

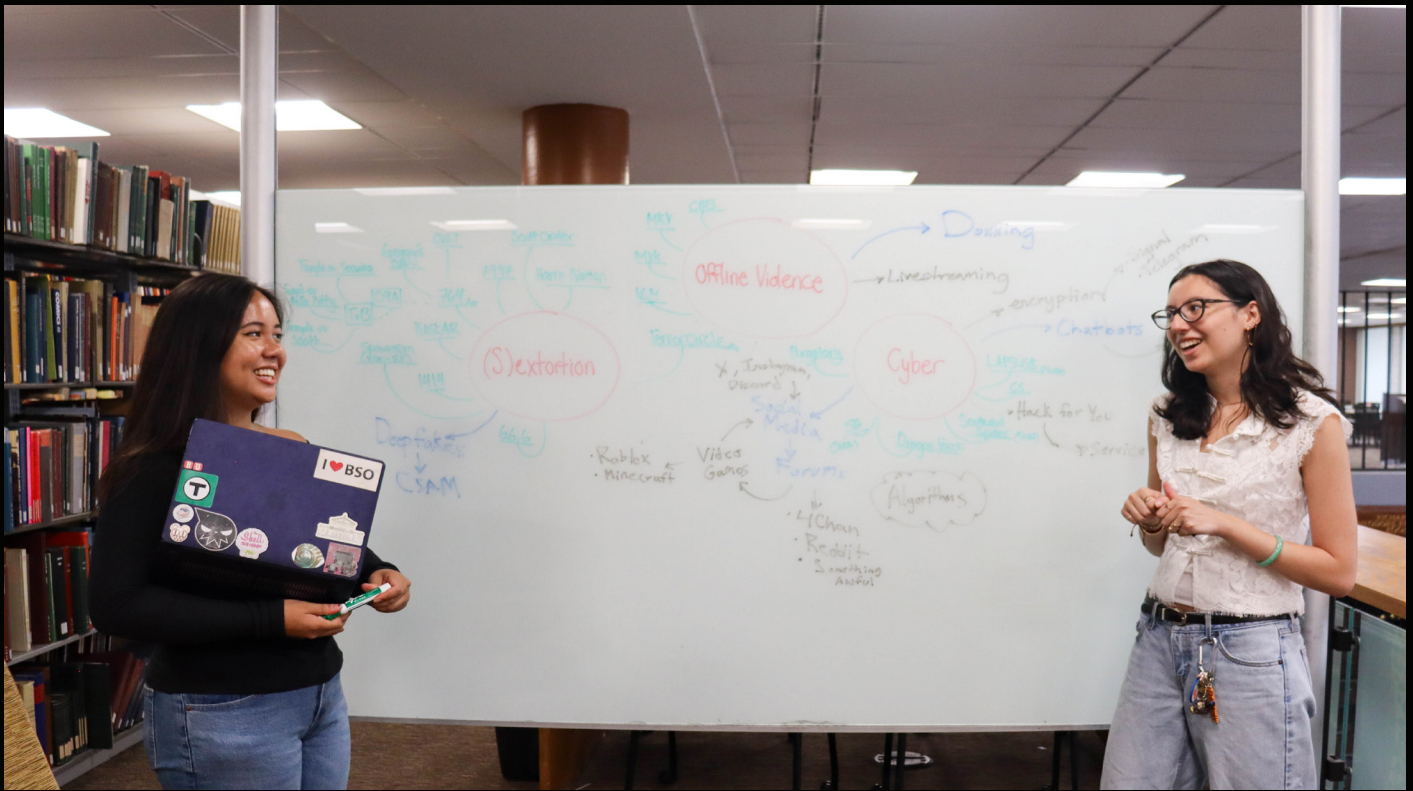
UROP IMPACT REPORT

2026

BOSTON UNIVERSITY

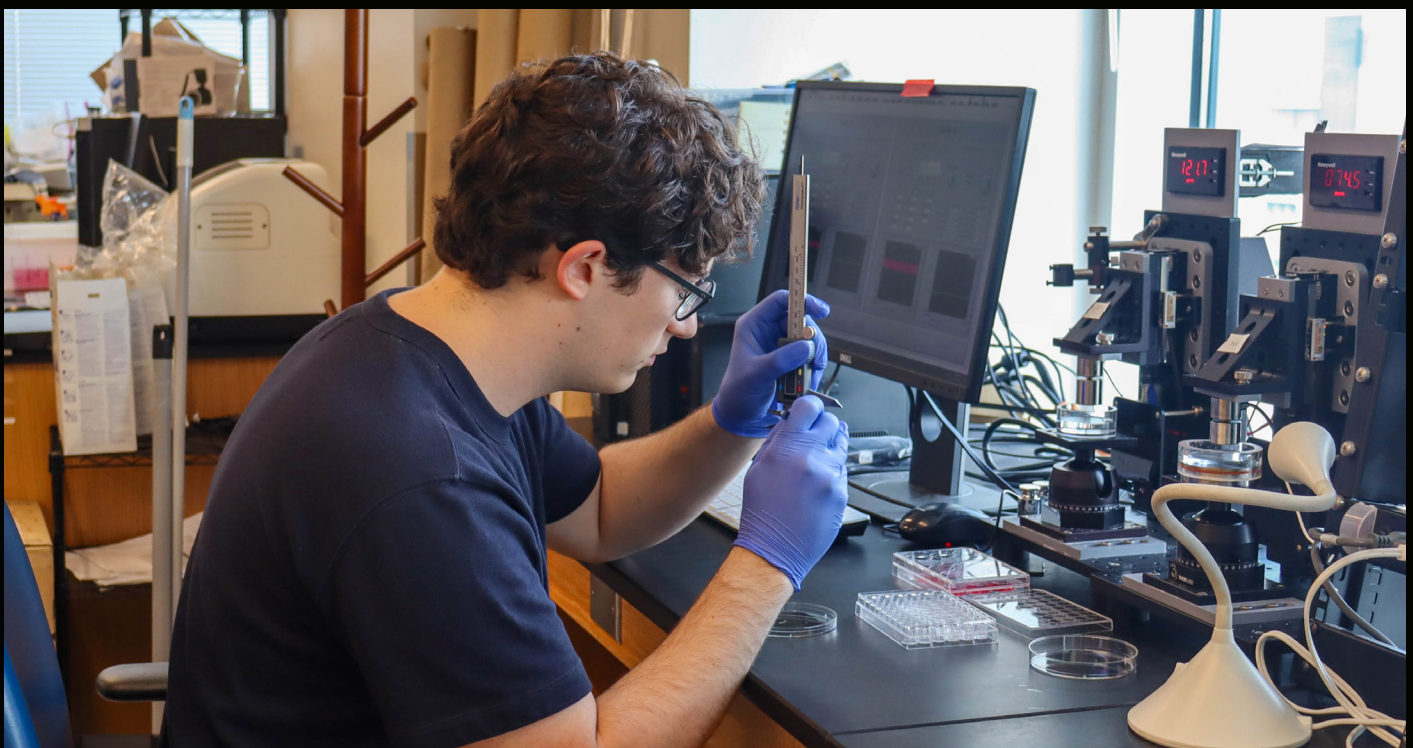


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“Whether it’s tackling complex problems, navigating the ups and downs of a long-term project, or pushing through challenges, [UROP has] prepared me to handle various situations in my academic, professional, and personal life with confidence.”

-Shreyas Puducheri, UROP student researcher



A letter from the Associate Provost for Undergraduate Affairs

Boston University has long been recognized for its excellence in research and scholarship. BU is committed to advancing knowledge and educating students across disciplines. The Undergraduate Research Opportunities Program (UROP) is a vital part of that mission, allowing students to apply what they learn in the classroom to hands-on research across the university. These experiences deepen their understanding of the research process while building critical technical and analytical skills. But UROP is more than research: it is about creating meaningful connections through experiential learning.

By working closely with faculty and researchers, students gain confidence, mentorship, and a strong foundation in communication, collaboration, and problem-solving. UROP empowers students to explore their interests, grow professionally and personally, and engage in work with real-world impact.

This report highlights students who have used their UROP experiences to expand their perspectives and make a difference, as well as the faculty who guide and support them. I'm grateful to all who help make these opportunities possible and inspired by the ways our students continue to drive positive change beyond BU.

Thank you for your continued support and please enjoy the student and faculty features in this report!

Sincerely,



Amie Grills
Associate Provost for Undergraduate Affairs



JOELY BRAMMER-DEPUY

Breast cancer doesn't follow a one-size-fits-all progression and can vary widely from patient to patient. One factor known to influence tumor behavior is obesity- but why? That question drives Joely Brammer-DePuy's UROP research, which centers on creating an obesity-mimicking environment in the lab to better understand how obesity impacts breast cancer tumor growth.

"My project aims to shed light on how breast cancer behaves in obese patients through creating microscopic breast cancer tumors in engineered collagen gels and treating them with obesity-simulated conditions," Joely explains. "I monitor the tumors daily for differences in their invasion into their surrounding collagen." Her research has been about not only scientific inquiry, but personal discovery as well. "When I was just starting my undergraduate biomedical engineering degree, I was slightly overwhelmed by the array of specializations that exist." Through UROP, she says, "I have discovered a passion for the topic I'm researching, breast cancer, as well as the type of lab work [I've gotten to do]."

