



2025 ANNUAL REPORT



**“ GREAT TEACHING IS
ABOUT MAKING DIFFICULT
IDEAS FEEL SIMPLE
AND BEAUTIFUL.”**

STEVEN STROGATZ

Susan and Barton Winokur Distinguished Professor for the Public
Understanding of Science and Mathematics at Cornell University.



Simons Foundation International (SFI) is a philanthropy whose mission is to
advance the frontiers of research in mathematics and the basic sciences.



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LETTER FROM THE PRESIDENT

By enabling promising students to pursue a career in mathematics and science, Simons Foundation International is investing in the future of science and the future of humanity. Jim Simons often told me that he believed that basic science has enabled humanity to live richer, longer and more comfortable lives than our ancestors did. The young scholars that we feature in this annual report will be among those whose curiosities will drive the discoveries of the future and help pave the way to further improvements.

This annual report highlights only a modest fraction of our programs to support rising scholars and students. A significant portion of all of our grants go toward their support. This report highlights some of our programs that focus on inclusive excellence, enabling students from a wide range of backgrounds, countries and cultures to develop their talents: the SURFiN program and the Simons STEM Scholars program involve undergraduates in research early in their careers; the International Centre for Theoretical Physics supports young

scholars from across the globe pursuing doctorates in physics and related fields; and our featured Bermuda programs (Bermuda Zoological Society, ICAN reading circle and Young Leaders in Ocean Governance) expose young Bermudians to the excitement of science.

This report also features BIOS, the Bermuda Institute of Ocean Studies. BIOS is one of Bermuda's crown jewels. The report introduces Craig Carlson, the new director. Craig succeeds William Curry, who ably led BIOS for 13 years. Simons Foundation International is proud to be a long-time supporter of this important institute, whose scientific impact ripples across the globe.

David Spergel



LETTER FROM THE CHAIR

Over the course of this past year, Simons Foundation International (SFI) expanded its research funding portfolio. The timing of this growth — always a part of SFI's long-term plan — has been fortuitous, given the changing landscape of basic science research. This past year has been marked by shifting government budgetary priorities and commitments that have threatened investments in scientific research and produced a climate of uncertainty for its future. At the same time, artificial intelligence (AI) technologies have introduced new opportunities to advance scientific frontiers, while also challenging the well-established existing approaches and infrastructure. Navigating this disruption to ensure investments in research and protect the pipeline of scientific scholars, while also leveraging new tools and technologies, is the pressing issue facing SFI today.

To catalyze its effectiveness in supporting great science, SFI hosted a retreat last October to discuss areas of science that hold the greatest potential for impact. Bringing together scientists, institutional leaders, science advocates and experts in AI, the retreat empowered board members, staff leadership and collaborators to deliberate SFI's vision and priorities for the coming years.

What better place than Bermuda to bring everyone together for such a collaborative session. Its pink sands, aqua waters and brilliant sunshine provided the perfect antidote to conference-room fatigue and assured a hint of optimism. With such a backdrop, we reaffirmed our values, examined strategic opportunities for impact, and assessed our own capacity to facilitate the promise of discovery. At SFI, we remain committed to supporting opportunities for innovation and advancing the frontiers of knowledge in the basic sciences and mathematics. I hope you enjoy reading about our work in the pages that follow.



Marilyn Simons



BUILDING A WORLDWIDE NETWORK OF PHYSICS TALENT

Curiosity and the thirst for knowledge aren't confined by borders. Anyone can fall in love with the grand quest that is the study of physics.

That belief motivates the International Centre for Theoretical Physics (ICTP). Founded in 1964 by Nobel laureate Abdus Salam, ICTP is located in the beautiful port city of Trieste, Italy, along the Adriatic

Sea. There, every year, more than 6,000 scientists from over 150 countries — including both leaders in their fields and those early in their careers — attend workshops, engage in high-level theoretical research, and build invaluable networks in six research areas across the mathematical, physical and quantitative life sciences.

PHOTO: The Adriatico Guesthouse, a former hotel in Trieste, Italy, has hosted hundreds of workshops and classes for the International Centre for Theoretical Physics over the past six decades.

"We at the Institute believe that scientific talent is distributed homogeneously around the world," says Ralf Kaiser, head of programs at ICTP. "But scientific opportunity is not." Indeed, many of the participants come from nations with limited academic opportunities in science, especially at the graduate level. A critical part of the vetting process for ICTP's highly competitive programs is therefore the identification of talented students from disadvantaged backgrounds who might not otherwise get to collaborate with this caliber of mentors.

The ICTP Simons Associates program supports the centre's mission by providing three-year appointments that allow scientists from developing countries to visit Trieste up to three times with one of their students, in the hope that they will find scientific inspiration and create a lifelong network of colleagues and friends. As of 2025, it has subsidized more than 200 visits from 90 associates and more than 60 of the associates' students.

Part of the value of ICTP is that its campus serves as "a safe haven for scientists" during difficult times, says Atish Dabholkar, director of the ICTP and an assistant director for UNESCO. "We have scientists from the United States and Iran meeting and talking in our cafe. Even in the '60s during the Cold War, the first fusion plasma physical conference where Soviet scientists and American scientists and Chinese scientists could meet together was at ICTP."

Salam, who shared in the 1979 Nobel Prize in Physics, faced similar political struggles when he was a budding physicist in Pakistan. In the 1940s the country was besieged by unrest from partition politics. Although he received a fellowship to attend Cambridge, even making it onto the ship bound for the U.K. was a fight, according to Kaiser.

"I think that helped him realize, 'There are more people like me. And those people like me should have the kind of opportunity that I got,'" Kaiser says.



On a visit to ICTP in 2015, Jim and Marilyn Simons met with Director Fernando Quevedo and several Simons Associates.

Among the six Simons Associates that ICTP hosted in 2025 was Imrana Ashraf Zahid, the first Pakistani woman to complete a Ph.D. in quantum optics, a pioneer in promoting female presence in STEM, and a long-time ICTP Associate. According to Zahid, her time as an associate was rich in "moments that tell you that your life has some worth, that there is some respect."

"ICTP opened my door to the whole world," says Narayan Prasad Adhikari, a computational condensed matter physicist from Nepal and another of the 2025 Simons Associates. "It helped me not only to build my network but also to develop computational physics in my country...which was a bit isolated at the time."

That kind of result, Kaiser observes, is an example of how ICTP has "a multiplier effect, which is very important."

Part of what helped make Adhikari's time as a Simons Associate special, he says, was that the program allowed him to bring along one of his Nepalese students. For researchers in less developed, more scientifically sequestered countries, that really "breaks the isolation," he notes.

In celebration of its 60th anniversary in 2024, ICTP embarked on new initiatives, and generous support

from donors including the Simons Foundation International (SFI) during 2025 has helped them bloom into full-fledged programs that can uphold the centre's mission for years to come.

With SFI's support, for example, ICTP acquired the Adriatico Guesthouse, a beloved former three-star hotel that has hosted hundreds of workshops and classes for ICTP over the decades. It is where Kaiser — today a veteran physicist who holds prestigious professorships and has headed committees for the International Atomic Energy Agency — stayed during his first visit to ICTP as an up-and-coming researcher.

“NOW, WE OWN IT AND CAN RENOVATE AND DEVELOP IT, WHICH IS AMAZING.”

Ralf Kaiser, head of programs, ICTP

High regard for the centre's reputation for good work and “the fact that a lot of people in the scientific community have a positive connection with our institute” gave ICTP the confidence to fund the purchase, he adds.

2025 was also when ICTP's Global Science Portal, an online alumni communications hub, took off in earnest. The Portal is “like LinkedIn for scientists from developing countries,” Kaiser says. After a soft launch in 2024, the platform grew to connect nearly 4,000 ICTP alumni, 70 percent of whom currently reside in the developing and least developed countries in Latin America, Africa and Asia often grouped as the Global South.

ICTP created the Portal at the request of alumni, who requested a way of “maintaining their connection to the institute when they weren't here,” says Charlotte Philips, ICTP's associate public engagement officer and manager of the Global Science Portal.

People who have spent time at the ICTP have “quite a strong emotional connection to the institute; they've met a lot of people and a lot of collaborators over the years,” she says. “When you don't have a community to bring everyone together, that kind of gets lost, particularly [for] people who then go back to very far-off places.”

On the Portal, researchers can promote opportunities at their institutions, set up discussion forums, access media resources, and remotely attend academic workshops and networking events. To improve accessibility for users in internet-poor countries, the team pushed to load the platform onto a fixed-bandwidth app. In 2025, ICTP hosted an in-person “mixer” event to celebrate the Portal's first anniversary, allowing Portal users to interact in person and deepen their connections. The success of the event in matching collaborators led the team to plan future similar events both in-person and online.

“We're all human, and so we naturally connect on more than just a scientific level,” Philips says. “The way that you get people to stay and do things on the Portal, I think, is by trying to push organic interaction through word of mouth, speaking to people, asking them what they would want, and hopefully trying to give them as much as we can.”

“In a world that relies more and more on digital connectivity, personal connection is important,” Kaiser adds. “And going forward, we want to give everybody the opportunity to use the Portal to participate in our workshops and seminars. So we're basically putting a virtual institute next to the real institute.”

It's a natural extension of ICTP's grounding philosophy: If anyone can fall in love with the study of physics, then they should have the opportunity to pursue it wherever they are, too.



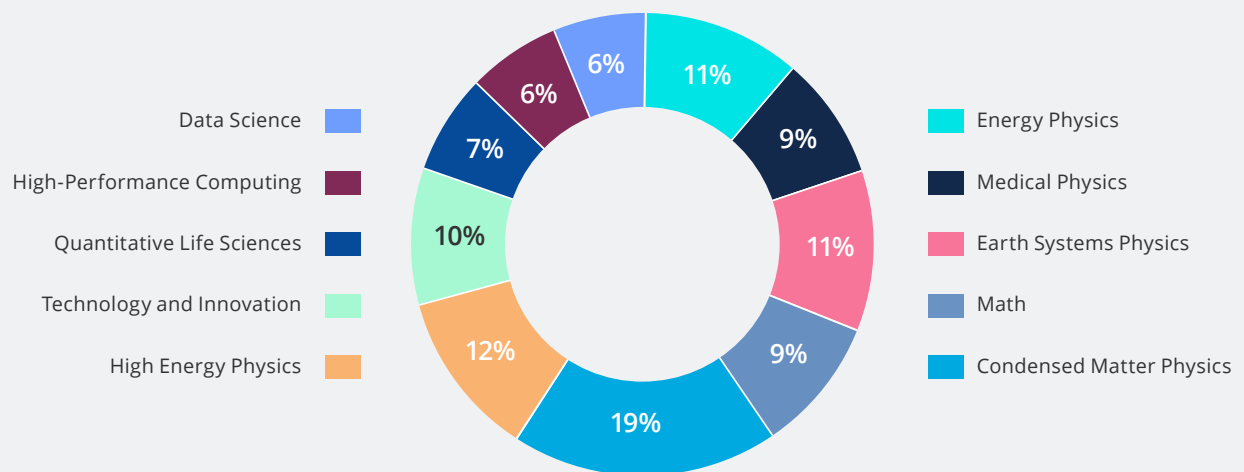
An aerial view of the ICTP campus in Trieste, including the Adriatico Guesthouse.



