

Washington



While the battle against SARS-CoV-2 rages on, WashU researchers and clinicians are also fighting drug-resistant infections — a global scourge brought on by the overprescription of antibiotics, pg. 20.

A Fresh Look at Our Past

Marie Griffith's *Making the World Over: Confronting Racism, Misogyny, and Xenophobia in U.S. History* tackles the most divisive issues of our time and offers a way forward, pg. 14.

The Launch Pad

Olin's MBA entrepreneurship program — ranked No. 1 by Poets & Quants — is a pivotal part of a community-wide ecosystem helping students and alumni become successful entrepreneurs, pg. 28.

Karibu Nyumbani, Welcome Home

Alumna Freida Brown's journey proves that you never truly retire from your purpose, pg. 44.

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Columns

Sharlene Lee, an MFA in Visual Art student in the Sam Fox School of Design & Visual Arts, uses a press at a Fox Fridays "Pressure Prints" workshop in the Nancy Spirtas Kranzberg Studio for the Illustrated Book. Workshops offered through Fox Fridays introduce the WashU community to tools, resources and ideas in a low-stress environment, and they encourage a culture of play and experimentation.

Photo: Carol Green



“By providing informal, ‘low-stakes’ access to the exciting possibilities of new and traditional media, Fox Fridays are a valuable resource for students from across the Sam Fox School and Washington University.”

— CARMON COLANGELO, THE RALPH J. NAGEL DEAN OF THE SAM FOX SCHOOL



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Microbiologist Arpita Bose chases climate change solutions in wetlands soils. Her efforts are yielding promising new biofuels and bioplastics — ones that could possibly be climate-saving.

Photo: Joe Angeles



The future of WashU is bright

Chancellor Andrew D. Martin presents Sarah K. England, MD, the Alan A. and Edith L. Wolff Professor of Medicine, with a Distinguished Faculty Award at the university's 2021 Founders Day celebration. England, professor of obstetrics and gynecology in the School of Medicine, was among four faculty members recognized for their outstanding commitment to the intellectual and personal development of students.

Greetings, friends of Washington University!

An essential aspect of a leader's work is to anticipate the challenges and opportunities of the future. While COVID-19 and all its variants have certainly humbled me in this regard, I'm proud to share that despite the challenges of the pandemic, we've remained laser-focused on an important project: our university strategic planning.

After 18 months of dedicated work by a large and diverse group of contributors, we are poised to launch our strategic plan in May, putting into action our vision for Washington University's next decade of impact. Our plan emphasizes conducting research with a major focus on pressing global needs, enhancing leadership capabilities and personal development for all members of our community, and building and maintaining strong bonds with the city of St. Louis.

When Provost Beverly Wendland and her team began this process, their first step was to convene a group of distinguished faculty to establish the guiding principles that would serve as a foundation for the progress ahead. Together they determined that every aspect of the strategic plan must serve inclusion, diversity, equity and access; a global perspective; stewardship of the resources entrusted to our care; community impact; and academic distinction.

Next, we assembled members of the community into working groups that would examine nine areas of focus that will drive our next era of distinction and service, encompassing all aspects of Washington

University: our education mission as well as our patient care, research, workplace and citizenship missions. The working groups were overseen by a coordinating committee that developed implementation and accountability standards.

Finally, after many hours of deep discussion and difficult decisions, the steering committee synthesized each working group's findings and recommendations into the strategic plan that we'll launch with great excitement in May.

This work didn't happen behind the closed doors of a boardroom; rather, it was a community-driven process. We heard from a total of 2,000 stakeholders, including 800 students, 600 alumni and 33 employers, and each voice was invaluable to understanding our strengths, opportunities and challenges.

I am continually in awe of how deeply our worldwide WashU community cares about this beloved institution, and the strategic planning process has confirmed what I already knew to be true: The future of Washington University is bright, and there is abundant opportunity to shine that light outward to improve lives around the world.

I can't wait to share more soon, and I'm grateful every day for the opportunity to pursue our university motto, "strength through truth," alongside each member of this community.

A handwritten signature in black ink, appearing to read "Andrew D. Martin".

Andrew D. Martin
Chancellor



@WashUChancellor

FEEDBACK



THE DECEMBER 2021 ISSUE

“Is it possible to get an aerial map outlining all the new construction ... Just driving by doesn’t do justice to the scope ... [of the] transformation.”

JOHN BAUER, UC '66
(See back cover for aerial view of the east end!)



IAUGUST 2021 MAGAZINEI

RICHARD SZETO, BSCS '80, AB '81 (computer science, biology and economics) – who is interim executive director of Imagine, A Center for Coping with Loss – reports that he was away most of the month of August 2021 and had not seen the August issue when he started receiving texts and calls about the photo appearing on the Lasting Impression spread.

“My old classmates asked if I was the person wearing the Bruce Track Club running top. I did confirm it was me, though I was more surprised that they recognized me than even appearing in a photo in the magazine. I was a freshman and on the track team. It was early in the spring term, and we were coming back from doing base training at Forest Park. As an aside, after high school in NYC, I joined the Bruce Track Club, a local club in Queens (hence the shirt). I always had a love of running and continued to compete at USATF Masters track and field competitions until my late 50s. Thank you for publishing the photo. It brought back wonderful memories.”



IDECEMBER 2021 MAGAZINEI

JOYCE (BATTLE) LINK, AB '78 (psychology and education) – who earned a JD from The Ohio State University College of Law and who retired in 2014 after a distinguished career in the legal profession as of counsel and partner at Montgomery McCracken Walker & Rhoads, LLP – reported that she is the student in the center of the Lasting Impression photo featured in December.

Of the full photo, she states the following: “I’m pretty sure it was a sanctioned event. I think the other female was in my dorm (sweet person), but the group you see there, we weren’t ‘hangout buddies.’... It’s funny. I looked at the magazine cover to cover and missed that page. One of my WashU girlfriends called to alert me to the picture. I couldn’t believe it. There I was. (Smile)”

We want to hear from you!

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In

ST. LOUIS

East end complete

James M. McKelvey, Sr. Hall, located south of Preston M. Green Hall, houses the Department of Computer Science & Engineering and supports WashU's data science efforts. This view of McKelvey Hall from the west shows the aluminum and glass curtain wall, which is used to flood the building with natural light. Opened in 2021, McKelvey Hall completes the transformation of the east end of the Danforth Campus. (See the back cover for a nighttime aerial view of the east end.)



Photo: James Byard

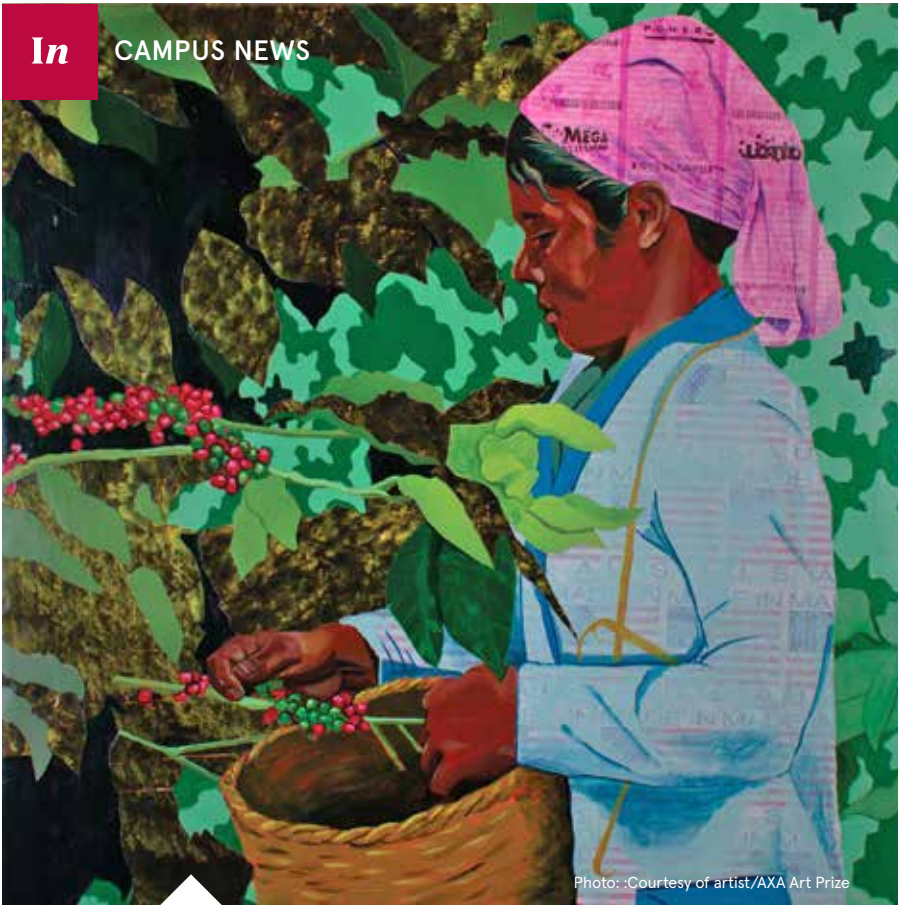


Photo: Courtesy of artist/AXA Art Prize



Photo: Kevin Roberts

SAM FOX STUDENTS EARN ACCOLADES

Quinn Antonio Briceño (pictured at right), a master's degree student in Sam Fox, had his painting "La Cortadora de Café" (pictured left) featured in the AXA Art Prize 2021 exhibition at the New York Academy of Art. The AXA Art Prize gives young artists a chance to be seen by top curators around the country. Briceño was one of 40 artists in the exhibit. View his work at quinnbriceno.com.

Students from the Sam Fox School of Design & Visual Arts also won the 2021 Barbara G. Laurie Student Design Competition sponsored by the National Organization of Minority Architects (NOMA). The competition challenged students to design a "Legacy Headquarters + Resource Center" that would celebrate NOMA's Detroit roots. The students' plan, "Embodying Legacy," was a district that would encourage artistic expression and sustainable living in the historic Black Bottom and Brush Park neighborhoods, which were displaced by gentrification.

MCKELVEY SCHOOL OF ENGINEERING LAUNCHES EDUCATION DIVISION

A new division in the McKelvey School of Engineering will have a big impact on the classroom. The recently created Division of Engineering Education centralizes some of the school's courses and creates new courses that appeal to students schoolwide.

Jay Turner, the James McKelvey Professor of Engineering Education and vice dean for education, heads the new division. "It is a key resource for experiential learning and career-development programming within McKelvey Engineering," says Turner, who is also a professor of energy, environmental and chemical engineering, "and fosters multidisciplinary design-, problem- and project-based opportunities for students."

SADAT, SEELINGER NAMED SPECIAL ADVISERS TO INTERNATIONAL CRIMINAL COURT

Leila Sadat, the James Carr Professor of International Criminal Law, and **Kim Thuy Seelinger**, research associate professor at the Brown School and visiting professor at the School of Law, were appointed special advisers to the International Criminal Court at The Hague.

Sadat was reappointed special adviser on crimes against humanity, a position she also held under the former prosecutor since 2012. Seelinger, a renowned expert on gender-based violence in forced displacement and armed conflict, was appointed special adviser on sexual violence in conflict.

NEW CENTER TO STUDY NEUROSTEROIDS

The National Institute of Mental Health (NIMH) awarded the School of Medicine a five-year, \$12.2 million grant to create a center aimed at advancing research into neurosteroids as treatment for depression and other psychiatric disorders. The new Silvio O. Conte Center for Basic Neuroscience Research will be one of only 15 Conte Centers currently funded by NIMH. The center's research focus complements work performed at the university's Taylor Family Institute for Innovative Psychiatric Research, where scientists have studied the potential of neurosteroids to treat psychiatric problems since 2013.

\$15M

\$15 million gift to strengthen life science education and research

The Division of Biology and Biomedical Sciences (DBBS) recently received a \$15 million gift from its founding director, **P. Roy Vagelos, MD**, and his wife, **Diana Vagelos**. The gift was to honor Chancellor Emeritus **William H. Danforth, MD**, who died in 2020. The gift will fund new graduate fellowships across DBBS, particularly in novel research areas, and bolster programming for undergraduates.



CONNECTING OVER TWEETS

Justin Matthews, a graduate student at Olin Business School, has always loved game nights, which is why he invented Utter, a game where players read a tweet and guess which of their friends tweeted it. So far, the game has been played more than 500 times. “Twitter is basically someone’s diary, and every tweet has a story,” Matthews says. Play Utter at utter.fun.

NEW CONSTRUCTION ON CAMPUS

WashU is continuing to build for the future. Arts & Sciences is going to get a new building in the heart of campus next to Olin Library, while the School of Medicine is expanding the Lipstein BJC Institute of Health building by adding six floors. The medical school is also still working on its 609,000-square-foot facility for neuroscience, which is slated to open in July 2023.

NEW FACES ON CAMPUS

Last November, **Asquith S. “Sean” Armstrong** (pictured below left), the former executive director for continuing education at the University of Central Florida, became the dean of University College. WashU’s professional and continuing education division is undergoing a transformation to offer more accessible pathways for economic mobility and career advancement for residents of the St. Louis region.

“Joining the University College team is an incredible opportunity to build an innovative hub of engagement,” Armstrong says. “Through strategic partnerships, we can truly make Washington University for St. Louis by creating an educational gateway that leads to transformational workforce opportunities for our community.”

This April, **Jessie Minton** (below right), former vice provost and chief information officer at the University of Oregon, became WashU’s new vice chancellor for technology and chief information officer. Minton is an information technology professional who has expertise in health-care and biomedical research.

“I am honored ... to lead the next iteration of service excellence and strategic vision for information technology at WashU,” Minton says.



Go to youtu.be/YnrohAAB_A for a video about Dean Armstrong.



Photo: Sid Hastings

HELPING TEENS OVERWHELMED BY SOCIAL MEDIA

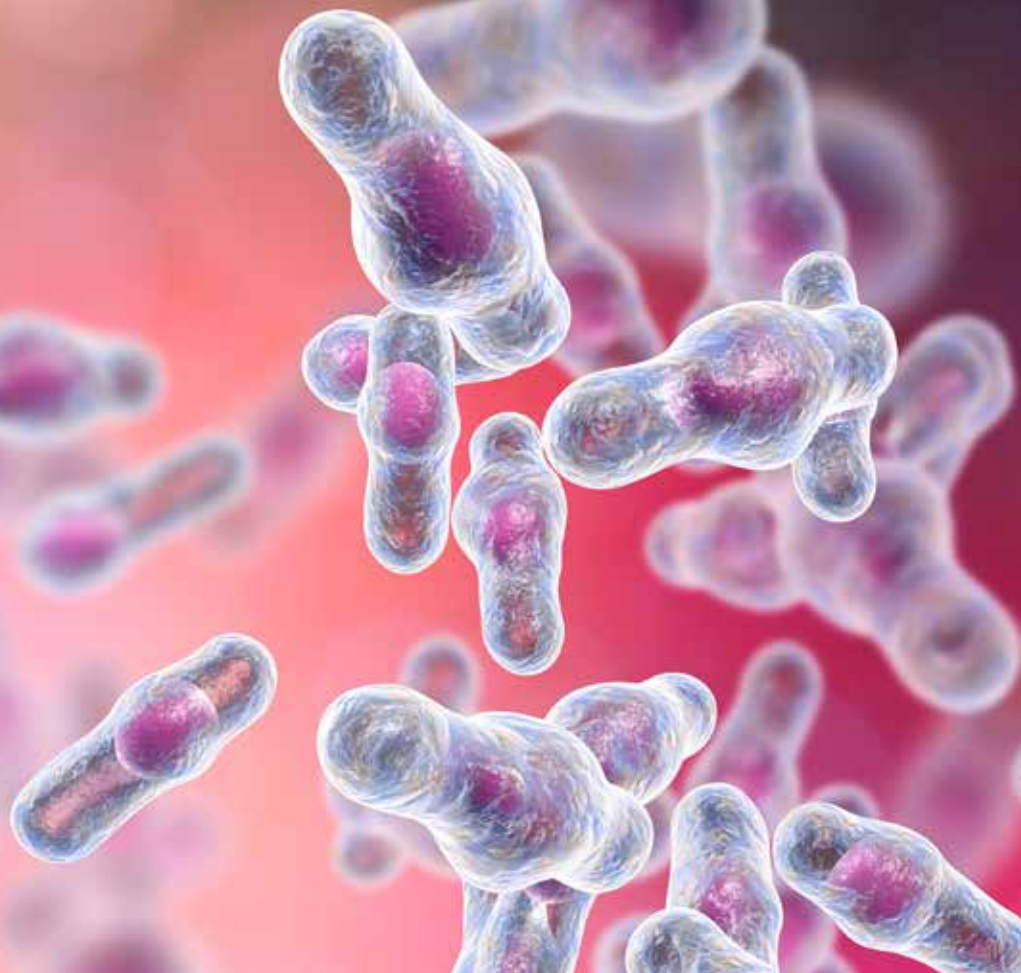
First-year student **Emma Lembke** learned early on that social media could have a powerful and negative impact on one’s life. “The more time I spent on social media, the more anxious and isolated I felt, which is, of course, ironic because people turn to social media in order to not feel isolated,” Lembke says.

