BOSTON UNIVERSITY
ANNUAL REPORT 2023

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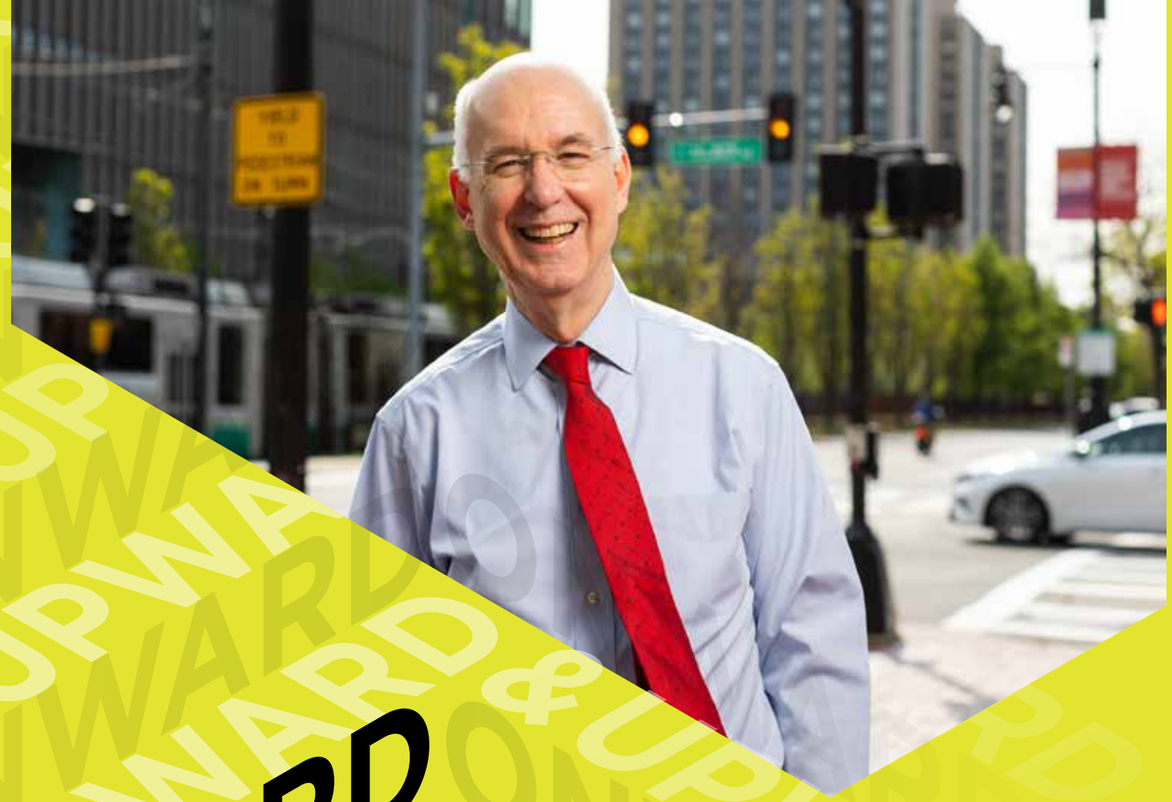
CLIMBING HERE?

TO THE NEXT...

BREAKTHROUGH
BIG IDEA
CHALLENGE
INVENTION
SOLUTION
CONNECTION
OPPORTUNITY
CONCEPT
DISRUPTION
CREATIVE EXPRESSION
COLLABORATION
GLOBAL IMPACT
DISCOVERY
INNOVATION
INSIGHT
FRONTIER
DEVEL
INTE



ONWARD & UPWARD

DEAR FRIENDS AND COLLEAGUES,

Year after year, Boston University ascends as a major global research institution. Fiscal year 2023 was no different. We're continually reaching for the next breakthrough, the next innovation, the next impact.

Our researchers made groundbreaking strides studying the brain, from the connection between memory and depression to exploring ways to better protect athletes from traumatic head injuries. At our National Emerging Infectious Diseases Laboratories, virologists and microbiologists are investigating viral threats. And one of our engineering professors recently received FDA approval for his "bionic pancreas," bringing relief to millions of people with diabetes. These efforts and many others drove our sponsored research awards to a record $645.6 million in FY2023, including generous international support for CARB-X, the BU-led consortium confronting antibiotic resistance around the world.

Our junior researchers are on the rise, too. In fact, five of them received Faculty Early Career Development Program (CAREER) awards from the National Science Foundation to advance their scientific research in topics ranging from mass incarceration to the brain and lungs to robots that can reason.

BU is a popular destination for students around the world. We received more than 80,000 undergraduate applications for our Class of 2027. We admitted 10.85% of those applicants, and 36% of those admitted enrolled—our highest yield ever.

We must respond to unanticipated challenges in the larger world—from the rapid and increasingly sophisticated development of artificial intelligence and its role in the classroom and the lab to the disappointing US Supreme Court ruling on affirmative action. While we will adjust our admissions practices in the wake of the high court's decision, our commitment to inclusive excellence—built on a diverse student body—remains resolute.

We opened the new LGBTQIA+ Student Resource Center in fall 2023. We also hired renowned education scholar Anthony Abraham Jack as an associate professor at our Wheelock College of Education & Human Development and faculty director of the Newbury Center for first-generation students. Jack plans to focus his research on the experiences of disadvantaged students and how their talents can be nurtured in academia.

We also witnessed tremendous support from our global community, closing FY2023 with nearly $273 million in donations, a 12.3% increase over last year and a new record for BU. It is humbling—and inspiring—that so many people believe in the work we're doing.

One of the major milestones of the past year was the conclusion of the remarkable 18-year tenure of my predecessor, Boston University President Emeritus Robert A. Brown. After his final semester as president in spring 2023, the community thanked Dr. Brown for his unwavering dedication to this University and for laying the foundation upon which we continue to grow, transform, and create impact. And continuing this upward trajectory, the trustees appointed Dr. Melissa L. Gilliam—a veteran administrator, educator, scholar, research scientist, and physician—as BU's next president. (Please see page 48.)

Making progress is never easy. It's a methodical and deliberate climb, and for every summit we reach, we know another lies beyond. As an institution and a community, we move ever forward, ever upward.

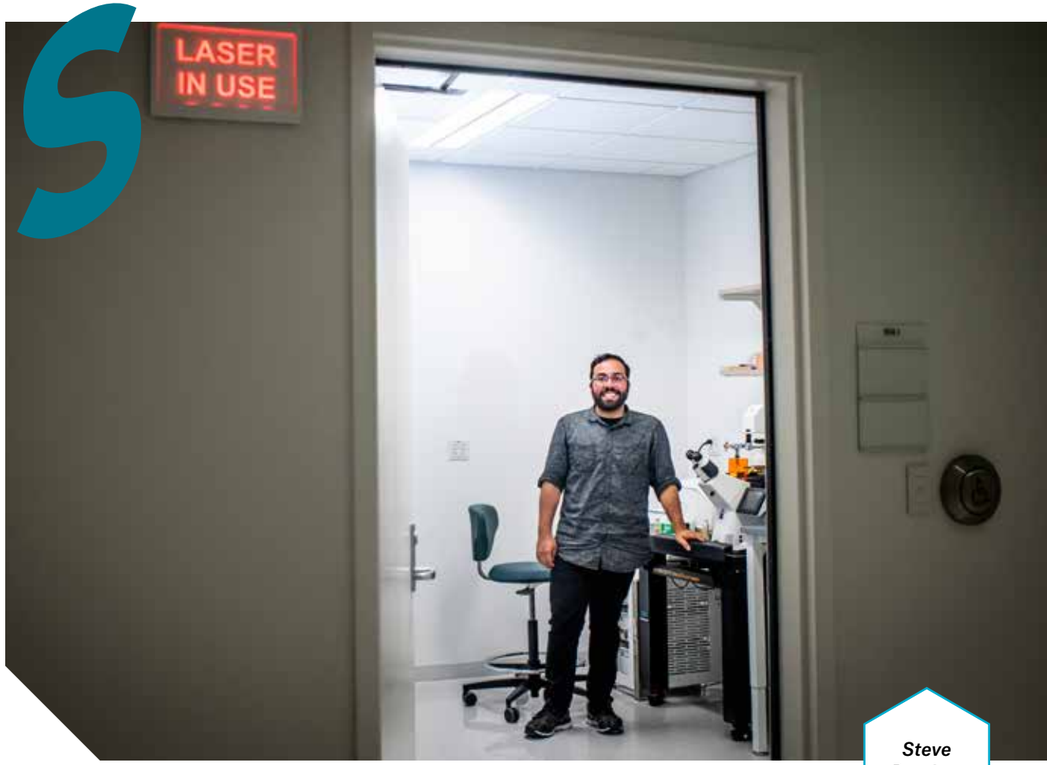
Sincerely,

Kenneth W. Freeman
President Ad Interim, Boston University

From PTSD to Alzheimer's to CTE, our researchers are breaking ground and uncovering hope

BRAINS ON BRAINS

GROWING OUR GRAY MATTER



Steve Ramirez

Robert Reinhart

As goes the mind, so goes everything else.

Neuroscientists at Boston University have been producing research that is leading to real-world applications and diagnostics in areas such as Alzheimer's, stroke recovery, and concussion.

BRING BACK MEMORIES. OR NOT

To tackle mental health disorders like depression and posttraumatic stress disorder, neuroscientist **STEVE RAMIREZ** (CAS'10) has been exploring the malleable nature of memory. "Our million-dollar idea is, what if a solution for some of these mental disorders already exists in the brain?" Ramirez asks. In their September 2022 paper in *Nature Communications Biology,* Ramirez, lead author **MONIKA SHPOKAYTE** (CAMED'22), and a team of BU neuroscientists identify key molecular and genetic differences between positive and negative memories. In a separate paper published the same month in *Nature Communications*, Ramirez, former postdoc and lead author **STEPHANIE GRELLA**, and other colleagues on Ramirez's team explore the possibility of diminishing the influence of negative memories by stimulating happier ones.

CURRENT THINKING

Other BU scientists have wondered about more long-standing approaches to improving mind matters.

ROBERT REINHART, director of the **COGNITIVE & CLINICAL NEUROSCIENCE LABORATORY**, took a deep dive into the noninvasive application of electrical currents to stimulate brain function—considered a controversial practice in some medical circles.

BU neuroscientist Vasileios Zikopoulos and colleagues are creating a digital brain to better understand the organ's activity and disorders.