2025 marked the one-year anniversary of ICTP's Global Science Portal, which enables ICTP researchers around the world to stay in touch.

SCIENTIFIC SPREAD

The Portal community spans all the fields studied at ICTP.
This graph shows the percentage of Portal users in each field in 2025.





“I AM A SIMONS STEM SCHOLAR”

“Concrete Girl” is Giselle Morocho Aguilar’s college nickname. A junior studying civil engineering at Stony Brook University in New York, Morocho Aguilar is a Simons STEM Scholar who is so passionate about her discipline — and concrete — that it’s come to define her at school.

“I’ve always been obsessed with it,” she says. “Ever since I came to interview here, that’s all I’ve talked about.”

The Simons STEM Scholar program launched in 2023 with the goal of preparing students from all backgrounds for a career in research science, paving the way for their pursuit of a Ph.D. or M.D./Ph.D. without worries about the financial burden. Scholars are selected for undergraduate admission to college at Stony Brook; when they graduate, they continue to receive financial support and mentoring if they continue on a path toward a higher degree. Morocho Aguilar is a member of the program’s inaugural class.

PHOTO: In 2025, 16 Simons STEM Scholars kicked off the inaugural research program to the Turkana Basin Institute in Kenya, including Deasia Valdemar (center right).

2025 was a landmark year for Simons STEM Scholars: The 42 new Scholars in the third class began their studies, bringing the total number of Scholars to 121, with 100% retention so far. Twenty-eight Scholars kicked off inaugural research programs with the Turkana Basin Institute in Kenya and CERN in Switzerland. Three Scholars were chosen as institutional nominees for the Goldwater Fellowship; one of the most prestigious national scholarships in the United States supporting college sophomores and juniors who show exceptional promise for becoming leaders in the natural sciences, engineering and mathematics.

Applications for the fourth class of this fully funded, merit-based scholarship program are currently under review. From the pool of 1,100 applicants, only around 40 students will be accepted, according to Erwin Cabrera, a research assistant professor in the department of neurobiology and behavior, and the Simons STEM Scholars executive director.

Because the applicants include some of the country's brightest students, they must stand out in ways beyond academic performance. Getting good grades in high school and taking Advanced Placement (AP) classes matters, but demonstrated curiosity and ambition are imperative qualities in prospective scholars. "At the end of the day, I want to see that they have reached their full potential at their high school," Cabrera says. He emphasizes that this achievement looks different for everyone, since not every high school offers AP calculus or research opportunities. "You have to see whether that student pushed to the highest level that their high school offered."

Leadership matters too — but that doesn't mean every Scholar was captain of their soccer team or school president. "If you're taking care of your siblings every day or working after school, that's leadership to me," he says. "That shows dedication and discipline."



Giselle Morocho Aguilar, a Simons Stem Scholar studying civil engineering, holds a goat during her research work in Kenya.

“

I'VE ALWAYS BEEN OBSESSED WITH IT," SHE SAYS. "EVER SINCE I CAME TO INTERVIEW HERE, THAT'S ALL I'VE TALKED ABOUT.

”

Giselle Morocho Aguilar, STEM Scholar

Cabrera says Morocho Aguilar caught his attention during her interview when she spoke about her obsession with concrete. "What 17-year-old says, 'I want to study material science and concrete?'" he says.

Now, Morocho Aguilar is doing it: This summer, she will be working in a lab at Texas A&M University's Department of Construction Science, the country's first construction science-related research program, as part of the research experience required of every Scholar in their last year.



STEM Scholars at the Turkana Basin Institute in Kenya.

Passion for community is also key to thriving in this program. Morocho Aguilar recalls that when she interviewed for the program, she mentioned that even the term “civil engineering” implies helping others. “We are there to serve the people,” she says. “Our purpose is to make sure we’re building a community the way it should be, helping everyone.” In one of her application’s three essays, she wrote about her desire to understand the harm to her community from gentrification and to remedy it through civil engineering.

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OUR PURPOSE IS TO MAKE SURE WE’RE BUILDING A COMMUNITY THE WAY IT SHOULD BE, HELPING EVERYONE.

”

Giselle Morocho Aguilar, STEM Scholar

To Anthony Gabriel Goode, a sophomore Scholar studying chemical and molecular engineering, being a Simons STEM Scholar means bringing curiosity and dedication to community. “Those are two things I see in everyone here,” he says. “Since our mission is to make STEM more equitable, people who have shown they are striving to uplift their community

— that’s something that Simons looks for.” Goode plans to pursue an M.D/Ph.D. and wants to show other young people that it’s a path available to them, too.

Commitment to something larger than themselves also applies to the college and research environment for the Scholars, who study, achieve and struggle alongside one another as a community. Dedication to the group becomes another necessary trait for success in the program.

That community is also part of what helps Scholars adjust to their challenging new path. Deasia Valdemar, a junior majoring in psychology, describes how the Summer Bridge program, which helps incoming first-year Scholars prepare for the program and college, empowers the students to see themselves as members of this community, no matter their background. “Everyone has their own sense of self, and being in an unfamiliar environment humbles you and makes you question, ‘Do I even belong?’” she says. But the Summer Bridge program helps reinforce that the Scholars weren’t selected only for their smarts, but their character. “They chose us for our specific reasons how we can contribute to the research community.”

Contributing to the research community continues to be a big part of the Scholars program throughout their years at Stony Brook. The Scholars are all expected to take two one-credit seminars on Ph.D.

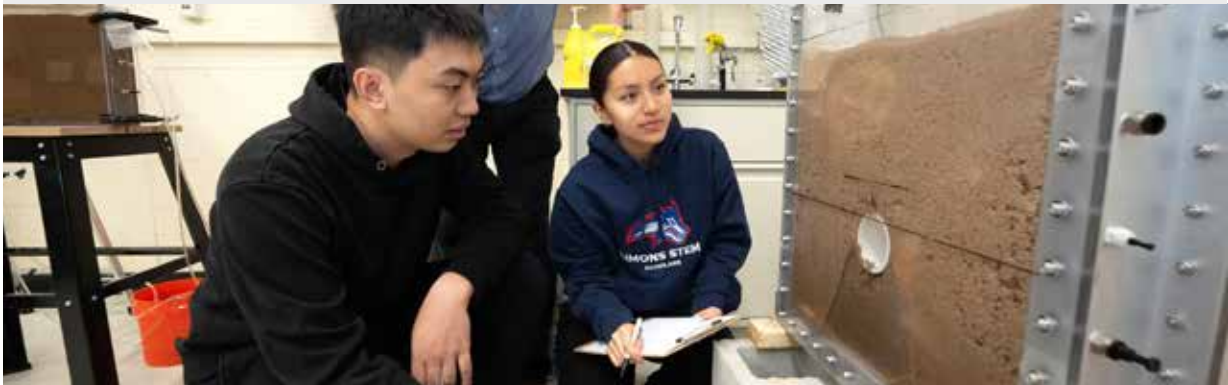
career pathways. As sophomores, they must take at least one science communications course and are encouraged to present at professional conferences. Juniors are expected to take graduate school preparation classes. All these requirements are aimed at raising the Scholars' awareness of being part of the wider research community.

Indeed, a sense of belonging to this community is so critical that owning one's place in it is part of introductions. "We say who we are, our pronouns, our majors, our high schools and where we came from, and then we say, 'I am a Simons STEM Scholar' to take pride in that," Valdemar says. She grappled with impostor syndrome at first (and says that many Scholars initially do) but now finds joy in mentoring first-year Scholars, who look up to her. "I'm able to give a first-person perspective, because I went

through the same thing," she says. "I can now be the example: I struggled, but now I have all these amazing opportunities."

In 2026, the Simons STEM Scholars program will induct its fourth cohort, creating a full cycle of college students from first-years to seniors. And at the end of the next school year, those seniors, including Morocho Aguilar and Valdemar, will be the program's first graduating class. While celebrating these milestones, Cabrera is looking much further ahead to what he hopes will be another historic first someday: "Get a Nobel laureate," he says. "That is our grand goal, to make sure that somebody from this space looks back and says, 'I started my career at Stony Brook University in the Simons STEM Scholar program, and I'm now a Nobel laureate.' I think that's very well possible."

In the lab, Morocho Aguilar conducts research on how to improve concrete as a building material.



Morocho Aguilar wants to put the "civil" in civil engineering by using her research to uplift her community.



Anthony Goode, who is planning to pursue an M.D./Ph.D., wants to show other young people that it's a viable path for them, too.

A photograph of Craig Carlson, a man with grey hair wearing a dark green polo shirt, standing on the deck of a white research ship. The ship has "HSBC" and "Atlant" (part of Atlantis) visible on its side. The background shows a blue sky and water.

CRAIG CARLSON LEADS BIOS INTO ITS NEXT CHAPTER

In the mid-1980s, when Craig Carlson was a fresh college graduate with a liberal arts degree from Colby College in Maine, he started working a carpentry job at the home of a buddy's uncle.

In the house, Carlson spotted a plaque indicating the man was on the board of a research institute that ran the Bermuda Biological Station. That piqued

his interest, partly because his then-girlfriend was from the island and partly because he had recently become interested in doing scientific fieldwork. After some persuasion, the friend's uncle wrote him a letter of recommendation for an internship. Carlson landed it, and he made his way south from New England to Bermuda.

PHOTO: Craig Carlson, after many years of involvement with the Bermuda Institute of Ocean Sciences (BIOS) as a researcher, took the helm as its president and executive director in 2025.



As a marine microbiologist for BIOS, Carlson, seen here with researcher Nick Baetge, assayed ocean water samples from various depths to determine what microorganisms are present and how they affect ocean chemistry.

As an intern, Carlson spent half the week doing maintenance at the station: He mowed the lawn, painted walls, washed dishes, and moved mattresses, sheetrock and tiles. But the rest of the time, he helped with the station's ongoing science projects. Aboard the station's ship, the Weatherbird, he collected samples of ocean water from various depths and quantified the distributions of bacteria in the water column. Carlson felt seasick the whole time, but something about the experience still stuck.

"That was my introduction to oceanography and marine microbiology," he said.

Now, nearly four decades later, Carlson stands at the helm of the institution that gave him his start. In August 2025, he became the president and executive director of the Bermuda Institute of Ocean Sciences (BIOS). BIOS, a unit of Arizona State University, maintains some of the longest-running sets of ocean observations in the world, making the most of Bermuda's position at the edge of the Sargasso Sea in the North Atlantic to explore critical environmental issues.

“ THIS FELT LIKE A GOOD TIME IN MY CAREER TO GIVE BACK TO THE INSTITUTION THAT’S HELPED ME SO MUCH. ”

Craig Carlson, Director, BIOS

Indeed, Bermuda and BIOS have always been integral to his interests throughout the remarkable arc of his career.