In high school, she founded Log Off, an organization run by teens who want to raise awareness about social media’s impact on mental health. Recently, Lembke started Tech(nically) Politics, a group advocating for regulatory changes so social media platforms “prioritize users’ well-being over profit.”

“The genie is not going back in the bottle,” Lembke says. “The question is, How do we live with this and produce social media in a humane way?” Read more at bit.ly/3KDe65W.

Ultrashort-pulse lasers kill bacterial superbugs and spores

Researchers at the School of Medicine have found that lasers that emit ultrashort pulses of light can kill multidrug-resistant bacteria and hardy bacterial spores. The findings, available online in the *Journal of Biophotonics*, open up the possibility of using such lasers to destroy bacteria that are hard to kill by other means. The researchers previously showed that such lasers don't damage human cells, making it possible to envision using the lasers to sterilize wounds or disinfect blood products.



TUG OF SUN, MOON COULD BE DRIVING PLATE MOTIONS ON 'IMBALANCED' EARTH

A study led by geophysicist **Anne M. Hoffmeister**, in Arts & Sciences, proposes that the Earth's tectonic plates might be shifting because the sun exerts such a strong gravitational pull on the moon. This has caused the moon's orbit around Earth to become elongated.

The new analysis provides an alternative to the hypothesis that the movement of tectonic plates is related to convection currents in the Earth's mantle. Convection involves the buoyant rise of heated fluids. Hoffmeister and her colleagues argue that force, not heat, moves large objects.

The moon's elongated orbit has caused the barycenter — the center of mass between the orbiting bodies of the Earth and the moon — to move closer to Earth's surface. This sets up internal stresses, as the Earth continues to spin. The new research is published in a special paper of the Geological Society of America.

DRUG MIMICS BENEFICIAL EFFECTS OF FASTING IN MICE

An investigational cancer drug that starves tumors of their energy supply also shows evidence of improving metabolism, leading to improved weight control, according to a new study from the School of Medicine.

The drug was given to mice genetically prone to obesity and mice that had become obese due to diet. The drug increased insulin sensitivity, improved cholesterol levels, reduced fat buildup in the liver and lowered inflammation. The drug protected the mice genetically predisposed to obesity from their typical weight gain; the mice that were overweight due to diet lost weight on the drug.

HOW NEW LEADERS BUILD — OR LOSE — TRUST OVER TIME

High expectations of trust early on can be bad for leaders, a new study from Olin Business School shows. Since trust is dynamic, the higher the initial expectation of trust, the more likely leaders are to experience a decline in those early days when they're under more scrutiny. "Although having a high level of employee trust is associated with a leader's effectiveness, we found it is even more effective for leaders to start at a moderate level of trust and increase to a high level over the first several months," says **Kurt T. Dirks**, vice chancellor for international affairs and the Bank of America Professor of Leadership at Olin Business School. "This approach allows leaders to build a sustainable foundation of trust and create a sense of positive momentum."

WHICH MASK BEST FACILITATES COMMUNICATION?

Kristin Van Engen, assistant professor of psychological and brain sciences and of linguistics in Arts & Sciences, and **Jonathan E. Peelle**, associate professor of otolaryngology at the School of Medicine, tested out popular mask styles to see which had the lowest impact on speech intelligibility in normal-hearing listeners. The worst performers were cotton masks with filter inserts and masks with transparent plastic panels. The plastic panels fog up and get wet, making it hard to see the speaker's mouth. The best performer was a simple surgical mask. Participants could still make out 50% of what was being said to them by people wearing surgical masks even with background noise.



PERSISTENT PSYCHOTIC-LIKE EXPERIENCES IN YOUTH ASSOCIATED WITH IMPAIRMENT

Using longitudinal data, **Deanna Barch**, professor and chair of psychological and brain sciences in Arts & Sciences and the Gregory B. Couch Professor of Psychiatry and of radiology at the School of Medicine, and her team found that youth who have persistent, distressing psychotic-like experiences show impairments in a variety of areas. The impairments can be in cognition and in psychopathology. The study, which appeared in *Molecular Psychiatry*, highlighted the long-term challenges these children may face and the need for early intervention and support.

NEW ALZHEIMER'S PREVENTION TRIAL IN YOUNG PEOPLE

The School of Medicine is launching an international clinical trial aimed at preventing Alzheimer's disease in people genetically destined to develop the illness at a young age. Unlike most Alzheimer's prevention trials, this one will enroll people before the disease has taken hold, up to 25 years before expected onset.

The trial, called the Primary Prevention Trial, will test whether an investigational antibody named gantenerumab can clear a key Alzheimer's protein called amyloid beta and slow or stop the disease.

Eric McDade, DO, associate professor of neurology, is the trial's principal investigator.

The trial is supported by an \$11.5 million gift from **Joanne Knight**, a longtime supporter of Alzheimer's research at the university. In addition, government agencies, nonprofit institutions and the university are providing more than \$200 million in funding.

EXPANDED CHILD TAX CREDIT HELPED FAMILIES

A survey from the Social Policy Institute (SPI) at Washington University found that American households making less than \$50,000 a year were more likely than higher-earning families to spend the expanded child tax credit on essential expenses and tutors for children. The expanded credit provided families with \$3,600 for every child in the household under age 6 and \$3,000 for children between the ages of 6 and 17. And the money was going toward good use, according to **Stephen Roll**, research assistant professor at the Brown School and SPI and co-author of the paper. Families used the funds to deal with budget constraints, pay off large debt burdens and supplement savings.

NONINVASIVE BRAIN BIOPSY SHOWS IMPROVED SENSITIVITY IN TUMOR DETECTION

Typically, glioblastomas, aggressive brain tumors, are diagnosed with an invasive surgical biopsy. But **Hong Chen**, associate professor of biomedical engineering at the McKelvey School of Engineering and of radiation oncology at the School of Medicine, and **Eric Leuthardt, MD**, professor of neurosurgery at the School of Medicine and of biomedical engineering at the McKelvey School of Engineering, have developed a noninvasive blood test that detects the tumor in animal models. The results of the study are published online in the journal *Theranostics*.

Searching for emotional support

Turning to loved ones for support in times of trouble might not always provide satisfactory support, shows preliminary data in a study from the lab of **Renee J. Thompson**, associate professor of psychological and brain sciences in Arts & Sciences. For the study, 87 people were prompted five times a day for two weeks to answer questions about whether, with whom and why they shared any negative emotional experiences.

Researchers discovered that people were much more likely to share their negative experiences with someone they were close to rather than an acquaintance or colleague. And while participants did report getting a supportive response more often than a negative one, they also said the support wasn't exactly what they were seeking.

"The overwhelming majority of the participants said they were seeking empathy, care and understanding (an emotion-oriented response) rather than advice, help or information (a problem-oriented response) from their sharing partners," says **Daphne Liu**, a doctoral candidate in Thompson's lab. But the sharing partners were more likely to provide a problem-oriented response than an emotion-oriented one. Liu and Thompson plan to conduct further research to examine this mismatch between desired support and actual support.

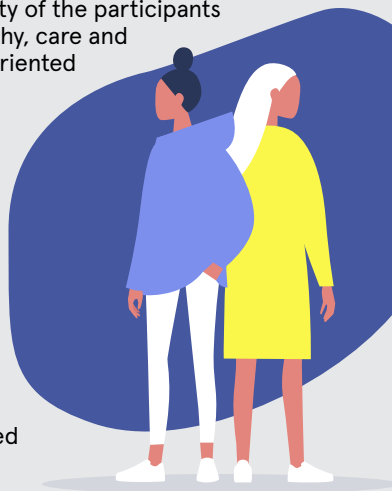




Illustration: Monica Duwel

Investigating racial health disparities to eradicate them

Darrell Hudson, who researches how social determinants like racism affect multiple health outcomes, wants to put himself out of business.

There is a paradox at the heart of Darrell Hudson's research: Despite lower average socioeconomic status, greater exposure to stress and more challenging contexts due to deeply entrenched racial segregation, data show that African Americans have lower rates of depression than white Americans. Hudson, associate professor at the Brown School, is trying to uncover why.

Using a social epidemiologic lens — a subfield of public health that focuses on the impact of social-structural factors on health — he makes use of focus groups, surveys, interviews and statistical analyses to investigate this issue and other related problems, such as how stress affects immune system functioning and the potential mental health costs of upward social mobility.

One of Hudson's priorities is to help the public see that there shouldn't be a divide between mental and physical health. "Associations exist between mental health and cardiovascular disease, mental health and diabetes, as well as with a number of chronic conditions, such as arthritis and lupus and other autoimmune diseases."

Yet mental health conditions often go undiagnosed. And even though underdiagnosis affects patients across race, it is markedly more prevalent for Black Americans.

In a 2013 study, Hudson found that diabetes patients who are racial/ethnic minorities are less likely to be clinically recognized for depression than their white counterparts.

Therefore, instead of an encouraging finding, the data pointing to lower rates of depression among African Americans might reveal clinical biases or symptoms manifesting differently across culture.

Another aspect of health inequity that Hudson studies is how upward social mobility affects the physical and mental health of people of color. Upwardly mobile people of color, he explains, are often integration pioneers in overwhelmingly white spaces, which exposes them to greater levels of interpersonal racial discrimination.

"Initially, I theorized that Black Americans with greater amounts of education, income and occupational prestige would be exposed to more racial discrimination," he says. "And that's certainly true in terms of the frequency of exposure."

While a complete picture of the impact of these disparities is not yet drawn, Hudson's research is ongoing. His nuanced findings don't always yield clear-cut narratives. "I always try to be very even-handed in how I describe results. Often, the story is more gray than it is black and white."

But Hudson is certain about ways to take action now. Racial health disparities can be traced back to fundamental causes such as disparities in education quality between school districts and unequal access to health-promotive resources in neighborhoods. "We need to address inequities from a fundamental cause perspective so that we can disrupt those fundamental causes," Hudson explains.

Considering the stakes of his research, Hudson finds the incremental nature of science to be the most challenging aspect of his work. "It is difficult to know people are suffering, mentally and physically, and not be able to speed up the solutions that can bring relief."

■ SARA BRENES AKERMAN

QUOTED

NEWSMAKERS

WashU faculty experts weigh in on the major topics of the day.



"I love the idea that there are big, rocky worlds out there with surfaces that might look completely different than what we're used to because of these particular combinations of size, surface temperature and age. The types of possible planets out there are considerably beyond what we see in the solar system."

PAUL BYRNE, ASSOCIATE PROFESSOR OF EARTH AND PLANETARY SCIENCES IN ARTS & SCIENCES, SPEAKING TO SPACE.COM ON HIS DISCOVERY OF EGGSHELL EXOPLANETS (WORLDS THAT ORBIT OTHER STARS) THAT HAVE SUPER-THIN OUTER LAYERS WITH ULTRA-SMOOTH SURFACES

"Humans are short-term focused, so the present looms very large to us. The future feels less vivid and important, so it's hard for us to prioritize our future selves."

CYNTHIA CRYDER, ASSOCIATE PROFESSOR OF MARKETING AT OLIN, TO *THE WALL STREET JOURNAL* ON WHY PEOPLE OFTEN SUFFER "INVESTMENT INERTIA"

"The coronavirus was once 'novel' because it was new. Now it feels both ancient and eternal. Having endured the emergence of two major strains even since the rollout of vaccines, a difficult thought is planted in my head: *What if the pandemic never ends?*"

IAN BOGOST, PROFESSOR AND DIRECTOR OF FILM & MEDIA STUDIES IN ARTS & SCIENCES AND PROFESSOR OF COMPUTER SCIENCE AND ENGINEERING IN THE MCKELVEY SCHOOL OF ENGINEERING, IN HIS ARTICLE "I'M STARTING TO GIVE UP ON POST-PANDEMIC LIFE" FOR *THE ATLANTIC*



"[Vaccinated folks] are fully vaccinated against the original SARS-CoV-2, but the original SARS-CoV-2 is not circulating anymore. Having that new variant is changing the rules."

ALI ELLEBEDY, ASSOCIATE PROFESSOR IN PATHOLOGY AND IMMUNOLOGY AT THE SCHOOL OF MEDICINE, SPEAKING TO *NPR*

"Most of unemployment is due to health. There is no wealth without our health."

VETTA SANDERS-THOMPSON, THE E. DESMOND LEE PROFESSOR OF RACIAL AND ETHNIC DIVERSITY IN THE BROWN SCHOOL, TO *THE ST. LOUIS AMERICAN*, DISCUSSING A RECENT CONFERENCE THAT ADDRESSED BLACK HEALTH DISPARITIES

F20 ART X08B Engaging Community: Understanding the Basics

How do you engage the community?

Working in art, architecture and design often means entering a community to change it. A new course at the Sam Fox School of Design & Visual Arts teaches students how to do so with thoughtful intention.

Starting a new course on community engagement in the middle of a pandemic seems ... impossible. After all, everyone is learning remotely. Yet **Liz Kramer, BS '08** (mechanical engineering), a lecturer in the Sam Fox School of Design & Visual Arts, did just that in 2020.

At the time, Kramer was leading the Office of Socially Engaged Practice. There, she held workshops for Sam Fox students, faculty and staff to help them make their art, design and architecture projects inclusive, collaborative and socially engaged. She showed how community engagement can be used to address systemic social, economic and environmental issues.

Kramer thought a way to keep students plugged in to community engagement remotely would be to expand those workshops into a seven-week course. So she developed “Engaging Community: Understanding the Basics” and offered different workshops each week.

“Ultimately, when I sum this class up for students, I say it’s about three things: understanding power dynamics, understanding how relationships are critical to engagement, and understanding the tools that we can use to subvert power dynamics so that we can get to authentic relationships that actually have impact,” says Kramer, who recently stepped down from her role with the Office of Socially Engaged Practice to run her design research and strategy firm, Public Design Bureau. She still teaches the course.

Students learn about power dynamics throughout the course, but the second week’s workshop, “Power, Privilege and Positionality,” is a linchpin. When students enter a community to do their work, they’re often coming from a position of privilege — racial, class, educational or otherwise. This workshop asks them to analyze who on a project has power. Why do they have it? How can you subvert that power or prioritize people who are frequently left out or do not have power?

The students also do a facilitation workshop in which they learn how to bring together the right stakeholders, plan a meeting, steer the conversation during the meeting, and reflect back while directing toward next steps. (This workshop also teaches students about cold-calling and emailing people to begin developing relationships.)

The facilitation lesson is also about subverting typical power dynamics: Are you including people who are impacted by your project but historically have been left out? What are you doing to support them so they feel comfortable speaking up? How are you steering the conversation to be inclusive?

Finally, Kramer also highlights the importance of building relationships. She assigns students to do “relationship-building one-on-ones” with one another. They have to chat individually with three classmates for at least an hour each and write a reflection about it. She also has them think about the characteristics of a successful personal or professional relationship.

“I love seeing them realize that the thing that bonds them to, for example, their hallmate, is that they have all this time together, just hanging out,” Kramer says. “When we think about community engagement, committing that time and being present with people are so important.”

The course includes other workshops to help students thrive in community organizing, including learning about St. Louis. For that, Kramer invites a panel of speakers, all of whom work locally in community engagement.

As a final assignment, Kramer has the students develop individual projects and a collective rubric for success. It’s what she does with her clients.

