Lehua Kamalu. Now in its seventh year, the Director's Fellows network has expanded to some 70 individuals with a wildly diverse range of knowledge, skills, and talents.

Media Lab Research

Actionable Auditing: Coordinated Bias Disclosure Study

A follow-up to last year's Gender Shades study, examining its impact by analyzing the response of targeted companies and new performance metrics since the study was published, and comparing the targeted companies' newly released APIs with those of nontarget companies Amazon and Kairos.

Aguahoja

The Aguahoja project aims to subvert the vicious industrial cycle of material extraction and obsolescence through the creation of biopolymer composites that exhibit tunable mechanical and optical properties, and respond to their environments in ways that are impossible to achieve with their synthetic counterparts.

Artificial Intelligence, Automation, Labor, and Cities: How to Map the Future of Work

This is an investigation of the barriers to studying artificial intelligence (AI) and the future of work, and possible approaches to overcoming them.

AI +Ethics Curriculum for Middle School

The AI + Ethics Curriculum is an open source curriculum in development for middle school students on the topic of artificial intelligence. Through a series of lessons and activities, students learn technical concepts—such as how to train a simple classifier—and the ethical implications those technical concepts entail, such as algorithmic bias.

Atlas of Inequality

Developed in collaboration with the Department of Mathematics at Universidad Carlos III de Madrid, the Atlas of Inequality shows the income inequality of people who visit different places in the Boston and New York City metro areas. More cities will be added to the platform over time.

Closed-Loop Optogenetics for Peripheral Nerve Control

This is an optogenetic technique to produce limb movements that can be adjusted in real time, using cues generated by the motion of the limb itself.

Daisy Drives

Daisy Drives is a self-limiting CRISPR gene drive system that can only affect local environments.

Deep Image of the City

Researchers combined the tangible user interface CityScope with a deep convolutional generative adversarial network to image cityscapes that don't (yet) exist—allowing for the possibility of real-time urban prototyping and visualizations.

EngageME: Personalized Machine Learning for Autism Therapy

EngageME combines deep learning and social robotics to enable automatic monitoring of the affect and engagement of children with autism spectrum conditions in communication-centered activities. This research was selected as an European Commission research success story.

Huggable: A Social Robot for Pediatric Care

The Huggable project aims to improve the hospital experience by creating a social robot that's able to mitigate stress, anxiety, and pain in pediatric patients by engaging them in playful interactions.

Implosion Fabrication

Implosion Fabrication is a new technique that inverts the processes of expansion microscopy to fabricate 3-D objects of almost any material into almost any shape, with nanoscale precision.

kinetX

kinetX is a transformable material featuring a modular design that resembles a cellular structure. It consists of rigid plates or rods and elastic hinges that can be combined in a wide variety of ways and assembled into multifarious forms.

LinkedOut: Codesigning Societal Reentry with Returning Citizens

This project is a collaboration with the City of Boston's Office of Returning Citizens that aims to define and build solutions to facilitate societal reentry for formerly incarcerated individuals.

Machine Behavior

An interdisciplinary group of collaborators from a range of institutions and organizations argue that the increasing importance of AI systems in mediating our social, cultural, economic, and political interactions necessitates a broad scientific research agenda to study machine behavior, which incorporates but expands beyond the discipline of computer science.

Mapping the Brain at High Resolution

This research combines expansion microscopy with lattice, light-sheet microscopy to image the brain and other structures with unprecedented resolution and speed.

Opening Wider Genomic Access with a Flexible CRISPR Enzyme

This is a flexible targeting approach that increases CRISPR's targeting ability to almost half the genome, up from 9.9%.

Optimizing Plants for Flavor, Nutrition, and Pharmaceutical Content

A highly flavorful plant generally contains a greater quantity and diversity of molecules, often with more useful functional roles than a bland-tasting plant. Using a combination

of botany, machine-learning algorithms, and chemistry, Media Lab researchers are discovering new techniques for improving the flavor and chemical composition of plants.