To what extent can memories be manipulated therapeutically? BU neuroscientist Steve Ramirez is studying the brains of mice to find out.

Reinhart and his team compared more than 100 studies of the technique, which introduces a mild oscillating current to the human brain via electrodes attached to the scalp. Their analysis, published in May 2023 in *Science Translational Medicine,* concluded that such treatment can improve—at least, in the short term—attention, memory, learning, and the ability to solve problems. The team's findings carry direct and immediate translational benefits.

CURING THE INCURABLE

BU's **CHRONIC TRAUMATIC ENCEPHALOPATHY (CTE) CENTER**, led by neurologist and William Fairfield Warren Distinguished Professor **ANN MCKEE**, has significantly expanded our understanding of the incurable brain disease, publishing more than 180 studies on its causes and effects. And the increasing supply of donated brains—to date, more than 1,300—at Boston University's **UNITE BRAIN BANK** offers a critical resource to researchers at BU and elsewhere.

Linked to repetitive blows to the head, CTE can only be diagnosed postmortem and is associated with everything from memory loss to impulsive behavior to suicidal thoughts and depression. BU researchers recently found that those who start playing tackle football at an early age or play it for more than 11 years are at greater risk for CTE. Their research was published in March 2023 in *Brain Communications.*

And in the largest study to date on CTE's causes, researchers at BU, Mass General Brigham, and Harvard Medical School found that the clearest predictor of brain disease later in life was the cumulative force of repeated blows to the head—not just the number of concussions suffered. Their findings were published in June 2023 in *Nature Communications.*

"We'd like to thank our brain donor families for teaching us what we now know about CTE," says McKee, "as well as our team and collaborators around the world working to advance diagnostics and treatments for CTE."

"Our million-dollar idea is, what if a solution for some of these mental disorders already exists in the brain?"

Steve Ramirez,
Assistant Professor of Psychological & Brain Sciences

Ann McKee

MINDING THE MIND

Many Boston University researchers are probing the inner workings of the brain, moving ever closer to solutions to some of the mind's most intractable challenges.

HUGO JAVIER APARICIO, an assistant professor of neurology, is researching how brain diseases may uniquely affect people of color, various sexes, genders, ethnicities, and/or cultural backgrounds, with the goal of developing personalized prevention methods.

Assistant Professor of Psychiatry **AUDREYANA JAGGER-RICKELS**, in a study published in the *Journal of Affective Disorders*, has identified a marker in the brains of veterans who have a history of suicide attempts. It connects areas that regulate cognitive control and self-referential processing. This discovery could prove essential in assessing suicide risk, even before an attempt is made.

SMRITHI SUNIL (ENG'21,'21), a former doctoral student at BU's **NEUROPHOTONICS CENTER**, and **ANNA DEVOR**, a professor of biomedical engineering, published an NIH-funded study in *Neuroimaging* in March 2023 examining the relationship between neural activity and cerebral blood flow after a stroke. Their findings indicate that neuroimaging could inform individualized treatment techniques and improve recovery.

VASILEIOS ZIKOPOULOS, director of the **HUMAN SYSTEMS NEUROSCIENCE LABORATORY**; **HELEN BARBAS**, professor of health sciences; and **ARASH YAZDANBAKHSH** (GRS'05), director of the **COMPUTATIONAL NEUROSCIENCE & VISION LABORATORY**, are building a digital brain that can simulate human brain activity, helping us understand which cortical mechanisms affect various disorders, including autism.

JAMES TRANIELLO (CAS'74), a professor of biology, studies more than 30 different species of ants' brains. By identifying variations in their "mushroom bodies" (the insect-brain equivalent of the mammalian cortex), Traniello is uncovering how differing cognitive demands may affect ants' learning, memory, and more.

Renowned sociologist and education scholar joins the faculty with a focus on disadvantaged students

FIRST-GEN POWER

LEVELING (UP) THE PLAYING FIELD

Anthony Abraham Jack

Kat Quach

Most undergraduates haven't heard of the "hidden curriculum." But for first-generation college students, it can color everything.

The "hidden curriculum" is the system of unwritten rules and expectations you might hear about if your parents went to college—taking advantage of office hours, pursuing internships, shadowing professionals in your desired field. In other words, inherited information to give you a leg up.

"That makes certain students feel less-than and othered for not knowing," says **ANTHONY ABRAHAM JACK**, an acclaimed higher-education researcher and author of *The Privileged Poor: How Elite Colleges Are Failing Disadvantaged Students* (Harvard University Press, 2019).

Jack was appointed in July 2023 as the inaugural faculty director of Boston University's **NEWBURY CENTER**, a resource for first-generation students, and as associate professor of higher education leadership at BU's Wheelock College of Education & Human Development. His arrival promises to help level the playing field for first-gen students and elevate it for all students.

"I study education, but I'm fundamentally interested in how inequality and poverty shape young people's life chances," Jack says. "I study universities because I believe that they are, quite frankly, the greatest shot at creating mobility and a more equal society."

Jack envisions expanding the Newbury Center into a research hub on the experience of first-generation

students as well as on inequality in higher education. "When you address the inequalities that disproportionately fall upon the shoulders of first-generation and low-income college students, you make the University better for all students."

The Newbury Center, which opened in 2021, offers students who work there the opportunity to lead and be of service to the first-gen community and beyond. Take **KATARINA "KAT" QUACH** (COM'24), an undergrad assistant who organizes workshops, manages the newsletter, and serves as coeditor in chief of the center's *Elevate* magazine. Her commitment to public service has earned her one of the inaugural Obama Foundation's Voyager Scholarships, which provide financial support and accommodations for summer travel.

"All of the staff at the Newbury Center are first-gen or were first-gen students," says Quach. "It allows us to create community amongst ourselves as a staff and, in doing so, to create an even more welcoming place for students."

As a self-described "forever first-gen" student, Jack says, "I lived the experiences that the people whom I learn from are going through. My life goal is not just to address problems in higher ed. I intend to use my research to provide a framework for universities to live up to the missions they love to put in Latin on their seals and diplomas."

First-generation college students who completed their degrees and programs take part in the Newbury Center's pinning ceremony.

DOUBLING DOWN ON BOSTON SCHOLARS

Boston University conferred its annual **THOMAS M. MENINO SCHOLARSHIPS** on 35 Boston Public Schools' (BPS) graduates last year and its BU **COMMUNITY SERVICE AWARDS** on 71 BPS alums. Together, the scholarships and awards amount to nearly $25 million in merit- and need-based aid over the next four years. This financial support, which is some of the University's most significant, represents a long-standing, key connection with the City of Boston and aims to invest in the talent, leadership, and overall potential of local students who may not otherwise be able to afford the opportunity.

BY COMMUNITY, FOR COMMUNITY

Driven in large part by student advocates, the Boston University **LGBTQIA+ STUDENT RESOURCE CENTER** is opening its doors for Academic Year 2023–2024. Housed in the same building as the **HOWARD THURMAN CENTER FOR COMMON GROUND**, the professionally staffed center is designed to be a community hub where LGBTQIA+ students can connect with peers and mentors, engage in leadership and career workshops, and, in the future, draw upon the resources of an archival library dedicated to LGBTQIA+ history.

THE FUTURE IS BRIGHT AND SO IS THE CLASS OF 2027

The Class of 2027 is eclectic. It includes an internationally ranked Irish dancer, a professional Tetris player, a chess Candidate Master, and a Team USA athlete. And that's without mentioning the patent-holding inventor, published author, and nonprofit founder, among many, many other accomplished and interesting students. With so much potential, there's no limit to how high these Terriers can climb!

- **80,495** applications received
- **3,145** enrolled freshmen
- **57%** admitted Early Decision
- **10.85%** admit rate, compared with 14.4% in 2022
- **1419** average SAT*
- **32** average ACT*
- **46** states represented, plus the District of Columbia and Puerto Rico
- **64** countries and regions represented
- **24%** are international students
- **3.9** grade point average of entering freshmen
- **21%** of entering freshmen are first-generation college students
- **34%** of domestic freshmen are underrepresented minorities
- **22%** of domestic freshmen are Pell Grant–eligible

**Average among those who submitted scores; not required for admission.*

CLIMBING

In FY2023, Boston University opened the Center for Computing & Data Sciences and launched additional degree programs in data sciences.

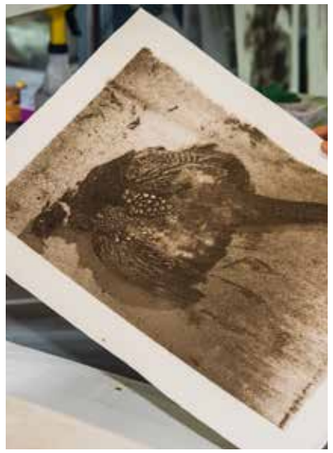
Lucy Kim

ART TAKES ON HATE

CONFRONTING RACISM WITH PIXELS AND PETRI DISHES

What happens when BU artists and researchers find inspiration in each other's spaces? Powerful work emerges

Lucy Kim, associate professor of art, creates screen prints that challenge social perceptions of human biology.



Art—not unlike scholarly research—is about breaking boundaries, upending conventional thinking, and showing reality in a new and unexpected light. When done collaboratively, across disciplines, the effect is even more powerful.

Especially when the topic is racism.

Associate Professor of Art **LUCY KIM** literally went into a science lab to pursue her latest art project. In a one-of-a-kind endeavor, she is creating prints with melanin—the natural pigment that gives our eyes, hair, and skin their color—produced by a genetically modified strain of *E. coli*. "To me, the point of being an artist is to see something new," she says. "I'm always trying to find a new path, confronting a new thing."

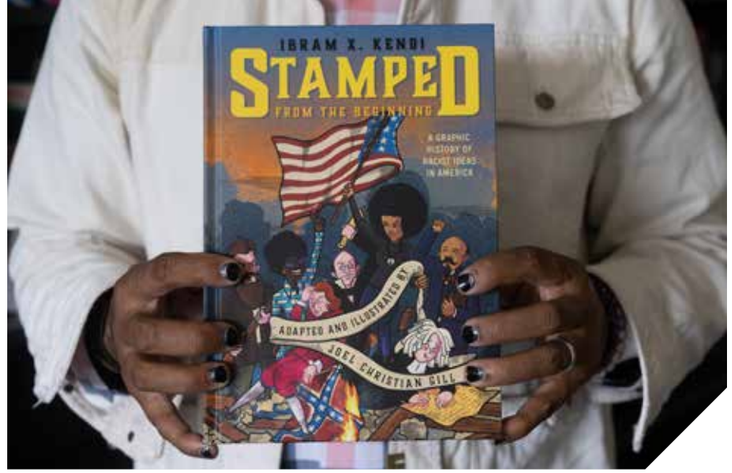
While melanin helps protect skin cells from ultraviolet light, its biological function can be overshadowed by its role in perceptions of racial identity. "It's a provocative material," Kim says. Her captivating monochromatic prints raise questions about the social constructs imposed on human biology.