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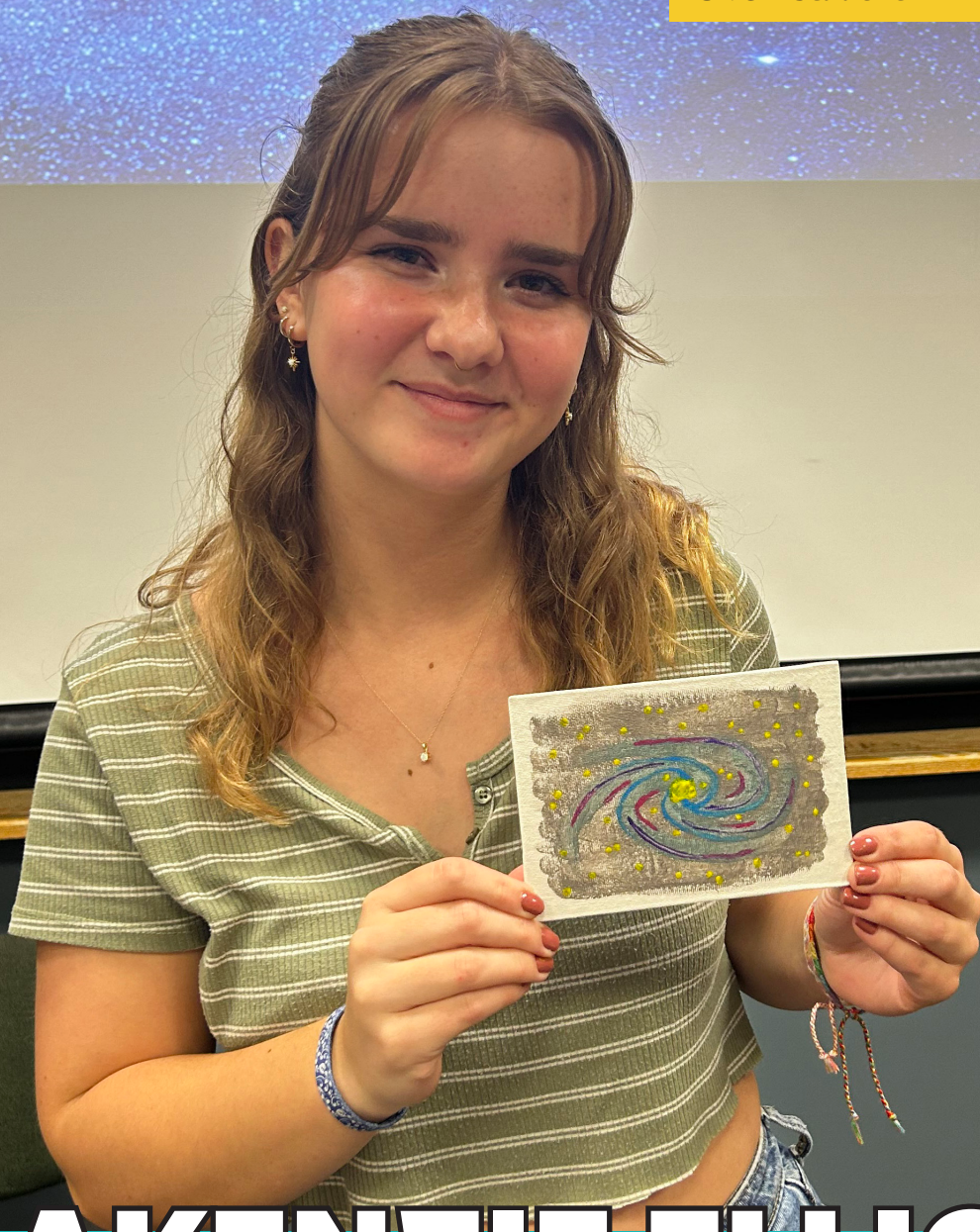
The experience has also helped her develop resilience and confidence in the face of challenges beyond just those found in a lab setting. The “process of incorporating new methods and reiterating trials to identify the source of experimental issues has given me the confidence to try things that might fail. The confidence to chance failure has been an invaluable gain.”

Joely is especially excited by the real-life application of the work she’s doing. When considering the impact of her research, she says “it has [also] given me the chance to provide new knowledge to the scientific community. Currently, [...] my lab [is] working to better understand breast cancer’s behavior in an obese microenvironment, as it is not fully understood. This will hopefully lead to better patient treatment for that population.” Thanks to UROP, Joely has found more than just her academic focus. She’s also making a meaningful contribution to breast cancer research and possibly the future of its treatment.



stars that must have formed just after
the big bang.

UROP Student



MAKENZIE ELLIOTT

Despite centuries of study, the universe remains full of unanswered questions. Its vastness, complexity, and the presence of interstellar elements like dust in the Milky Way continue to challenge models of cosmic structure. For MaKenzie Elliott, this challenge acts as a motivator. Working alongside faculty mentor Dillon Brout, she uses simulations of supernovae - i.e., exploding stars - paired with coding techniques to test how different cosmological models align with their predicted outcomes. Their research, MaKenzie explains, "contributes to refining our understanding of the universe's structure and composition." It's an enormous undertaking, one that brings us a step closer to making sense of the cosmos.

When explaining her UROP project in more detail, MaKenzie says, I “use simulations of Type Ia supernovae—explosions of dying stars that serve as cosmic distance markers—to better understand the expansion of the universe. I work with these simulations to test cosmological models, particularly by constructing Hubble diagrams that relate supernova brightness to their redshift/distance from us. A key part of my work involves correcting for the effects of dust in the Milky Way, which can obscure or redden the light we observe, making our distance inferences unreliable.” This work has allowed her to dive deeper into important skill sets than she’s gotten the chance to do in other settings. “This project has been a great chance to strengthen my coding skills. I’ve also gained experience working with astrophysical models and simulations in a much more hands-on way than in class.”

MaKenzie was surprised at how comfortable she felt in research meetings that she initially assumed would be over her head. “I could follow a lot more than I expected, and even contribute to discussions. That’s been a huge confidence boost.

I’ve gotten to collaborate with researchers from places like the University of Toronto, Duke, and Oxford, and that experience has made research feel more accessible and less intimidating. Getting to work with researchers from different institutions has also shown me what a future in this field could look like, and that’s been incredibly motivating.”