“They’re able to say, ‘Here are the things that are important to me in my final projects,’ and then they synthesize those [values] and make them more tangible,” Kramer explains.

Kramer judges her own success based on how much she can challenge student assumptions and get them to think differently about relationships and community. The art, design and architecture projects the students will engage in are purportedly to benefit the community. “We’re doing good, but who is deciding what good is?” Kramer asks. “Who is actually accountable to the people who are impacted?” Community engagement is about having a plan.

“Recognize your assumptions,” Kramer says. “Know what your limitations are. Think about how you set expectations. Plan your interactions with the community. And think about how you’re going to say good-bye.”

■ ROSALIND EARLY, AB '03



Illustration: Monica Duwel

A fresh look at our past

Marie Griffith's new book tackles the most divisive issues of our time and offers a way forward.

Over the last decade, **R. Marie Griffith**, the John C. Danforth Distinguished Professor in the Humanities, has given countless talks around the country about the deeply challenging and divisive issues of our time. After each talk, without fail, an audience member will ask, "What can we do?"

"People are pleading aloud for ways to help improve the civic and political culture of the United States and to end the suffering and injustices they see in their communities," Griffith says.

In her newest book, *Making the World Over: Confronting Racism, Misogyny, and Xenophobia in U.S. History* (May 2021, University of Virginia Press), Griffith answers that all-too-familiar question, giving readers tools to listen and debate productively and address deep social injustices. The book, she says, is for anyone who may be fighting a sense of helplessness about the polarization and social unrest facing our society.

The title of the book is inspired by the famous James Baldwin quote, "We made the world we live in, and we have to make it over."

"Making the world better is too lofty and often paradoxical," Griffith says. "Better for whom? Throughout history, well-intentioned efforts to make the world better for some have often made it worse for others. But to make the world over — that is a more audacious, more challenging, more foolhardy goal than making the world moderately better.

"But what choice do we have?"

According to Griffith, to make the world over, we must start by confronting the hardest truths of our history, which she acknowledges can be uncomfortable, but argues is the only way forward.

"Reckoning with history is so important. This often gets misunderstood: Some believe people like me are calling for people to be paralyzed by 'white guilt.' But that's not it at all — it's about taking the blinders off so we can acknowledge injustices and make constructive changes to address these issues."

A historian of religion, Griffith carefully considers the history of these conflicts around racism, immigration, misogyny and reproductive rights, and why they remain so unresolved and bitter today. She also sheds light on how to encourage constructive dialogue and move society forward.



In the first chapter, Griffith reflects on the legacies of slavery in the United States, as well as perennial conflicts over telling that history and teaching it to new generations of students, which has boiled up recently under the name "critical race theory."

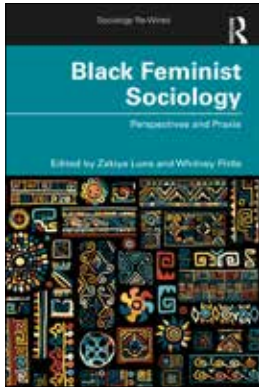
In the second chapter, she turns her attention to America's immigration policy and struggles over which foreigners should be welcomed across our borders. Next, she explores the nation's long struggle over gender roles and the persistent entrenchment of misogyny in culture and politics. In the fourth chapter, she addresses what some consider the most contentious issue of all: women's reproductive rights and abortion. In this chapter, she addresses the possibilities and limits of this conversation and whether people can converse authentically without unduly compromising their values.

"Our political system has benefited from anger and fear. These emotions are motivating and can be manipulated by politicians," Griffith says. "It's time for us to change the conversation and to hold ourselves, each other and our leaders accountable.

"Really, this is not that different than holding ourselves accountable in our personal relationships with family and friends. It means acknowledging when we do wrong and trying to rectify and make amends for that."

■ SARA SAVAT

FACULTY



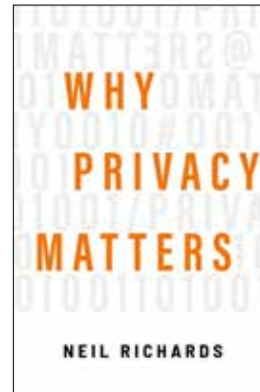
Black Feminist Sociology EDITED BY ZAKIYA T. LUNA AND WHITNEY PIRTLE

Zakiya T. Luna, associate professor of sociology in Arts & Sciences, and Whitney Pirtle, assistant professor of sociology at the University of California, Merced, edited this collection of new writings that explore Black feminist sociology. The essays, which are at times critical, personal or political, situate Black feminist sociology within the context of the sociological canon, widening the lens of the field.



Then the War and Selected Poems, 2007–2020 CARL PHILLIPS

In his latest collection of poems, Carl Phillips, professor of English in Arts & Sciences, explores “a forest of intimacy, queerness and moral inquiry, where the farther one goes, the more difficult it is to remember why or where we started,” according to the publisher. In times of increasing racial tension in America, Phillips’ poetry is more essential than ever.



Why Privacy Matters NEIL RICHARDS

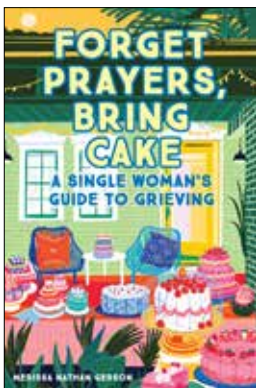
In his latest book, Neil Richards, the Koch Distinguished Professor in Law, explains what privacy is, what it isn’t and why it matters. In addition, the book dispels many myths about privacy, including that young people don’t care about it. Privacy, Richards explains, protects four core human values: identity, freedom, protection and trust, and it is a necessary component of a healthy society.

ALUMNI



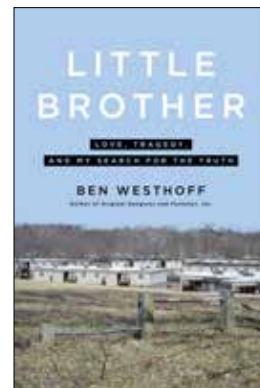
George Washington’s Hair: How Early Americans Remembered the Founders KEITH BEUTLER, PHD ’05

Did you know that there are locks of George Washington’s hair in historical societies across the United States? In his latest book, Keith Beutler, PhD ’05, examines why this happened, uncovering some long-forgotten elements of early American history, including a taxidermist who wanted to stuff Benjamin Franklin’s body and an evangelical preacher who was burned in effigy.



Forget Prayers, Bring Cake: A Single Woman’s Guide to Grieving MERRISSA NATHAN GERSON, AB ’04

When Merissa Nathan Gerson, AB ’04, lost her father soon after her moving to New Orleans, she found herself in a new city with no friends and in deep grief. In her book, Gerson recounts how she made it through that time and what she learned: that people can face anything with help from friends and community. Read more about Gerson’s new book at source.wustl.edu/2022/02/tending-our-grief/.



Little Brother: Love, Tragedy, and My Search for the Truth BEN WESTHOFF, AB ’99

When he was 28, Ben Westhoff, AB ’99, joined the Big Brothers Big Sisters program and was matched with 8-year-old Jorell. The two formed a strong bond, with Westhoff taking Jorell on his first plane trip and helping him open his first bank account. But in 2016, at age 19, Jorell was murdered. In this memoir, Westhoff details his journey to solve and make sense of the crime.



Photo: James Byard

David H. Perlmutter, MD: School of Medicine climbs ever closer to No. 1 in NIH funding. What is our secret?

Some people say that the WashU way is uniquely defined by its Midwestern humility, and I now consider myself a native St. Louisan. But when I first saw the National Institutes of Health funding report this year, I was overcome with more than a little humble pride and the competitive juices perhaps still emanating from my Philadelphia roots.

I track our NIH funding very closely, and I knew we had great momentum over these past few years. Still, I was truly astonished when I saw the total number of \$575.8 million for federal fiscal year (FFY) 2021 and that we had surpassed medical research institutions with which we collaborate and that we deeply respect, like the University of Pennsylvania, Stanford University and Johns Hopkins University.

Our goal has never been getting grants per se, but rather has always been about curing disease and improving human health. We do this in large part through our discovery capabilities, with knowledge that advances in the lab and leads to new therapies and innovations for improving patient care. But grants allow us to do more of this work and to do it at the level of excellence that all have come to expect from WashU. That is why this news is so incredibly exciting and gratifying.

What's more impressive is how we are growing: an increase in NIH funding of nearly \$88 million over FFY2020. Our current funding level is also an all-time high for the school and our sixth consecutive year of growth in NIH grant awards. Since 2016, our NIH funding has grown by more than \$200 million, which represents an increase of 54% and a compound annual growth rate of over 9%. And the support from NIH contributes to how we have been able to invest even more of our institutional resources in research projects and capabilities. Research grants to the School of Medicine from all sources totaled nearly \$750 million in our FY2021. Together with increased institutional support, the total annual investment in research has reached well over \$1 billion.

Because NIH funding is publicly available and easily validated, we, as well as many of our peer institutions, use it as a metric of success rather than other popular ranking metrics, such as *U.S. News*, that include data that is not verifiable.

Most important to me is that these awards reflect the exceptional competitiveness of the science at our school and provide the basis for being confident in how we are pursuing our core values and vision for the future, using our scientific capabilities to improve the health and economy of our communities.

So how did we get to this exhilarating moment?

It is due to many years of attracting and supporting very talented and dedicated people,

including faculty, students, trainees and staff at all levels. Long before I took on this role, the leadership of this school and university invested in research as a core mission in a special foundational way that promotes the highest possible quality and transformational potential of its scientific endeavors. These last few years of growth in grant awards reflect the remarkable depth and breadth of the talent here at the School of Medicine.

It is no coincidence that we are home to a history of groundbreaking publications and successful NIH funding. We continue to build on that foundation today through the leadership of the Executive Faculty and the power of its shared governance model. Each of our department heads has figured out ways to invest more in the research and clinical programs of their departments, to bring in new recruits and to explore new research areas. We have also benefited from the BJC Investigators program, which added six brilliant leaders in science to our faculty and will bring in four more BJC investigators in the coming years. This dedication to the big picture of scientific research along with the superb work of every individual who walks into a lab every day are the secret sauce of success here.

But it isn't about our investment in labs alone. Because of who we are — our commitment to clinical, research and educational excellence — we believe in the “virtuous cycle” of academic medicine. We invest in education and research to bring improvements to clinical care, better outcomes for patients and better health for the community. In turn, our clinicians identify important areas for study. This culture of academic improvement is also a draw for more patient referrals and clinical research studies that distinguish what we do as a clinical provider.

Furthermore, the “virtuous cycle” of academic medicine is the paradigm that drives our vision for contributing to the future of St. Louis. At Washington University School of Medicine, we are always asking how we can have more impact on the community around us. How can we improve the health of our neighbors, urban and rural? How can we improve the economy in our city and the region, since we know that economic status plays such an important role in health outcomes? This is what my colleagues are doing every day and why it needs a shout-out from the rooftops.

■ DAVID H. PERLMUTTER, MD

WHO

David H. Perlmutter, MD

TITLES

Executive Vice Chancellor for Medical Affairs, the George and Carol Bauer Dean of the School of Medicine, the Spencer T. and Ann W. Olin Distinguished Professor, Professor of Pediatrics

EXPERTISE

Internationally recognized for his research on the pathobiology of α 1-antitrypsin deficiency, a rare disease in which a misfolded protein causes chronic liver failure and hepatocellular carcinoma

Scholars, athletes and champions

A new mural honors some of the university's athletes and a program that lets students shine both on the field and off.

When Anthony J. Azama, the John M. Schael Director of Athletics and associate vice chancellor of student affairs, walks past the new mural of scholar-champions in the Athletic Complex, three words come to mind: inspire, inform, empower.

"Inspire, because our scholar-champions really are an inspiration — athletically and academically. Inform, because we always have guests who come here for the first time and aren't aware of all of our sports or the accomplishments of our teams," Azama explains. "The empower part is also really important to me. I want people to see themselves in the strength of our community."

The new mural features 16 alumni and current student athletes in action under the Gateway Arch. Think the Avengers, WashU style. There's soccer player Armando Sanchez-Conde **1**, a senior studying environmental biology, readying a shot on goal. And 2010 UAA Player of the Year and sports executive Sean Wallis **2**, BSBA '09, MS '10, moving toward the net in a basketball game. And 2021 NCAA Woman of the Year Award finalist and future physician Eka Jose **3**, AB '21, leaping through the Arch as she competes in the long jump.

"They are all in their own element, joining forces," Azama says. "It's almost like they are chasing something. And in my mind, what they are chasing are championships and success in the classroom."

Azama is proud of the strong performance of WashU teams and prouder still that WashU athletes hold an average GPA of 3.66. In 2021, 14 scholar-athletes earned prestigious Academic All-America honors from the College Sports Information Directors of America.

"It's all about getting them ready for the next chapter of their lives," Azama says.

■ DIANE TOROIAN KEAGGY



To learn more about all the athletes featured in the mural and how their experiences as a Bear prepared them for life after WashU, visit source.wustl.edu/washington-magazine.





SCHOLAR-CHAMPIONS

Mural: Waterboy Graphics; lead designer: Betsy LeClair

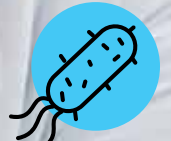
THE NEXT WAR WE HAVE TO WIN

WHILE THE BATTLE AGAINST SARS-COV-2 RAGES ON, WASHINGTON UNIVERSITY RESEARCHERS AND CLINICIANS ARE FIGHTING A REARGUARD ACTION AGAINST DRUG-RESISTANT INFECTIONS THAT YEARS OF OVERPRESCRIBING HAVE TURNED DEADLY.

OFTEN, WAR METAPHORS ARE FORCED. THIS ONE IS NOT. We are fighting invisible enemies, one all too obvious, the others a guerrilla force that can show up anywhere, at any time. SARS-CoV-2 landed fast and caught us off guard. But with drug-resistant infections, we armed the enemy ourselves — and the casualties are quietly mounting.

Because of the way we have overused antimicrobial drugs (antibiotics, antivirals, antifungals), they are now useless against more and more infections. And because we no longer have effective treatments, these infections are killing 35,000 people a year in the U.S. alone, says the latest and most alarming report from the Centers for Disease Control and Prevention. The United Nations estimates that by 2050, the global death toll could reach 10 million — almost double the number of lives lost thus far to COVID-19.

The acronym for six of the most dreaded pathogens is ESKAPE. The acronym for a new bill to encourage drug research and development is DISARM. And the warfare feels like terrorism, relocating and shapeshifting by the second. When a new coronavirus emerged in China and swiftly spread to other countries, we had no antiviral drugs ready to treat it, and we had to move fast to develop vaccines. Since then, SARS-CoV-2 has mutated, changing as much, on a viral scale, as our species has changed in the past 2.5 million years.



Gautam Dantas, professor of pathology and immunology, leads a research team of experts across multiple fields: microbial genomics, ecology, synthetic biology and systems biology. In an effort to find ways to treat bacterial diseases without relying exclusively on antimicrobials, the team is studying why resistance is so insidious and how it can be stopped.

“THE PUBLIC HEALTH THREAT OF ANTIBIOTIC RESISTANCE IS NOT SOME MYSTICAL APOCALYPSE OR FEAR-MONGERING. THE EPIDEMIC OF ANTIBIOTIC RESISTANCE IS A CURRENT REALITY. IT’S AFFECTING PATIENTS RIGHT HERE, RIGHT NOW.”

— Victoria Fraser, MD

We have managed to keep up, barely. But with many other infections to deal with, we remain outgunned, our health-care troops waiting in desperation for new drugs and diagnostic tests.

The casualties of resistant infections take many forms. A 4-year-old girl comes close to dying from a trivial scratch. A preemie develops a blood infection, and the bacteria grow more resistant with each treatment. Five teenagers taking the combo antibiotic Bactrim (sulfamethoxazole plus trimethoprim) develop a respiratory illness so severe they need a heart-lung machine to stay alive. A patient in his early 20s, partially paralyzed, develops a spine infection that resists everything except colistin — a drug physicians had stopped using in humans long ago because it damages the kidneys.