To make these prints, Kim learned how to culture the bacteria and create an ink while an artist-in-residence at the Broad Institute of MIT and Harvard from 2018 to 2021. Now, she plies her trade in the lab of **JOHN CELENZA**, an

Joel Christian Gill

"Trying to make something as serious as racism and the history of racist ideas in America funny is difficult. I feel most of the jokes are funny/not funny."

Joel Christian Gill, Associate Professor of Art



Cartoonist Joel Christian Gill is the inaugural chair of BU's MFA in Visual Narrative program.

associate professor of biology at BU. Kim says she's found kindred spirits in the scientists she's consulted.

"Every time I describe why I think art is amazing to research scientists, they say, 'That's exactly how I describe science.' The whole point of it is to learn."

GRAPHIC CONTENT

In another instance of an interdisciplinary artistic partnership at Boston University, an antiracist historian and a graphic artist joined forces.

IBRAM X. KENDI, founding director of BU's **CENTER FOR ANTIRACIST RESEARCH** and Andrew W. Mellon Professor in the Humanities, teamed up with Associate Professor of Art **JOEL CHRISTIAN GILL** (CFA'04) to render Kendi's acclaimed book *Stamped from the Beginning* into a graphic novel. The 2016 National Book Award winner traces the history of racist ideas in America. Kendi thought a graphic treatment would reach a greater number—and different types—of eyes and ears. "There are some readers who will read this graphic [version], but they won't necessarily read a 500-page narrative history," he says.

Enter Gill, inaugural chair of the new **MASTER OF FINE ARTS IN VISUAL NARRATIVE** program. Kendi supplied him a PDF with highlighted sections and stepped out of the way. The result was delightful and surprising, peppered with modern twists while still treating the subject with respect.

"I built a narrative around those sections," Gill says. "I added stuff like 'IDK' and 'Are you mansplaining?' after the fact. Trying to make something as serious as racism and the history of racist ideas in America funny is difficult. I feel most of the jokes are funny/not funny."

"I didn't fully know what to expect," Kendi says, "although I did know that Joel was a great cartoonist and a historian in his own right. I suspected that whatever he produced would be great visually and conceptually."

Whether in a lab, at the computer, or in the studio, one thing is clear—when great minds get together to think differently, the world is enriched.

ART BEARING FRUIT

They say write what you know. In **MEGAN ARNÉ**'s (CFA'23) case, it's paint what you live. Arné was named an artist to watch by the *Boston Globe* in May 2023. Her work, which examines motherhood and the often overlooked labor of mothers and caregivers, features organic shapes inspired by the foods her toddler eats, which also act as symbols for the "female body, for childbirth, for breastfeeding." And while integrating her art career with home life has not always been easy, it has proven fruitful.

FANTASTIC FACULTY, ACCOLADES INCLUDED

From all corners of campus, our faculty have been recognized, nationally and globally, for their research, altruism, and willingness to push boundaries. Here are a few highlights from the past year:

JESSICA SIMES, assistant professor of sociology, **RENATO MANCUSO**, assistant professor of computer science, **HADI NIA** and **MICHAEL ECONOMO**, both assistant professors of biomedical engineering, and **ALYSSA PEARSON**, assistant professor of mechanical engineering, have received prestigious Faculty Early Career Development Program (CAREER) Awards from the National Science Foundation to advance scientific research in their areas of study, which range from mass incarceration to the brain-body connection to robot decision-making.

It's been a big year for **MARK GRINSTAFF**. The William Fairfield Warren Distinguished Professor received the 2023 American Chemical Society award in applied polymer science and the Royal Society of Chemistry's 2023 Centenary Prize for his research using innovative polymer platforms for new drug delivery systems and medical applications.

William Fairfield Warren Distinguished Professor **CHRISTOPHER CHEN** was named a National Academy of Inventors fellow in recognition of his "outstanding contributions to innovation." Chen, founding director of the Biological Design Center, has more than 300 cited papers and 31 patents—so far.

CARL STREED, assistant professor of medicine, received the 2023 Excellence in LGBTQ Health Award from the American Medical Association for his work as a physician and researcher to improve healthcare and well-being for LGBTQIA+ individuals at Boston Medical Center's GenderCare Center.

Professors **MARY COLLINS** and **RENÉE SPENCER** were named two of the Top 100 Global Contributors to Social Work Journal Scholarship by Sage Journals, based on their scholarly impact throughout the scientific community.

STAYING AHEAD OF THE CURVE WITH BU VIRTUAL

BEYOND CAMPUS

Wendy Colby

Zander Dolan is a production assistant for Questrom School of Business' Online MBA—a hugely popular program.

The future of work is always shifting, with professionals upskilling and reskilling as they seek to advance or pivot in their careers or switch to a different industry. Our newly launched **BU VIRTUAL** was created, in part, to meet those forward-thinking learners where they are—geographically, professionally, and educationally.

"As technology advances and events unfold," says **WENDY COLBY**, Boston University's inaugural vice president and associate provost for BU Virtual, "acquiring new skills is becoming even more urgent in areas like global health, management, leadership, sustainability, data science, cybersecurity, legal, engineering, and other sectors."

In 2020, BU launched its **ONLINE MBA** program through the Questrom School of Business. The value is excellent and so is the quality of education, with courses taught by accomplished BU faculty who are experts in their fields. More than 3,000 students from around the globe enrolled, many already in the workforce and looking to harness their master's degree for career advancement. Success is but an invitation to grow. So, BU created online master's degree programs in public health and in social work—with several more in the pipeline, including computing and data sciences.

Colby's team is dedicated to identifying opportunities to expand online education. While BU has been offering online education for more than twenty years through our Metropolitan College and other schools and colleges, this new unit brings together the design, development, and delivery of a complete portfolio of online graduate and certificate offerings across BU, ranging from online programs in computer science to criminal justice. Colby has already begun forging relationships with prospective industry partners, as well.

"Scale is about collaboration and community—and not just about size," Colby says. "It's about how best to bring BU to the world and serve more students in ways that serve them best, and to become a vital education hub for learners everywhere."

MY 10,000TH STUDENT AND COUNTING

JAY ZAGORSKY (GRS'87,'92), a clinical associate professor at the Questrom School of Business, taught his 10,000th student last summer. He taught his first in 1987. Over the years, he has logged 140 courses. When he became a core instructor in BU's Online MBA program, which has seen exploding enrollment, he reached the milestone years earlier than expected. "In my first class [at BU], there was a woman from rural Kansas, an exotic place to most of us in New England," he says. "During my online sessions, I talk to students on six out of seven continents."

RISING THROUGH THE RANKINGS

Several of our online education programs cracked the top ten list at *U.S. News & World Report*.

#4 **in Online Master's in Criminal Justice**

#9 **in Online Master's in Business**

#10 **in Online Master's in Computer Information Technology**

And they weren't the only ones to turn heads.

#43 **in national universities** *U.S. News & World Report*

#25 **in best value schools** *U.S. News & World Report*

#10 **in the US for employability** *Times Higher Education*

#17 **in undergraduate business schools** *Poets & Quants*

#1 **in Healthcare Law***

#1 **in Occupational Therapy***

#8 **in Public Health***

#10 **in Biomedical Engineering***

**Graduate Program Rankings,* U.S. News & World Report

Boston University's research enterprise received $645.6M in sponsored funding in FY2023, a record amount and recognition of impactful work.

Wesley Wildman

NEW WAY OF THINKING

USING AI TO EXPAND OUR LIMITS

Can artificial intelligence really make us smarter?

Some liken the advent of generative artificial intelligence to the invention of the printing press—a disruption for the ages. Tools such as ChatGPT are rapidly expanding the limits of research, innovation, and knowledge creation—the very substance of our mission.

While our researchers are busy harnessing artificial intelligence and machine learning to make advances in medicine, our experts in computing, data sciences, and ethics, along with our students, are collaborating to develop policy and practices for research and classwork as this new age dawns.

PEDAGOGY IS NOT STATIC

"We teach students to think through writing—this idea is perceived to be under threat," says Chair of Faculty Affairs for Computing & Data Sciences **WESLEY WILDMAN**, who is also a professor of philosophy, theology, and ethics. Pedagogy is not static, he says.

In early 2023, almost 50 undergraduates in Wildman's inaugural Data, Society and Ethics class worked on a blueprint for academic use of ChatGPT and similar artificial intelligence models. Called the Generative AI Assistance (GAIA) Policy, it addresses grading and describes use in assignments, the disparity between students who use ChatGPT and those who don't, and the pedagogically productive applications of the technology.

"The printing press changed the way we think, changed the way we taught each other," says Wildman. "It changed everything about education. This is similar in scale."

The student-led GAIA Policy calls for a practical and beneficial incorporation of ChatGPT into the learning experience, rather than a complete ban.

Wildman shared the policy with

Ioannis Paschalidis

AI HIRING INITIATIVE HONES OUR EXPERTISE ON CAMPUS

From supercharging data analysis to improving human health and rehabilitation to building smarter, faster, and more reliable supply chains, AI is creating new opportunities to enhance our capabilities and understanding of our world. Industry experts predict that professions such as AI-solution architect, machine-learning engineer, computer-vision expert, and roboticist will soon be in high demand.

That's where the Boston University Faculty of Computing & Data Sciences (CDS) comes in. To train the next generation of data scientists and AI practitioners, BU launched a three-year AI cluster hiring initiative in fall 2022.

Led by CDS, in collaboration with other academic units across the University, the initiative covers foundational, methodological, and use-inspired dimensions of AI. From a pool of almost 600 applicants, four were ultimately recruited: **ALDO PACCHIANO**, **JOSHUA PETERSON**, **DEEPTI GHADIYARAM**, and **XUEZHOU ZHANG**.