After Carlson's BIOS internship sparked his fascination with marine microbiology, he enrolled at the University of Maryland Horn's Point Laboratory for a doctorate in marine science, studying how microorganisms regulate the flow of carbon molecules in dissolved organic matter through open ocean ecosystems. He spent most of his time trying to find and perfect a measurement of dissolved

organic carbon. The topic was highly controversial because a conversion factor was needed to estimate the quantities of carbon, and that number varied depending on whom you asked.

“It was very wildly unconstrained, and we were trying to figure out how or if the measurements that were being reported were accurate,” Carlson said. Then Carlson realized that by measuring the changes in the organic material that the microbes were consuming, rather than the absolute amounts of organic carbon, he could side-step the complicated calculations, greatly simplifying the problem. “It allowed us to reevaluate the role of this type of carbon in bigger environmental processes,” Carlson said.

Carlson’s work culminated in an influential 1994 paper in *Nature*, in which he showed that seasonal mixing in the Sargasso Sea drove dissolved carbon through the layers of the ocean. “What he showed is that you can’t close the carbon budget without thinking about this mixing portion, which was a big deal,” said Elizabeth Kujawinski, an oceanographer at the Woods Hole Oceanographic Institution.

“

IT’S ALL ABOUT WHAT IS CAPTURING THE CARBON, WHICH STARTS AT THE MICROBIOLOGICAL LEVEL, AND HOW IT’S TRANSFERRED AND TRANSFORMED IN THE OCEANS,” HE SAID. “THAT JUST MADE ME THINK EVEN MORE ABOUT CRAIG, WHO IS A LEADER IN THAT AREA.

”

Bill Curry, Chair, BIOS Board of Trustees

Understanding this “biological carbon pump” and how it caused the dissolved material to move throughout the ocean became the focus of Carlson’s work. He and his colleagues needed to draw on microbiology, oceanography, geochemistry, and a host of increasingly more granular specialties to do it. “Keeping the bridge between biogeochemistry and marine microbiology is where my sweet spot is,” Carlson said.

As a postdoctoral scholar, he returned to Bermuda and BIOS in 1994, where he stayed until he joined the faculty of the University of California, Santa Barbara in 2001. At UCSB, he rose through the ranks to become a full professor in 2007, as well as vice chair and finally chair of the Ecology, Evolution and Marine Biology Department from 2010 through 2016. In 2022, he became a distinguished professor of marine science.

Concurrently, in 2015 Carlson also took on the mantle of scientific director for the Simons Collaboration on Ocean Process and Ecology (BIOS-SCOPE), a joint collaboration between Simons Foundation International and the broader BIOS program. BIOS-SCOPE includes more than 20 researchers from Bermuda, the United States, Germany and the United Kingdom, who look across specialties to understand how organisms interact with ocean chemistry and how those interactions drive carbon cycling.

That strong interdisciplinary focus has always been central to the mission of BIOS-SCOPE. “We bring those teams with different levels of expertise together to see how the puzzle works,” Carlson said.

BIOS-SCOPE’s research focuses on the dramatic ocean circulation that churns the materials in the water column over each winter and summer cycle in the Sargasso Sea. Since 1988, researchers have collected monthly water samples from this unique ocean gyre as part of the Bermuda Atlantic Time-series Study (BATS). The work follows how tiny organisms eat, reproduce, and move dissolved



Off the coast of Bermuda, Carlson (at left) and his colleagues prepare to lower gear for collecting samples from the water column.



Carlson's introduction to marine research was in 1987 aboard the Weatherbird, a ship operated by BIOS.

organic matter throughout the water column, and how the chemistry of the ocean directs microbes' marine life. The long-running data set gives the BIOS-SCOPE researchers a backdrop for their inquiries into how microscopic ocean life influences ocean chemistry and vice versa.

Now, Carlson is leading BIOS and BIOS-SCOPE as they tackle some of the most urgent questions about how the ocean's carbon cycle and all the life forms entangled in it are responding to global climate change.

That strategic direction is part of why Bill Curry, the previous BIOS director, lobbied so hard for Carlson to take his position. Curry, who is a geologist by training, explained that marine science historically studied the physics of the ocean — how it circulates, how sound moves through it, and so on — but that later gave way to a fascination with the chemistry of the ocean, and particularly how it holds carbon dioxide. Now, understanding biological activity in the ocean is one of the "major future directions" for marine science, Curry thinks.

"It's all about what is capturing the carbon, which starts at the microbiological level, and how it's transferred and transformed in the oceans," he said. "That just made me think even more about Craig, who is a leader in that area."

To Kujawinski, who worked with him at BIOS-SCOPE, Carlson is the perfect person to get the multidisciplinary effort to gel. He is invested in every aspect of the science, not just the microbiology, she explained. His enthusiasm is as clear during research meetings on shore as it is when the team takes its water-sample cruises in the Sargasso. "He perpetuates a really good atmosphere at sea," she said. "He helps everybody out, and everybody knows what's going on."

"When he's at sea, he has his hands in everything," from helping with the water pumps work to coordinating the research. "The beauty of Craig is that there's no difference, from a science perspective, between what he was like when he wasn't Grand Poohbah and what he is like now," Kujawinski said. "He's just Craig."

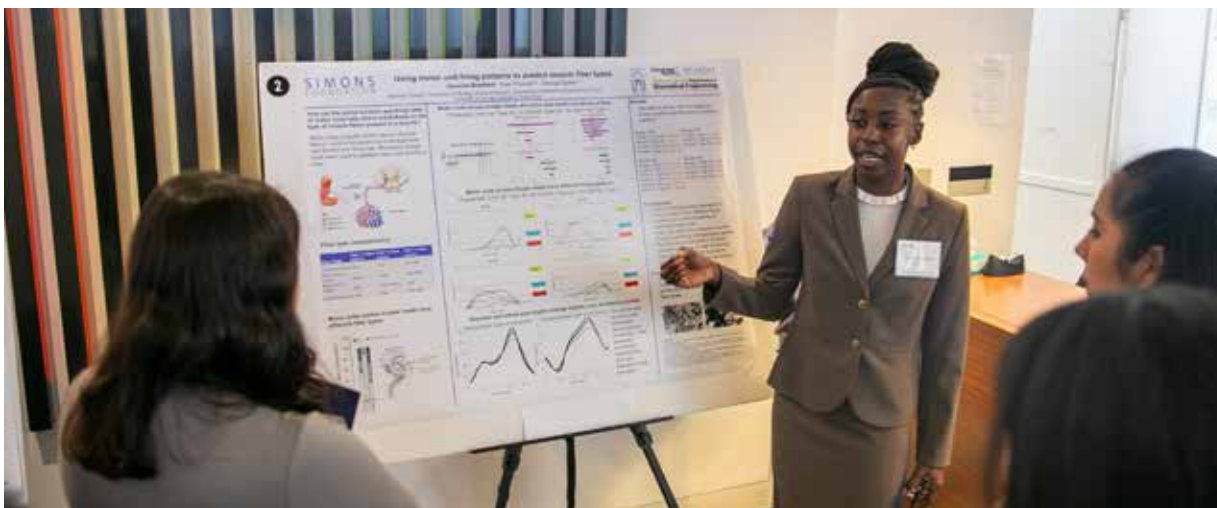


SURFiN OPENS THE DOORS OF SCIENCE

In 2023, Amaya Chikuni was an undergrad at Brigham Young University studying neuroscience, scrolling through a departmental newsletter filled with opportunities for science research assistants. The third-year student felt that most of the jobs were meant for students who already knew how the system worked, or who had mentors, connections, or an intuitive sense of what a science career looks like. But she didn't have any of that. Chikuni was the first in her family to go to college. The idea of even applying felt, as she put it, "kind of lofty."

But one opportunity caught her eye: The Shenoy Undergraduate Research Fellowship in Neuroscience (SURFiN). The program, which offered a paid research assistantship in the neuroscience laboratory of a Simons Foundation-supported investigator, looked promising. It offered hands-on research experience, mentorship and was a paid opportunity. She applied and, to her surprise, she got in. Looking back, she can't believe how much it changed everything.

PHOTO: At a symposium in New York City in 2025, SURFiN Fellow Tatiana Moustafa, a SURFiN Fellow at the University of Bordeaux, presented research that she conducted on possible neurological causes for memory decline in Alzheimer's disease.



Javonna Bradford, a SURFiN Fellow in the Spelman College Department of Biology, discussed a new technique for measuring the fiber composition of muscles.

Chikuni interned for one and a half years in the laboratory of Nicolas Frost at the University of Utah, a neuroscientist funded by the Simons Foundation Autism Research Initiative (SFARI). She had no previous experience running experiments in a lab. But through the program, she found herself working at the bench and learning techniques in cell culture and protein assays. She also gained access to networking opportunities, one of which led to a research job after graduation in 2024.

“The mentors shaped my experience and my career path,” said Chikuni, who graduated from Brigham Young and is now moving into a full-time research assistant position at Icahn School of Medicine at Mount Sinai in New York City. “The exposure to neuroscience through the program let me see what it’s actually like, and that’s when I decided to pursue a Ph.D.”

The SURFiN program, founded in 2021, aims to expand access to neuroscience research for undergraduate students who might not otherwise have opportunities to participate in research. It is named after the late Krisha Shenoy, a distinguished neuroscientist and investigator in the Simons Collaboration on the Global Brain (SCGB) who was deeply committed to mentoring young talent.

“

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”

Amaya Chikuni, SURFiN Fellow

SURFiN fellows gain hands-on, in-person, paid research experience in a lab during the academic year with direct mentorship, typically from early-career scientists.

“For us, the goal was to create pathways into science for people who hadn’t had those opportunities before,” said Alyssa Picchini Schaffer, vice president and senior scientific officer of Neuroscience Collaborations. Picchini Schaffer originally launched the SURFiN program as part of the Neuroscience Collaborations, but it has subsequently expanded to involve laboratories headed by investigators who receive funding from SFARI as well. The program is now overseen by Picchini Schaffer and Jennifer



Raine Brickan, interned as a SURFiN Fellow at the Nationwide Children's Hospital in Columbus, Ohio, where she studied neuroinflammation in a degenerative brain condition.

Foss-Feig, SFARI vice president and senior scientific officer, and is managed by Jennifer Valdivia Espino.

Picchini Schaffer says one of the program's real benefits is the pay. Many research internships are unpaid, which limits the applicant pool to students who can afford it. But in SURFiN, students receive \$25 per hour, a competitive wage for an undergrad. Moreover, the program offers 10 hours a week throughout the year, with the option to extend into the summer months and the next academic year, too. That arrangement provides financial stability to the student and continuity for the principal investigator, allowing labs to integrate the student as a steady member of the research team, Picchini Schaffer says.

What's more, the students do not need to be at the institutions where the principal investigators are working. They often come from nearby schools, including community colleges and institutions offering associate's degrees. Many are first-generation college students. The diversity is intentional, says Picchini Schaffer. Students who might never have imagined themselves in a top-tier research environment suddenly have that opportunity within reach. She is passionate about inclusivity in science and about the program

attracting a range of students with varied backgrounds. "Science is stronger when more kinds of people are doing it," she adds.