PopBots: A Hands-On STEAM Platform for the AI Generation

PopBots are programmable, intelligent social robots that play with children to help them learn about artificial intelligence. The full system includes a mobile phone-based social robot learning companion, LEGO blocks and LEGO/Arduino peripherals, and a tablet or computer for a programming interface. PopBots are designed to make robotics education creative, hands-on, and inexpensive.

Radio Frequency IQ: Food Quality and Safety Detection Using Wireless Stickers

This project aims to put food-safety detection in the hands of consumers using wireless sensors and cheap Radio Frequency Identification tags to detect potential food contamination. This project was selected for a grant from the Abdul Latif Jameel Water and Food Systems Lab.

Scratch 3.0

Scratch 3.0 expands how, what, and where kids can create with code. It's designed to run in any browser and works on a wide range of devices, including tablets. There's even an offline, desktop version. The growing Scratch extensions library also allows communication with LEGO Mindstorms, micro:bit, Google Translate, and more.

votoMosaic

Developed in collaboration with researchers from MIT Sloan School of Management, votoMosaic is a shifting tapestry in which each pixel represents an individual's pledge to vote. Participants upload photos to the project website, and encourage their friends to join in, too.

Wireless Communication from Underwater to the Air

Translational Acoustic-RF communication (TARF) enables communication between underwater and above the water using a TARF transmitter that sends standard sound (or SONAR) signals.

Visits

Visiting dignitaries to the Media Lab in FY2019 included Julius Maada Bio, president of Sierra Leone, with a delegation that included Biomechatronics alum David Sengeh PhD '16, now the country's chief innovation officer; Ole Schröder, former German Parliamentary state secretary for the interior; Ko Wen-je, mayor of Taipei; Carolina Cosse, Uruguay's minister of industry, energy and mining, and representatives of the Uruguayan Chamber of Information Technology; representatives of the United States Patent and Trademark Office; former New York City mayor Michael Bloomberg; Chen Chu, mayor of Kaohsiung and secretary-general to the president of Taiwan; and Subramaniam Ramadorai, the prior chief executive officer and vice chairman of Tata Consultancy Services. High-profile individual visits included Sean Parker, Susan Whitehead, and Anna Blom.

MLTalks

In its eighth year, the MLTalks series continue to bring speakers from unexpected and varied disciplines and areas of expertise to participate in live conversations with members of the Media Lab community. Talks this year included the following:

- "A bit about computer crime and digital evidence"—Joi Ito in conversation with Jan Fuller, a digital forensics expert and member of the 2019 Director's Fellows cohort
- "Experiential storytelling with Walt Disney Imagineering"—graduate student Emily Salvador in conversation with Disney Imagineers
- "Hoops, Tech, and Justice"—Community Biotechnology Initiative head David Sun Kong in conversation with Kade Crockford (director of the Technology for Liberty Program at the American Civil Liberties Union of Massachusetts and member of the 2018 Director's Fellows cohort) and Boston Celtics player Jaylen Brown (a member of the 2019 Director's Fellows cohort)
- "Inventive Minds: Marvin Minsky on Education"—alum and research affiliate Xiao Xiao in conversation with Cynthia Solomon and Hal Abelson
- "The lowdown on the high seas: What we don't know about the oceans can kill us"—Open Ocean Initiative head Katy Croff Bell in conversation with Wendy Schmidt
- "Perspectives on creativity and failure"—Joi Ito in conversation with game designers Colleen Macklin and John Sharp
- "Team Human: How people, together, can rule the digital future"—research specialist Kate Darling in conversation with Douglas Rushkoff

Selection of Media Lab Events

"Media Lab Berlin—Signal and Noise," was a week-long prototyping workshop bringing together Media Lab researchers, university students from across Europe, and corporate collaborators to engage in a dialogue between machines, design, and humans (August 12–18, 2018).

The lab hosted a screening of *Paywall: The Business of Scholarship*, a documentary investigating the need for open access to research and science, followed by a panel discussion with filmmaker Jason Schmitt, Joi Ito, director of MIT Libraries Chris Bourg, and Peter Suber, director of the Harvard Office of Scholarly Communication (September 7, 2018).