"We are recruiting the best of the best," says Azer Bestavros, William Fairfield Warren Distinguished Professor and associate provost for computing and data sciences, "and positioning Boston University as a center of excellence in AI."

other faculty members, including those on the **CDS ACADEMIC COMMITTEE**, "all of whom indicated that it would be good for other courses to adopt or use as a starting point."

DETECTING DEMENTIA IN YOUR VOICE

For others at the University, the benefits of artificial intelligence and machine learning are very clear.

Engineers at BU have developed a machine learning–powered computational tool that can determine from a simple voice recording your likelihood of developing Alzheimer's.

Currently, it takes a lot of time—and money—to diagnose the disease. After running lengthy in-person neuropsychological exams, clinicians must transcribe, review, and analyze every response in detail.

The researchers found a way to detect cognitive impairment from audio recordings of neuropsychological tests—no in-person appointment needed. Their findings were published in *Alzheimer's & Dementia: The Journal of the Alzheimer's Association.*

"This approach brings us one step closer to early intervention," says Distinguished Professor of Engineering **IOANNIS PASCHALIDIS**, a coauthor on the paper and director of the **RAFIK B. HARIRI INSTITUTE FOR COMPUTING AND COMPUTATIONAL SCIENCE & ENGINEERING**.

Paschalidis says faster and earlier detection of Alzheimer's could drive larger clinical trials that focus on individuals in early stages of the disease and potentially enable clinical interventions that slow or prevent cognitive decline: "This detection model can form the basis of an online tool that could reach everyone and increase the number of people who get screened early."

> "The printing press changed the way we think, changed the way we taught each other. It changed everything about education. This is similar in scale."
>
> **Wesley Wildman, Chair of Faculty Affairs for Computing & Data Sciences**

AI AIDING INNOVATION

Machine learning and AI are proving useful, despite their preliminary limitations and concerns. In fact, AI is helping us write this article (thanks, Google autocorrect) and illuminate the work of brilliant minds at BU.

For the visually impaired, navigating an unfamiliar street can be challenging. That's why **ESHED OHN-BAR**, a professor of electrical and computer engineering, is working to develop AI technologies that provide intuitive, humanlike guidance through an unknown environment.

In a May 2023 study, researcher **CHONGHUA XUE** (ENG'18,'27) and Associate Professor of Medicine **VIJAYA B. KOLACHALAMA** used machine learning to compare blood samples, which found differences in the plasma of healthy adults and those who developed Parkinson's—up to 15 years prior to diagnosis.

At the intersection of AI and healthcare, the next life-changing discovery awaits—and **MARGRIT BETKE**, a professor of computer science, has found one. Betke is using AI to review brain scans of stroke victims, pinpoint damaged areas of the brain, and predict the likelihood of language problems and the efficacy of treatment.

Improving your diet improves your health, right? But why? That's the question **MAURA E. WALKER**, an assistant professor of nutrition, is investigating. Her research combines lab-based biochemical work with data science to understand how diet induces a microbial response that can affect long-term health.

BU researchers join $100M effort to combat dangerous pathogens

PATHOGEN BUSTERS

HOW TO GO ANTIVIRAL

The next pandemic could be lurking, ready to strike, and Boston University researchers aren't waiting to find out.

In early 2023, six of our scientists joined a $100 million effort to advance the understanding of dangerous pathogens—and help spur new ways to defeat or at least contain them.

The **HOWARD HUGHES MEDICAL INSTITUTE'S (HHMI) EMERGING PATHOGENS INITIATIVE** is pulling in 70 scientists from 29 organizations who will be part of teams working on the next generation of RNA-based antiviral therapies. BU's share of the funding will be **$10.75 MILLION**.

Among those contributing to the HHMI initiative is **ELKE MÜHLBERGER**, director of integrated science services at BU's **NATIONAL EMERGING INFECTIOUS DISEASES LABORATORIES** (NEIDL). NEIDL is a state-of-the-art research facility that focuses on infectious diseases that are—or can become—public health threats. Mühlberger is a professor of microbiology and an expert on highly pathogenic viruses like Ebola, Marburg, and SARS-CoV-2. She recently started investigating other viruses of concern, including Nipah—a bat-borne disease with the potential to infect humans—that is high on the

BU researcher Ellen Suder preps her suit for work in the BSL-4 high containment lab at the NEIDL.

"The goal is to come up with mechanisms and strategies... to block these viruses, to find antiviral countermeasures."

Elke Mühlberger, Director of Integrated Science Services at NEIDL

World Health Organization's priority list for research.

Mühlberger is teaming up with BU colleagues, biochemist **DANIEL CIFUENTES** and microbiologist **ANTHONY GRIFFITHS**. Mühlberger says, "The goal is to come up with mechanisms and strategies, to use the knowledge that we gain through this project to block these viruses, to find antiviral countermeasures."

The other **EMERGING PATHOGENS INITIATIVE** team featuring BU researchers includes **RUSLAN AFASIZHEV, INNA AFASIZHEVA**, and **JOHN SAMUELSON**, all BU Henry M. Goldman School of Dental Medicine molecular and cell biology faculty members. They are working with scientists from the Broad Institute, Harvard T.H. Chan School of Public Health, and Massachusetts General Hospital to decode key proteins—known as mitochondrial proteomes—in six disease-causing parasites.

Afasizhev says that the work could also lay the foundation for developing a new generation of drugs targeting historically neglected diseases. "We aim to build highly accurate and comprehensive mitochondrial proteomes of parasites that cause human diseases in some of the most disadvantaged countries in the world."

INVESTING IN INNOVATION

Our researchers won **$645.6 MILLION** in sponsored awards in FY2023. What they are developing and discovering is worth far more:

BU's **CONTRACEPTIVE RESEARCH CENTER** received a $7.2 million grant from the National Institutes of Health's **NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT** to continue developing the next generation of contraceptives and products that prevent sexually transmitted infections, with a focus on "plantibodies": antibodies that have been cultivated from tobacco plants.

CAROL NEIDLE, professor of linguistics, was awarded $180,000 by the National Science Foundation's **CONVERGENCE ACCELERATOR** program to continue her development of AI-based tools that enhance access and opportunities for those who are deaf and hard of hearing.

SHERYL GRACE, associate professor of mechanical engineering, **DAN LI**, associate professor of Earth and environment, and **ROBERTO TRON**, assistant professor of mechanical engineering, were named to lead a **NASA**-funded, $5.6 million multiyear project that will study the technical requirements for using quieter, vertical-lift air vehicles in an urban environment.

Funded by a $550,000 award from the **NATIONAL SCIENCE FOUNDATION**, **NINA MAZAR**, professor of marketing, and **MARSHALL VAN ALSTYNE**, **RAN CANETTI**, and **MAYANK VARIA**, professors of computing and data sciences, will conduct a multidisciplinary research project to help minimize the adverse effects of misinformation and promote free speech.

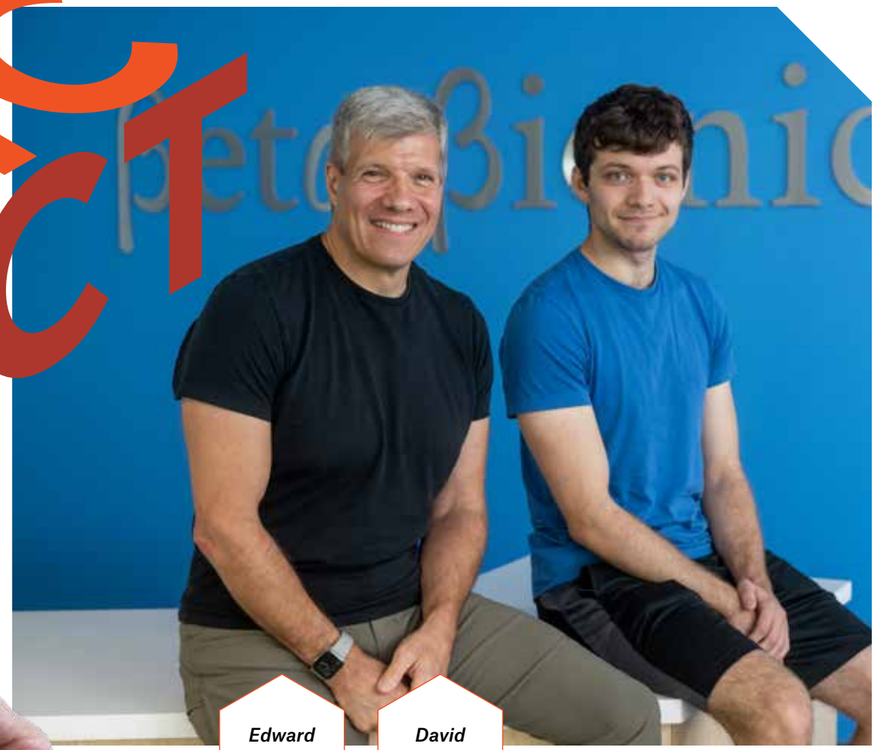
ALLIES FOR ANTIBIOTIC ACCELERATION

The need for accelerated antibiotic innovation featured prominently at the **G7 HIROSHIMA SUMMIT 2023**, with renewed financial commitments to the BU-based pharmaceutical accelerator **CARB-X** from various member nations, including €41 million from Germany, C$6.3 million from Canada, and up to £24 million from the United Kingdom.

Abundant gathering and affinity spaces—with more added in FY2023—offer a multitude of ways to connect on campus.

FROM LAB TO PHARMACY

BIONIC IMPACT



The FDA approved BU biomedical engineer Edward Damiano's "bionic pancreas" in 2023.

The ILET BIONIC PANCREAS has landed on the market, bringing fresh hope to countless people with type 1 diabetes. Developed in a Boston University lab, the wearable, pocket-sized, automated, insulin-delivery system was cleared by the US Food and Drug Administration in mid-2023, and *TIME* magazine recently named it one of "The Best Inventions of 2023."

The approval is a massive milestone in a two-decade—and deeply personal—journey. Coinvented by **EDWARD DAMIANO**, a professor of biomedical engineering, the new device combines an insulin-infusion pump with algorithm-controlled, dosing-decision software. Damiano was inspired by his son, who was diagnosed with type 1 diabetes when he was just 11 months old.

In people with type 1 diabetes, the pancreas doesn't produce enough insulin—an essential hormone for utilizing and storing sugars. Uncontrolled, this chronic condition carries a host of complications, from heart disease to eye damage. There's no cure.