Nana Dufie Akowuah was a pre-med undergrad at CUNY (City University of New York) College of Staten Island in 2021 when she applied to the program and was matched with the lab of neuroscientist Liam Paninski at Columbia University. She spent two years working in the lab, commuting from Staten Island to upper Manhattan, where she was embedded in a computational neuroscience research project funded by SCGB.

"If I hadn't done the program, I wouldn't be interested in computational work at all," she said. "Now I love it." She credits the program with that exposure, including learning the programming language Python "from scratch" through one-on-one coaching from her mentor.

"Getting that hands-on experience made me realize that computational work is here to stay. It's going to be part of our daily lives. Especially with this new wave of artificial intelligence, I'm not scared, because I had an early introduction to what AI is and what it can do," she said.

Today, Akowuah is in her fourth year of a computational neuroscience Ph.D. program at Rutgers University. She says her two years of hands-on lab experience gave her an advantage when applying to graduate school because programs look for students who have already spent time at the bench. Her time as a SURFiN fellow gave her real work to point to, not just an expressed interest.

Apart from the lab work, there are other professional skills the fellows pick up. The program offers networking opportunities and professional development courses. At an October 2025 virtual meeting on applying to graduate school, for example, Akowuah provided insight and advice based on her own experience. There are also meetings in which the fellows discuss resumé writing, the best ways to approach people for letters of recommendation, and a variety of other aptitudes required to pursue an academic research career. There is also an in-person symposium each year, during which students travel to New York City, the headquarters of the Simon Foundation, and are given the chance to present at a scientific conference. For most students, that is their first time standing in front of an audience and discussing their work.

For Damhyeon Kwak, a neuroscience doctoral candidate at the University of Utah who mentors fellows in the program, that kind of opportunity is one of the most valuable aspects of SURFiN. “For students who have never been in a lab, science exists at the textbook level, but how it actually happens is a black box to them,” she says. “The fellows I’ve mentored get to see the day-to-day of what it really takes to do research.”

She says her favorite experience was helping the students create posters and practice their talks. For many of those students, that was the first time they truly understood that science doesn’t happen in isolation in the lab, but also requires communication, collaboration and bringing others into your work.



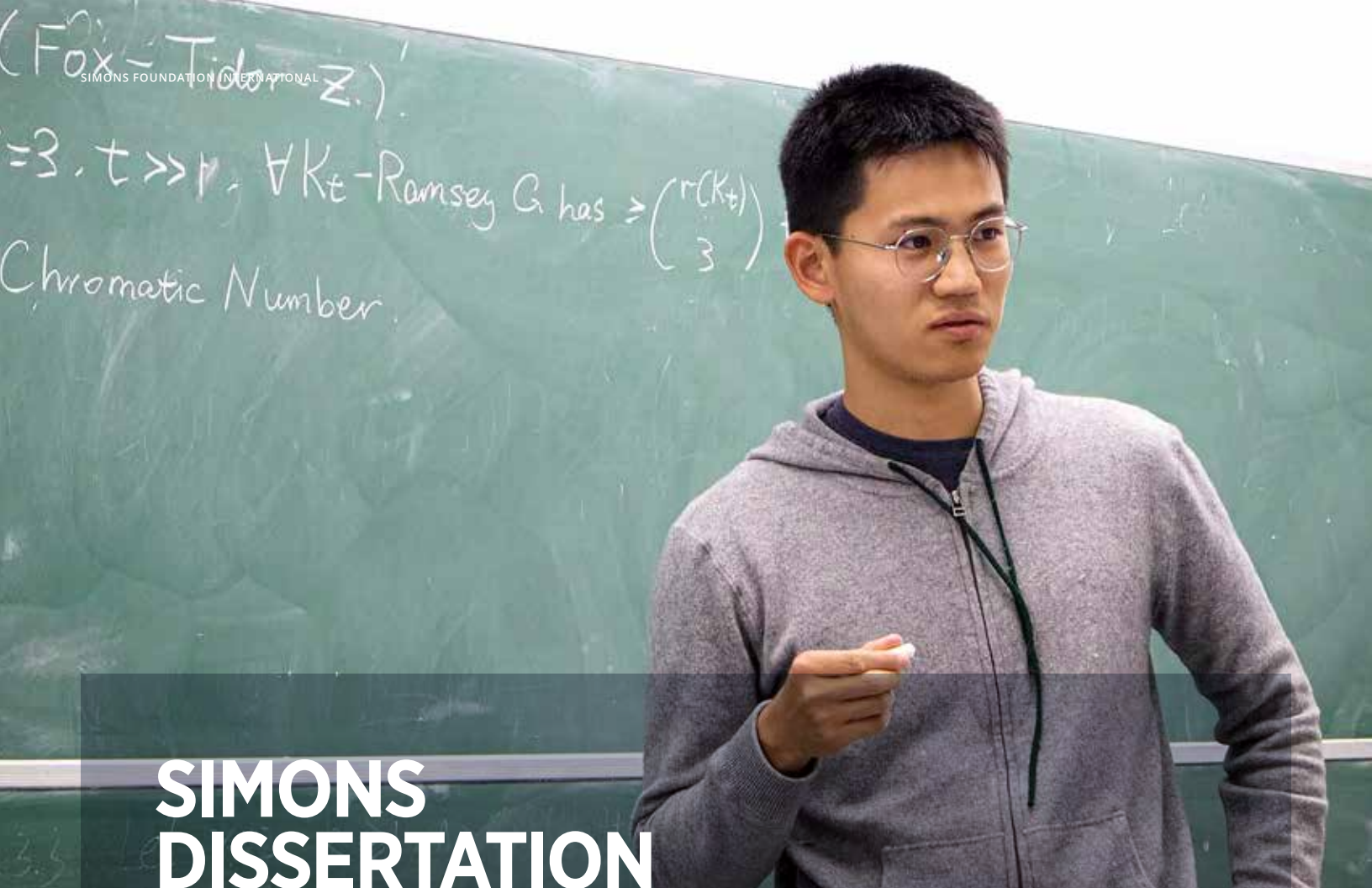
Alishba Silat, a SURFiN Fellow at the University of Texas at Dallas, described her research about how autism can present itself differently in various cultures.

That presentation experience also builds confidence. The biggest shift for many students is not only what they learn about doing science, but how they see themselves in the process. Applying to a graduate school with a four-year degree is one thing but doing it with the benefit of a couple years of benchwork and time in front of an audience delivering scientific results is another. Suddenly, they can see a roadmap for their path in science.

Picchini Schaffer says that in the future, she hopes to expand this program beyond neuroscience to other scientific disciplines. The combination of skill-building, exposure and wide outreach is exactly what she thinks is needed to open the doors of academia. “A lot of success in science hinges on getting mentorship, connections, and most importantly, thinking that you can,” she says.

“IF I HADN’T DONE THE PROGRAM, I WOULDN’T BE INTERESTED IN COMPUTATIONAL WORK AT ALL, NOW I LOVE IT.”

Amaya Chikuni, SURFiN Fellow



SIMONS DISSERTATION FELLOWSHIPS FOSTER PASSIONS FOR MATH

When Jim Simons was a graduate student, a fellowship from the National Science Foundation allowed him to turn his study of mathematics from an academic passion into a real profession. So when Yuri Tschinkel, the executive vice president of the Simons Foundation's Mathematics and Physical Sciences division, sat down with David Spergel, the president of SFI, to come up with a project to honor the life of Simons, who died in 2024, it struck them as a glaring oversight that there were few funding opportunities for young scholars in mathematics.

Thus, the Dissertation Fellowship in Mathematics was born. The funding opportunity is available for mathematics students in the last two years of their doctoral studies. The Simons Foundation announced the first class of 40 fellows in July, with each fellow receiving \$30,000 over two years, with additional support for their departments and universities.

PHOTO: Shengtong Zhang, a 2025 Simons Dissertation Fellow, gives a talk to the Discrete Mathematics Group in South Korea.

"It was natural. It felt right to do it in memory of Jim," Tschinkel said.

He had just been reviewing applications for the second year of the awards and was moved by both the intellectual strength and the diversity of mathematical interests that the applicants showed. "It's great to know that the next generation of scientists are working hard and publishing," he said.

Shengtong Zhang is one such student.

As an undergraduate at MIT, Zhang grew fascinated by a longstanding problem in geometry called equiangular lines: Imagine a set of straight lines that all intersect at a given point, and the angle between any pair of the lines is equal. What is the maximum number of lines that can do this in any given multi-dimensional space? Easy as the question is to state, a satisfying answer remained elusive to mathematicians — until a breakthrough paper that Zhang coauthored offered a generalizable answer for a long-standing version of this problem.

"He is a superstar already," said Tschinkel.

To better understand these lines and the angles they form, Zhang and his co-authors used an approach called spectral graph theory, which casts a graph (such as that intersecting set of lines) as a networked matrix. The information encoded in the matrix can then be characterized by an "eigenvalue" that describes what happens as the number of lines increases.

The work has propelled Zhang to his research today at Stanford University, where he is in the latter half of his doctoral studies. Now, he is captivated with refining understanding of the largest eigenvalues.

Zhang describes the work as generative: Each answer opens a new world of questions.

"It's fortunate, in this field I'm working on, that there has been a stream of very nice problems being proposed and being solved," he said. He loves that

“

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”

Shengtong Zhang, Stanford University

the field relies on a "synergy of two points of view" to answer these questions, one that blends the discrete world of combinatorics (the mathematics of counting) with the more fluid approach of linear algebra.

It lends itself to elegant collaborations, too.

"The combinatorics community is very vibrant right now," Zhang explained, excited about the exchange of ideas that occurs at conferences.

Though Zhang has yet to put any of the fellowship funds towards attending a conference, he is grateful the funds have the flexibility to do that, especially in a year when funding for the sciences has been especially fraught. As an international student, Zhang has been bound to conferences in the U.S. for the past year. The fact that the fellowship has no nationality requirement has been galvanizing. "I think it's important for international students to see that we are recognized and our work can attract and win fellowships," he said.

Anne Fayolle is another recipient of the Dissertation Fellowship who benefits from its broad and flexible application. Originally from France and now a doctoral candidate at the University of Utah, Fayolle says the fellowship "is allowing me to do things that I wouldn't have the freedom to do otherwise," she said. "It's so wonderful. Not a lot of grad students have that much freedom."



Anne Fayolle, a doctoral candidate at the University of Utah, says the Dissertation Fellowship “is allowing me to do things that I wouldn’t have the freedom to do otherwise.”

During the fall of 2025, for example, she used the funds to attend a number of conferences, including one at the Banff International Research Station in Alberta, Canada, in October, where she gave a talk as part of a workshop on “singularity in different characteristics.” A characteristic, in this mathematical context, is a function that shows how random variables are distributed in a continuous shape.