In addition to boosting her confidence in the lab, MaKenzie’s research has changed the way she approaches classes and thinks about her future. “Working on this project has only solidified my vision for my future. It’s been really motivating to get a taste of the kind of projects I hope to work on long-term,” she says. “I also find myself thinking differently in class— instead of just learning concepts for a test, I’m constantly connecting them back to my research and seeing how they apply in real-world problems.” The impact of MaKenzie’s undergraduate research experience cannot be overstated. “Undergraduate research has been one of the most valuable parts of my experience at BU so far,” she says. “It’s connected me with amazing mentors and collaborators, helped me build technical skills, and made my classes feel more relevant.”



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CELESTE CURINGTON

Associate Professor



*Nelissa Mascary-Timothee, Prof. Celeste Curington, and Sara Diaz (left to right).
Photo by Cydney Scott for Boston University Photography.*

The technology-induced reinvention of dating and intimacy. Persistent race disparities in infant mortality in the United States. The enduring impact of colonialism. What do these topics have in common? They all fall under the purview of Celeste Curington's research. As an associate professor of sociology and an intersectional scholar, she describes her research as tackling "pressing contemporary social problems of our time." While at BU, this work has been bolstered by the help of UROP students. "Some of the most insightful moments," she says, "come from my conversations with students."

Undergraduates working with Celeste may gain firsthand experience in several different ways, from filling out institutional review board applications and ensuring compliance with federal standards, to researching policies and empirical literature, to learning the art of conducting qualitative interviews and coding data. Celeste explains that students helping with her independent research on doulas and reproductive justice "have also been tasked with researching and comparing state-by-state birthing outcomes and policies impacting doula care. [Celeste has] also provided students with the opportunities to become trained as doulas in the process."

When asked about the impact of undergraduate research, Celeste's answer is twofold. "Undergraduate research enhances students' learning, enabling them to nurture their curiosity beyond the classroom while applying their knowledge to real-life situations." In addition to the benefits for students, Celeste notes that working with undergraduates helps her grow as a researcher and has led her work to evolve in unexpected ways. "Undergraduate students often approach my research with a level of excitement and curiosity not unlike how I started out years ago. And it's this wonderment that leads me to the 'aha' and 'so what?' moments that guide me toward powerful paths of discovery that I may not have otherwise followed."

Although Celeste's research focus is already decided when students join her projects, she encourages "them to research some of [the] spontaneous questions that seem to spark their curiosity." "As the supervisor," she says, "I have a vested interest in the work the students are doing as it should directly support my own research. But just as importantly, I hope to foster and encourage students to engage in the conversation because I also learn a lot from them. Ultimately, I hope my teaching encourages students to feel empowered in the process, too."

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Unhealthy alcohol use can not only cause serious physical harm, it may also prevent people from experiencing the full positive impact of treatment for existing medical conditions. Yoeku Sam's UROP project focuses on how alcohol use impacts lung function and clinical outcomes for patients being treated for HIV and tuberculosis (TB), conditions that frequently occur together. In his own words, "the goal is to inform more effective, equitable treatment approaches for vulnerable populations affected by HIV, TB, and substance use."

Through UROP, Yoeku has been able to "connect classroom knowledge to pressing public health issues" and he's deeply grateful for the opportunity to apply his studies to real-world problems. "One of the most valuable lessons I've gained through my UROP research experience," he says, "is how complex and non-linear real-world research can be." As part of his project, he learned how to critically evaluate studies while conducting literature reviews, what's required for informed consent during a study, and how to communicate across disciplines. This unexpected breadth of knowledge is part of what has made research "the most transformative part of [his] undergraduate journey."

UROP has not only been transformative for Yoeku's time at Boston University, it has also changed his goals for the future. When he started college, Yoeku planned to become a physician. Then UROP came along. "This experience," he says, "opened my eyes to the possibility of becoming a physician-scientist. I realized that combining a MD with a PhD would allow me to not only care for patients but also contribute to the scientific knowledge that drives better treatments and policies." Yoeku's undergraduate research has done more than deepen his understanding of public health and scientific inquiry. It has helped him reimagine the kind of impact he can have in the world.

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Associate Professor

*Prof. Steve Ramirez and Amithi Tadigadapa
(left to right).*

STEVE RAMIREZ

Manipulating memories might sound like science fiction, but in Steve Ramirez's lab, it's reality. By artificially activating memory cells in mice, Steve and his team are able to implant, erase, and study memories and explore how brain cells work together to make memories possible. His research on memory loss has a powerful goal: "to develop non-invasive ways to keep memory systems resilient." "In short," he says, "we're trying to turn memory science into a tool for healing."

So, how does UROP fit in? "Undergrads bring fresh perspectives, contagious enthusiasm, and a curiosity that keeps the lab vibrant," says Steve. They "are open to true exploration of everything that we don't know in biology, and that can lead to creative leaps we wouldn't otherwise take!"

In Steve's lab, UROP students are true collaborators. They carry out behavioral experiments, analyze imaging data from memory-bearing neurons, and even modulate brain activity. Their contributions are far from behind-the-scenes. His student researchers present at conferences and co-author peer-reviewed publications. In addition to technical skills and impressive credentials, Steve stresses that "undergraduate research creates a direct bridge between learning and discovery. It empowers students to think like scientists—to be scientists—and it makes our work better."