For most of his son's early life, Damiano and his wife woke every few hours in the night, checking their son's blood sugar levels, giving him insulin or juice to control the numbers. "Sleeping is the scariest part of all this," he says. "It's what put this project on a high-speed rail. It's a very scary prospect that blood sugars could go low at night. When you're sleeping, you're checked out and you don't want to check out permanently."

In 2015, Damiano cofounded Beta Bionics, a public benefit corporation, to advance the technology. Four years later, the company had raised $137 million to push the device through the final stages of clinical research and product development. Since then, Beta Bionics has raised an additional $160 million to support regulatory clearance and commercial launch of the iLet Bionic Pancreas in the US.

Communicating with a Bluetooth-enabled continuous glucose monitor, the iLet Bionic Pancreas can administer customized insulin doses every five minutes, based on calculations of current and past glucose levels and anticipated levels based on insulin it has delivered. Small enough to be clipped on a bra strap or thrown in a pocket, the iLet means patients will no longer have to constantly measure their glucose levels and calculate, with help from their doctor, their correct insulin dose—a 24/7 endeavor.

The iLet Bionic Pancreas is now commercially available, for people six and older with type 1 diabetes, and ready for widespread impact.

University Provost Ad Interim **KENNETH LUTCHEN**, as the former dean of the College of Engineering, bore witness to Damiano's determination and vision over the years, "This is such a fantastic example of what a Boston University societal engineer does—advancing new ideas into real inventions driven for the betterment of others."

POWERING PIONEERING PROFESSORS

Our University's labs and classrooms are fertile ground for promising discoveries and exciting advances—and the Ignition Awards are designed to help faculty transform research into marketable proof-of-concept. Here are just four of the innovators who received 2023 Ignition Awards, which includes financial support and the coaching needed to connect academia with industry.

Education innovator **HANK FIEN** has developed an AI-enhanced software that provides gamified lessons that adapt as students play, reinforcing skills in areas they need to improve most, while identifying for teachers opportunities for customized instruction.

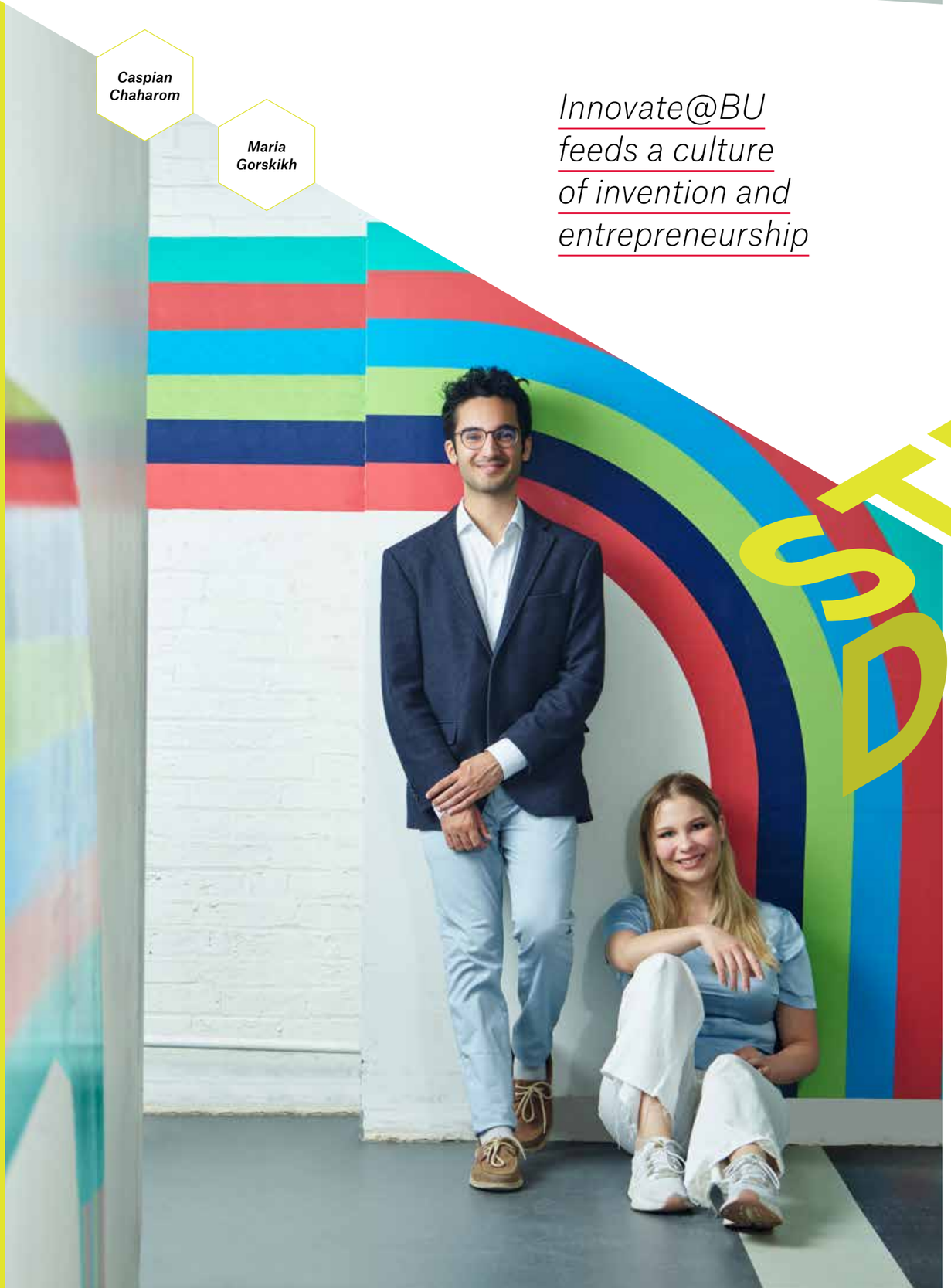
Biomaterial researcher **YUWEI FAN** is one step closer to solving the problem of tooth enamel decay. Using a new process and working with lifelike enamel material, Fan may have hit on a way to restore the surface of teeth damaged by bacteria, trauma, or everyday wear.

Neuromotor researcher **LOUIS AWAD** is using AI-based technology to help stroke victims recover their walking ability. The device he developed is worn on a user's calf and stimulates muscles to generate nerve impulses in the brain. The reestablished mind-muscle connection will, hopefully, speed up stroke victims' recovery.

Computational biologist **IGNATY LESHCHINER** is helping patients and their providers track cancer in real time. Rather than relying on expensive imaging techniques, Leshchiner is developing a blood test that can detect cancer activity almost immediately. Next up: creating a prototype and testing in clinical trials.

Caspian Chaharom

Maria Gorskikh



Innovate@BU feeds a culture of invention and entrepreneurship

STUDENT DISRUPTORS

NO-HOLDS-BARRED THINKING (AND DOING)

Preparing young minds to investigate the world around us and contribute to the betterment of society is our reason for being.

However, the mission goes well beyond the classroom.

With the help of **INNOVATE@BU**, a University-wide innovation initiative, we've nourished a culture of invention, entrepreneurship, and no-holds-barred thinking on campus, encouraging students to spread their wings and take flight in all directions.

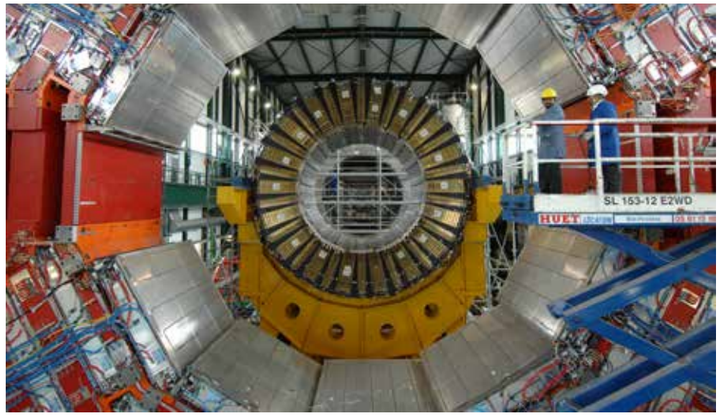
BUILDING A BUSINESS BY REMOVING BARRIERS

Take **MARIA GORSKIKH** (Questrom'23), for example. Innovate@BU named her 2023's Student of the Year. She is a podcast host and cofounder of multiple start-ups, and her brainchild, DREAM Venture Labs, won the 2023 **BU REFUGEE CHALLENGE**.

Gorskikh's nonprofit empowers refugees and immigrants to start and grow their own businesses. The approach pairs immigrant entrepre-

BUILDING A BETTER BOSTON: CITY SCHOLARS AT WORK

In summer 2022, nine Boston University students interned at Boston City Hall and with the Boston City Council as part of the **BU CITY SCHOLARS SUMMER FELLOWS** program. They contributed to speech writing, public health communications, stormwater mitigation infrastructure development, public arts event planning, and more. And, as BU students who grew up in Boston, the opportunity to serve their community was personal, offering the chance to better understand—and give back to—the city they call home.



A number of BU scientists and students have conducted research at CERN, the international physics research center outside Geneva, Switzerland.

neurs with student-volunteers who speak their partner's native language. Starting a business in the US is challenging enough, Gorskikh says, and it's even more daunting when you are not fluent in English, unfamiliar with the market, or lack resources.

"As an immigrant myself, I know that many people in my community possess an entrepreneurial drive and aspire to establish their own businesses upon arriving in the US," she says. "Our plan is to accept 20 businesses and more than 200 student-volunteers into our program and help develop and refine immigrant-founded ventures."

PEERING INTO THE VERY DISTANT PAST

Another Innovate@BU alum is physics major **CASPIAN CHAHAROM** (CAS'23), who interned last year at CERN (Conseil Européen pour la Recherche Nucléaire), an international physics research center outside Geneva, Switzerland. He worked alongside the world's leading physicists at the forefront of unraveling the origins of our universe.

Chaharom helped develop software to create, detect, and measure heavy particles such as the Higgs boson, a subatomic particle considered a crucial component in understanding the foundations of nature. He also designed a component for the timing receiver circuit to measure a particle's position as it speeds along the beam in the Large Hadron Collider, the world's most powerful particle accelerator. At BU, he started a company to simplify circuit board building and was a finalist in Innovate@BU's **NEW VENTURE COMPETITION**. In fact, Chaharom's design for the new circuit at CERN was reviewed and approved by the center's engineering team and is now in production. Perhaps what made the biggest impression on him was the diversity of the research community, which comprises 23 member countries.