Researchers at Washington University School of Medicine — along with researchers in molecular microbiology and synthetic biology on the Danforth Campus — were already mobilized against these threats when the pandemic hit. One lab, for example, had identified a new set of enzymes that would inactivate the oft-used antibiotic tetracycline. They had also found a way to counteract the enzymes’ effect. Others were working on vaccines against staph and *E. coli*; reversing drug-resistant TB; using viruses to attack bacteria; performing fecal microbiome transplants (using the good bacteria from a healthy person’s waste to attack a *C. diff.* infection); and synthesizing molecules that can mimic the immune system.

Then, in 2020, research at the university and around the world pivoted to SARS-CoV-2. It was tough to stop some important non-COVID projects midstream, but no one doubted the urgency. And the speed and cooperation, the strong public-private partnerships and the public health outreach showed us what we were capable of.

Now we need a collaboration of the same magnitude to attack antimicrobial resistance.

Antibiotics were once miracle drugs. They made it possible for wounded soldiers not only to survive but to avoid losing a limb to gangrene;

lengthened the lives of patients with cystic fibrosis; allowed surgeons to safely do heart and lung transplants; helped people recover from once-deadly pneumonia. Today, we have a far longer list of miracles: We can stop cancer with targeted treatments and immunotherapies, turn HIV from a death sentence into a manageable chronic illness, ease the torment of autoimmune diseases with new biologic drugs, replace shattered joints and do complex surgeries. But because we have overused antibiotics, treating them as “magic bullets,” many of these advances are in jeopardy. Medicine can do all that is necessary to save a life, only to lose it to a drug-resistant infection.

“The public health threat of antibiotic resistance is not some mystical apocalypse or fear-mongering,” Victoria Fraser, MD, the Adolphus Busch Professor of Medicine and chair of internal medicine, told NBC two years ago. “The epidemic of antibiotic resistance is a current reality. It’s affecting patients right here, right now. Many physicians are faced with trying to take care of patients who have drug-resistant infections that we have no treatment for.”

The COVID pandemic made antibiotic resistance an even greater danger, Fraser says now. Nationwide, “broad-spectrum antibiotic use increased during COVID surges, and infection-prevention resources were diverted from antimicrobial stewardship to COVID precautions. There was also a tremendous shortage of personal protective equipment.”

Why did it take so long, even before COVID, to galvanize a response to the global epidemic of antibiotic resistance? “Because for many people, antibiotics are still remarkably effective,” says William Powderly, MD, co-director of the Division of Infectious Diseases at the School of Medicine and the Larry J. Shapiro Director of the Institute for Public Health. After suffering a miserable sinus infection for a few days, you cave and call the doctor, begin a course of antibiotics, and start to feel better. Maybe you would have anyway, but you credit the drug and ask for it by name the next time. A toddler gets an ear infection — who wants to see her suffer? A woman gets a urinary tract infection and is prescribed a week of antibiotics to be on the safe side. Yet “for healthy women who develop a UTI, often a single dose of an antibiotic is enough, and certainly no longer than three days,” adds Powderly, also the Dr. J. William Campbell Professor of Medicine.

In this country — so far — resistance usually only threatens patients with more serious infections or extra vulnerability: those who are very young or very old, or who live with obesity, diabetes or compromised immune systems. But serious infections are increasing, and the more antimicrobials we use, the more resistance is created worldwide.

“We are now seeing something we didn’t see five years ago: infections for which we have no antibiotics or maybe only a partially effective one,” Powderly says, his voice grim. “And in most cases, these infections are fatal.”

KNOWING THE ENEMY

Antimicrobial resistance is far older than the medicines we blame. A resistant virus was buried for 30,000 years in the Siberian permafrost; resistant bacteria hid in one of the world's deepest caves for more than 4 million years. They already possessed natural properties of resistance — and those properties can spread. What happens when we overuse antimicrobials, though, is that we kill off all the nonresistant organisms, leaving a clear field for those with resistance to grow and replicate. We help natural selection strengthen our enemy.

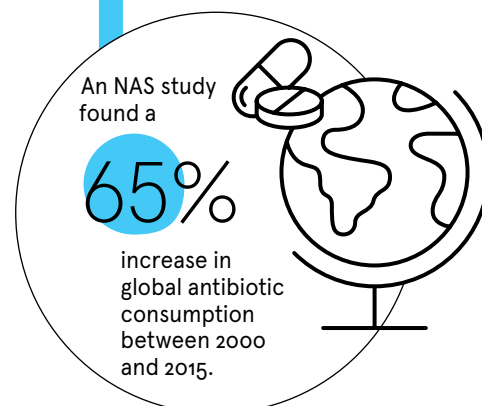
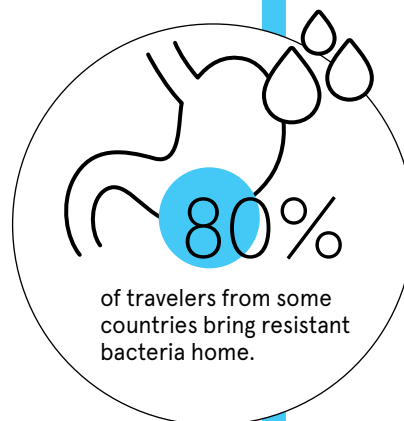
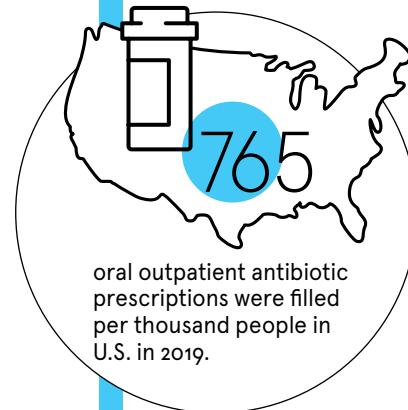
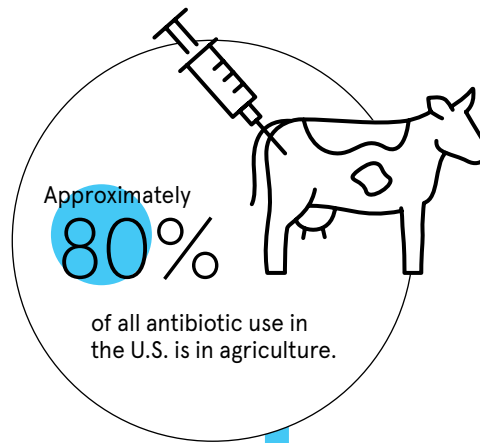
“Even health-care professionals don’t always understand,” says Caline Mattar, MD, assistant professor of medicine, who helped develop a curriculum for health professionals for the World Health Organization. “Some still thought it was the body that becomes resistant, not the bacteria. Others thought resistance was not a problem in their country or practice. Antibiotic resistance is a problem everywhere.”

The pandemic set back a lot of progress, Mattar adds. “The laboratory surveillance structure was repurposed, the supply chain — even for old antibiotics — collapsed, stewardship programs were shut down or repurposed. It was just not a priority anymore.” Even if “normalcy” returns, the current model of antibiotic development and reimbursement (more on that later) means that “the population who will need new antibiotics the most — in low- and middle-income countries — is unlikely to be able to access them.”

Resistance, meanwhile, increases worldwide, driven by the profligate use of antibiotics in agriculture. Mattar winces at the quantity of antimicrobials used to stimulate the growth of Florida’s citrus trees and the copious antibiotics used to promote growth and prevent infection in livestock (approximately 80% of all antibiotic use in the U.S.). In 2019, the CDC counted 765 oral outpatient antibiotic prescriptions per thousand people in the U.S.

Some countries are so rife with resistant bacteria that 80% of travelers carry them home unwittingly, colonized in their guts after a gulp of water or a few bites of raw banana.

In India, where Sumanth Gandra, MD, associate professor of medicine, has been researching resistance since 2012, antibiotics are available over the counter at drugstores, and they are being heavily prescribed during the pandemic — despite the fact that SARS-CoV-2 is a virus, and antibiotics attack bacteria. They are also used in vast quantities to raise poultry, and both antibiotics and resistant bacteria enter groundwater and can contaminate the water supply. In many countries with limited resources, environmental sanitation is poor, so bacteria spread easily. Pollution inflames the lungs, making people more vulnerable to respiratory infections. Cultural practices and behavior can also increase transmission of resistant bacteria; for example, millions of people take ritual baths in the River Ganges for religious reasons.



Jennie H. Kwon, DO, assistant professor of medicine, explores novel methods to detect, prevent and treat antimicrobial resistance. In her lab, researchers search for reservoirs of antibiotic-resistant organisms and focus on finding methods to detect and prevent colonization and infections in the first place.



“If a disease is not a problem in western Europe or the U.S., there is no incentive for pharmaceutical companies to discover new drugs,” Gandra says flatly. Meanwhile, “in low-income countries, the use of antibiotics is increasing.” He co-authored a study, published by the National Academy of Sciences, that found a 65% increase in global antibiotic consumption between 2000 and 2015, driven by rising rates of antibiotic use in low-income countries.

“A child in one of these countries will get 25 courses of antibiotics prescribed in the first five years of life,” Gandra says, “and most of the time, it’s not necessary.” As for preventing the spread of infection in hospitals, “there are no single rooms, and more people have resistant bacteria in their gut than don’t. Addressing this problem would require reverse isolation — to try to protect the person who doesn’t have resistant bacteria.”

In her lab at the med school, Jennie H. Kwon, DO, assistant professor of medicine, looks for the reservoirs of antibiotic-resistant organisms. Are they in the gut, on the skin, in the environment? If they find a cozy niche, do they stay for life? What turns them into a dangerous infection?

Kwon’s lab is creating “methods to detect and prevent colonization and infections. How much of the population is already colonized? Who is at greatest risk for an infection? As fast as we can develop new drugs, the microbes become resistant, so I focus on how to prevent them in the first place,” Kwon says.

“When I was a medical student, we took care of a patient with a liver transplant. She had been suffering for quite some time before the

transplant, but the surgery was successful, and she was doing well,” she continues. “Later, she wound up extremely ill in the ICU with a severe multidrug-resistant infection. After going through so much to get to a transplant, she was overcome with sepsis, and there was no antibiotic available to treat her infection.” That was over 12 years ago, and it sealed Kwon’s resolve to study infectious diseases. “I’m a clinician first,” she says. “I opened the lab because I realized there were unanswered questions, and we could not help people without doing the research.”

FINDING WEAPONS

A *New York Times* article in December 2019 suggested that hospitals and physicians were to blame for the lack of new antibiotics since they preferred to use the older, cheaper, less effective antibiotics. The suggestion infuriated Jason Newland, MD, associate professor of pediatrics: “That is absolutely false! The cheaper antibiotics are not less effective, and we are saving the new antibiotics for the cases when we have resistant bacteria, because we don’t want to overuse them!”

Powderly adds a complication: “At places like Barnes, we do have the newest, most expensive drugs available, and we keep them in reserve. But many hospitals across the country use less expensive medications because of the way Medicare reimburses” — and that is creating a problem.

Powderly is past president of the Infectious Diseases Society of America, which has been sounding the alarm about antimicrobial resistance for nearly 20 years. In June 2021,

he says, a bill they've advocated for was reintroduced in Congress. It would change the way the U.S. incentivizes drug development, using tax credits to make sure there is sufficient return on investment to keep companies working on new antimicrobials, keep the drugs affordable and offer "higher levels of reimbursement for resistant infections, so there isn't a disincentive [for physicians] to use the appropriate drug."

At the moment, "the bottom line is not there" for pharmaceutical companies, Mattar says. "You are asking for a really good new drug to be developed quickly and to be made accessible globally — but then public health experts tell companies, 'Don't market it; don't overuse it!'" The usual estimate is that it costs \$2.6 billion to develop a new antibiotic. "Are the R&D costs pharma claims accurate? Those are murky waters. But it is obvious there isn't a profit incentive to develop new antibiotics the way there are incentives to develop other drugs like blood pressure, diabetes or cancer medications." Mattar chairs an international team of experts that hopes to encourage and coordinate R&D around the world.

To address antibiotic resistance, we need more than new drugs, though. New antibiotics are necessary to treat resistant infections, but the enemy will develop resistance to them, too. To really make headway, we need new diagnostic tests, so we can swiftly detect the source of infection and pinpoint the right treatment. Some of the current tests are so slow, doctors feel obliged to prescribe antibiotics while waiting for the results. And many tests require a lab with running water and electricity, which hospitals in some countries can't guarantee continuously.

"Hospitals and laboratories need to use molecular methods to detect the genetic material of the bacteria or virus," Fraser says, "to speed diagnosis of the organism and detect the presence of resistance genes." Just waiting for bacteria to grow can take days to weeks — and that's often too long. "Also, we need rapid diagnostic tests that can be used on blood and other body fluids."

One creative approach is to treat infections caused by antibiotic-resistant bacteria with bacteriophages — viruses that paralyze bacteria. Bacteriophages can be used in combination with antibiotics and targeted to kill certain resistant bacteria, Fraser says. "But it's difficult and labor-intensive, and the protocol has to be developed specifically for each patient's infection." And after all that? Bacteria can become resistant to bacteriophages as well.

Gautam Dantas, PhD, is a professor of pathology and immunology. In his laboratory, he leads a team of experts across the fields of microbial genomics, ecology, synthetic biology and systems biology. In their search for ways to treat bacterial diseases without relying exclusively on antimicrobials, they have begun to study resistance itself: why it is so insidious and how it can be stopped.

Bacteria transfer their genes vertically to the next generation when they replicate, but they

TO REALLY MAKE HEADWAY, WE NEED NEW DIAGNOSTIC TESTS, SO WE CAN SWIFTLY DETECT THE SOURCE OF INFECTION AND PINPOINT THE RIGHT TREATMENT.

also transfer genes horizontally to unrelated organisms. That's why the capacity for resistance can spread so easily from one person to the next, between people and animals, between groundwater and soil and people and animals. "Bacteria can copy and paste, transferring genes to a bacterium as different from them as you and I are from a banana," Dantas explains.

The transfers of resistance genes aren't only between pathogens, either. Back in 2008, Dantas' lab was the first to discover that "good" bacteria, lying harmless in the soil, were transferring huge sets of their DNA — four or five or six resistance genes in a row — to microbes that cause disease. These transfers were so big, they leapfrogged evolution: "That chunk of genes can knock out five or six antibiotics at once," Dantas says.

Luckily, the team also identified particular genes whose entire *raison d'être* is to move other genes around. "They are the scissors and the glue," he explains. "So now, when we identify a resistance gene, we look around it. If we find those genes, we know the resistance is perfectly poised to jump." That happened recently, when they discovered a set of enzymes that could inactivate tetracycline in a new way. Although this resistance "was not yet active in pathogens, it was sitting right next to the genes that cause horizontal transfer." In other words, it was poised to emerge — which was especially bad news because three new drugs in the tetracycline class were in the pipeline.

Before these drugs even made it to clinical trials, bacteria with resistance enzyme genes were found in humans and animals in China. "I wish I'd been wrong," Dantas says heavily. "But luckily, in collaboration with two other labs at the university, we created new compounds that can inactivate the enzymes. These inhibitors — which are not antibiotics — can be given along with tetracycline," preserving its potency.

The Dantas lab looks for pathogens' Achilles heels: How do they inject toxic proteins? How can we foil that mechanism? Where is the resistance gene vulnerable? "No function is cost-free," he points out. While a resistance gene is fighting on one front, its opponent can sneak up from another angle. "So maybe we use a combination of drugs, and while the organism is resisting one, it becomes more vulnerable to another."

That worked with MRSA, the strain of staph infection that's been so problematic. "We gave a combination of three generic drugs that individually do nothing against MRSA. But together, these three drugs overwhelmed its balance, and it short-circuited."



USING THE MICROBIOME

The most promising arsenal may come from our microbiome itself.

We all walk around with trillions of microbes — bacteria, fungi, protozoa and viruses that live on our skin, in our mouths, in our guts. This collection is our microbiome, an organ as surely as the heart or lungs. It weighs about 5 pounds in a young male, its cells outnumber our own, and it has 200 times the number of genes in the human genome. Teeming and complex, the microbiome plays a critical role in our immune system. But when these microbes wind up invading other parts of our body, they can cause infection.