The niche of the Banff conference perfectly aligned with the questions that drive Fayolle. After loving algebra as an undergraduate at McGill University, she says, she “stumbled into” the study of singularity theory when she was a master’s student at the Swiss Federal Technology Institute of Lausanne, where she was captivated by the work of those studying non-zero characteristics.

“I just got lucky when I got there that I found an area that works really well with the way I think mathematically,” she said. “I like structures. I like objects. I think that algebra is a lot about figuring out the right structure.”

It helps to think of Fayolle’s work in terms of shapes and structures. Picture a sphere and a cone: While the sphere is smooth all around, the cone is smooth until it tapers to a point. That point, an area of non-smoothness, is a singularity. For increasingly

complex shapes, representing increasingly complex equations, the singularities get more interesting as well.

Fayolle is fascinated by understanding singularities in different number systems and how they are linked in different characteristics.

To better identify them, she applies Frobenius methods, measuring the “intrinsic movement in the shape that tells us where the singularities are,” she said. As part of her research supported by the Dissertation Fellowship, she is trying to refine the theory behind Frobenius methods to better understand these singularities in shapes.

Fayolle lights up when she describes this work, which for her is rollicking fun. The autonomy to dig deep into the nuances of her specialty frees her to relish the joy of mathematics. She can capitalize on what delights her.

That is exactly what the open-ended flexibility of the fellowship’s funding is meant to do, Tschinkel said. He hopes for it to be a way to nurture youthful passions for math like the one that young Jim Simons had.

“We view this, long-term, as a way of finding young students and giving them leverage,” he said.

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”

Anne Fayolle, University of Utah



GIVING IN BERMUDA

CHANGING THE EQUATION FOR BERMUDA'S YOUNG LEARNERS

For many children in Bermuda, math is more than a difficult subject. It is a source of anxiety, frustration and self-doubt. The ICAN Math Program at The Reading Clinic is working to change that by helping students rebuild not just their skills but also their confidence. With support from the Simons Foundation International (SFI), the program is expanding its reach and strengthening opportunities for both students and educators.

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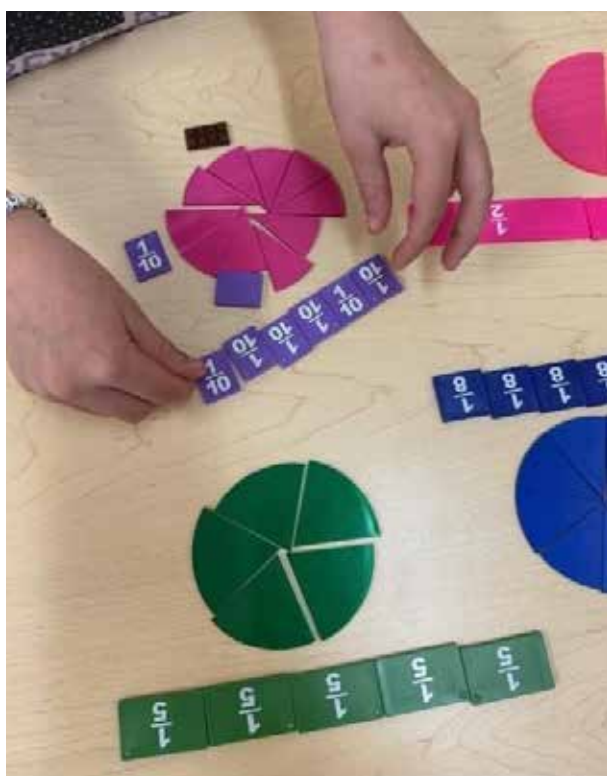
**WHEN A CHILD SEES
THEIR PROGRESS,
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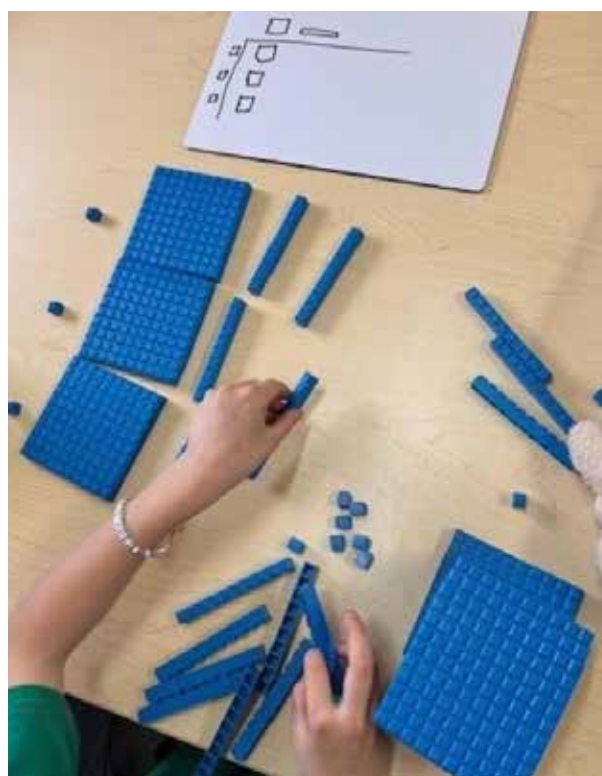
Tina Harris, executive director, The Reading Clinic



PHOTO: The ICAN Math Program staff (left to right): executive director of The Reading Clinic (TRC) and tutor Tina Harris, tutor Debbie Melo, TRC ICAN director and tutor Juliet Pearman, tutor Katina Rabain, and TRC administrative assistant and tutor Jill Waddington.



Multiple fraction models help reinforce conceptual understanding.



Base 10 blocks and pictorial representations help Bermuda students understand division.

The ICAN (which stands for Individualized Cognitive Approach to Numeracy) program supports school students who struggle with math, including both those with diagnosed learning differences and those who have simply fallen behind. Through small-group instruction and targeted tutoring, trained educators take a structured, hands-on approach to helping children strengthen their foundational numeracy skills.

“When a child sees their progress, it becomes a confidence booster,” says Tina Harris, executive director of The Reading Clinic. “If we say, ‘You’ve improved by a grade level,’ that doesn’t necessarily mean much to them. But when we show them the difference in their work, how many more questions they can answer correctly, it becomes real.”

Students in the program often start off struggling with fundamental concepts and carrying a deep sense of math anxiety. Harris says that anxiety can show up in many ways.

“

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Tina Harris, executive director, The Reading Clinic

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“For some children, it’s actually physical,” she says. “They feel nauseated, their stomach hurts, and they try to avoid the lesson.”

The ICAN approach eases students over that anxiety by helping them work step by step to build conceptual understanding. The program uses the Concrete-Representational-Abstract (CRA) method, in which children visualize and physically interact with representations of math concepts before moving on to more abstract problem solving. “They may arrive feeling like they hate math,” Harris says. “But they don’t leave feeling that way. They leave believing they can do it, and that belief can change everything.”

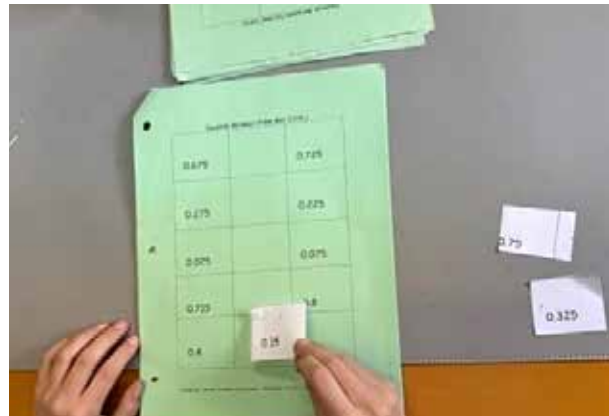
All ICAN tutors are teachers holding degrees or certificates in education, in addition to completing specialized training in the program’s methodology.

“The tutor becomes like the child’s safe space,” Harris says. “The child can say ‘I don’t understand’ without feeling embarrassed. They can make mistakes and build skills without fear.”

The impact of the ICAN program experience extends beyond academic progress. Parents and teachers frequently report noticeable changes not just in the students’ attitudes toward math but toward school more broadly.

“Parents often say homework is no longer a battle,” Harris says. “Teachers tell us students are raising their hands more or sharing strategies they learned during tutoring.”

Demand for the program continues to grow. During the 2024-25 academic year, ICAN served 57 students with a support team of 25 tutors, nearly twice as many students as in previous years. The financial assistance offered by ICAN is vital. “We operate on a tiered bursary system because many families simply wouldn’t be able to afford tutoring otherwise,” Harris says. “We want to ensure that no child misses out on support because of financial barriers.”



Students use manipulatives to understand the place value of decimals. Photo by Tina Harris.

Support from SFI plays a critical role in making that access possible. SFI funding subsidizes the program costs, provides financial assistance to families and supports the operational needs for the program’s continued growth.

The grant has also allowed The Reading Clinic to expand its impact beyond the students directly enrolled in ICAN. The clinic launched a six-week educator workshop series, titled From Fingers to Decimal, designed to equip teachers with the same evidence-based strategies used in the program.

“**WHEN WE TRAIN TEACHERS, OUR REACH EXPANDS DRAMATICALLY... EACH TEACHER WORKS WITH DOZENS OF STUDENTS EVERY YEAR. BY SUPPORTING TEACHERS, WE’RE SUPPORTING HUNDREDS OF CHILDREN.**”

Tina Harris, executive director, The Reading Clinic

PREPARING BERMUDA'S FUTURE OCEAN STEWARDS

The ocean is a cornerstone of Bermuda's past, present and future. Despite the island's vast insurance and financial presence alongside its vibrant marine ecosystems, there are still few clear pathways for local, early-career professionals entering fields that determine how the ocean is governed and how capital is directed toward it; often referred to as the fields of ocean governance and "blue economy." The Young Leaders in Ocean Governance (YLOG) program addresses that gap by offering Bermudian youth a structured pathway into this emerging sector, linking local expertise with global developments.

"Before the YLOG program, I had a general understanding of ocean governance from my degree, [but] I felt less confident discussing its complexities," wrote Destiny Amor-Matthie, a YLOG Fellow, in a testimonial for the program. "After completing the program, I feel much more comfortable engaging in conversations about governance frameworks, policy challenges and sustainable ocean management."

YLOG is a 10-week training and fellowship program that provides a unique, internationally curated curriculum, coupled with masterclasses and

YLOG Fellows after learning from Sargasso Sea Commissioner Robbie Smith on a boat trip to Bermuda's North Rock.



internships within Bermuda's public, private and non-profit sectors. Fellows gain a multidisciplinary foundation that connects science, law, economics and community-based leadership, with the goal of preparing the participants to support ocean governance at both local and international levels.

Ela Gokcigdem, the founder of YLOG, spent her childhood shuttling between the United States and Avsa, a small Turkish island in the Marmara Sea, roughly a third the size of Bermuda. Over time, she witnessed regional environmental decline around Avsa, including recurring algal blooms that contributed to what scientists describe as marine "dead zones." The degradation affected coastal areas that had long been central to community life.