"[At CERN], I have met more students and researchers from a wider variety of countries than I have in my whole life," Chaharom says.

WHERE IN THE WORLD ARE WE? YES.

This year, students hit the road as well as the books, studying abroad in numbers nearly level with pre-pandemic rates. Of the more than 2,100 students who studied abroad, nearly 67% participated in an academic internship, gaining valuable work experience in another workplace culture. Boston University offers 82 global programs and an ever-expanding roster of partnerships with universities and organizations in 22 countries.

LEADING THE WAY WITH STUDENT-LED RESEARCH

Engineers, experiment designers, linguists, artists, and moneyball mavens. What do they all have in common? They're undergraduate students conducting leading-edge research at BU. Many have worked with mentors through the Undergraduate Research Opportunities Program, while others designed experiments in class, won design competitions, or simply followed their passions. Read about a few of their projects below:

LEELA MUNSIFF (CAS'23), a linguistics student, spent her last three summers recruiting native Ende speakers from Limol, Papua New Guinea, then translating and interpreting over 70 interviews with Ende tribe members. Her research, conducted with her mentor, Professor Kate Lindsey, led to her presenting her work at New Ways of Analyzing Variation – Asia Pacific 7 (NWAV-AP 7), an international research conference.

Music education student **SPENCER HART-THOMPSON (CFA'24)** received an Arts Research Award to expand his project, Music Through the Scope of Disability, examining new, more equitable accommodations for students with physical disabilities in music education. The project, which evaluates the burdens of existing accommodations and the benefits of newer proposals, will be complemented by a lecture-meets-music performance organized, written, and performed by Hart-Thompson.

ADANNA THOMAS (CAS'23), who studies neuroscience, helped design an experiment to understand how the brain's reading network—interconnected areas of the brain that are active when reading—responds to words that have been spelled incorrectly, scrambled, or made up altogether. Thomas plans to further her research in a lab setting after graduation.

Engineering students **MELISSA FERRANTI (ENG'25)**, **YASH PATEL (ENG'25)**, and **KARA WALP (ENG'24)**, whose concentrations span computer engineering, statistics, machine learning, and nanotechnology, have developed a prototype test that uses silver nanoparticles to detect GHB, a common date-rape drug, in drinks. The paper-based detector was developed in the first annual BTEC x BMES Design-A-Thon, a design competition from the Bioengineering Technology & Entrepreneurship Center and the BU chapter of the Biomedical Engineering Society.

E.J. WONG (CGS'21, CDS'23), a recent graduate in the inaugural class of the Faculty of Computing & Data Sciences, together with CGS Master Lecturer of Natural Sciences & Mathematics Leonard "Andy" Andres, presented research they had conducted to the SABR (Society for American Baseball Research) Convention. Their project, which aimed to accurately predict a team's success in the playoffs, was well received and earned Wong a Yoseloff Scholarship for his contributions, which supports students interested in the field of baseball analytics.

CLIMBING

With more than 80 study abroad programs and internships around the world and faculty research conducted on six continents, BU was a prominent player on the world stage in FY2023.

To combat environmental threats, BU researchers focus on mental health, bioreactors, and China

CLIMATE WARRIORS

WRAPPING ALL OF OUR ARMS AROUND THE PLANET

Amruta Nori-Sarma

Gregory Wellenius

Combating climate change is a profound challenge, requiring a multipronged response from all corners of Boston University.

In FY2023, we added more prongs and more corners.

They include a joint venture to collect data around the impact of climate change on human health, an interdisciplinary engineering effort to scale up bioreactors, and global development policy that calls for greater cooperation with China, to name a few.

IS HUMAN HEALTH THE NEW POLAR BEAR?

Extreme weather events aren't just resulting in more property damage and compromised animal habitats; they're threatening the health of people around the world. Extreme heat, for example, is a stressor and poses a significant risk to our physical and mental health, leading to more deaths, hospitalizations, and emergency room visits during hot weather, says **AMRUTA NORI-SARMA**, an assistant professor of environmental health. People in vulnerable areas—such as low-income neighborhoods with fewer community resources or places less likely to have air-conditioning—are particularly at risk, she adds.

Nori-Sarma is coleading a unique joint venture with **GREGORY WELLENIUS**, a professor of environmental health at BU's School of Public Health, and Harvard's T.H. Chan School of Public Health. Backed by **$6.7 MILLION** in federal funding, they aim to confront the massive health threats posed by climate change through global research cooperation and the development of action plans. The three-year

CLOSING THE LAB-TO-LANDFILL LOOP

Among the 21 teams awarded funding in Academic Year 2022–2023 by Boston University's **CAMPUS CLIMATE LAB**, one wants BU's labs to turn over a new leaf.

PhD student and 2023 Janetos Climate Action Prize–winner **CARLY GOLDEN (CAMED'27)**—in concert with **ANGIE SERRANO**, a Chobanian & Avedisian School of Medicine assistant professor, and her team from the Center for Regenerative Medicine (CReM)—spent much of 2022 researching more sustainable ways their lab could recycle waste, reuse materials, and reduce energy use.

With their findings, which range from raising the temperature of labs' sample freezers by a few degrees to enacting a robust recycling program for plastics that have not contacted hazardous materials, CReM is creating a blueprint for other BU labs to accelerate the University's sustainability goals.

grant from the **NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES**, part of the **NATIONAL INSTITUTES OF HEALTH**, will launch the **BUSPH-HSPH CAFÉ RESEARCH COORDINATING CENTER**. Several faculty members from BU's SPH and the Department of Earth & Environment are providing their support and expertise as well.

APPLE CORE POWER

Can apple cores, orange peelings, and rotten cabbage dramatically cut carbon emissions nationwide? At the College of Engineering, a cross-disciplinary trio of researchers is setting out to prove that they can.

RABIA YAZICIGIL, DOUGLAS DENSMORE, and **AHMAD (MO) KHALIL** are collaborating with experts from Capra Biosciences, Inc., developers of a cutting-edge bioreactor technology. The nutrients produced by decaying food, manure, and other waste products can help fuel bioreactors, which, in turn, can synthesize new substances. The result is everything from medicines and gene therapies to cleaner and greener materials, machine oils, detergents, fuels, fabrics, fragrances, and even foods.

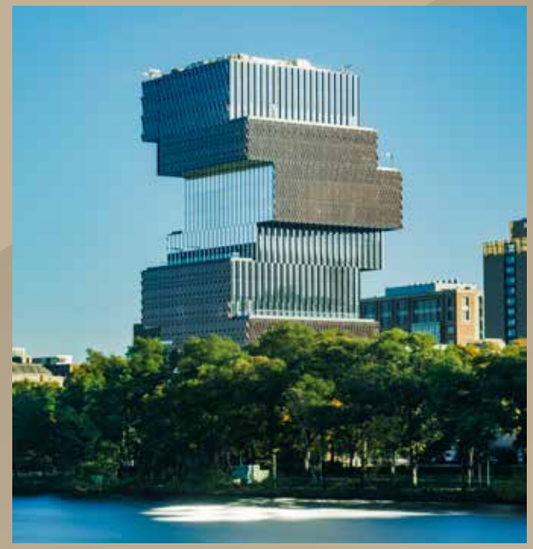
However, refining and replicating the company's innovative platform on a grand scale requires automation and novel quality-control and security measures. That's where the BU team—with backgrounds in genetic engineering, electronics, and automation—comes in. As part of a federal push for more and better bioreactors, the team received a $3 million grant from Schmidt Futures, funding given in partnership with bio-industrial manufacturing consortium BioMADE. They also plan to share the technology they're already developing with researchers worldwide.

"BLUE-ING" CHINA'S BELT AND ROAD INITIATIVE

Researchers at our **GLOBAL DEVELOPMENT POLICY CENTER** led the first comprehensive evaluation of the effects on marine ecosystems—and the communities who depend on them—from China's Belt and Road Initiative (BRI), a global infrastructure development strategy.

An international team from Boston University; the University of Queensland; University of California, Santa Barbara; and Colorado State University quantified the social and environmental risks of 114 coastal development projects that China financed from 2008–2019. Among other findings, researchers determined that ports present the greatest impact risks to marine systems, with power plants, roads, and other facilities presenting relatively high localized risks. Their analysis was published in December 2022 in *One Earth*.

The researchers argue that an agenda is needed for "blue-ing" the BRI—one with stronger social and environmental safeguards, stricter standards for impact assessments, and management that includes local and indigenous communities.



PLATINUM IS THE NEW GREEN

The US Green Building Council has bestowed its highest rating, LEED Platinum, on our recently opened **CENTER FOR COMPUTING & DATA SCIENCES**. The certification recognizes the building's numerous sustainability features, including eight garden roofs, reduced embodied carbon in building materials, and—most notably—one of the largest geothermal heating and cooling systems of its kind.

The distinction marks Boston University's first LEED Platinum space and its twenty-third LEED-certified space overall, increasing BU's LEED-certified footprint to 1.8 million square feet.

GOLD STARS FOR SUSTAINABILITY

For the first time, BU has achieved a STARS Gold rating for efforts related to our Climate Action Plan, such as our BU Wind project, Campus Climate Lab, and use of community-supported agriculture in Dining Services, among other initiatives. The Association for the Advancement of Sustainability in Higher Education (AASHE) oversees the Sustainability Tracking, Assessment & Rating System (STARS), a framework colleges and universities can use to measure and report achievement in sustainability, which is then scored by AASHE staff members.

Thanks to generous alums and friends, another record-breaking year in giving

DONATION NATION

A BOTTOMLESS CUP OF COMMUNITY

Boston University's ninth annual Giving Day saw a record-breaking 12,000 donors support more than 450 campus causes.

Setting a record for the University, we closed FY2023 with $273M in donations from our alumni and friends, a 12.3% increase over the prior year.

Much of that success can be credited to the University's Strategic Plan, our road map for growth that articulates BU's top priorities—from impactful research and vibrant academics to diversity efforts and global engagement.

"Donors have been inspired and encouraged by the plan and want to support our new initiatives," says Senior Vice President for Development & Alumni Relations **KAREN ENGELBOURG**. "At the same time, we have maintained and even increased momentum around core priorities, such as undergraduate financial aid, faculty and research, and student life."