“There’s this phenomenon called translocation,” Powderly explains. “Bacteria from the gut cross into the bloodstream all the time. The body senses that and deals with it, eliminating them without us even knowing. But in certain circumstances — when someone is taking immunosuppressant drugs, for example — that protection breaks down, and these gut organisms can go somewhere they’re not supposed to and become pathogenic. So we need either to boost our ability to keep them where they are supposed to be or to eliminate them when they move.”

In other words, we need to make our microbiome our closest ally. “We can’t disrupt its functioning willy-nilly,” Powderly concedes. “But can we use the microbiome to enhance response, decrease virulence, even prevent infections?”

Dantas goes back to the beginning, looking at the formation of the microbiome. “We’re not born with one; it sets up early in life. Use

antibiotics early, and you set it off on a bad trajectory. We’ve been able to develop an understanding of different antibiotics and how badly they might damage the gut, and we’re trying to figure out features of microbiomes that are more resilient.”

His most exciting work, though, focuses on using living organisms. All the buzz about probiotics jumped the gun, he says, because probiotics are unregulated, and what consumers can currently take are largely untargeted and could even be problematic. “Rather than go on the hunt for new probiotics, we’re using synthetic biology to genetically engineer safe organisms that do specific things.” His lab has developed two organisms, a bacterium and a yeast, that are equipped to fight pathogens the same way our immune system does.

“Let’s learn from nature,” Dantas urges. “Let’s look at the mechanisms by which phages destroy bacteria, borrow that toxin, and put it in our engineered organism.” As a weapon, it will sense, detect and destroy: “The sensors are proteins that will bind to particular pathogens. They can be detected when additional proteins turn on, maybe showing up as a fluorescent color. To destroy, they turn on an additional gene that is toxic. Now it will go destroy the pathogen.”

“So we are actually working with the bugs,” he concludes, “endowing them with properties that will be beneficial to us. Rather than a military campaign, it’s our attempt at diplomacy.”



Far left: In an exciting development, the Dantas lab is engineering novel probiotic bacteria and yeasts as precision treatments against infectious drug-resistant pathogens. Here, research technician James Liao is extracting DNA from bacteria samples. Left: Infectious disease expert Jason Newland, MD (left), the medical director of St. Louis Children's Hospital (SLCH) Antimicrobial Stewardship Program, makes rounds with resident Mehr Zahra Shah, MD (center); and Christine Hanks, a pediatric infectious diseases clinical pharmacist. Together, they review patient medications and visit care teams at SLCH.

CONTROLLING INFECTIONS

"The color of your sputum or phlegm does not mean you need an antibiotic," Victoria Fraser, MD, says crisply. "Choose antibiotic-free foods. Stay home when you're sick. Cover your mouth and nose when coughing, or cough into your elbow/sleeve, not into your bare hands. Wash your hands frequently." In 2020, when those measures were made urgent by the threat of COVID-19, antibiotic use in the U.S. plunged.

Infectious diseases specialist Hilary Babcock, MD, professor of medicine at the School of Medicine and vice president and chief quality officer at BJC HealthCare, hits the hand-washing hard. "It's not very sexy, but it's the bedrock. For health-care practitioners, alcohol-based hand rubs are good — they're quick and easy to use. But soap and water are important if there is visible soiling, blood or poop on your hands, and for all of us after using the restroom."

It sounds too simple — until you force yourself to imagine the stealth of an invisible enemy. In one recent study, 88% of participants acknowledged using their smartphones while sitting on the toilet, thus exposing the phones to fecal staph, *E. coli* and other bacteria.

Some participants even held their phones in their mouths when their hands were occupied. Many went straight from the bathroom to the kitchen to prepare a meal.

Despite all the challenges, infection control is in many ways easier in a hospital setting, where there can be strict protocols, safeguards and oversight to guard against the overuse of antibiotics. The mantra in infectious disease circles sounds almost Buddhist: "The right antibiotic in the right patient at the right time" — and at the right dose for the right duration. "We now know that even a short course of antibiotics will change the makeup of the bacteria in your body for months if not years," William Powderly, MD, says. "By and large, doctors have overtreated infections."

As medical director of the Antimicrobial Stewardship Program at St. Louis Children's Hospital, Jason Newland, MD, works with a pharmacist to review all antibiotics prescribed. He checks each diagnosis and the lab culture results, and he rounds with the medical teams, making suggestions and answering questions. His job is to make sure all the antibiotic selections, doses and durations

are appropriate; avoid unnecessary toxicities; and limit the development of antibiotic resistance.

Newland also watches for patients labeled as having a "penicillin allergy" when the only indication was a rash after seven days of antibiotics. "That's unlikely to be a true penicillin allergy," he says, "and there is no reason to go away from the best antibiotic for that indication and take an antibiotic that is potentially more harmful and might lead to more resistance."

At Barnes-Jewish Hospital, risks for infection from contagion or procedures have plummeted. "WashU and BJC were sentinel sites for some important studies in chlorhexidine bathing," which prevents infection from central catheters," Fraser notes. "There have been dramatic reductions in the rates of catheter-related bloodstream infections and ventilator-associated pneumonia." She pauses. "The success stories are in hospitals. Where we need much more work is in outpatient centers, surgical centers, long-term care facilities, nursing homes — and in the community."

■ KELLEY FREUND

THE LAUNCH PAD

Olin's MBA entrepreneurship program — ranked No. 1 by Poets & Quants for three consecutive years — is a pivotal part of a school-, university- and community-wide entrepreneurial ecosystem helping students and alumni become successful entrepreneurs. And St. Louis' status as a national epicenter for entrepreneurs is soaring as a result.



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— MARK TAYLOR,
DEAN OF
OLIN BUSINESS
SCHOOL

A FEW YEARS AGO, WHEN LORI COULTER and her mother were discussing a Florida beach trip, her mother commented that whoever could make a swimsuit that fits would have a goldmine.

And the idea for Summersalt was born. Tired of suits that women couldn’t actually move in comfortably and that were marketed in an oversexualized way, Coulter and her co-founder created a brand they hoped would inspire the joy women used to feel as kids playing on the beach.

It’s what entrepreneurs who graduate from Washington University do: take a problem, find a solution and make the world a better place. Coulter, MBA ’99, is not alone. For Byron Porter, MBA ’20, a fatal accident in the rail yard of his former company led him to create technology that would keep workers safe. When Lungile Tshuma, MBA ’21, had trouble finding a college in the United States, he created a platform to help universities connect with international students. Megan Berry, MBA ’15, figured out a way for small brands to afford the price tag on a physical store. And Mark Schwager, MBA ’11, noticing there was no electrification in the agriculture industry, is in the process of integrating smart technologies into farm operations.

Some of these concepts were conceived at WashU and developed within the university’s entrepreneurship program at Olin Business School. The entrepreneurship program was created in the early 2000s, following a national trend for schools to begin focusing their research not just on large, established corporations, but on getting companies off the ground.

Today, Olin offers both undergraduate and graduate degrees in entrepreneurship. In 2021, the MBA Program for Entrepreneurship earned its third consecutive No. 1 ranking by Poets & Quants, an online business school news

journal. The ranking is based on an analysis of 16 components of a school’s entrepreneurship program, including the number of startups launched and courses in entrepreneurship offered. (WashU placed first for having the highest percentage of MBAs launching companies and the highest percentage of MBAs involved in a startup over the past year.)

Yet Olin Business School Dean Mark Taylor is quick to point out that entrepreneurship ideology is embedded throughout the entire business school, not just in these dedicated programs. There are more than 90 courses available to MBA students at Olin, and Taylor says 90% of those include entrepreneurship-related content. Spreading entrepreneurship education throughout Olin’s curriculum was an important mission for Taylor when he took over the dean position in 2016. It was then he created a strategic plan for Olin, centered on four pillars of excellence, one of which was a focus on entrepreneurship and innovation.

“Entrepreneurship is very much part of our DNA,” Taylor says. “It’s infused in what we do.”

The atmosphere at the business school, combined with hands-on learning opportunities, a dedicated center for entrepreneurship at the university and a region loaded with resources for startups, creates in its students a love of problem solving to better the world.

COURSE LOAD

One of the things Dan Conner, MSChE ’10, MBA ’12, now a venture capitalist in St. Louis, enjoyed most about his graduate school experience was the opportunity to take courses cross-listed across departments. For Mark Schwager, the founder of Monarch Tractor, it was the MBA program’s small class size.

According to Doug Villhard, EMBA '13, who serves as the academic director for entrepreneurship, these two things are exactly what makes WashU's entrepreneurship program special. The small class sizes make it easy for students to collaborate. And because classes are open to both undergraduate and graduate students across WashU's schools, the benefits of those collaborations are multiplied.

"Our students in the MBA program interact with law students, engineering students, social work students and medical students," Villhard says. "We're leveraging and integrating with the entirety of Washington University, and that's very powerful."

Dave Kanoff earned an undergraduate degree in business from WashU in 2012, then immersed himself in the entrepreneurship world, working at an early-stage startup and as a problem solver for an investment group in Asia. When he decided he wanted to earn an MBA in entrepreneurship, the school's focus on experiential learning was a key factor in bringing him back to the university. Olin's top ranking and global mindset also influenced his decision. Throughout the program, students participate in a variety of hands-on learning opportunities, like taking on consulting projects with early-stage startups through the CEL Entrepreneurial Consulting Team; creating business plans in their courses; participating in competitions through the Skandalaris Center for Interdisciplinary Innovation and Entrepreneurship; and networking with entrepreneurs and investors. Kanoff experienced all of this, as well as his choice of extracurricular activities, including Olin's annual Impact Investing Symposium and the student-led Entrepreneurship & Venture Capital Association.

The MBA curriculum also provides the opportunity and resources for students to work on a business concept from its inception all the way through to its launch. Megan Berry first worked on her business idea in Olin's "Introduction to Entrepreneurship" course. She'd been studying architecture at WashU but had become more interested in the business side of the field when she realized how long it would take her to actually create an architecture project.

"Most projects take five to seven years from start to finish," Berry says. "That meant that in my life, I was going to work on very few projects. So, I thought about how I could do architecture faster."

Berry began thinking about small brands that could never afford the years and \$2 million it took to set up a physical store. On the other hand, e-commerce sites could be launched in a short timeframe, were relatively cheap and captured data. Was there a physical counterpart to e-commerce? Could she create a physical space that could be set up quickly and provide the same type of tracking as an e-commerce site?

Berry came up with the idea to create pop-up experiences. She laid a foundation for the concept during "Introduction to Entrepreneurship." In the intro course, in addition to engaging in case studies and listening to guest speakers, students pitch an original idea to workshop, then team up with their classmates to perform a feasibility study on some of those concepts. The feasibility study allows them to take what they've learned in class and apply it to an idea to see if it has legs.

Her idea did. The following semester, she enrolled in the "Hatchery," perhaps Olin's best-known entrepreneurship class and the oldest university-affiliated business-plan course in the country. Student teams, guided by faculty, local entrepreneurs and investors, develop a business plan and see how far they can take their concept. The course culminates in a pitch competition. It was in that class where Berry fine-tuned her plan for her business, REVEAL. By graduation, she was ready for her company's launch in St. Louis' Central West End.

"You don't know what you don't know," Berry says. "And there was so much I didn't know about getting to that point. The program helped me figure out what steps to take, and the guidance helped me not get overwhelmed."

BRINGING THE NEXT IDEA TO LIFE

One of the things Il Luscri, who serves as managing director of WashU's Skandalaris Center for Interdisciplinary Innovation and Entrepreneurship, enjoys about his job is the variety: When that door opens, he never knows who will walk in. One day it's a student from the medical school with an idea for a new technology she hopes the center can help advance. Or it's an international politics professor who wants to bring an entrepreneurial case example to class. Another day, it might be an Olin alumna looking for help with that business concept she explored a few years ago as a student.

The Skandalaris Center is a cross-university initiative that helps undergraduate and graduate students, faculty, staff and alumni with their innovation journey. Over the past 20 years, the center has worked with more than 1,000 startups, providing resources ranging from networking events to funding and investment opportunities.

"People come in thinking, 'Maybe they can help,'" Luscri says. "And the answer to that is, 'I know we can help.' And if it's not through our center directly, we'll find the faculty member, person in the alumni network or one of our connections to make those things happen."

One of the center's major resources is IdeaBounce®, an online platform for sharing new ideas and receiving feedback on them, and for making connections. Anyone in the WashU community can post an idea, as well as attend a two-minute pitch competition and networking session held about once a month.

**"IF YOU'RE A
GEOSPATIAL,
AGTECH OR
BIOTECH
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COUNTRY."
— BYRON
PORTER,
MBA '20**

The IdeaBounce® pitch competition is a small part of the over \$100,000 non-dilutive funding that the Skandalaris Center puts into WashU startup ideas each year. A bigger portion of that funding goes toward the center's annual Global Impact Award and the semiannual Skandalaris Venture Competition. (Both competitions are open to alumni, in addition to current students.)

Last November, the center announced the winners of the venture competition, and placing second was Oystar, a company that is looking to improve traditional university recruiting strategies and how students find educational opportunities. Co-founder Lungile Tshuma, who was born in Zimbabwe, was inspired by his own frustrating experience looking for U.S. colleges. He realized the recruitment process for international students was inefficient: Talented students were missing out on opportunities because they didn't know about them, and colleges had no idea that these talented students existed. So Tshuma and his co-founders set out to build a platform that helps universities actively recruit and be matched with international students, which they describe as a LinkedIn for higher education. Oystar launched its beta student platform in Africa in November 2021, with an aim to generate a user base to bring to schools around the world. In the meantime,

the company is bringing more people on to the project, even partnering with the McKelvey School of Engineering and its pool of developers.

SOMETHING IN THE WATER

Located in downtown St. Louis, T-REX (Technology Entrepreneur Center at the Railway Exchange) is a nonprofit innovation and entrepreneur development facility that provides early-stage startups with resources ranging from co-working spaces and conference rooms to a technology incubator. The nonprofit purposely locates growing startups alongside a network of support organizations and larger, established companies so they can form relationships.

Byron Porter based his company, Hum, which builds wireless sensors for rail transportation, out of T-REX for two years. While the company moved to Chicago in early 2022 due to the location of its customer base, Porter believes St. Louis is a great city for startups.

"If you're a geospatial, agtech or biotech company, St. Louis is one of the best places in the country," Porter says. "It's an absolutely amazing place for starting a business. The city has this desire to create prosperity, and that bleeds into the entrepreneurial ecosystem."

Porter says what he misses most about St. Louis is the number of resources available to startups in the region, including innovation hubs, co-working spaces, incubators and accelerators, venture investors, and other funding opportunities. In 2020, Hum was the recipient of an Arch Grant, which has funded 208 companies since its founding nine years ago. (The Spirit of St. Louis Fund is another local grant available for startups.) When he first started Hum in 2019, Porter took advantage of sales coaching provided by the Information Technology Entrepreneurs Network, or ITEN, which delivers programs and services for local innovators. (The Cortex Innovation Community, founded by Washington University, Saint Louis University, University of Missouri–St. Louis, BJC HealthCare and the Missouri Botanical Garden, is one of the region's largest innovation campuses. Located in St. Louis' historic Central West End and Forest Park Southeast neighborhoods, Cortex is a main location for bioscience and technology startups.)

Dean Taylor agrees with Porter that St. Louis is a great place to launch a company. He likes to joke that there must be something in the water in the city, with its growing network of entrepreneurs. But, of course, there's more to it. Villhard, also professor of practice in entrepreneurship, describes St. Louis as a city big enough to matter but small enough where entrepreneurs can come in and make a difference. This unique combination, along with a strong entrepreneurial ecosystem, has earned the city some top rankings: Forbes included St. Louis in its list of top 10 cities for startups in 2018, and in 2021,

Illustrations, pp. 29, 31, 33: Monica Duwel

Entrepreneurship Magazine ranked St. Louis as the No. 1 city for innovation.

Dan Conner's Ascend Venture Capital is one of many such firms based in St. Louis that are supporting entrepreneurs and driving the region's growth in startups. (He works out of TechArtista, another co-working space, which was started by WashU alumni.) And according to venture capitalists like Conner, investments go a long way here.