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ELY HOCHFELDER

UROP Student



From the 1960s to the 1980s, Brazil's military dictatorship imposed harsh restrictions on free expression of individual identity. Today, Rio de Janeiro is often seen as widely inclusive and welcoming of all types of self-expression. Ely Hochfelder's research, strengthened by their time living in Brazil as part of their UROP project, challenges that perception and explores the capitalistic and racist sentiments that undermine it. "My research," Ely says, "uses photojournalism and interpersonal interaction to understand the relationship between LGBTQ+ residents of Rio de Janeiro, social media, body image and autonomy, and popular politics."

Where better to conduct this research than Rio de Janeiro itself? "It is quite difficult to gain proficiency in a language without immersion in a society that speaks that language," Ely says. "Nothing is comparable to going grocery shopping, ordering at a restaurant, or visiting a museum where nearly no one speaks English. So, through my research and Portuguese instruction in Rio de Janeiro, I have learned the immense value of traveling abroad to understand a culture and language in its local territory. I've been lucky to have teachers who have referred me to museums, archives, nonprofits, and even personal friends who have shared resources with me to help develop my research."

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Ely's interest in working with Latin American communities has deep roots. "I grew up in Berkshire County, MA, a rural and relatively culturally-homogenous community. As I got older, immigrant communities from all over the world, especially Latin America, started settling in the Berkshires. As a queer and trans person, I felt a kinship with many of my immigrant friends as they also experienced prejudice and exclusion."

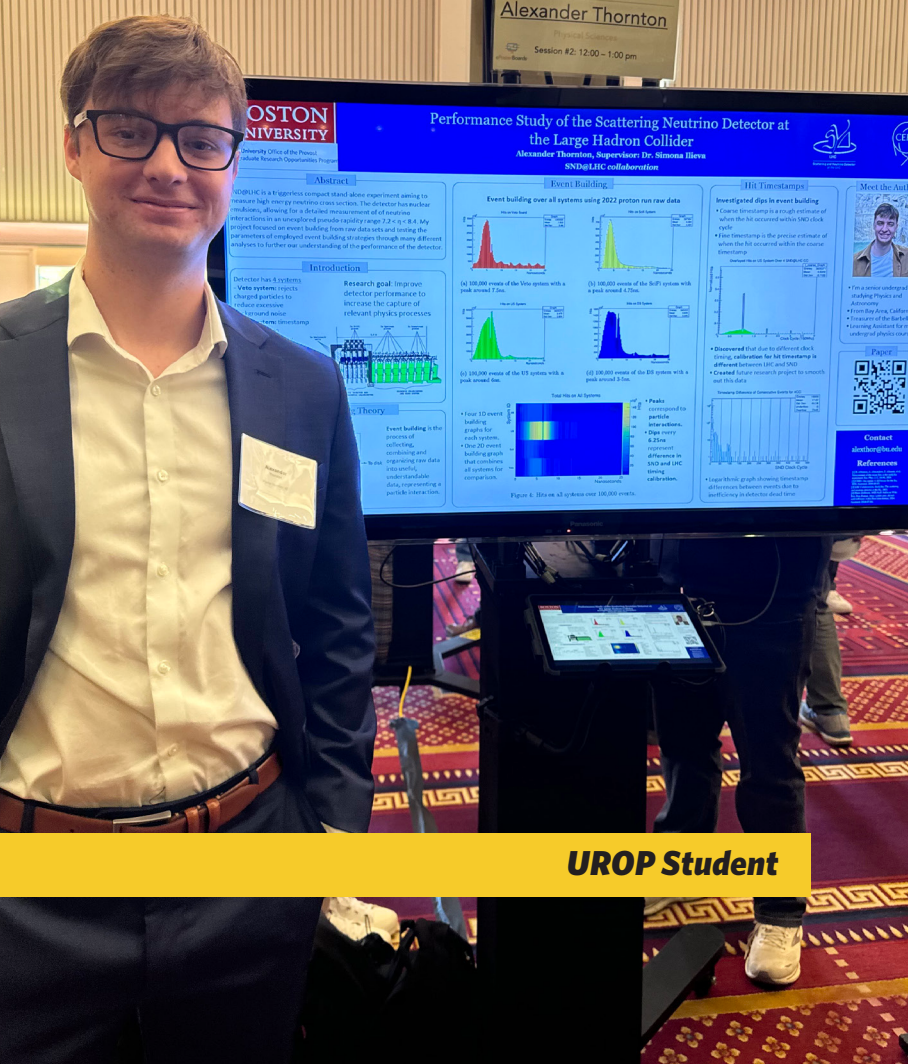
Traveling to Brazil has not only allowed Ely to connect more deeply with those communities, it has also instilled newfound confidence in their abilities. "My experience has taught me, quite simply, that I can do hard things! My research has boosted my self-confidence in adjusting to settings that feel daunting and completely unfamiliar. My time in Rio de Janeiro has pushed me out of my comfort zone, only to my benefit."