Our year of giving started off with a bang. The late philanthropist **EDWARD AVEDISIAN** (CFA'59,'61, Hon.'22) gave $100 million to benefit the University's medical school—since renamed the Aram V. Chobanian & Edward Avedisian School of Medicine—with funds designated for research, endowed faculty chairs, and student scholarships. As part of his gift, the former professional clarinetist established two $1 million scholarships in music and the visual arts, one honoring Chobanian's wife, Jasmine, and the other his wife, Pamela (Hon.'23). Recently, the College of Fine Arts received an additional $2 million from his estate for scholarships in performance. BU received 35 gifts of $1 million or more, including several eight-figure gifts from anonymous donors in support of key University initiatives last year, as well.

Donors flocked once again to the **CENTURY CHALLENGE**, the undergraduate scholarship program in which

Associate Provost for Computing & Data Sciences Azer Bestavros stands with our president emeritus and his wife, Drs. Robert A. and Beverly A. Brown, for the announcement of an endowed fund in their name to support faculty fellows in computing and data sciences. The fund was made possible by the generosity of numerous BU alumni and friends.

the University matches the scholarship awards distributed from new endowed scholarship funds for 100 years. The program is especially popular with those looking to make their first major gift, Engelbourg says.

It's not just the dollar amounts that command attention—it's the participation. Boston University's ninth annual **GIVING DAY** brought in gifts from a record-breaking 12,000 donors from 48 countries and all 50 states, supporting more than 450 causes across campus. And our newest alums were fast out of the gates too—nearly 2,500 donors from the Class of 2023 contributed to their class gift.

"We are engaging more alumni, parents, and friends in many more ways," Engelbourg says.

"We are engaging more alumni, parents, and friends in many more ways."

Karen Engelbourg, Senior Vice President for Development & Alumni Relations

Jasmine Mijares (Questrom'23), Dumebi Onogwu (CAS'23), and Christian Hahm (Sargent'23) presented the Class of 2023's gift, to which nearly 2,500 new graduates contributed.

WINNING AT COMMUNITY

Throughout Academic Year 2022–2023, Boston University Athletics has pursued two community-oriented goals: foster a connection between the athletic department and Boston-area youth and confront food insecurity in the city. To do this, BU athletes, staff, and coaches logged more than 2,700 volunteer hours, partnering with numerous organizations, including Stem to Stern, Boston Public Schools, Team Impact, the Salvation Army, BU Food Pantry, Boston Health Care for the Homeless Program, Bike to the Beach, and Food Link.

GIVING THAT KEEPS ON GIVING

CULLOM DAVIS and **BRIDGET DAVIS**, parents of Tyler Davis (CGS'20, COM'22), have established an endowment for the Newbury Center, providing support for first-generation students, including stipends for conferences, travel, research, room and board, as well as dedicated funds for support in the event of personal emergencies.

Thanks to the generosity of BU alumni and trustees, the Robert A. and Beverly A. Brown Faculty Fellows in Computing & Data Sciences Fund has been created to support research, related travel, and other scholarly pursuits for distinguished faculty in the field.

The Travis Roy Foundation, established by the late **TRAVIS ROY** (COM'00, Hon.'16), who was paralyzed in a hockey accident his freshman year at BU, has given $1 million to the Sargent College of Health & Rehabilitation Sciences. The Travis M. Roy Endowed Scholarship Fund will support graduate students studying occupational or physical therapy.

Trustee **PETER WEXLER** (Questrom'93) made a $5 million gift to provide fellowships in the Faculty of Computing & Data Sciences. The Wexler Fellowships are awarded to PhD candidates, supporting them as they explore areas of study and devise new ways to research.

Chair Emeritus of the Board of Trustees **KENNETH FELD** (Questrom'70) has given $5 million to the College of Communication to create the Feld Family Initiative for Civic Science Communication. The initiative will advance civic engagement on science issues impacting individuals, communities, and the larger world.

Two $1 million donations have been made to BU's Center on Forced Displacement, one by an anonymous donor and the other from BU Trustee Emeritus **RICHARD C. SHIPLEY** (Questrom'68, '72, Hon.'22) and **FEYZA SHIPLEY**. The funding will develop new research and provide resources for faculty, students, and staff to better understand the challenges experienced by displaced communities.

UNIVERSITY NAMES DR. MELISSA L. GILLIAM 11th PRESIDENT

After a rigorous and comprehensive search that spanned the nation and the globe, Boston University's Board of Trustees selected a new leader this fall to help write our next chapter of transformational impact.

Meet Dr. Melissa L. Gilliam.

Dr. Gilliam is a veteran administrator, award-winning interdisciplinary researcher, and esteemed doctor, who currently serves as executive vice president and provost at The Ohio State University.

Dr. Gilliam takes office at BU on July 1, 2024, inheriting a thriving institution that has been in continual ascension, thanks in large part to her predecessor, BU's 10th president, Robert A. Brown. His remarkable 18-year tenure saw the University quadruple its endowment, open its doors to a more diverse student body, and establish itself as a leading private urban research university.

"It is a testament to Boston University's accomplishments and momentum that we were able to attract candidates who were so highly qualified and with such enormous capability," says Ahmass Fakahany (Questrom'79), chair of the BU Board of Trustees. "We are at an incredible juncture, and we've earned the right to dream big and to fulfill the potential of this University. Hiring Dr. Melissa Gilliam is a tremendous step in that direction."

At Ohio State, Dr. Gilliam oversees undergraduate and graduate education, international affairs, diversity and inclusion, external engagement, online learning, and information technology. Like BU, Ohio State is a member of the Association of American Universities, an elite organization of leading public and private universities. With 15 colleges, more than 7,500 faculty members, and over 60,000 students across 6 campuses, Ohio State is the 12th-largest research university in the country, with nearly $1.4 billion in research expenditures. With Dr. Gilliam's experience serving such a comprehensive and sprawling institution, steering a ship of Boston University's magnitude and complexity will present familiar opportunities and challenges.

Prior to joining Ohio State, Dr. Gilliam served at the University of Chicago for 16 years—as vice provost, Ellen H. Block Distinguished Service Professor of Health Justice, and professor of obstetrics and gynecology and pediatrics. While there, she led the university's faculty development and hiring programs as well as diversity and inclusion efforts.

Service and community building have been themes throughout Dr. Gilliam's life, and she says that starts with meeting, and listening, to people inside and outside her orbit.

"I'm really excited about how engaged Boston University is in the city and how engagement has been a hallmark of BU," Dr. Gilliam says. "I'm looking forward to hearing from people, learning and listening. I lead by listening, collaborating, and empowering other people. That is the best way to run big organizations: to get everyone excited and engaged and doing more than they think they're capable of doing. This philosophy is core to shared governance, an essential component of a thriving university."

Dr. Gilliam earned her Bachelor of Arts in English literature from Yale University, Master of Arts in philosophy and politics from the University of Oxford, Doctor of Medicine from Harvard University, and Master of Public Health from the University of Illinois Chicago. She completed an internship in general surgery at the University of Chicago and her residency in obstetrics and gynecology at Northwestern University.

Despite her highly accomplished background in science and medicine, she says she was also raised to embrace the societal importance of arts and culture. Her late father was a pioneering abstract painter known for a career of continuous experimentation and innovation. And her mother was a trailblazing journalist and the first Black female reporter hired by the *Washington Post*.

Gilliam will be the first female president of Boston University and first person of color to lead our 184-year-old research institution. A choice that makes history, a choice that forges our future.

OUR YEAR IN FINANCES

Boston University's continued ascent has not been limited to its academic mission or research enterprise. We successfully wrapped up another year of robust financial growth, culminating in total assets topping $8.3 billion in FY2023, a 3.6% increase over the previous year.

Our financial performance was anchored by a net operating gain of $152 million, which brings the University in line with our pre-pandemic operating results. While operating revenues surpassed previous years, expenses also rose—5.2% over last year—as we methodically restored staffing to normal levels while simultaneously navigating rising costs stemming from inflation.

Tuition and fees represent the University's main income stream, accounting for more than 50% of total operating revenues. That channel remains robust. Net tuition and fees rose by $46 million over the previous year with higher enrollments and a 4.25% tuition increase (which we offset with an additional $44 million in financial aid generated from higher interest rates earned on working capital investments).

Support for undergraduate education remains a top strategic priority and represents another measure of growth for BU. Financial aid increased from $381 million in FY2022 to $425 million in FY2023.

Several other key areas saw notable growth: sponsored research awards in FY2023 jumped to $645.6 million, a 22% increase from the prior year; the University posted another record-breaking year of cash fundraising totalling $273 million; and the endowment continues to grow, ensuring our institution's stability, increasing $165 million over last year, or 5.5%, reaching $3.2 billion.

As we know, meaningful growth doesn't just happen. It is an intentional process guided by vision, focus, and collective will. Taken together, the University's strategic plan, strong student demand, high-quality teaching and research faculty, and data-driven management systems and processes have proven a powerful formula for long-term financial success.