City Robotics: Designing for People-Centric Mobility was a three-day hackathon hosted by Principal Research Scientist Kent Larson with Don Norman and Colleen Emmenegger of the University of California at San Diego's Design Lab (September 15–17, 2018).

Muriel R. Cooper Professor of Music and Media Tod Machover and Korean violinist Hyung Joon Won led a discussion about how collaborative City Symphonies or other

innovative musical projects could help bring peace to the Korean peninsula and beyond (September 26, 2018).

The Affective Computing group hosted Barbara Fredrickson, Kenan Distinguished Professor and director of the Positive Emotions and Psychophysiology Laboratory at the University of North Carolina at Chapel Hill, for Positivity Resonates: Effects of Face-to-Face Social Connection on Human Wellbeing (October 1, 2018).

The Media Lab participated in the launch of the Prior Art Archive at the American Academy of Arts and Sciences. This MIT-hosted and publicly accessible archive, which allows anyone to upload their prior work and make it easily searchable by patent examiners, was created in collaboration with the US Patent and Trademark Office and Cisco (October 3, 2018).

The Community Biotechnology Initiative hosted the second annual Global Community Bio Summit (October 26–28, 2018).

The Open Ocean initiative hosted All Hands on Deck, the 2018 National Ocean Exploration Forum. This event was co-convened by the National Oceanic and Atmospheric Administration (NOAA) Office of Ocean Exploration and Research (November 7–10, 2018).

The second annual Disobedience Award was presented to Tarana Burke, BethAnn McLaughlin, and Sherry Marts, leaders of the #MeToo and #MeTooSTEM movements. The 2018 finalists were Sarah and Yusra Mardini, Katie Endicott, and Deborah Swackhamer (November 30, 2018).

City Science Workshop Guadalajara welcomed participants from Universidad de Guadalajara and surrounding communities to an educational outreach workshop to understand data-driven, decision-making applications, patterns, and potential uses and deployment in Guadalajara, Mexico (December 4–6, 2018).

The Symposium on Blockchain for Robotic Systems brought together scientists, engineers, entrepreneurs, and key stakeholders to discuss the possibilities of blockchain technology in robotics and AI. The *Proceedings of the First Symposium on Blockchain and Robotics, MIT Media Lab, 5 December 2018* were published by *Ledger*, an open access journal from the University of Pittsburgh Press (December 5, 2018).

"Gathering 'round the connected table: Crafting tools for a 21st-century food system" brought together researchers, advocates, chefs, and activists to consider ways of building a future food system and empowering a diverse set of stakeholders to shape a future of food that's good for people and the planet (December 10, 2018).

Beyond the Cradle 2019: Envisioning a New Space Age was the Space Exploration Initiative's third annual convening of scientists, engineers, artists, designers, and others working to revolutionize our next half-century of moon shots and star shots (March 14, 2019).

Alexander W. Dreyfoos (1954) Professor Joseph Paradiso hosted a special guest panel on photographing a black hole, with members of the Event Horizon Telescope team from Haystack Observatory and the Harvard-Smithsonian Center for Astrophysics (April 12, 2019).

The Kronos Quartet gave the first public presentation of Tod Machover's new composition, GAMMIFIED, for string quartet and electronics, written for the quartet as part of their Fifty for the Future commissioning project with Carnegie Hall. Following the concert, Kronos, Machover, and graduate students Alexandra Rieger, Nikhil Singh, and Ben Bloomberg discussed the work, which incorporates state-of-the-art research at MIT into gamma frequencies that show remarkable promise for resynching the brain and promoting mental wellbeing (April 29, 2019).

Selection of Talks, Exhibits and Performances

Ethan Zuckerman and Anushka Shah, research manager of Media Cloud, participated in The Past, Present, and Future of Civic Entertainment in India, at the Godrej India Culture Lab in Mumbai (August 11, 2018).

Ekene Ijeoma's sculpture *Pan-African AIDS* (2018), which explores the hypervisibility of the HIV/AIDS epidemic in Africa and the hidden one in Black America, was included in *Germ City: Microbes and the Metropolis*, an exhibition organized by the Museum of the City of New York in collaboration with the New York Academy of Medicine and the Wellcome Collection (September 14, 2018–April 28, 2019).