"Every dollar you invest in a company based in regions like St. Louis goes further than if you were to direct that dollar in a place that has a much higher cost of living, like the Bay Area or New York City," he says.

With so many startups in St. Louis, good things happen when those begin to "exit" (by going public or selling to other companies). When a startup exits, the individuals on the team then have the experience and the funding to go on to start new businesses or join early-stage investment outfits. As Conner puts it, the ecosystem compounds. And the cycle continues when these new startups then exit. St. Louis is hitting its stride with these second- and third-generation businesses, and that is adding another pillar to the city's entrepreneurial ecosystem.

"St. Louis seems to have all those pillars in place now," Conner says.

SUCCESS STORIES

Villhard says it's easy to be a good coach when you have really good players. As much as the university's resources and St. Louis entrepreneurial ecosystem have contributed to the MBA program's consistently high ranking, so have the students who enroll in the program.

"WashU students are smart, motivated and open to new ideas and solving problems in different ways," Villhard says. "And another great attribute is their curiosity. Students who come here are not necessarily looking to land a particular salary or job, nor are they taking a course just to check a box. They want to learn."

So, what do they learn? According to Villhard, the MBA entrepreneurship program prepares its graduates to take on four types of careers: The first type is launching a company. Throughout the program, students have workshoped their business idea, figured out the risks, "derisked" them and used the resources available at WashU to bring their businesses to life.

Much of the innovation that comes out of the university is related to biomedicine due to having a high-ranking medical school as well. And while Villhard thinks that trend should continue, he's also excited about the number of WashU startups delving into other industries and finding success. Lori Coulter's Summersalt, for example, has added lifestyle apparel, including activewear and loungewear, to its lineup. Last summer, thanks to a collaboration with Rifle Paper Co., the

company sold over \$1 million worth of swimsuits in a day. And with his company Monarch Tractor, Schwager is working to integrate electric, autonomous and smart technologies into farm operations. In November 2021, Monarch announced it had secured \$61 million in Series B funding to accelerate production of the world's first self-driving electric tractor.

"We need to start looking at WashU as a bigger mover and shaker in the innovation space," Villhard says.

Not everyone who is entrepreneurial wants to start their own business, however, so the entrepreneurship program prepares them for related careers. Some graduates still enjoy the startup atmosphere, and they go on to work for one. Others will have success as investors or venture capitalists, like Conner, providing support to help get the best ideas funding to move forward. Finally, others will find success at larger organizations, which provide better job security but also opportunities to use their creativity to innovate. Recent grads have gone on to work for Mastercard, Dell and Humana.

But even after graduating, alumni are keeping their WashU connections alive, serving as a resource for current students. Rian Edwards, who serves as program manager of the Olin Entrepreneurship Program, has worked to grow a database of alumni who have offered support. The database has grown from 40 to over 500 alumni who speak in classes, mentor students, judge pitch competitions, invest in student startups and more.

"Alumni are such a huge piece of our success, and we couldn't do this without them," Edwards says. "I'm genuinely thankful for all our alumni who reach out and want to give back to the next generation in some way."

Some even teach classes. This semester, Olin launched its newest course, called "The League of Extraordinary Entrepreneurs," co-taught by Olin's "Mount Rushmore." These successful alumni include Jim McKelvey, AB '87, BSCS '87, of Square; Andrew Rubin, BSBA '98, of Illumio; Marc Bernstein, BSBA '15, of Balto; and Coulter of Summersalt. Students, armed with a tech or digital business concept that is ready to launch, can apply to take the course and learn how to execute their business plans.

"I love to interact with students," Coulter says. "I saw another female founder speak while I was in college and was really influenced by that exposure. I hope to be able to pass that on and inspire the next generation of WashU founders."

A PROMISING FUTURE

But why does all of this matter? Why is it important that WashU strive to educate the next generation of entrepreneurs?

"Entrepreneurship is about creativity and innovation, and without those, there is no growth,



**“STANFORD AND SILICON VALLEY ARE SUPPOSED TO BE THE IDEAL FOR ENTREPRENEURSHIP. BUT WHY CAN’T WASHU AND ST. LOUIS BE THAT?”
— DOUG VILLHARD, EMBA ’13**

just stagnation,” Taylor says. “Entrepreneurship is at the very core of economic prosperity.”

In 2019, small businesses alone created 1.6 million jobs in the U.S. But in creating new jobs, entrepreneurs also develop new products and technologies that improve people’s lives and have the potential to solve our society’s biggest challenges.

WashU is continuing to develop future problem solvers, with new ideas being developed every semester. Thanks to his “Hatchery” course, current student Lloyd Yates has developed a business idea to help solve online retail return problems.

“In 2020, fashion retailers grossed over \$600 billion in online revenue,” Yates says. “But because we shop online without truly knowing our size and without the luxury of a fitting room, we’re three times more likely to return the clothes we buy than those we buy in person. This costs retailers an estimated \$200 billion annually in returned items, and it is incredibly unsustainable environmentally.”

His company, Tylmen, has created a mobile app where users make a sizing profile through a self-recorded video that extracts their full-body measurements with sizing technology. Tylmen

uses that data as a foundation to shop and find a shopper’s exact size online. The information is stored on the app for future shopping and can be updated as needed.

As for Kanoff, while participating in an extracurricular, he helped complete a demand study for a manufacturer of shipping-container farms. After interviewing St. Louis chefs for the study, he gained a better understanding of the challenges of local food sourcing and wanted to help solve the problem. Kanoff is now preparing for fundraising to start a vertical-farming company, VertiGreens, which will build a local, scalable network of shipping-container farms for chefs to source products.

Villhard believes entrepreneurship at WashU is just getting started. With high-caliber students, successful alumni who are willing to work with those students and new courses that continue to be added to the curriculum, WashU is well-positioned to be a unique and incredibly remarkable institution.

“Stanford and Silicon Valley are supposed to be the ideal for entrepreneurship,” Villhard says. “But why can’t WashU and St. Louis be that? We’re going to plow forward as fast as possible and see if we can’t disrupt this space.”

CURRENT GIG: REVEAL works with brands to create custom pop-ups that generate sales, build brand awareness and test out new markets. Over the years, REVEAL has worked with brands like Bose, Intel, Rachel Zoe and John Hardy Jewelry.

THE WASHU EXPERIENCE: “People have this optimism at WashU: ‘Of course you can do it! Just go ahead and try!’ When I launched my company, I had to call up a property owner in the Central West End to get permission to hold the event, and I had to reach out to designers and ask for thousands of dollars worth of merchandise. Without WashU, I don’t think I would have had the guts to do any of that, to ask those things of people I’d never met before.”

ADVICE FOR STUDENTS: “I know it’s difficult to put something forward when you know if you had another week, it could be better. But you can’t wait until everything is perfect. Business is constantly evolving, and if you’re not out in the market, you’re not going to learn what you need to know to survive tomorrow.”



MEGAN BERRY

CURRENT GIG: Founder of Ascend Venture Capital, at St. Louis-based micro-VC firm that provides financial and operational support to startup founders.

ON BEING A VENTURE CAPITALIST: “The best entrepreneurs have foresight about the direction of their industry, and they have the gall to start a company to get to that point first. It’s a rewarding thing to be able to build relationships with people like that.”

ADVICE FOR STUDENTS: “Too often we get siloed into our own program. I would encourage students to take courses across campus, from any program they’re interested in. And if you find a course you’d like to have count toward your degree, the administration is very open to that. You can create your own path in a way, and that’s a very entrepreneurial mechanism.”



DAN CONNER

CURRENT GIG: Co-founder of Summersalt, a direct-to-consumer sustainable apparel brand selling swimsuits, loungewear and activewear.

THE WASHU EXPERIENCE: “WashU has been very influential in Summersalt’s journey. There isn’t a course I took at Olin that isn’t relevant to what I do today.”

ADVICE FOR STUDENTS: “If you’re interested in entrepreneurship, definitely take advantage of opportunities to work within an early-stage startup. And make sure you take the time to understand what’s happening in different areas of the business, such as capital raising, e-commerce and marketing, even if you’re not working in them.”



LORI COULTER

CURRENT GIG: Founder of Hum, which builds wireless sensors for rail transportation. These sensors can do everything from predicting when bearings will fail to alerting if a door is left open.

ON BEING AN ENTREPRENEUR: “I don’t like to be told what to do. But I love to be able to work as hard as I want on what I want. As an engineer, I liked to create things. Now I’m doing that in a business context. I’ve seen a problem, figured out a solution, and I’m helping save lives. That’s very rewarding.”

ADVICE FOR STUDENTS: “Keep your hands dirty. Students want to get out and be successful right away, but it doesn’t work that way. You’re not valuable yet because you don’t know anything. Go out and learn things. Get industry experience, and learn about the challenges people are facing.”



BYRON PORTER

CURRENT GIG: Co-founder of Monarch Tractor, which is working to integrate electric, autonomous and smart technologies into farm operations.

ON BEING AN ENTREPRENEUR: “I enjoy having the ability to influence every part of the business. My role as co-founder allows me to cater to my obsessions, which is the design of the manufacturing process. It’s not something I have to do, but I want to, and I enjoy it. A perk of having your own business is having an outlet for those obsessions.”

ADVICE FOR STUDENTS: “As an entrepreneur, you’re going to hear the word *no* a lot. You can tell yourself those people don’t know what they’re talking about. Or you can realize your business idea has holes in it and spend time refining it. The process of becoming an entrepreneur is going through that pain of refining. And that doesn’t happen part time. Being an entrepreneur isn’t even a full-time job — it’s a lifestyle.”



MARK SCHWAGER

CURRENT GIG: Co-founder of Oyster, a platform that matches international students to their ideal university in the United States; consultant for World Wide Technology

THE WASHU EXPERIENCE: “Everyone is unique and therefore has a special lens through which they see the world. WashU made me feel like my lens was valuable and gave me the confidence to use it to solve problems and add value to the world.”

ADVICE FOR STUDENTS: “If you have an idea, just do it. Lean in and be vulnerable. School is probably the best environment to do this because so many resources are available to you.”



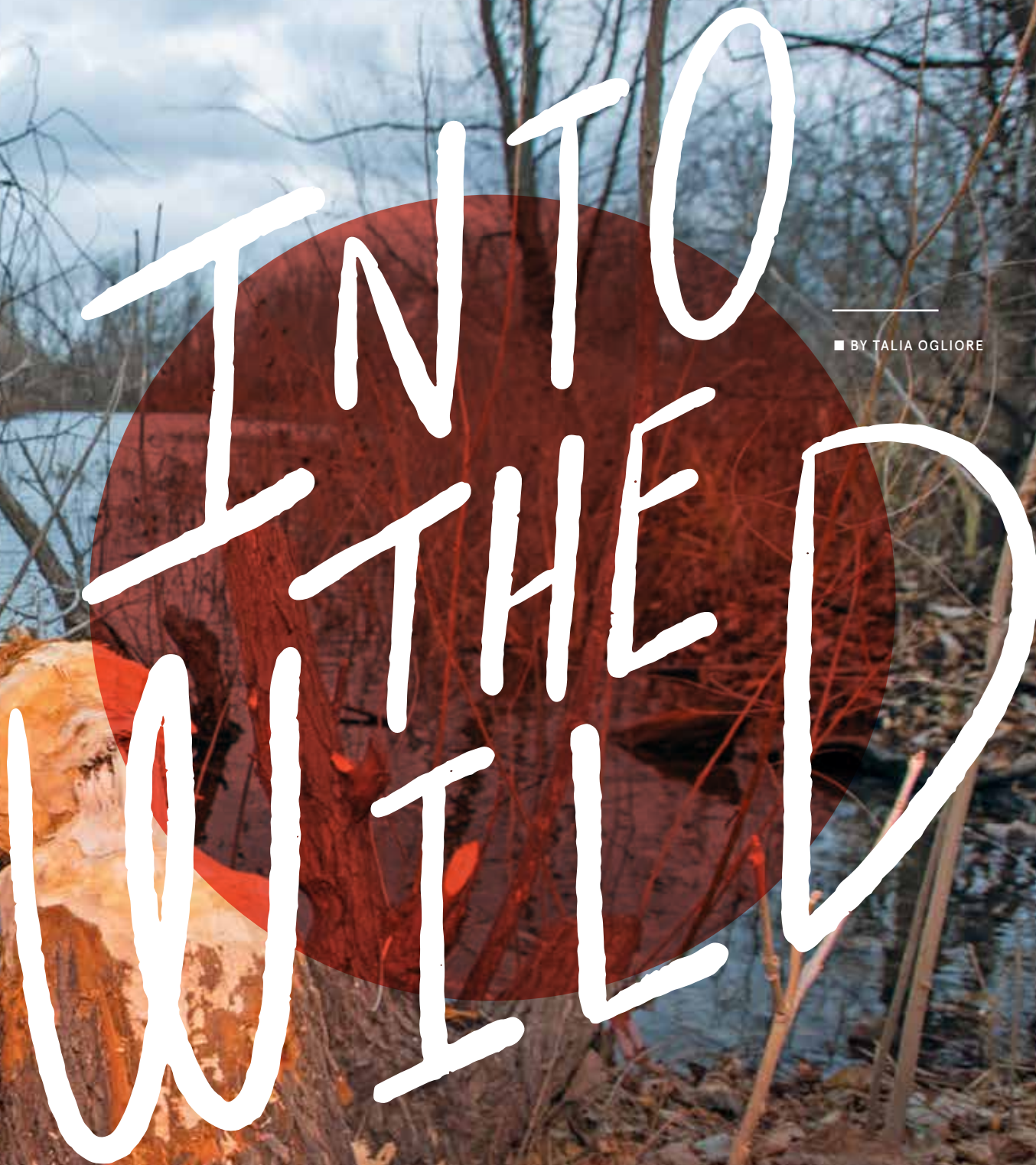
LUNGILE TSHUMA

Our world by degrees
climate series

On Ellis Island in the Mississippi River, Arpita Bose harvests microbes in the wetlands area of the Riverlands Migratory Bird Sanctuary.



Photo: Joe Angeles



INTO THE WILDS

■ BY TALIA OGLIORE

Microbiologist **Arpita Bose** chases climate change solutions in wetlands soils. Her efforts are yielding promising new biofuels and bioplastics — ones that could possibly be climate-saving.



requently flooded and accessible only by dinghy, Ellis Island in the Mississippi River near Alton, Illinois, seems like an unlikely place to launch one part of a clean energy revolution.

But that's exactly what Arpita Bose, associate professor of biology in Arts & Sciences, aims to do with the help of microbes harvested from this wetlands area, which is part of the Riverlands Migratory Bird Sanctuary. She believes these organisms have an important role to play in fighting climate change.

"Here in this area (between Missouri and Illinois), we're surrounded by water," Bose says. "It's a unique ecosystem because some of these wetlands get flooded periodically. Flooding affects microbial diversity, and it affects carbon sequestration — it affects everything."

Inspired by the wild microbes she discovered as a postdoctoral fellow at Harvard University's Life Sciences Research Foundation, Bose is looking for similarly beneficial organisms in local waterways.

In the past, she found these microbes in the muck of an estuary at Woods Hole, Massachusetts — a place where fresh water from a river mixes with the salty ocean. Some microbes that live in this estuary are adapted to survive and grow where there is no oxygen. But other microbes that live in inland wetlands have to deal with flooding, which brings the same sorts of harsh, anaerobic conditions that their coastal cousins face. That's why Bose thinks she might be able to find something special nearby.

"Most people think of microorganisms as nasty microbes that cause disease, but I'm more of a glass half full sort of person," Bose says. "Microorganisms are everywhere, doing really positive things for us, too."

A living system

Back in her Washington University research space in Busch Lab on the Danforth Campus, Bose keeps batches of different microbes cooled to -79 degrees Celsius in a deep freezer.

They don't seem to mind. This form of life has persisted on Earth across millennia and through all kinds of dramatic shifts in climate and surface conditions. From the microbes' perspective, they're just waiting out this (artificially induced) ice age before they can breathe, eat and reproduce again.

In fact, it's what they eat — and how they eat it — that fascinates Bose.

"Microorganisms have evolved a bewildering array of techniques to obtain nutrients from their surrounding environments," she says.

