

# corridor

Spring 2023



From the  
MIT Office  
of Gift  
Planning

# Leaping at a Quantum Opportunity

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William Oliver, the Henry Ellis Warren Professor of electrical engineering and director of MIT's Center for Quantum Engineering, is working toward building reliable, compact quantum computers. Now, a Faculty Research Innovation Fund grant, supported by Professor Emeritus Richard Thornton SM '54, ScD '57 using funds from his IRA, has made it possible for Oliver to pursue a new research path.

**The promise of quantum computing.** Research that leads to world-changing discoveries often depends on computer-generated simulations of complex, variable systems that are currently impossible to produce without making approximations. But what if researchers could fully generate accurate, transferrable results without the guesswork?

"The promise of quantum computing is that it will help us understand the world around us with more accurate simulations so that we can develop new materials or quantum chemistry, and that the technologies resulting from those advances will lead to solutions to some of the really thorny problems we're facing," says Oliver. "We're moving closer to quantum computing becoming a technical reality, and we're only just beginning to imagine its potential applications."



**The power to pivot.**

For the past 20 years as an investigator at MIT Lincoln Laboratory and as an MIT professor since 2019, Oliver has been working with a quantum computing logic device called a superconducting qubit, which he and his team

are presently using to build quantum computers that each fill up most of a room. Yet he sees the potential benefits of a different approach: the semiconducting qubit, which could be a better candidate for commercializing more compact quantum computers in the long term.

Oliver's new work on semiconductors gained significant momentum in 2021 when he was awarded a Faculty Research Innovation Fund (FRIF) grant that encourages mid-career professors to place

necessary bets on novel ideas and explore exciting, untested directions. "We couldn't have gotten the effort off the ground without the discretionary support from the FRIF," Oliver says. "Since then, we've been able to secure additional funding, purchase large pieces of infrastructure, and begin outfitting a new lab space."

**Risk and reward.** The Thornton Family Faculty Research Innovation Fund was established in 2018 by Richard Thornton using funds from his IRA. As a former electrical engineering professor who also founded two companies, he understands the importance of academic freedom. "Over my career, I observed that virtually all MIT faculty at some point had to make significant changes in their career," he says, recalling how his own research moved from electronic circuits to linear motors and magnetic levitation. "It can be difficult for a faculty member to pivot because, ironically, if you're an expert in the field, it's easier to gain funding to be a better expert in that field. It's much harder to transition."

More than 30 MIT School of Engineering faculty have benefitted from FRIFs like Thornton's. For him, inventiveness is key to the future of MIT and the technologies developed here. "It is important that professors have room to be creative," he says. "My hope is that MIT will remain at the forefront of leading the way to a better future."

Oliver certainly sees that possibility with quantum computing. "Quantum computers are not going to print out a solution to problems like climate change," he says, "but they may facilitate faster development of a material—for example, a better battery—that helps us solve climate change. It's one tool we can use to solve the world's problems." ●

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To learn more about how to make an IRA gift to MIT, visit [giving.mit.edu/ira](https://giving.mit.edu/ira).

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Cover: Oliver (center), postdoctoral researcher Ilan Rosen, and doctoral candidate Beatriz Yankelevich with a dilution refrigerator used to cool superconducting and semiconducting qubits to temperatures close to absolute zero. Above: doctoral candidate Aziza Almanakly SM '22 with a dilution refrigerator.

# Fellowships and Sustainability, in the Same Boat

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## James Ellis II SM '80 and Margaret Brady

When Jim Ellis played against MIT as a member of the US Coast Guard Academy baseball and wrestling teams, he had no idea he would someday be back on campus as a graduate student at the MIT Sloan School of Management.

“While I was stationed in Alaska in 1978, my supervisor let me know that the Coast Guard had recently committed to sending one officer per year to the intensive one-year MIT Sloan Fellows MBA program and was now soliciting applications from within the officer corps,” he says. “My wife Maggie was also interested in going to graduate school, so the timing worked out for us to apply to MIT and Harvard Business School, respectively, in hopes of heading to Boston for an academic experience.”

Jim was selected by the Coast Guard and accepted by MIT to the Sloan Fellows program, and Maggie was accepted and enrolled across town at Harvard Business School. As a result of their academic and professional experiences, the couple are strong believers in the importance of education in solving the problems that face our world. To evidence that support and create academic opportunities for the future, they have made a bequest to MIT by establishing the Ellis/Brady Family Fund, which is intended to support the Sloan Sustainability Initiative and graduate fellowships through the Sloan Veterans Fund.