When Gokcigdem attended the 2023 Youth Climate Summit at the Bermuda Underwater Exploration Institute, she connected with local stakeholders and saw how central the ocean is to the island's future. A few weeks later, while participating in the United Nations Climate Conference, she was struck by how few early-career professionals were working at the intersection of ocean governance and finance. She began developing a pilot program with Bermuda in mind, building on those initial connections and existing international partnerships.

As the concept evolved, YLOG was endorsed as an official activity of the United Nations Decade of Ocean Science for Sustainable Development.

“
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Destiny Amor-Matthie, YLOG Fellow



YLOG Fellows participate in the "Imagining Ocean Futures Workshop" at the Alliance for the Just Deliberation on Solar Geoengineering.

A critical turning point came when Gokcigdem presented the program to the Simons Foundation International (SFI). By providing both validation and resources at an early stage, SFI's early support helped transform the concept into an operational program, building its momentum and strengthening local partnerships.

The curriculum is designed to reflect the complexity of ocean governance in island jurisdictions like Bermuda. Each week, Fellows move between conceptual modules and applied work that connect policy, science and finance rather than treating them as separately siloed concerns.

The 2025 pilot cohort explored topics such as the Sargasso Sea's unique role in the High Seas Treaty, ocean-climate finance principles with experts from IOC-UNESCO, and climate finance taxonomies and diplomacy with practitioners from Small Island Developing States, including the Federated States of Micronesia and Palau. They also examined emerging topics such as solar geoengineering and marine carbon dioxide removal, asking how Bermuda's position as an insurance hub might shift if those technologies are deployed at scale. Students mapped which nations would be involved, which would bear risk, and where Bermudian communities fit into those decisions, linking speculative ocean futures to concrete questions of justice, responsibility and governance.



Ela Gokcigdem, the founder of YLOG, introduces the oceanographer Philippe Cousteau Jr. before his address at the kickoff for ASU BIOS.



Fellowship recipients pose at the inaugural kickoff event for YLOG hosted at BIOS.

The program combines weekly asynchronous coursework with in-person Friday sessions featuring subject-matter experts who can engage directly with the topics. The program's structure is intentionally designed as a test bed for how to educate ocean governance professionals in a changing climate. YLOG Fellows analyze how global agreements such as the High Seas Treaty can be financed in the North Atlantic, how financial mechanisms could be used to support or undermine conservation, and how community priorities should be centered in blue economy strategies. Fellows must complete individual capstone projects in which they translate their 10 weeks of learning into concrete proposals for Bermudian institutions. In 2025, those projects ranged from short films about Bermuda's blue economy to carbon tax analyses.

YLOG Fellows work with a wide array of local organizations, including AXA XL and KPMG, and receive the endorsement of the then-deputy premier, Walter Roban. The program places two Fellows within the Ministry of Home Affairs, where they directly engage with Bermuda's energy policy developments. One Fellow, Osei Agyapong, described his mentors at KPMG as "world-class both in professional experience and in my interactions with them," and hailed YLOG as "an incredible opportunity for Bermudians to interact and learn from some of the best of the best in the industry."

Looking beyond its pilot year, YLOG aims not only to train individual students but to help cultivate a locally informed, globally connected community of practice around ocean governance in Bermuda. With support from partners such as SFI and local host institutions, the program will expand its masterclasses, strengthen alumni networks, and continue to build the kind of durable, island-rooted capacity that ocean governance demands.

“
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 INSIGHTFUL AND ALLOWED ME
 TO COMBINE MY LOVE OF THE
 FINANCIAL INDUSTRY WITH
 PROTECTING OUR OCEANS...
 IT REALLY IS AN EYE-OPENER
 TO THE OPTIONS WE HAVE TO
 HELP THE PLANET.**
 ”

Zorena Anderson, YLOG Fellow

MENTORING BERMUDA'S NEXT GENERATION OF CONSERVATION SCIENTISTS

The waters surrounding Bermuda are alive with color, movement and diversity, but understanding them takes effort, not just curiosity. With the support from the Simons Foundation International (SFI), a new generation of Bermudian scientists is

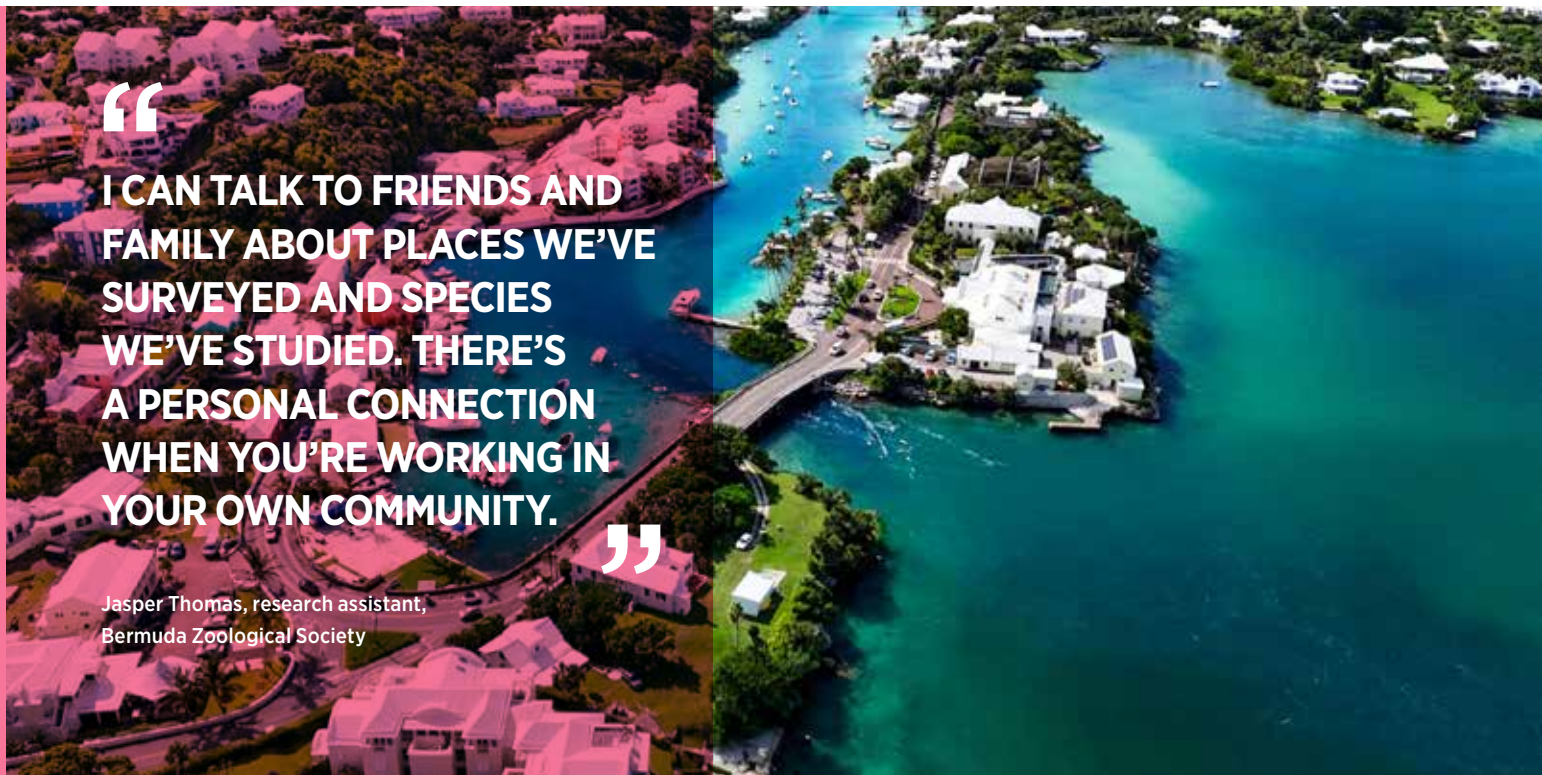
gaining hands-on training in marine conservation under the guidance of Robbie Smith of the Bermuda Natural History Museum and Bermuda Zoological Society, bringing together students and interns to deepen understanding of local fish communities and habitats.

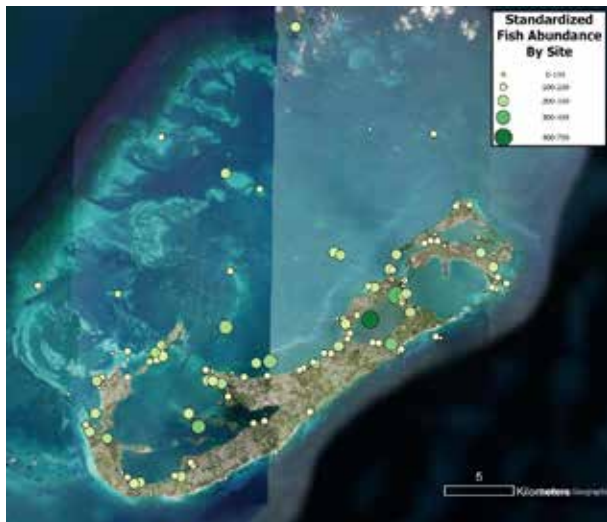
“

I CAN TALK TO FRIENDS AND FAMILY ABOUT PLACES WE'VE SURVEYED AND SPECIES WE'VE STUDIED. THERE'S A PERSONAL CONNECTION WHEN YOU'RE WORKING IN YOUR OWN COMMUNITY.

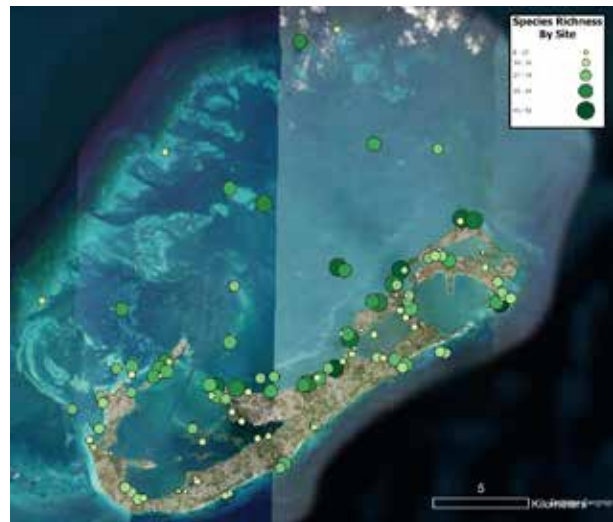
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Jasper Thomas, research assistant,
Bermuda Zoological Society





Fish abundance per 100 square meters across sampling sites from 2019 to 2025.



Species richness (the number of species observed) across sampling sites from 2019 to 2025.

In July 2025, Smith recruited Jasper Thomas as a research assistant. Thomas, who had just graduated from Dalhousie University with strong data-processing skills, had completed a series of summer internships with Smith from 2019 to 2024, conducting fish surveys with the support of the Bermuda Institute of Ocean Sciences. He chose to defer a master's program in data sciences from Dalhousie University to participate in the final stage of his collaboration with Smith: the comprehensive data analyses and preparation of a publication.