Graduate student Neil Gaikwad's photographic work, some of which was originally published in *National Geographic*, was featured in *Beyond the Boundaries*, an exhibit at the Wiesner Student Art Gallery (November 8–30, 2018).

Tod Machover's newest opera, *Schoenberg in Hollywood*, premiered at the Paramount Theater in Boston (November 14–18, 2018); Machover also hosted a symposium on Arthur Schoenberg and the creation of the opera at the lab (November 17, 2018).

The Road Ahead: Reimagining Mobility, at Cooper Hewitt, Smithsonian Design Museum, included work from the Media Lab's City Science and Scalable Cooperation groups (December, 14, 2018–March 31, 2019).

Graduate student Ariel Ekblaw, research engineer Minoo Rathnasabapathy, astronaut Cady Coleman, and space economist Sinéad O'Sullivan participated in Dent:Live Boston at Carbonite—Women Driving Innovation in Space (February 12, 2019).

Danielle Wood joined Professors Paulo Lozano, Richard Binzel, Sara Seager, and Dava Newman for MIT AeroAstro's Apollo 50+50 symposium, celebrating the 50th anniversary of the Apollo 11 moon landing (March 13, 2019).

Participatory Self-Portrait: Art, Environment, and Community, at the Wiesner Student Art Gallery, showcased works by graduate student Laura Perovich and community collaborators in Cambridge and Chelsea, Massachusetts (April 22–May 23, 2019).

Perovich's work is also featured in *Untold Possibilities at the Last Minute*, an exhibition on view at Cambridge Arts' Gallery 344 (May 20–October 4, 2019).

David Sun Kong delivered the Louise M. Slaughter National DNA Day lecture, titled "Crossing Cultures: An Exploration of Microbial Music and the Community Bio Movement," for the National Human Genome Research Institute (April 23, 2019).

Joi Ito participated in Mind, No Mind, AI Mind, a conversation with Daiko Matsuyama (Zen priest and vice abbot of Taizo-in within the Myoshinji temples complex) and Tenzin Priyadarshi (director of the lab's Ethics Initiative and president of the Dalai Lama Center for Ethics and Transformative Values at MIT), moderated by Rekha Malhotra, a graduate student in Comparative Media Studies/Writing (April 25, 2019).

Assistant professor of media arts and sciences and assistant professor (joint) of aeronautics and astronautics Danielle Wood hosted a talk with Moriba Jah, the director for Computational Astronautical Sciences and Technologies, a group within the Institute for Computational Engineering and Sciences at the University of Texas at Austin, on how we track objects orbiting the Earth and why it matters (May 3, 2019).

Nature—Cooper Hewitt Design Triennial (May 10, 2019–January 20, 2020), co-organized with Cube Design Museum, included work from a number of Media Lab researchers and alumni, including Personal Food Computer and Open Phenome (OpenAg Initiative), Aguahoja II (Mediated Matter), Cilllia (Tangible Media), and Air-Ink (Graviky Labs).

The Bees of Science was an exhibit created by assistant professor of media arts and sciences and LG Career Development Professor of Media Arts and Sciences Canan Dagdeviren, that highlighted the work of students in her MAS.810 Decoders 1.2 class, and was on display in the Media Lab lobby (June 14, 2019–October 31, 2020).

Communications

Traditional Press and Media Coverage

Hundreds of print, broadcast, and online outlets reported on Media Lab projects and people in FY2019. Of particular note were a feature in *Vogue* on how the Media Lab's Breast Pump Hackathon, new startups, and a highly public shift in the conversation are contributing to the #normalizebreastfeeding movement; a profile in the *New York Times* on Sony Corporation Career Development Professor and associate professor of media arts and sciences Neri Oxman; and a longform Associated Press story on the Mass Audubon Tidmarsh Wildlife Sanctuary and its living observatory, which included interviews with Glorianna Davenport, Joseph Paradiso, and Gershon Dublon. Other media outlets covering the lab included: *Adweek*, *Architect Magazine*, the *Atlantic*, the *Australian*, *Axios*, BBC, *Boston Business Journal*, *Boston Globe*, *Business Insider*, *Daily Beast*, *Daily Telegraph*, *Dazed*, *Deutsche Welle*, *Dezeen*, *Die Welt*, the *Economist*, *El Pais*, *Fast Company*, *Forbes*, *Globe and Mail*, the *Guardian*, *Harvard Business Review*, *IEEE Spectrum*, *Korea JoongAng Daily*, *la Repubblica*, *MIT Technology Review*, *Motherboard*, *Nature*, *New Scientist*, *New York Times*, NPR, *OZY*, *PC Magazine*, *Politico*, *Psychology Today*, *Quanta*