**Harnessing leadership skills.** Jim, who spent his post-Coast Guard career as a lawyer focused on transportation and maritime law, has seen how government funding for veterans to earn advanced degrees has become less available in recent decades. “Maggie and I are big supporters of both education and those who have served our country,” he says. “Creating a fellowship through the Sloan Veterans Fund was a natural fit for us and will be a good use of our funds. The leadership experience that veterans gain in the Coast Guard and other branches of the military translates well to the MIT Sloan Fellows program,” he says. The fellows program was a great fit for Jim, who saw his management skills come into play constantly as cofounder and managing partner of a law firm. “My career took a much different tack when I left the Coast Guard than it would have had I not gone to MIT Sloan,” he says.



**A sustainable future.** The Sloan Sustainability Initiative, whose goal is to empower leaders to act so that humans and nature can thrive for generations to come, is also important to the family. Jim points out that environmental sustainability goes hand in hand with their support of veterans. “A significant portion of the Coast Guard is focused on issues related to the environment,” he explains. “The water and air pollution issues that relate to the ability to develop a sustainable future are also very important in the life of the Coast Guard.” He notes that, even in private practice, he was dealing with the transportation and maritime industry, which is deeply linked to the environment. “As a family, we’re very aware of the need to support a sustainable future.”

**Strong MIT ties.** Jim’s MIT Sloan cohort of about 50 students has stayed close over the years thanks to recurring reunions at a classmate’s home on Cape Cod in Massachusetts. “We’ve had classmates come for our five-year reunions from across the world—Japan, Australia, Europe, and the United States to attend the reunion,” he says. “My time at MIT was very influential in my career, and the relationships that I developed there remain strong and important to me today.” ●

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To learn more about how to make a bequest, visit [giving.mit.edu/bequests](https://giving.mit.edu/bequests).



# The Language of Active Learning

**The MIT-Haiti Initiative promotes technology-enhanced active learning and the use of students' native language, Kreyòl, in the classroom. Co-directed by Michel DeGraff, professor of linguistics, and Haynes Miller, MIT professor emeritus of mathematics, the initiative has made a profound difference in the life and education of Haitian students and instructors. Supporters of the initiative include Jeffrey Toney, MIT visiting professor in linguistics and philosophy, whose support includes a bequest intention.**

Michel DeGraff remembers the first time he saw students in his native Haiti speaking Kreyòl in their classroom, while visiting in 1994. "It was the first time I saw Haitian kids who were all happy learning in school," he says. Although nearly all Haitians speak Kreyòl, French remains the dominant written language in most Haitian schools, despite official policy, in force since 1982, requiring the use of Kreyòl as a language of instruction.

"When your teachers are not teaching in a language you understand, it's difficult or impossible to ask questions and engage meaningfully with the material," DeGraff says. "But the kids I saw learning in Kreyòl were so receptive, enthusiastic, and inquisitive. To me, it was like a light bulb turning on."

The scene was starkly different from his own school as a child in the 1970s, when students who spoke Kreyòl in class were subject to harsh discipline. DeGraff's epiphany in the Kreyòl-speaking classroom has since guided his research and led him, together with M. S. Vijay Kumar, senior advisor to the vice president for MIT Open Learning, to create the MIT-Haiti Initiative in 2010.

**Embracing students' home language and their identity.** Teaching children in a language they do not speak at home typically occurs in previously colonized countries where a variety of local languages are spoken. In contrast, Kreyòl is the sole fluent language of approximately 95% of the Haitian population. Using Kreyòl as the language of instruction in schools presents a clear opportunity to increase educational attainment for all Haitians, and thereby enhance their capacity to contribute to national economic development and nation-building in the future.

One key goal of the MIT-Haiti Initiative is to equip instructors in Haiti with the means to teach in Kreyòl. Haynes Miller points out how the biases shaped by colonial suppression of the language have extended to education. "We began by conducting workshops in Haiti with teachers at university level," Miller says. "It was quite an eye-opener for that group of faculty because many of them had been subject to the false belief that you couldn't conduct a scientific discussion in Kreyòl." Instructors who have worked with the MIT-Haiti Initiative have reported record engagement when they use Kreyòl in their classrooms.

ABOVE:  
DeGraff and a  
student at the Lekòl  
Kominotè Matènwa  
in Lagonav, Haiti.

“When their mother tongue is valorized, it has a tremendous impact on students’ self-image and learning gains,” Miller says.