"Lucky me," Smith says, appreciative of the expertise Thomas brings to the project.

For Thomas, the opportunity represents both continuity and growth. "It's been fantastic working with Dr. Smith," he says. "He's very patient, he knows so much, and the way he thinks about problems is really interesting. My role is taking those ideas and applying data science, which has been a great learning experience."

This summer, Smith and Thomas focused on organizing and double-checking the data sets from

the fish surveys conducted between 2019 and 2024, carried out alongside a team of 10 interns. They also collected new data from 14 mangrove sites in 2025. Over the course of the project, the team surveyed 113 sites, from the Northern Outer Rim reefs to the South Shore Boiler inner reefs, lagoon patch reefs, rocky shorelines and mangroves. Rocky shorelines and mangroves were the primary focus, since these habitats have historically been underexplored. Thomas employed GIS analyses to visualize fish abundance and compare species diversity across the habitats and to highlight habitat-specific trends for key species.

New Bermudian summer intern Loryn Ming, a student at the University of South Wales, conducted an independent study on the distribution of an endemic fish, the Bermuda Bream, in mangroves and nearby habitats, providing insight into an area that has rarely been studied in depth. Ming designed her study, collected field data and interpreted the results — a valuable opportunity for hands-on research that the Bermuda Zoological Society has provided to undergraduates for the past 25 years under Smith's guidance.

For Thomas, working on Bermuda's ecosystems adds a personal dimension to the research. "It's really rewarding to work on Bermuda's environment," he says. "I can talk to friends and family about places we've surveyed and species we've studied. There's a personal connection when you're working in your own community."

Like Thomas, Ming gained experience designing and carrying out independent research, developing field and analytical skills that are critical for careers in marine science.

"This work is about more than data," Smith says. "It's about giving students hands-on experience with real conservation science while building a baseline for protecting Bermuda's marine biodiversity."

The experience is already shaping participants' futures. "It's not easy to find a job in marine science right after you graduate, especially in Bermuda," Thomas says. "So this was a perfect opportunity. It's exactly what I want to be doing."

He adds that the technical skills gained through the program will carry forward into his career. "I really like research to a certain extent, but I especially like working with data," he says. "This job has helped me build skills in programming and analysis that I know I'll use in the future."

For Ming, the program provided a rare opportunity to lead her own research project, from study design to fieldwork and analysis, helping build the independence and confidence needed for a career in conservation science.

The team is preparing a comprehensive manuscript for submission to a peer-reviewed journal by June 2026; the prior interns will also be listed as co-authors. This study will provide valuable insight into fish distributions, habitat use, and the importance of mangroves and rocky shores as nurseries for key species.

By placing students at the center of the work, SFI's support ensures they are not just assisting with research but actively developing the skills, confidence and independence needed to pursue careers in science and conservation. Interns gain experience in fieldwork, data analysis and critical thinking, while also learning how their work connects to real-world environmental decisions. For students like Thomas and Ming, the impact extends well beyond a single summer. They leave with practical experience, professional mentorship, and a clear sense of direction in their careers. The real legacy of the program is not only the data collected, or the paper produced, but the cohort of young scientists now equipped to explore, analyze and protect Bermuda's marine ecosystems for years to come.

“

THIS WORK IS ABOUT MORE THAN DATA... IT'S ABOUT GIVING STUDENTS HANDS-ON EXPERIENCE WITH REAL CONSERVATION SCIENCE WHILE BUILDING A BASELINE FOR PROTECTING BERMUDA'S MARINE BIODIVERSITY.

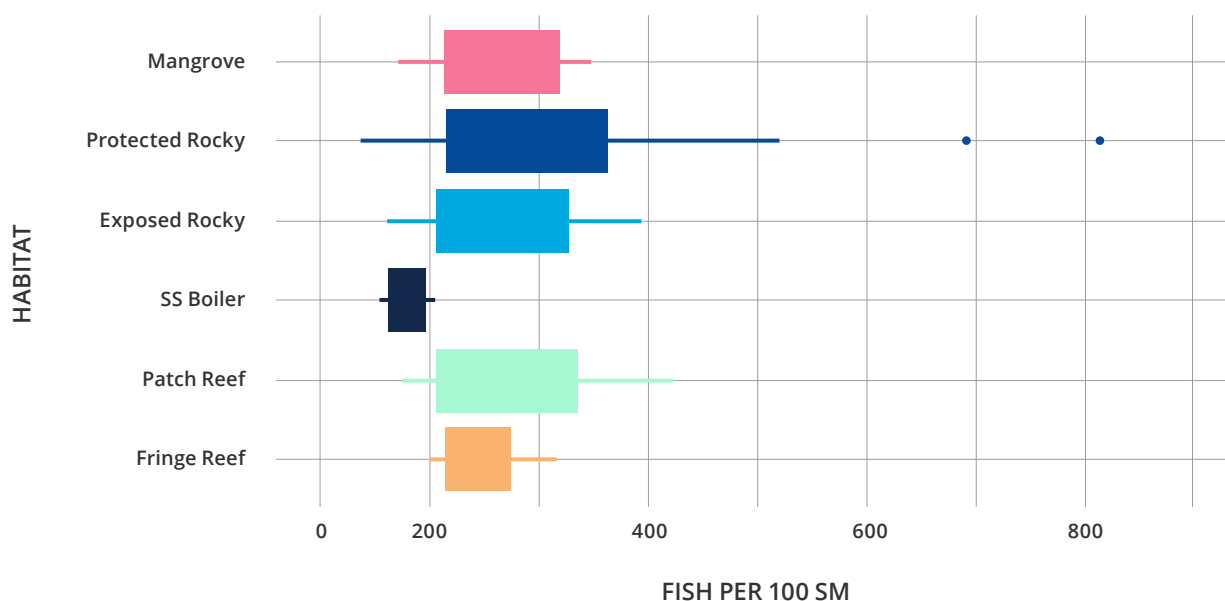
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Robbie Smith, curator, National History Museum,
The Bermuda Aquarium, Museum and Zoo