Magazine, *Quartz*, the *Register*, RTE, *Salon*, *Scientific American*, *Seattle Times*, *Smithsonian Magazine*, *STAT*, the *Statesman*, *New Yorker*, *TIME*, *Undark Magazine*, the *Verge*, *Vox*, *Wall Street Journal*, *Washington Post*, WGBH, *Wired*, and *WWD*.

Web Analytics

Website traffic saw a slight decrease from FY2018, when the site had 5,550,716 page views, 4,296,052 of which were unique page views; in FY2019, it had 5,354,523 page views, 4,144,768 of which were unique page views. However, visitors to the research section of the site increased by approximately 4.5% over the same time period.

Social Network Analytics

The lab gained over 24,000 new Twitter followers in FY2019. Top activity included tweets about Principal Research Scientist Pratik Shah's TED Talk (with a potential reach of 11,446,699); Joi Ito's interview with Kara Swisher on *Recode Decode* (with a potential reach of 2,112,773); and tweets about the 2019 Disobedience Award (one of which had a potential reach of 902,728). More than 250,000 people follow the lab's Facebook page, and our posts are regularly shared outside of our usual network; the lab's Instagram account has approximately 98,000 followers. With more than 36,000 YouTube subscribers, we received approximately 1.3 million total views. Top videos posted in FY2019 were "Getting submarines talking to airplanes, finally" (63,684 views); "Elowan: A Plant-Robot Hybrid" (27,379 views); and "kinetiX—designing auxetic-inspired deformable material structures" (18,010 views). The latter was also one of our most popular videos on Facebook, with more than 70,000 views and a reach estimated at 330,000.

Finance

The MIT Media Lab's annual operating budget of approximately $82 million was an increase of approximately 9% over FY2018. With surpluses from prior years, our net asset balance is $28 million ($24.4 million of this with the lab director and $3.6 million with the research groups). Roughly 34% of funding came from the consortium ($28 million), which brought in a net annual membership revenue of $2.2 million. Sponsored project funding was $18 million, and accounted for 22% of the FY2019 budget. Gift income came in at $24 million. The lab wrote off three members in FY2019, and after these write-offs, holds a bad-debt reserve balance of $307,286 to protect from any downside risk. In all, FY2019 was a year of financial stability, and one in which the lab has continued to automate business systems.

Members

In FY2019, the Media Lab welcomed eight new member companies and organizations: Fannie Mae; Asia Pacific Land Corporation; Abakus; Harman International, a Samsung Company; Citi Group; Merck KGaA; Banco Santander Brasil; and Telefónica Alpha.

Patents

In FY2019, the Media Lab filed 80 patent applications (provisional, ordinary, patent cooperation treaty, and divisional) and 26 patents have been issued since July 1, 2018.

Directed Research

In FY2019, the Media Lab submitted 102 proposals for new or continuing directed research projects, including postdoctoral fellowships and no-cost collaborations. Approximately 34% of these proposals were for subawards in collaboration with other research institutions. There are 55 proposals that remain under consideration, and 18 have resulted in awards. Of the proposals submitted, 58% were in response to government solicitations (e.g., National Science Foundation [NSF], National Institutes of Health [NIH], Department of Defense, NOAA, and NASA), while the others were submitted to foundations and nongovernmental sponsors. The new awards ranged from $8,000 to $1.3 million with durations of seven months to five years.

Human Resources

Janine Liberty was promoted to communications manager. This spring, Administrative Assistant Priscilla Capistrano and Senior Human Resources Assistant Helene Kelsey received Infinite Mile Awards from the School of Architecture and Planning.