Bose studies microbial metabolisms, and she is particularly interested in microorganisms that can "eat" electricity in its many forms.

One of the microbes in her menagerie, called *Rhodopseudomonas palustris* TIE-1, is a purple bacterium with unusual metabolic flexibility, including the ability to pull electrons out of iron or directly from an electrode.

Last year Bose made a splash by publishing a study that revealed a new way to train this microbe to make a biofuel called *n*-butanol. This fuel alternative is authentically carbon-neutral and can be readily used in blends with diesel or gasoline. The best part about it, according to Bose, is that microbes can make this fuel using only three renewable and naturally abundant source ingredients: carbon dioxide (CO₂), solar panel-generated electricity and light.

Bose has also previously coaxed these microbes into making bioplastics, as a way of grappling with what she calls "rampant petroleum-based plastic use and plastic waste."

As scientists learn more about these microbes, their potential uses are more and more promising, Bose says, though she acknowledges that improvements are needed before her techniques can be rolled out on larger scales.

"The research is new. Therefore, the biggest challenge for scaling up is that we don't know how to do it fundamentally," says Haluk Beyenal, a professor of chemical engineering and bioengineering at Washington State University, who is helping Bose to think about how to expand her biofuels production effort. "Scale-up strategies for chemical engineering systems are well-defined, and we know which parameters should be used. However, we currently don't know which parameters are critical for scale up for bioelectrochemical systems.

"Arpita's work starts there: from the fundamentals," Beyenal continues. "This is critical for developing laboratory, then pilot and, ultimately, industrial-scale technologies. In the long term, her work on wiring microbes to electrodes to produce biofuels and bioplastics will enable us to develop transformational technologies."

Part of a clean energy revolution

First-generation biofuels were rolled out with the best intentions: to replace the use of liquid fossil fuels, especially for transportation uses.

“Most people think of microorganisms as nasty microbes that cause disease, but I’m more of a glass half full sort of person. Microorganisms are everywhere, doing really positive things for us, too.”
— Arpita Bose



Photo: Joe Angeles

Rajesh Singh (left) is a research scientist in the Bose laboratory. Here, he collects a sample of soil along the shoreline at Ellis Island. Washington University biologists are searching for beneficial microbes in the wetlands.

These kinds of biofuels are produced from biomass such as corn, soy and sugarcane. The biofuel is made through fermentation or chemical processes that convert the oils, sugars and starches in the biomass into liquid fuels.

But first-generation biofuels in general — and corn-generated ethanol in particular — face three major criticisms. First, some say that the source material should be used for food, not fuel. Second, biofuel production from corn or other biomass often requires significant consumption of fossil resources, such that there are minimal benefits from a carbon-emissions perspective. Finally, there’s a requirement of land to grow corn.

Second- and third-generation biofuels are now being developed that overcome these criticisms. Bose’s microbes are an important part of this mix.

“The way that we grow these organisms connects the dots between renewably produced electricity and the consumption of CO₂ or other problematic carbon sources or greenhouse gases,” Bose says. “We’re converting them into something usable.”

The fuel she is making, *n*-butanol, has a high energy content and low tendency to vaporize or dissolve in water without combustion, making it a good replacement

for ethanol. Her cost analyses show that her microbes are capable of making biofuels at a level that is potentially “commercializable,” with some help from engineers in scaling it up.

Climate change ‘solutionaries’

The alarm clock rings early for global scientists. Like 3:30 a.m. early, every day of the week.

Bose pushes her long, black hair back into a ponytail and sits down at her computer in the dark, hours before her 6-year-old daughter wakes. This year Bose is participating in an intensive training program called the Anant Fellowship for Climate Action. Every morning she signs on to join an elite group of 30 scientists and leaders — the program dubs them climate change ‘solutionaries’ — discussing potential actions to mitigate climate change.

Austria. Nigeria. India. Barbados. The fellows hail from countries around the world (hence their compromise on what time to gather each day on Zoom).

Bose was selected to participate based on the strength of her research with microbes and sustainability — including her work on both carbon sequestration and sustainable bioproduction. A 2015 Packard Fellow, Bose earned a PhD in microbiology from the University of Illinois at Urbana-Champaign. She also



Photos: Joe Angeles

Above images, pg. 40: Arpita Bose (center) works with Tahina Ranaivoarisoa (left), Bose's research lab supervisor, and Rajesh Singh collecting microbes at Ellis Island. At right, Ranaivoarisoa shows some of their collections.

has an MS in biotechnology from the All India Institute of Medical Sciences in New Delhi, India, and earned a BS in microbiology from the University of Delhi.

"I think climate change has really captured the collective imagination during the COVID pandemic," Bose says. "People have been home, and they've been more connected to nature than ever before. For some, it's been their only outlet. For a period of time, all we could do was go for walks and look around and enjoy nature.

"Suddenly, there's this recognition that the environment is something that we have to preserve," she says. "It's for posterity; it's for our children." It is a sentiment that she has been working hard to communicate, starting with members of her own family.

"I've been trying to tell my daughter (without creating climate anxiety): 'You are part of this process, but you are part of the solution as well,'" Bose says. "Because they're so young, children might hold the key to solving this problem of climate change as a human race.

"We've solved such difficult problems in the past. Why couldn't we solve this?" Bose asks. "We have to engage people in a positive way."

Collaboration and inclusion

From the time that she was hired at Washington University in 2014-15, Bose has reached out across the university, finding collaborative solutions in surprising places.

"I knew that to do climate science, which is what I'm especially interested in, and do it well, I'd need collaborators from across disciplines," Bose says. "As a microbiologist, I study microbes in the lab. Sometimes I go out and collect samples in the field to study. But,

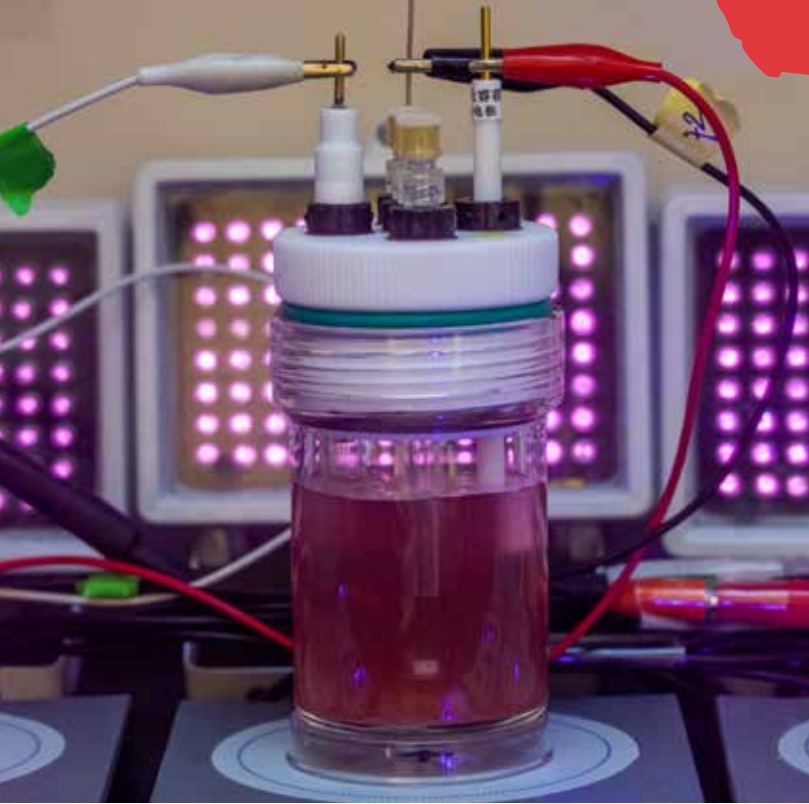
at the end of the day, I have to depend on the expertise of scientists across fields, from earth and planetary sciences to engineering."

One of her newer collaborations is with Mark Meacham, assistant professor of mechanical engineering & materials science in the McKelvey School of Engineering. Together they were awarded the university's first Defense Established Program to Stimulate Competitive Research award from the U.S. Department of Defense since 1996. They are combining their expertise to understand extracellular electron uptake in bacteria — a key part of the process that allows microbes to convert CO₂ into something useful.

Bose was recently selected for a Climatebase Fellowship, a program designed for entrepreneurs in climate technology, and she'll serve as an Island Innovation Ambassador, where she will help leaders of small island nations address climate-related challenges. She is also highly involved in mentoring local high school students, including welcoming interns from Gateway Science Academy of St. Louis, and building a more diverse and inclusive STEM pipeline. As associate editor of the journal *Applied and Environmental Microbiology*, she hopes to improve transparency, diversity, inclusivity and fairness in peer-reviewed scientific publishing, especially for early-career scientists.

In recognition of these and other outreach efforts, Bose was selected to serve as a faculty marshal in the university's graduate student ceremony in May 2021.

"Professor Bose is such an inspiration," said ceremony organizer Laurie Maffly-Kipp, the Archer Alexander Distinguished Professor, who was then working as the interim vice provost



of graduate education. “Her dedication to mentoring students at all levels, and to finding pipelines to attract women and students of color into STEM fields, is a model for what we should be doing here at WashU.”

Bose said she was honored to participate. “As faculty, our efforts to diversify the STEM fabric can often be overlooked compared to our research efforts,” Bose says. “I believe that I have a key role as an educator and scientist to help create opportunities for all students. To me, my research efforts are intertwined with my efforts to diversify STEM. One is not without the other.”

Back to the wetlands

The latest report from the Intergovernmental Panel on Climate Change is frank: Climate change is “widespread, rapid and intensifying,” and mitigating global warming will require humans to limit their cumulative CO₂ emissions and reduce other greenhouse gases. Plastic waste represents a related and daunting worldwide problem. Global plastic production now averages more than 300 million metric tons per year, which is a staggering increase over the 1.5 million metric tons produced in 1950.

Innovations like those that Bose is pursuing can help address these challenges. Her basic science research has the potential to lead to engineered solutions with a real, positive impact for the global environment.

Back at Ellis Island, Bose and members of her team are currently focused on learning more about the carbon sequestration potential of the freshwater microbes (freshwater phototrophic bacteria — the ones that can do photosynthesis) they are finding along the shoreline. They hope that their research can

also help to lay the groundwork for additional protections for these threatened ecosystems.

“Ellis Island is one of the inland freshwater wetland ecosystems in Missouri that was not described as part of the most recent National Wetland Condition Assessment,” says Rajesh Singh, a research scientist in the Bose lab. “This study will help provide scientists with a data set that is representative of the Mississippi River’s freshwater inland wetland area for exploring the role of microbes in carbon cycling, particularly anoxygenic phototrophs.”

Despite occupying only 5%-8% of Earth’s land surface, wetlands soils hold up to 30% of the carbon that is locked away in the ground. Bose and scientists on her team want to know more about the microbial processes that are keeping that carbon at bay.

“There’s a disconnect where we do not appreciate the value of freshwater wetlands,” Bose says. “But wetlands have a massive role ecologically.”

“Freshwater wetlands, we know, hold a lot more carbon than marine wetlands,” Bose says. “But we don’t fully understand the basis of this difference.”

Further research is needed to determine the factors that control how much carbon is sequestered by plants and microbes in wetlands. With this knowledge, Bose says, humans could take better advantage of wetlands that are already being set aside for preservation and protection.

“We have these existential issues, climate change being one of them,” Bose says. “I know that we can find microbial solutions. They won’t be the only ones, of course. But I’ve realized we need an all-hands-on-deck approach right now.”

Above images, pg. 41: Back in their laboratory on the Danforth Campus, members of the Bose lab are studying the carbon sequestration potential of freshwater microbes. In previous work, they have shown that related microbes can make bioplastics and readily usable biofuels.

Next

Reducing disabilities

Karl Zelik, BS '06, MS '07, associate professor of mechanical engineering at Vanderbilt University, focuses on reducing disabilities in society through advances in prosthetics, exoskeletons and wearable technology. And what's more: As co-director of the Center for Rehabilitation Engineering and Assistive Technology, Zelik works to enhance human well-being and physical capabilities beyond biological limits. See <https://source.wustl.edu/2022/4/karl-zelik/> for more on Zelik's research in helping create the future of wearable technology.



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Photo: Vanderbilt University

Karibu nyumbani, welcome home

Alumna Freida Brown went from protesting in Brookings to leading the first chartered university in Africa.

In August 2021, in the midst of retirement, **Freida Brown, AB '70**, returned to Nairobi, Kenya, to serve as interim vice chancellor at United States International University-Africa (USIU-Africa).

Brown had been the vice chancellor (the university's highest position) from 1994 until her retirement in 2016. She is now filling in while the university conducts an international search for its next vice chancellor.

"It's been a wonderful opportunity for me to come back, to see the growth of the university," Brown says.

How did Brown end up the first woman to lead a chartered university in Kenya? According to Brown, it wasn't by design.

"Life is just interesting. You don't know where you'll wind up," she says. "I used to tell students to take advantage of every opportunity, because you never know what skill you'll acquire and how you'll use it."

Life for Brown began in Hopkinsville, Kentucky, but her parents moved the family to St. Louis so that Brown and her siblings would have access to a better education.

"Living in a small town in Kentucky was very segregated," Brown recalls. "It was like night and day going from 'no coloreds allowed' and segregated water fountains" to St. Louis.

Although St. Louis proved to be less segregated than her hometown, there was still much racial tension and harassment. But she nonetheless was able to focus on her studies and graduate from Laboure High School. She matriculated at WashU in 1966.

Brown was one of 12 Black incoming first-year students — the largest number of Black students the university had had since desegregating in 1952. The students inspired change on campus through organizations like the Association of Black Collegians (ABC), which Brown helped found. In 1968, ABC successfully advocated for a Black studies program, more Black professors, an end to police harassment and other changes on campus.

"That was the era of Black pride — 'I'm black and I'm proud' — and the Black Panthers. It was an exciting time, a tumultuous time," Brown says.

Brown began her college career as a pre-med major but decided to switch to psychology while serving as a research assistant for Robert Williams, who was the founding director of the Black studies program. Williams encouraged her to continue her education and pursue graduate school.

After earning a bachelor's degree in 1970, Brown went on to Michigan State for graduate school. While there, she discovered a new world.

"My first taste of Africa was working on my dissertation research in grad school, and I lived in Botswana for a year," Brown says. "That hooked me into enjoying being outside of the U.S. and experiencing a totally different culture. That was during the time of apartheid in South Africa. Going in and out of South Africa was like stepping back into Kentucky in the 1950s."

After graduate school, Brown taught at Howard University for a year. She then returned to WashU to work as associate director for Williams' minority mental health program for two years.

A few additional career moves later, a colleague recommended she pursue an adjunct position at USIU-San Diego. The position led Brown to become the executive assistant to the president at the university, overseeing international campuses.

In 1994, when the then-vice chancellor retired, Brown was asked to take up the reins. Under her leadership, the school grew from 1,100 students to more than 6,200. The campus grew in size as well, from 20 to 160 acres along with major infrastructure expansion.

"I marvel at people who have a planned life. Mine was happenstance," Brown says. "It was truly taking advantage of things that were offered at the time and being adventurous enough to say, 'let's go try this.'"

While leading the university, Brown had to face many obstacles. When she arrived, the campus had dirt roads, unreliable water and rolling blackouts. However, in Kenya, she felt a sense of belonging that she hadn't felt before.

"I'm not saying there weren't times when I thought I would pack up and go home. My mother would always say, 'Remember why you're there. You're there for the students,'" Brown says.

It wouldn't take long for Brown to see the fruit of her labor. Several of Brown's former students are now sending their children to USIU-Africa and giving back to their hometowns and villages.

"My mom was right," Brown says. "When you make a difference in people's lives, at the time you don't even think about it. You just think it was the right thing to do. To have so many people come back and tell me, 'You made a difference in my life,' fills me with joy."

■ BRITTNEY WHEELER



WHO

Freida Brown, AB '70

DEFINING SONG

"My Way," the Frank Sinatra rendition

WORDS TO LIVE BY

"My mom used to say, 'Get yourself a good education, get yourself a good job.' For her, education was critical."

PLANS FOR A SECOND RETIREMENT

Brown plans to return to St. Louis to be close to family and finally set up a pottery studio in her garage. She also will work on her memoir.