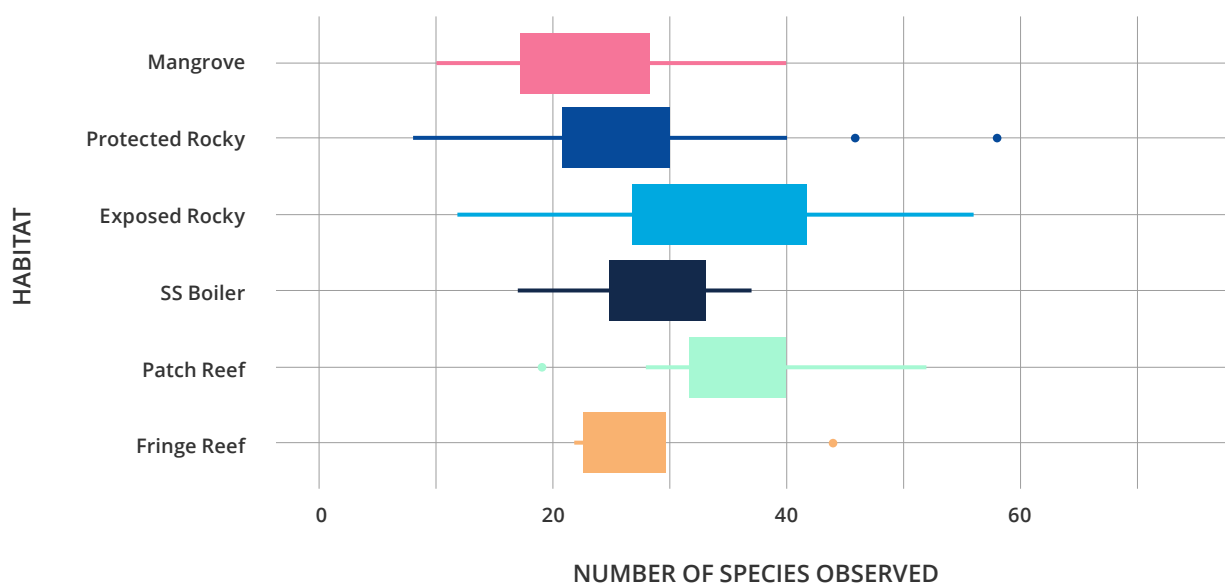
STANDARDIZED ABUNDANCE OF FISH AT HABITAT TYPES

Abundance of fish across different habitat types



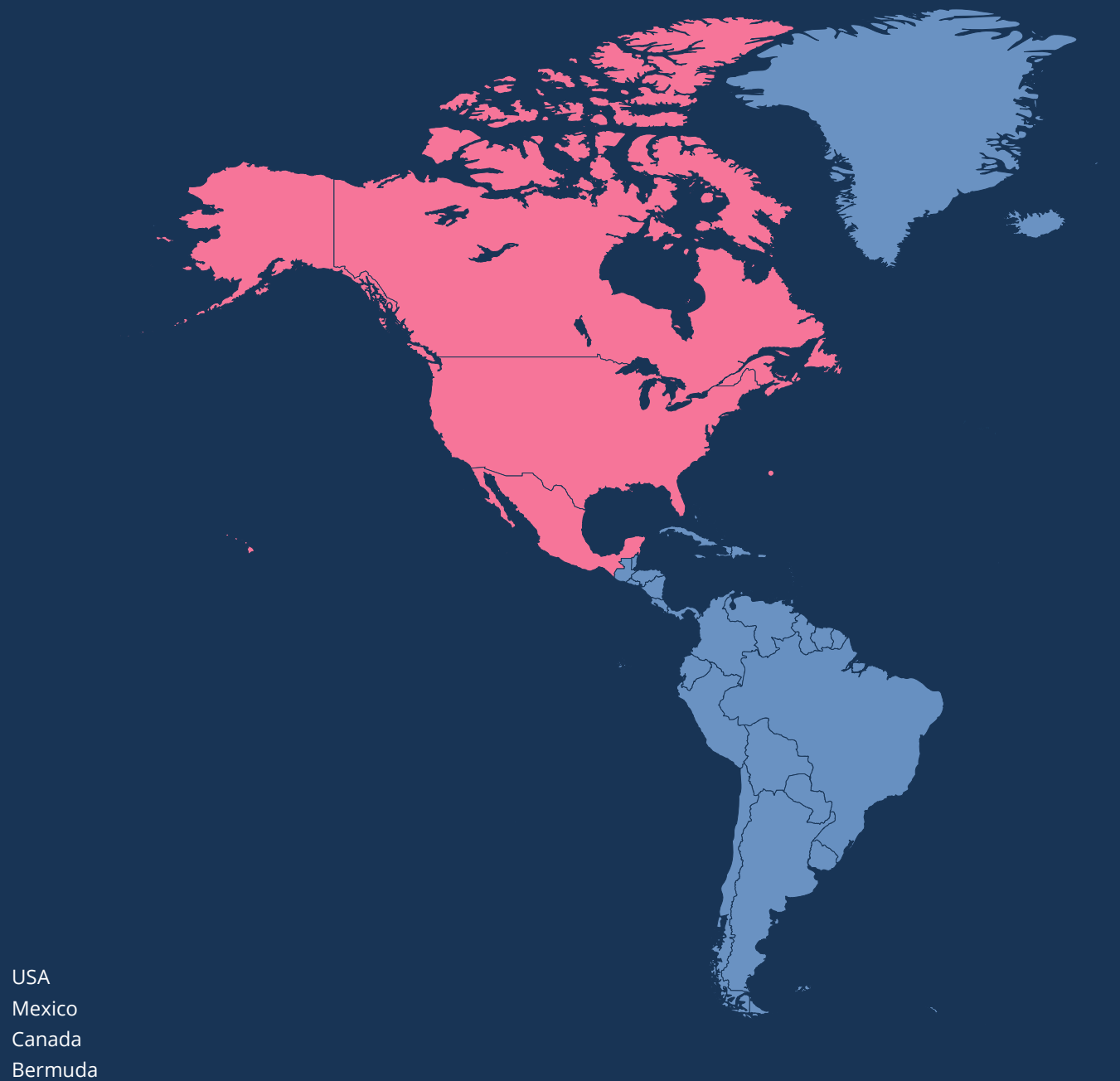
FISH SPECIES RICHNESS ACROSS HABITAT TYPES

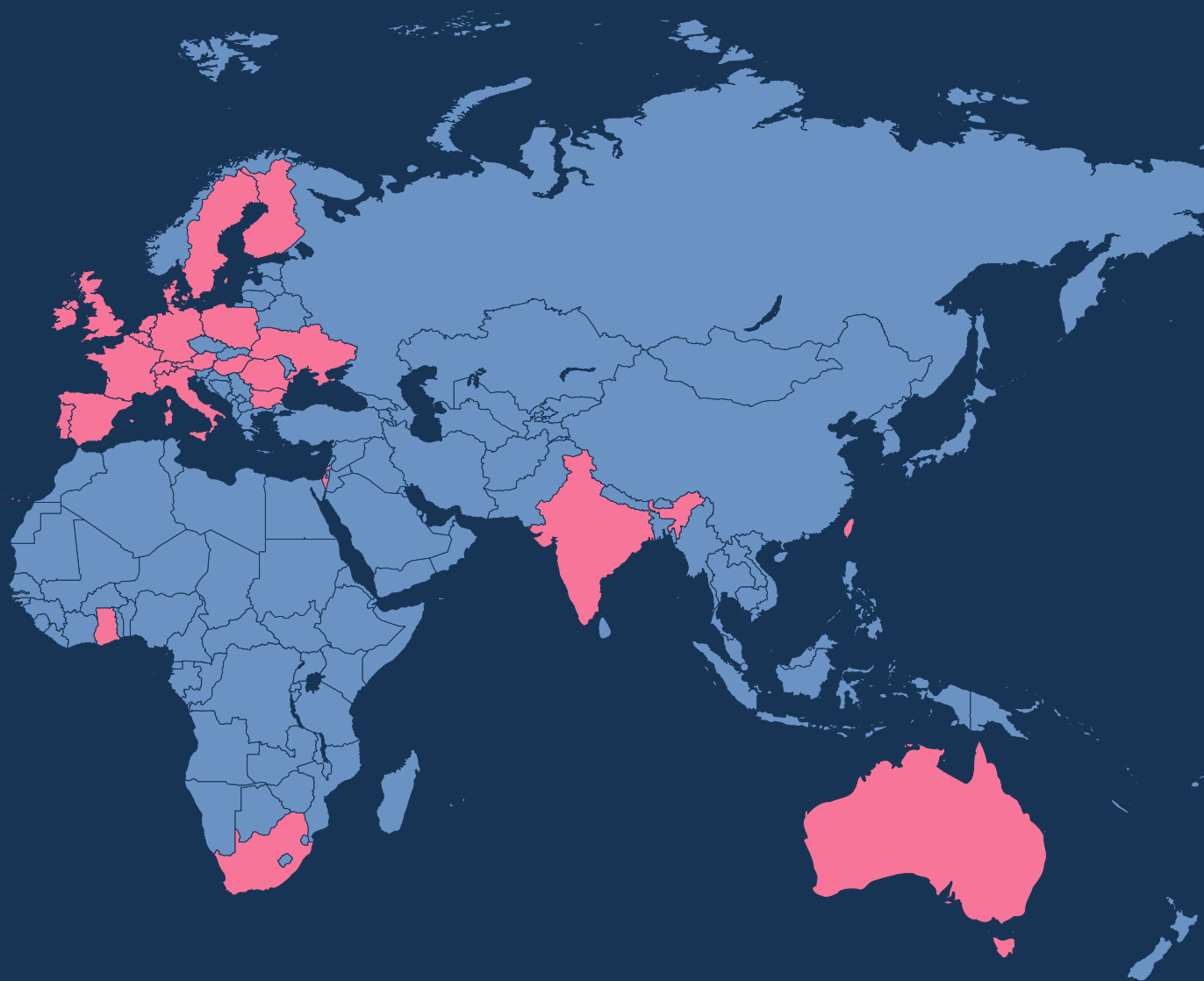
Fish species richness, the number of species observed over time, within different habitats



SFI GRANT DISTRIBUTIONS IN 2025

SFI funds are distributed to organizations around the world.





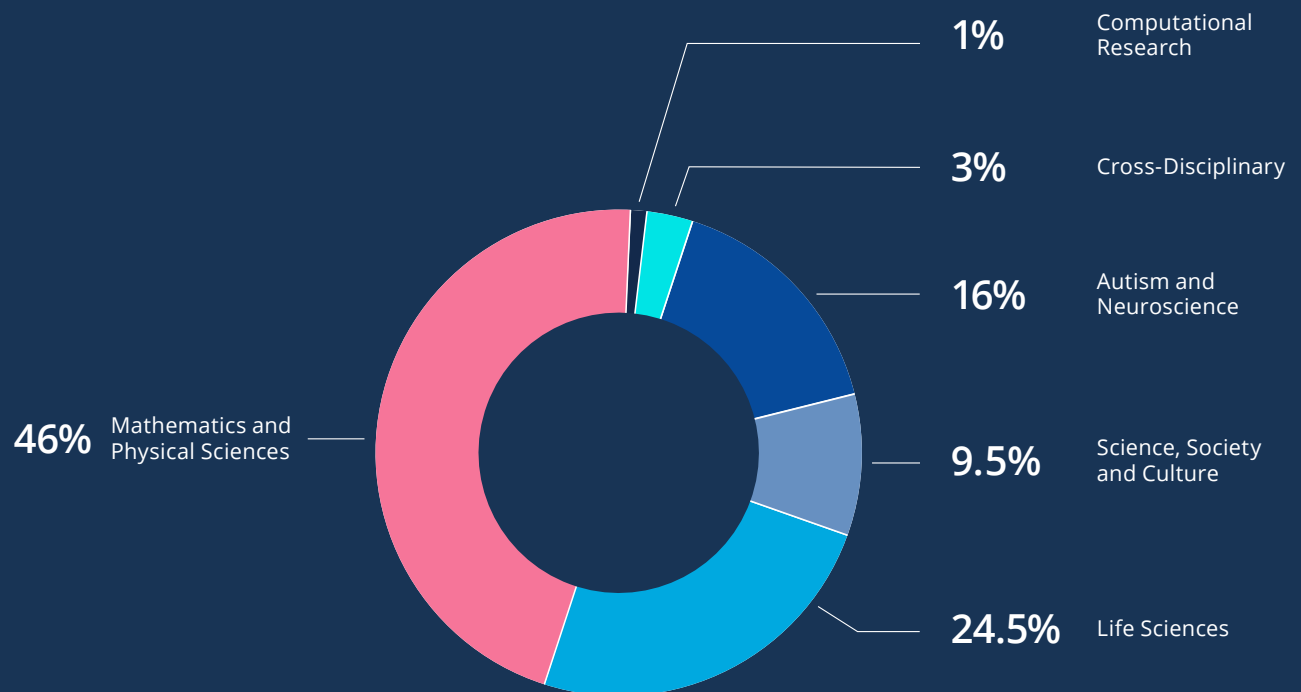
Belgium
Netherlands
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Ireland
Sweden
Finland
Poland
Spain
Austria
Denmark

Ghana
Romania
Taiwan
UK
France
Germany

Ukraine
Switzerland
Italy
Israel
South Africa

DISTRIBUTION OF SFI SUPPORT BY INTELLECTUAL AREA



Simons

E frame bundle φ connection

$\pi \downarrow$
 $X^n \xrightarrow{\text{Miem}}$ (curv matrix, $[\varphi, \varphi]$)
 $\Phi = d\varphi - \varphi \wedge \varphi$

$$\pi^* h_k(E) \hookrightarrow 0$$

$$\Phi = s^{-1} \Omega s = -t\Phi$$

$$d\sigma(I + \Omega)$$

$$\{h_k(\Omega)\} = h_k(E)$$

Pont forms

$$t\varphi = \varphi_t$$

$$\int_0^1 P(\varphi, \Phi_t, \dots, \Phi_t) dt = TP(\varphi)$$

$$4k-1$$

$$dTP = P(\Phi)$$

The pictured marks on a chalkboard represent foundational equations and concepts underlying the mathematics of Chern-Simons forms, as written out by the first chair of the Board of Simons Foundation International, Jim Simons.



$\int$ Simons
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 $\{h_n(\Omega)\} = h_n(E)$
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 $4k-1$ $\int TP = P(\Phi)$
 $t\varphi = \varphi_t$

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 $\int_0^1 P(\varphi, \Phi_t, \dots, \Phi_t) dt = TP(\varphi)$
 $4k-1$ $\int TP = P(\Phi)$
 $t\varphi = \varphi_t$
 M^3 Compact manifold
 $\uparrow S, s$
 $E \xrightarrow{SO(3)}$ $\int TP \in H^3(E; \mathbb{Q})$
 $\int_{S^3} TP, \text{ mod } 1$ $\int_{E_x} TP = 1$ $SO(3)$

$\int$ Simons
 E frame bundle φ connection
 $\pi \downarrow$
 $X^n \xrightarrow{\text{Niem}} \text{Niem}$ curv matrix, $[\varphi, \varphi]$
 $\pi^* h_n(E) \hookrightarrow 0$
 $\Phi = s^{-1} \Omega s = -t \Phi$
 $\det(I + \Omega)$
 $\{h_n(\Omega)\} = h_n(E)$
 $\int_0^1 P(\varphi, \Phi_t, \dots, \Phi_t) dt = TP(\varphi)$
 $4k-1$ $\int TP = P(\Phi)$
 $t\varphi = \varphi_t$

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 $\uparrow S, s$
 $E \xrightarrow{SO(3)}$ $\int TP \in H^3(E; \mathbb{Q})$
 $\int_{S^3} TP, \text{ mod } 1$ $\int_{E_x} TP = 1$ $SO(3)$

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