Joi Ito
Director

Media Lab Members

Consortium Research Lab Members

Digital Garage
DP World
Harman International, a Samsung Company
Hyundai Motor Company
Mercedes-Benz Research and Development North America
NHK
Nomura Research Institute
NTT Data Corporation
Panasonic Corporation
Samsung Electronics
Toppan Printing
Toshiba Memory Corporation
Yokogawa Electric Corporation

Consortium Lab Members

Abakus
Actuatech
Agility
Asia Pacific Land Corporation
ATB Financial
A.T. Kearney
Banco Santander Brasil
Boston Consulting Group
BP
Cisco Systems
Citi Group
Colgate-Palmolive
Comcast
Culture Convenience Club
Dell EMC
Deloitte
Denso
Dentsu
Estee Lauder
ExxonMobil
Fannie Mae
Ferrero
Fidelity Center for Applied Technology

Ford Motor Company
General Electric
GlaxoSmithKline
Google
Honda Research Institute Japan
Honeywell SPS
IBM
IDEO
Intel
Inter-American Development Bank
International Flavors and Fragrances
Intuit
Khazanah Nasional
The LEGO Group
LKK Health Products Group
MacAndrews and Forbes
McKinsey
Merck KGaA
MetLife
Monetary Authority of Singapore
Mori Building
NEC Corporation
Nike
Novartis
OMRON Corporation
PepsiCo
PMP TECH
POLA Chemical Industries
PTC
Publicis Groupe
Salesforce
SHIMA SEIKI MFG
Standard Industries
Steelcase
Takeda Pharmaceuticals
Target Corporation
Tata Consultancy Services
Telefónica Alpha
Twitter
UCB
VeChain Foundation
Verizon
VSP Global
Young Communication
Zoshinkai Holdings

Affiliate Foundation Members

Robert Wood Johnson Foundation

Endowment and Naming Grants

Asahi Broadcasting Corporation
Armand and Celeste Bartos
Benesse Corporation
BT
Joseph Chung
CSK Holdings Corporation
Alexander W. Dreyfoos Jr.
Informatix
The LEGO Group
Dorothy Lemelson
LG Electronics
MasterCard International
Misawa Homes
Motorola
Masanori Nagashima MArch ’76
NEC Corporation
Isao Okawa
Schlumberger
Jeffrey L. Silverman ’68
Sony Corporation
Swatch AG
Telmex
Toshiba Corporation
Philippe Villers

Research Contracts and Special Funds

Aalto University

Alfred P. Sloan Foundation

Baylor College of Medicine / NASA Johnson Space Center

Beth Israel Deaconess Medical Center / NIH

Bezos Family Foundation

Bill and Melinda Gates Foundation

Boston University / NSF

Brain and Behavior Research Foundation

Brigham and Women's Hospital / US Army

The Broad Institute / Leidos Biomedical Research

Burroughs Wellcome Fund

Case Western Reserve University / NIH

Cold Spring Harbor Laboratory / NIH

Columbia University / NIH

Electronics and Telecommunications Research Institute (ETRI)

Fiducoldex

HafenCity University

Harvard Medical School / NIH

Harvard University

Harvard University / Ford Foundation

Harvard University / US Army

Howard Hughes Medical Institute

Human Frontier Science Program

Kadokawa Culture Promotion Foundation

Knight Foundation

LeafLabs / NIH

Life Sciences Research Foundation

Massachusetts General Hospital / NIH

The Michael J. Fox Foundation for Parkinson's Disease

NASA Goddard Space Flight Center

National Institutes of Health

National Science Foundation

National Taipei University of Technology

Northeastern University / Templeton Foundation

Northwestern University / NIH

Space and Naval Warfare Systems Center

TIPD / Air Force Research Laboratory

Tongji University

Université libre de Bruxelles / European Commission Directorate General for Research and Innovation (ECDGRI)

University of Augsburg / ECDGRI

University of California at Davis / NIH

University of Guadalajara Central

University of Michigan / NIH

University of Zurich / ECDGRI

US Army

US Navy Office of Naval Research