*Pictured top right: an example of political graffiti and postings common in Rio de Janeiro.
Photo by Ely Hochfelder.*

*Pictured below: artwork by an Afro-Brazilian artist depicting a Black point of view of Rio de Janeiro.
Photo by Ely Hochfelder.*



ALEX THORNTON



UROP Student

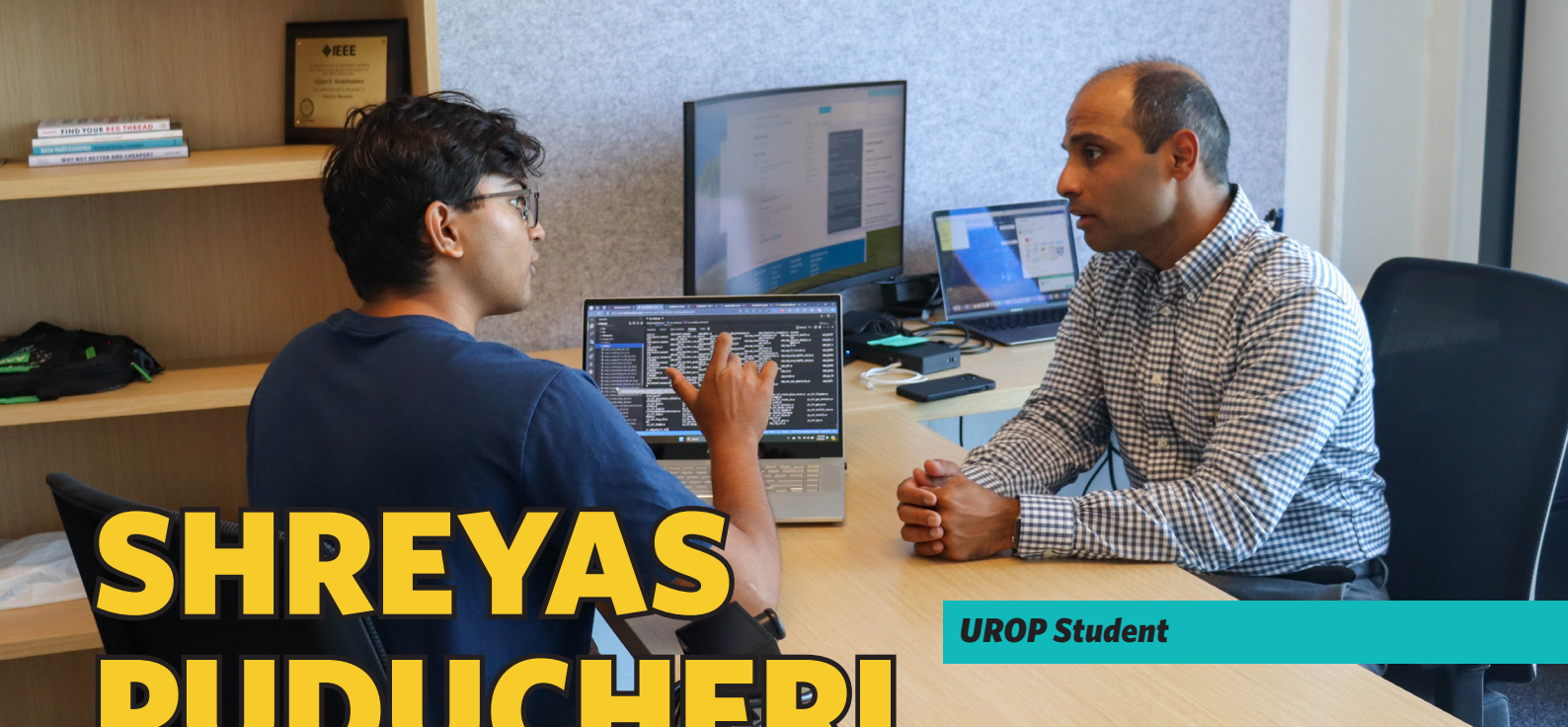
“My UROP experience confirmed that performing full-time research and trying to discover new physics is my passion.”

Imagine studying the particles that make up the universe at one of the world's best known research centers. Now imagine doing that as an undergraduate student. That's exactly what Alex Thornton did. Through the Geneva Study Abroad program, he pursued a UROP project studying particle physics at the European Council for Nuclear Research (CERN). His interests in data analysis and software development led him to his mentor, Dr. Simona Ilieva, who he worked with during his time abroad. Together, they collaborated on data analysis and work debugging code.

Alex credits his involvement in UROP as a transformative part of his academic journey. “UROP has given me the opportunity to conduct research at the bleeding edge of particle physics at CERN,” he says. “Not only did this experience lead to my first-author publication and multiple presentations at American Physical Society conferences, but it also ignited a strong passion for research. I learned an incredible amount through working on a fascinating project with an outstanding group of people.”

Beyond technical skills, UROP helped Alex refine foundational abilities applicable to other parts of his life and his future career. “I learned many skills in both collaborating with others and in writing and presenting. I learned how to better communicate with others in my field by talking and working through problems in my research group, and also with many different types of audiences through both poster and oral presentations.”

Perhaps most notably, Alex's UROP experience helped him gain clarity about his future. “My UROP experience confirmed that performing full-time research and trying to discover new physics is my passion. This experience inspired me to pursue a PhD in physics to further advance my research career.”



SHREYAS PUDUCHERI

UROP Student

*Shreyas Puducheri and Prof. Vijaya Kolachalama
(left to right).*

Even for specialists, accurately diagnosing Alzheimer’s disease and other dementias can be challenging. Acting quickly to come up with management or intervention plans is critical in these cases. So, what if artificial intelligence (AI) could step in and analyze neuroimaging to improve diagnostic accuracy? Enter Shreyas Puducheri’s UROP project.