### Supporting education, championing culture.

Jeffrey Toney, MIT visiting professor in linguistics and philosophy, who conducted postdoctoral chemistry research at MIT in the late 1980s and recently retired as provost of Kean University in Union, New Jersey, counts the MIT-Haiti Initiative as a huge influence on his research. He became involved in 2016 after hearing DeGraff speak at an American Association for the Advancement of Science conference. “I was blown away by the model of the MIT-Haiti Initiative, which centers students’ cultural experience,” says Toney. “The idea that education is a human right connects perfectly with everything that I want to support.”

As provost, Toney was able to sponsor Haitian and Haitian-American students at Kean University to undertake internships with the initiative—a rare opportunity for them to conduct research in Kreyòl involving both Haiti and the United States. His estate will also provide support with a bequest to the MIT-Haiti Initiative through the MIT Office of Gift Planning. “Once I reconnected with MIT, I thought, now here’s a chance to carve out a meaningful donation,” says Toney, who was a first-generation college student. “I want to be sure that whatever I have to give back will make a lasting impact.”

**Seeds of hope.** When discussing their goals and methodology, DeGraff and Miller often refer to a



From left: Miller, Jeremy Orloff, Paul Belony, MIT researcher Glenda Stump, DeGraff, and Ruthly François at Citadelle Laferriere, a monument to Haitian independence, in 2016.

quote from linguist H. Ekkehard Wolff: “Language is not everything in education, but without language, everything is nothing in education.” Though it is important to develop and share innovative content and new pedagogies, language is the key that opens access to those resources.

“Haiti cannot escape its impoverishment and political instability unless all children have access to quality education. If the home language isn’t systematically factored into students’ initial development, it’s impossible to sustain that,” says DeGraff. “The landscape is now changing in favor of multilingual education based on the mother tongue. This change gives us hope.” ●

A Kreyòl translation of this article can be found at [giving.mit.edu/corridor/haiti](http://giving.mit.edu/corridor/haiti).

## The Twa Wòch Dife of the MIT-Haiti Initiative

**Twa wòch dife, or “three rocks of fire,” refers to the three rocks that support the cooking pot on a community fire.**

**The rocks keep the pot stable, providing food to sustain the entire community. Similarly, the MIT-Haiti Initiative embraces these three foundational principles to champion education.**

**1 ACTIVE LEARNING**  
Students interact with their instructor and each other to fully engage with lessons and actively contribute to building new knowledge.

**2 TECHNOLOGY**  
Students learn how to use educational technology. In addition to tools that rely on electricity and the internet, technology also refers to “situated learning” through hands-on, collaborative activities such as gardening, flying kites, or making books.

**3 MOTHER TONGUE**  
Instruction in Haitian students’ native Kreyòl empowers them, allows them to embrace their cultural identity, and is indispensable for active learning as a key ingredient of quality education.

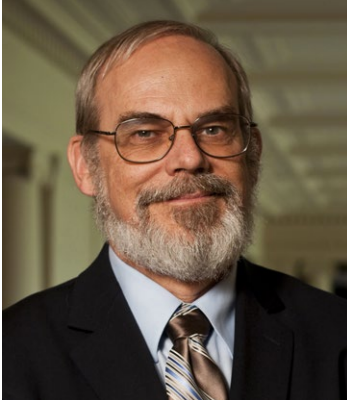




# Q&A: What Open Learning Means at MIT

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## W. Eric L. Grimson PhD '80, Chancellor for Academic Advancement and Interim Vice President for Open Learning



**Professor of computer science and Bernard M. Gordon Professor of Medical Engineering, Eric Grimson has taught 20,000 MIT undergraduates, supervised nearly 50 MIT PhD students, and co-taught an MITx course which has reached two million learners worldwide. He is chancellor for academic advancement and interim vice president of MIT Open Learning.**

### **What is MIT Open Learning?**

MIT has a mission statement, which in essence says we aim to educate students, create knowledge, and apply that knowledge to the great challenges of the nation and the world.

MIT Open Learning is a natural extension of this mission as applied to learning and education. Open Learning offers access to hundreds of free online courses, many of which are taught by MIT faculty, as well as professional boot camps and certificate programs.

Starting years ago with OpenCourseWare and MITx, we aimed to take what we knew about a field and what we knew about how to teach it, and make that knowledge available to motivated students and teachers around the world. Looking inward, we also wanted to think critically about how to apply what we've learned to our own classrooms. For example, a faculty member can be giving a traditional lecture while a TA monitors an online chat, responding to students' questions in real time. Online lectures can be broken into chunks, interrupted by brief exercises to test students' mastery of the material, providing both individual feedback to learners and general feedback to instructors on where their teaching hits or misses the mark.