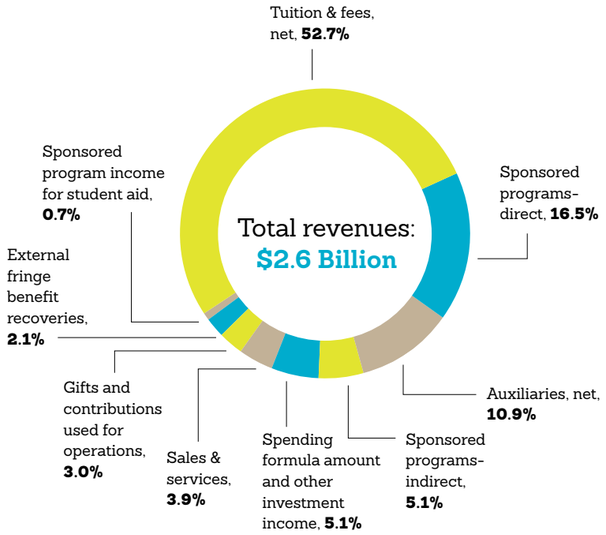
Financial Summary

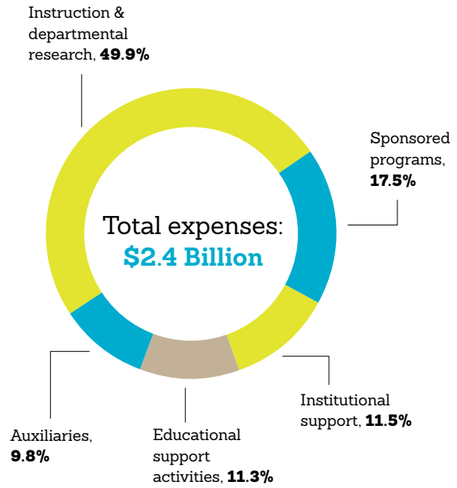
$ THOUSANDS

	2019	2020	2021	2022	2023
Operating revenues					
Student tuition and fees, net	$ 1,164,242	$ 1,168,192	$ 1,152,579	$ 1,297,659	$ 1,343,938
Auxiliaries, net	288,576	224,480	153,911	261,044	279,255
Sponsored programs-direct	304,614	333,773	411,472	457,280	422,844
Sponsored programs-indirect	97,854	105,695	108,054	118,689	130,157
External fringe benefit recoveries	39,951	44,457	32,511	52,077	53,764
Sales and services	107,415	89,399	76,848	89,394	99,282
Endowment spending formula amount & other investment income	97,786	92,044	80,607	85,114	130,324
Gifts and contributions used for operations	53,870	59,767	68,822	61,187	77,229
Sponsored program income for student aid	16,345	31,038	28,163	38,912	19,051
Total operating revenues	**$ 2,170,653**	**$ 2,148,845**	**$ 2,112,967**	**$ 2,461,356**	**$ 2,555,844**
Operating expenses					
Instruction and departmental research	$ 1,050,772	$ 1,040,427	$ 942,859	$ 1,110,347	$ 1,199,891
Educational support activities	203,858	213,724	204,947	246,337	271,150
Sponsored programs	307,291	337,926	414,621	461,077	420,978
Auxiliaries	222,658	209,701	181,964	220,869	236,208
Institutional support	228,225	248,510	225,087	246,539	275,250
Total operating expenses	**$ 2,012,804**	**$ 2,050,288**	**$ 1,969,478**	**$ 2,285,169**	**$ 2,403,477**
Change in net assets from operating activities	**$ 157,849**	**$ 98,557**	**$ 143,489**	**$ 176,187**	**$ 152,367**
Nonoperating activities					
Contributions, net	$ 33,491	$ 21,165	$ 42,141	$ 46,574	$ 159,710
Reinvested endowment and other investment income	32,863	31,688	27,209	30,167	34,642
Net realized and unrealized gains (losses) on investment and other assets	161,386	144,960	959,240	(397,688)	136,191
Spending formula amount	(79,333)	(84,918)	(91,151)	(96,145)	(106,531)
Other	(91,056)	(147,055)	68,045	130,104	38,225
Total nonoperating activities	**$ 57,351**	**$ (34,160)**	**$ 1,005,484**	**$ (286,988)**	**$ 262,237**
Change in net assets	**$ 215,200**	**$ 64,397**	**$ 1,148,973**	**$ (110,801)**	**$ 414,604**

Read more about our financials at bu.edu/ar/2023

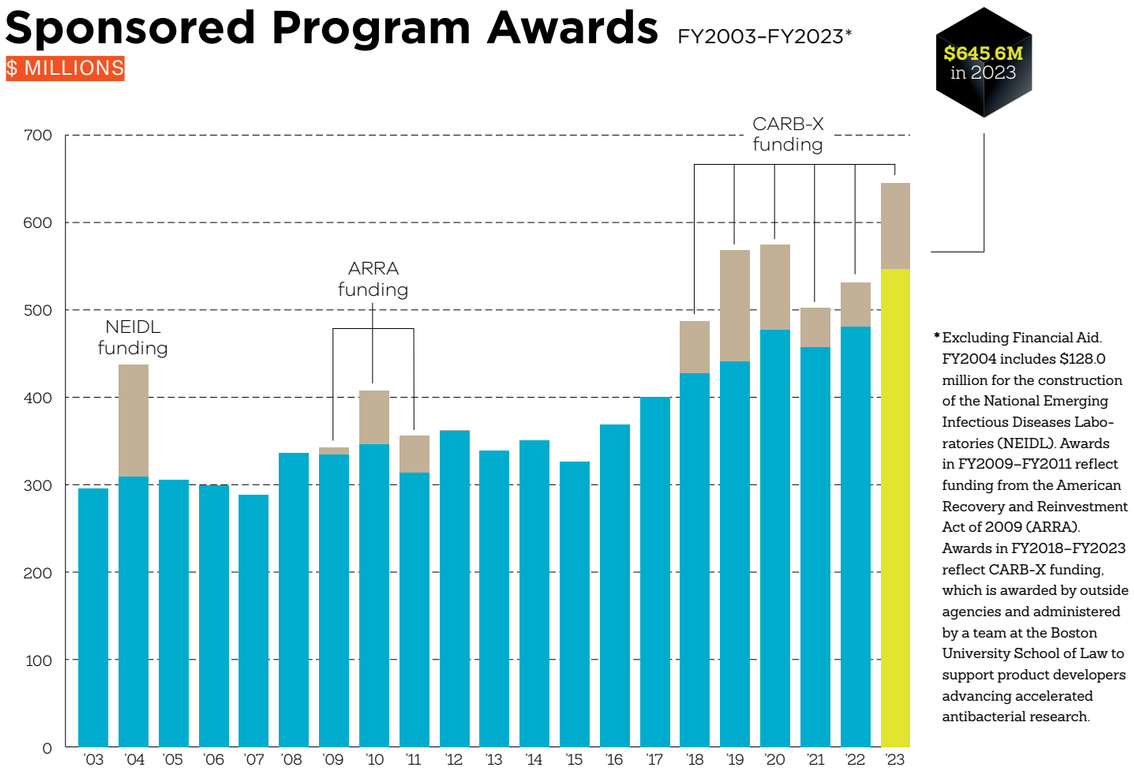
Operating Revenues & Expenses FY2023





Sponsored Program Awards FY2003–FY2023*

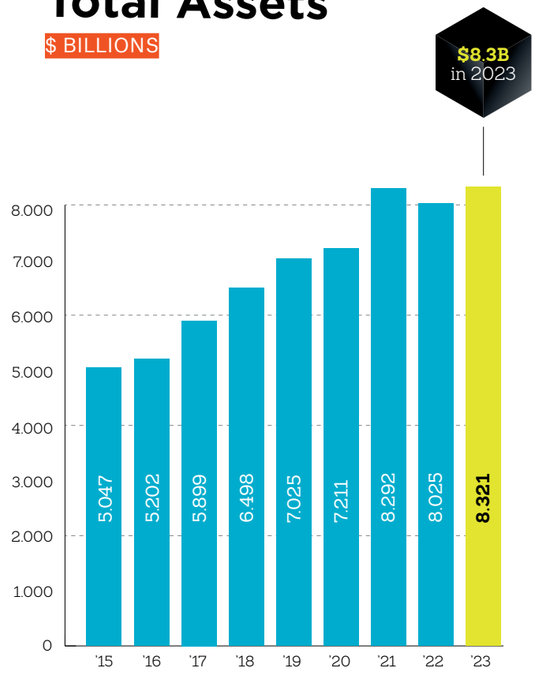
$ MILLIONS



*Excluding Financial Aid. FY2004 includes $128.0 million for the construction of the National Emerging Infectious Diseases Laboratories (NEIDL). Awards in FY2009–FY2011 reflect funding from the American Recovery and Reinvestment Act of 2009 (ARRA). Awards in FY2018–FY2023 reflect CARB-X funding, which is awarded by outside agencies and administered by a team at the Boston University School of Law to support product developers advancing accelerated antibacterial research.

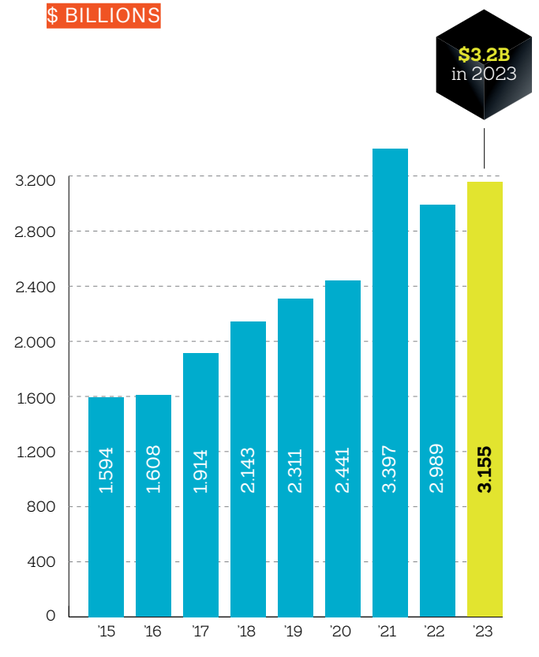
Total Assets

$ BILLIONS



Total Endowment

$ BILLIONS

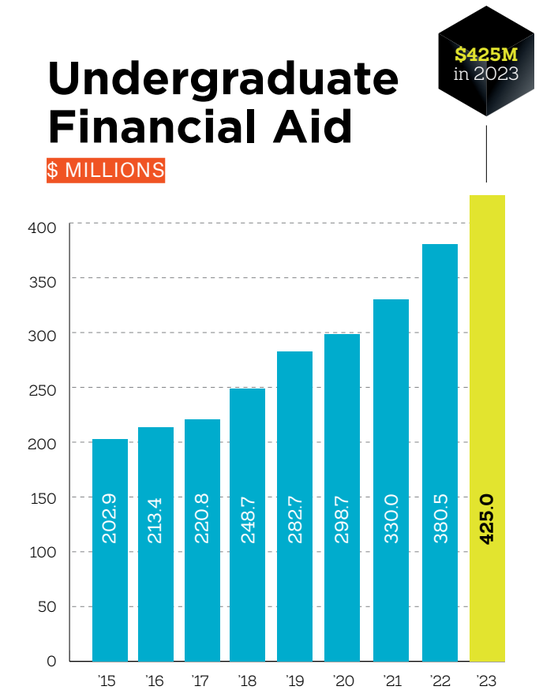


Cash Giving

$ MILLIONS

Undergraduate Financial Aid

$ MILLIONS



CLIMBING

In May 2023, thousands of Boston University graduates joined a global community of more than 400,000 alumni who serve, shape, and improve their world.

Office of the President
Boston University
One Silber Way
Boston, Massachusetts 02215

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