Working in the Kolachalama Lab, Shreyas tackled research exploring “AI-based assessments of various neuroimaging MRI modalities and their relation to dementia etiologies and assessments from expert neuroradiologists.” What excited him most about UROP was bridging theory and application. “The coolest aspect of my research,” he reflects, “has been connecting my understanding of the foundational physics behind MRI technology to the anatomical interpretation of the rendered scans. Learning how these machines capture and encode images of the brain has been important for informing analysis strategies tailored to each acquisition method, and it’s been both challenging and rewarding.”

Not only has UROP provided Shreyas with a chance to explore cutting-edge research, it has also been a transformative opportunity to further his resilience and independence in the lab. “My favorite part of participating in UROP has been the autonomy it provides,” he shares. “I’ve had the freedom to independently explore complex problems and areas I’m interested in. This independence has been incredibly fulfilling, allowing me to steer my project in directions I find most impactful.”

For Shreyas, UROP isn’t just about honing technical skills and deeply exploring a specific field. UROP has left a lasting mark on how he approaches challenges of all kinds. “The skills I’ve learned from UROP, particularly independence and resilience, are extremely transferable,” he says. “Whether it’s tackling complex problems, navigating the ups and downs of a long-term project, or pushing through challenges, these skills have prepared me to handle various situations in my academic, professional, and personal life with confidence.”

“ *This independence has been incredibly fulfilling, allowing me to steer my project in directions I find most impactful.* ”

JULIA WESTWOOD

As ocean temperatures rise, the delicate balance of marine ecosystems is increasingly at risk. A shift in one species can set off a chain reaction, disrupting countless others in its wake. For Julia Westwood, the Marine Evolutionary Ecology Lab offered an opportunity to study this web of interactions. Her UROP project focused on one of the ocean's most well-known partnerships, that of anemonefish (clownfish) and anemones. Anemones have increased mortality rates as temperatures rise, so Julia's project asks: what happens to clownfish under the stress of a warming ocean and an ocean with fewer anemones?

UROP Student



"My project seeks to determine whether the anemone or the anemone-fish confers more resilience and recovery to the other during an increase in water temperatures," Julia explains. As her research kicked off, she found herself "fascinated by how the behavior of anemones changes under stressful conditions and how quickly they bleach in response to environmental stressors or adjustments."

Before even arriving at Boston University, Julia had her sights set on participating in a UROP project aligned with her interests as a marine science major. "This program and the many campus labs available for undergraduate research are why I chose BU," she says. Why? "UROP provides opportunities for focused, intense research. There is also the potential for publication. That doesn't always happen in undergraduate coursework."

In thinking about her favorite part of her UROP experience, Julia says, "UROP has allowed me to

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work on real-world research projects that are more time-, labor- and skill-intensive than typical projects in class. The experience is teaching me so many skills as a researcher and a team member and it's been a lot of fun to collaborate with people who get excited about the same topics that I do."

UROP also proved pivotal in helping Julia in her applications for graduate school. "UROP has allowed me to grow independence and agency in my research, to learn science communication skills, improve application writing, and to work closely with faculty and other students in my chosen field of study. The skill set development and the relationship building have been invaluable and I feel really thankful."

To other students thinking about applying to UROP, Julia has simple advice: "Do it. It's going to be challenging, and you may feel overwhelmed by how much work you need to conduct independently each week, but you will grow in ways you cannot foresee. I've been able to learn from incredible teachers and scientists here who helped me shape my future path."

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***This program
and the many
campus labs
available for
undergraduate
research are
why I chose BU.***