### **What opportunities do you see for Open Learning to expand this work?**

I would like to see Open Learning put serious energy into three areas. First, we should take advantage of opportunities to better embed Open Learning within MIT itself. The Covid-19 pandemic was a forcing function worldwide for online teaching, to very mixed results. We had a head start in the field, and as a result of our innovations, much of the Institute continues to engage deeply with our office, leveraging our digital learning experts, technical tools and facilities, and staff in great ways. I'd like to see these resources continue to enrich most, if not all, MIT courses.

The second area is K-12. We started our work, understandably, with a focus on college-level materials. But how do we reach children and use what we know about teaching to make better outcomes? Open Learning programs such as RAISE (Responsible AI for Social Empowerment and Education) and J-WEL (Abdul Latif Jameel World Education Lab) are focused on that, and we can do more. Thirdly, how could we be even more effective in "workforce upskilling"? Open Learning is already doing a lot of work in this space through xPRO online courses, the MIT Horizon library, and industry-specific boot camps. But it's one of the great challenges of our time—how can people whose jobs are changing adapt and move into different careers? I think MIT should consider how we could help with the transition to work in a more heavily information-based society.

### **Philanthropy is key to ensuring that MIT stays on the leading edge of knowledge and technological development. How do planned gifts support MIT's educational mission?**

Planned gifts provide a critical foundation for MIT's future. We don't know the challenges the future will bring, but we can make some assumptions based on past experience about what we'll need to tackle them. First, resources will always be needed to jump-start new ideas. Unrestricted funds provide MIT's leaders with flexible "start-up capital" to power new initiatives. Second, we know that we will need cutting-edge facilities and equipment in state-of-the-art laboratories to make new discoveries and prove new technologies. Finally, and most importantly, we will need talented generations of students to tackle tough problems. MIT is fortunate to have supporters far and wide who understand the importance of the scientific breakthroughs that happen here. We find common purpose in our vision for a better world. ●

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To learn more about MIT Open Learning, visit [openlearning.mit.edu](https://openlearning.mit.edu).



“The overwhelming generosity of those who have named MIT as a beneficiary of their estate keeps the Institute strong, providing support for students, faculty members, and exciting research. If you are considering adding MIT to your will, I hope you reach out to the MIT Office of Gift Planning. We want to recognize you today for the amazing impact you will make on MIT’s future, and we are happy to work with you and your advisors to answer all questions.”

**Julie A. Lucas**  
Vice President for Resource Development

## Contact Us

Making a planned gift to MIT enables you to meet your financial goals while achieving your charitable aspirations and bolstering MIT’s world-changing programs while providing income to you and/or your beneficiaries.

Ready to start the conversation?  
Contact us today!

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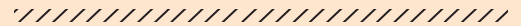


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## New Law Expands IRA Giving Opportunities

As of January 1, 2023, the SECURE Act 2.0 makes it possible for individuals and couples aged 70½ and older to fund **charitable gift annuities** and **charitable remainder trusts** with an IRA qualified charitable distribution.

To learn more about how you can receive a stream of income for life with a gift from your IRA, contact the MIT Office of Gift Planning or visit [giving.mit.edu/ira](https://giving.mit.edu/ira).



## Sample Bequest Language

Below is suggested language to share with your advisor if you would like to include MIT in your will or estate plan.

**I give [all of the residue of my estate OR an amount equal to X percent of the residue of my estate / thereof OR \$ \_\_\_\_\_ ] to the Massachusetts Institute of Technology (MIT), a Massachusetts nonprofit corporation, for its general educational and charitable purposes.**

We can provide sample language if you prefer your bequest to be designated for a specific purpose. Contact us to learn more about bequests.

This information is provided for illustrative purposes only and should not be considered legal or financial advice. We encourage you to discuss these options with your advisor.

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Office of Gift Planning  
600 Memorial Drive W98-500  
Cambridge, MA 02139-4822

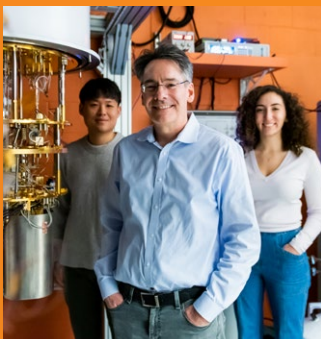
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