UROP at a Glance

6,600+
awards granted

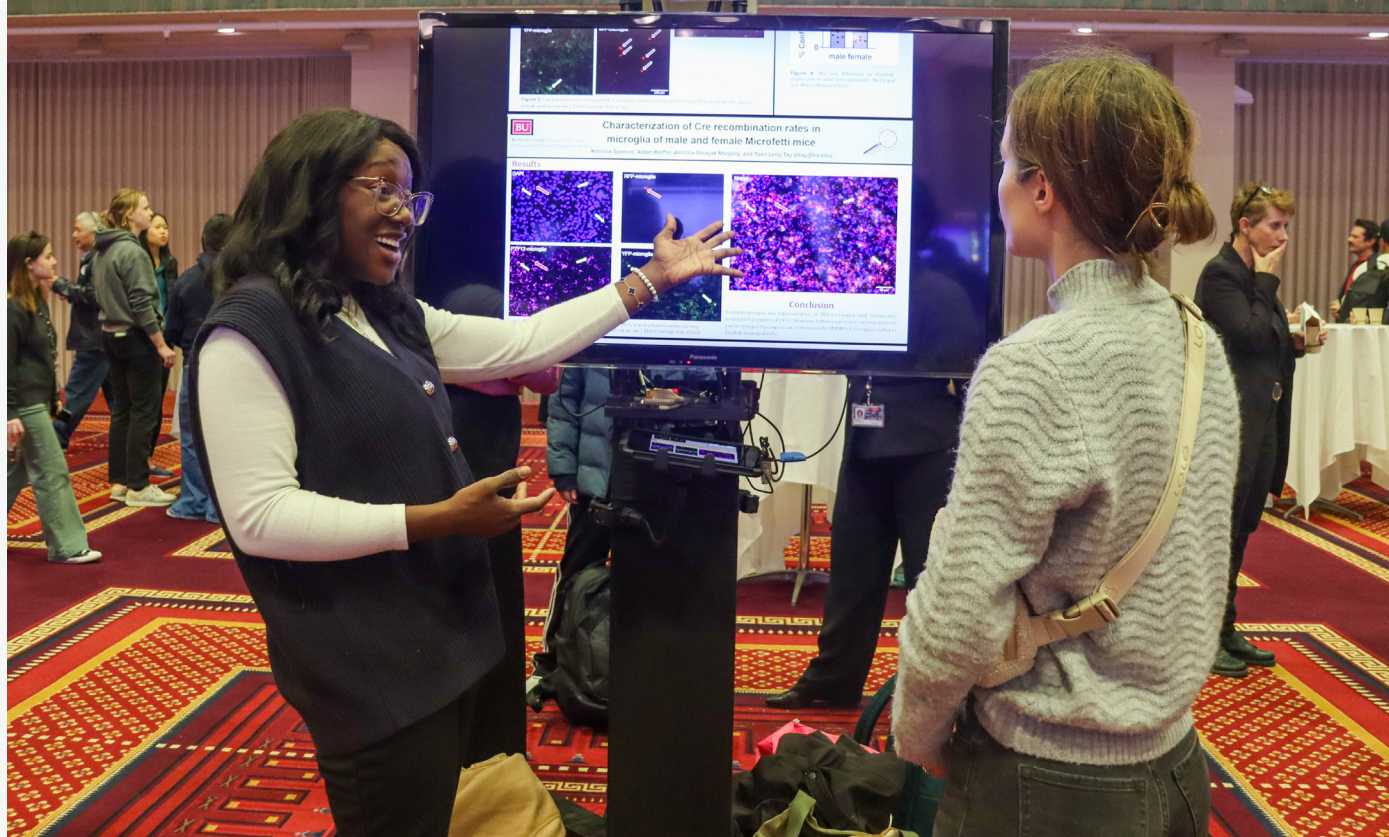
9,100+
applicants

1,100+
faculty mentors

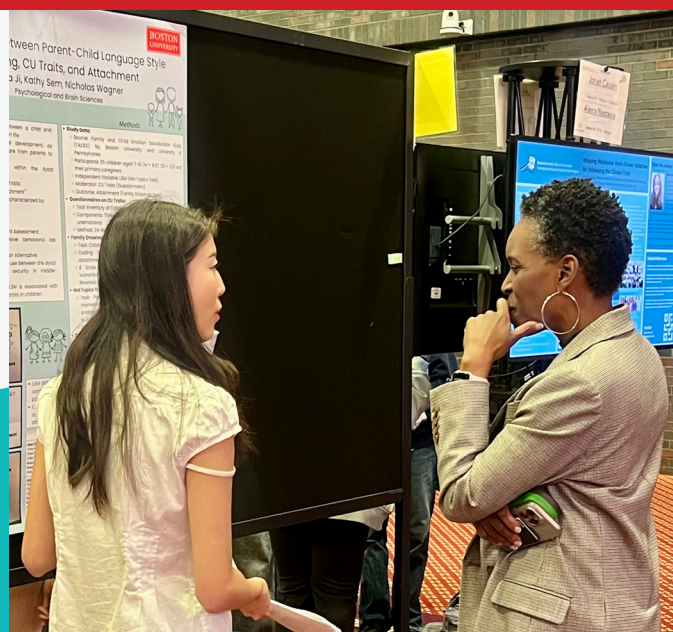
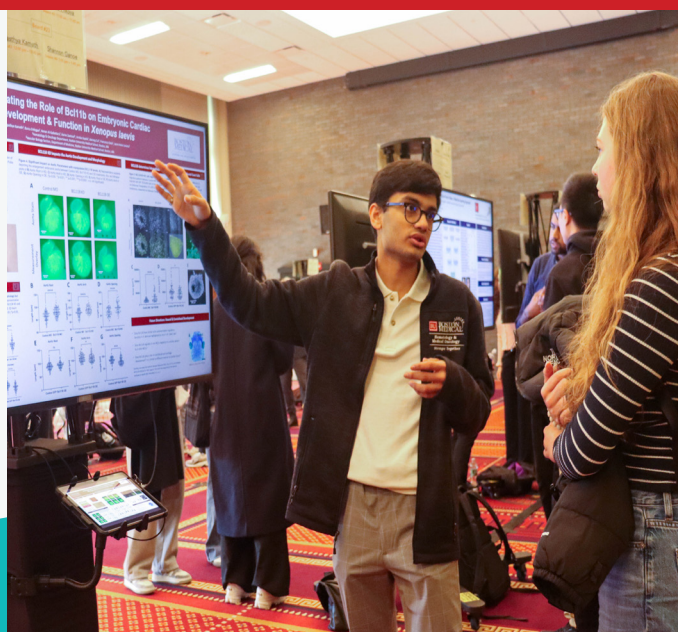
\$15 million
in student funding

Students across all undergraduate schools and colleges can receive UROP funding and have conducted research in more than 95 departments university-wide.

Data from fall 2015 - spring 2026



Annual UROP Symposium



**1,000+
attendees**

**240+
student
presenters**



Get in touch!

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