ACCOLADES

2018 Arts & Sciences Distinguished Alumna

Photo: Sean Garcia



Photo: Nestlé Purina

From intern to CEO

While earning an MBA at WashU, Nina Leigh Krueger joined Purina as an intern and never left. Now, she's the company's first female CEO of the Americas.

WHO

Nina Leigh Krueger,
MBA '94

HOMETOWN

Louisville, Kentucky

HOBBIES

Paddle tennis, Peloton and reading

PETS

Two female labradoodles, Guinness and Caffrey, named after Krueger and her husband's favorite Irish beers. Krueger has three sons, so she affectionately calls the dogs "the girls."

ACCOLADES

2017 Distinguished Olin Business School Alumna

How does one climb from intern to the first female CEO of one of the biggest pet-care companies in the world? For **Nina Leigh Krueger, MBA '94**, it took creativity, a lot of hard work and lightweight kitty litter.

In Olin Business School's "On Principle" podcast, Krueger says she never set out to become CEO of Nestlé Purina PetCare for the Americas. "[My ambition] was really to conquer the job I had been hired to do, and to be a brand manager."

In 1993, Krueger was working on an MBA at WashU when Ralston Purina (now Nestlé Purina) offered her a brand management internship — and she never left. "Purina's values, culture and people have felt like home to me since my early days as an intern," Krueger says.

Krueger's experience studying at WashU was foundational to her career. "Olin taught me how to ask smart questions," she says. "I discovered

that leadership is not just knowing the answers. Often it is about knowing the right questions to ask of your subject-matter experts."

These lessons carried Krueger through her first years working in marketing at Purina, but they proved especially salient when she was unexpectedly thrust into the company's struggling cat-litter division.

This was not the career shift she was looking for. "I felt like, in some ways, I was being put into a penalty box," she says. "In our careers, we all feel that we should keep moving up and up and up; but this was a lateral roll."

At the time, the cat-litter division was in dire straits. "The business was in a really challenging position and was somewhat separate from the rest of Purina. The message that I got was essentially: 'Revive it, get a stronger pulse, or we may have to exit the business.'"

Krueger entered the department in a marketing role, but her responsibilities quickly expanded. "I had to develop a team and build trust," she says. "I had to use my marketing skills to demonstrate to them that I knew what I was doing, but I also needed to understand their expertise so that we could build on this together."

She also decided to light a fire under the team with the ambitious goal to become a billion-dollar division by 2020. "If you don't push the boundaries and break paradigms and think differently," she told them, "then we're not going to get to where we need to be."

Undertaking a "segmentation study" on consumer impulse, the division found a sore spot. "What we learned was that consumers didn't like lugging litters. They really wanted a lightweight litter." After a series of challenges and successes, the newly developed product was successfully launched. The litter division has since achieved her billion-dollar goal.

Krueger went on to other prominent roles at Purina, including leading the merger of the Purina and Nestlé marketing departments. She was appointed chief marketing officer in 2015 and became the company's first female president in 2016.

In 2021, Krueger became the CEO of Nestlé Purina. "It was an incredible and humbling year," she says. "I've been reminded at every turn what a wonderful team we have."

From her first days as an intern, Krueger has lived by a mantra: Listen. Learn. Lead. "It is crucial that leaders have a vision," she says, "but it's equally crucial that they be open to input from their teams. Business success is about getting results, not credit."

■ THOMAS HUMPHREY

Making life-saving medicine affordable

Michael Holmes was determined to make a difference, and with a little guidance from above, help from pharmaceutical companies and some ingenuity, he started saving lives.

By almost any definition, Michael Holmes' career had been a success story. The first of his family to attend college, **Michael Holmes, AB '79**, went on to become a partner at Edward Jones, heading the company's HR division. Under his leadership, Edward Jones achieved the No. 1 spot in *Fortune's* 100 Best Companies to Work For. At age 46, Holmes retired to volunteer his time with nonprofit organizations that made a difference in people's lives.

A year later, after finding the nonprofit pace slower than expected, Holmes accepted a leadership role with Express Scripts. He began by running the firm's HR function and was soon managing \$2 billion worth of subsidiary businesses along with many of the corporate staff groups and leading strategy for the firm. But something was still missing: He was looking for a greater purpose in his life.

Then, during an act of prayer, Holmes' true calling was revealed to him. "God spoke to me that morning. There was no doubt in my mind," says Holmes, who was then in his 50s. "He put it in my heart to take Rx Outreach, a small part of my portfolio, and spin it off as a nonprofit."

Within a few months, Holmes founded Rx Outreach as a stand-alone company that makes prescription drugs affordable and accessible for the underprivileged. He then retired from Express Scripts to dedicate himself to this new mission. (The organization's motto is "Honoring God by serving others.")

With a generous donation from Express Scripts, which at the outset contributed \$7 million worth of equipment and supplies, Holmes assembled a team including pharmacists, patient service representatives and technical support personnel that could



Photo: Joe Angeles

deliver these heavily discounted drugs to those in need. He also established partnerships with pharmaceutical companies willing to donate drugs outright or sell them at greatly reduced cost. Now with 40,000 patients a year, Rx Outreach has helped patients save nearly \$1 billion.

In just one of thousands of examples, a retired teacher who lives on a farm with her husband couldn't afford Plaquenil, a brand medication, for her rheumatoid arthritis. Without it, she was faced with moving to a nursing home since her husband couldn't take care of her. By lowering the cost from \$600 a month to \$35 for two months' treatment, Rx Outreach made it possible for her to remain at home.

"When you're on the phone with patients," Holmes says, "and you hear stories about how they wouldn't be able to make it without their medication, or you get a thank you letter from someone who says, 'Look, my husband just died, but you kept him alive 10 years longer than he ever would have lived by making his medicine affordable,' it touches your heart and makes you say, 'OK, this makes sense for us.'"

■ RYAN RHEA, AB '96, MA '01

WHO

Michael Holmes, AB '79

STUDIED

Political science

ABOUT WASHU

"WashU gave me the skills I needed to be successful. I grew up in North County, St. Louis, and it was basically black and white, and there wasn't much diversity. And when you go to WashU, you see all this diversity — different attitudes and perspectives. It opens your mind in terms of realizing the world is a lot bigger, and there are more ways to think of things than you've thought of before."

VOLUNTEER WORK

Brown School's National Council

Advisory board member and speaker with the Bauer Leadership Center

BJC HealthCare Board of Directors

One Family Church trustee



Photo: Steve Smith

Tech network earns high honors

WHO

Russ Shaw, BSBA '85

LOCATION

London, UK

HOMETOWN

Phoenix

KEEPING FIT

Shaw completes a 5K run every day to stay healthy.

FAVORITE CONVERSATION TOPICS

Politics and economics

For **Russ Shaw, BSBA '85**, the founder of Tech London Advocates and Global Tech Advocates, achieving the honorary title Commander of the British Empire (CBE) was a shock. “When I received the congratulatory email last November, I fell off my chair,” he says.

The highest Order of the British Empire award below knighthood or damehood, it is a high-water mark for Shaw’s storied tech career. “It inspires me,” he says. “I’ve been given this honor, and I’m humbled, but I need to keep building.”

Shaw’s professional career began after graduating from WashU in 1985. He worked for two years at Ernst & Whinney (now EY) in Los Angeles before earning an MBA at Harvard, where he met his wife, Lesley Hill. In 1992, the couple moved to her native London “for a few years.” Three decades (and three sons) later, Shaw is engrossed in the London tech ecosystem.

He first moved into tech at Virgin Media, before becoming the CEO of later-stage tech-startup Mobileway.

After favorable exits from executive positions at UK mobile operator O₂ (which was acquired by Telefónica of Spain) and Skype (which was acquired by Microsoft), Shaw was ready for a change. So he decided to become a champion of the professional community that he had been such a big part of. “The London tech sector was expanding; what was missing was a group of diverse leaders coming together to support the startups and scaleups,” Shaw says.

In 2013, he founded Tech London Advocates (TLA) to fill this gap. A volunteer network of over 12,000 advocates across the UK and in over 70 countries, the group supports London’s tech sector by drafting policy reports and hosting seminars, workshops and networking events for its community. Inclusivity and openness are at the center of TLA’s mission: “Anyone can become an advocate,” Shaw says.

Recent TLA projects include the London Tech Manifesto, in which advocates presented 12 policy recommendations for London’s mayoral candidates, and its “tech for net zero” campaign, which highlighted the importance of tech in combating climate change ahead of the UN COP26 conference. TLA also organized critical support during the London COVID-19 lockdown, instructing tech businesses on how to manage cash flows.

Within the network are more focused TLA working groups for fintech, blockchain, robotics and more. TLA also organizes the largest UK women and Black women in tech organizations.

“London is quickly becoming a center of startup innovation,” says Shaw, citing London’s over 100 “tech unicorns” (startups with valuations exceeding \$1 billion).

Yet London is no longer Shaw’s sole focus. Since 2015, Shaw has replicated his advocacy organization in over 20 tech hubs and regions under the umbrella of Global Tech Advocates (GTA). GTA groups operate across the UK and Europe, the Americas, China, India, Japan and Australia.

In 2019, Shaw organized the first GTA Summit in China. Most recently, Shaw has begun talks to establish a tech advocates group in Africa.

Looking back, Shaw sees how important networking is: “No matter what your age or where you’re at in your career, build your network. There are others always willing to help.”

■ THOMAS HUMPHREY

Arsalan Iftikhar: Combating fear of a Muslim planet

Arsalan Iftikhar, AB '99, JD '03, has spent his career speaking out against Islamophobia. In his latest book, he says the need to stand against hate is more urgent than ever. Iftikhar is a human rights lawyer and frequent news commentator who wrote *Fear of a Muslim Planet: Global Islamophobia in the New World Order*. In the book, he shows how Islamophobia — a hatred or fear of Muslims — has spread across the globe, its impact and dangers, and how to take a different path, all while he commemorates the 51 victims of the 2019 mosque attack in Christchurch, New Zealand.

► **Christchurch was one of the worst acts of mass murder against a religious minority in the Western world in modern history.**

► **The killer was live-streaming it on Facebook Live.** I actually saw the video. They took it down, but I was watching it live. It was like watching a Call of Duty video game with real human beings. And you think that you can imagine that, but you can't until you actually see it. And that's why I decided to tell the stories of the 51 folks who died, because people need to remember them.

► **A lot of the book was precipitated by Donald Trump.** Trump issued the Muslim travel ban. Sadly, the modern Republican Party has normalized xenophobia, racism [and] bigotry as part of their political platform.

► **It's been 20 years of putting out fires.** It's been 20 years of trying to figure out how we as an American society domestically, and as a human race worldwide, get out of this march toward ethnonationalism.

► **The book is called *Fear of a Muslim Planet*, which is a twofer for me,** because I'm an old-school hip-hop head, and it's an homage to Public Enemy's 1990 seminal album, *Fear of a Black Planet*. But it also ties into that

same hysteria that the Muslims are coming to take over the world. And I always laugh. I'll do interviews, and I'm asked: "Are Muslims coming to take over America?" How are we trying to take over? We have three members of Congress. We have zero senators. We have zero governors. There's zero Muslim Supreme Court justices. If Muslims are trying to take over America, we're doing a terrible job. But facts don't matter to some people.

► **For me, everything revolves around incremental humanization.** When somebody is even incrementally humanized, that means that others will be less likely to demonize or scapegoat them. As a human rights lawyer, I try to see the humanity in every single person."

■ ROSALIND EARLY

WHO

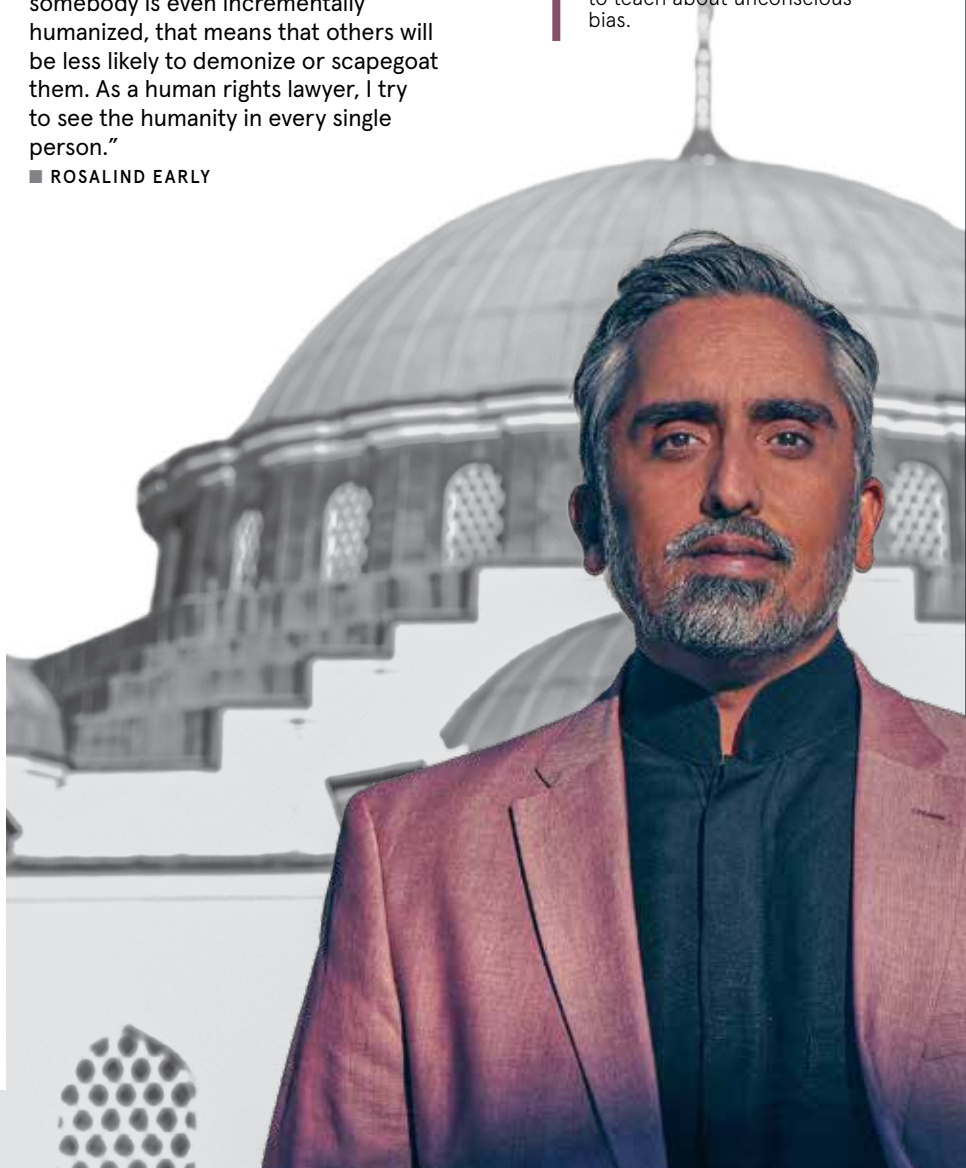
Arsalan Iftikhar, AB '99, JD '03

WASHU SUPPORT

On 9/11 Iftikhar was a student at WashU's law school and an RA. "I felt that the administration and ResLife were so kind and protective, and that's something I have not forgotten, nor will I ever forget," he says.

HELPING REDUCE BIAS

Iftikhar has worked as a DEI management consultant for the past 10 years. He goes into Fortune 500 companies to teach about unconscious bias.



Courtesy Photo



Photo: Tony Avelar Photography LLC

An enterprising advocate

Alumnus David Ulevitch's résumé is filled with personal entrepreneurial successes, yet today he finds mentoring entrepreneurs as well as college students and young alumni among his most fulfilling endeavors.

David Ulevitch, AB '04, believes that entrepreneurship is about two things: understanding how the world works and understanding how people work. "Ideas that address both tend to have the best outcomes," he explains. A former anthropology major and entrepreneur, Ulevitch should know. He has founded and sold two enterprise companies — EveryDNS, a domain name system he launched as a WashU student, and OpenDNS, which Cisco Systems acquired in 2015.

Today, he is a general partner at Andreessen Horowitz, the storied venture capital firm in Silicon Valley. He focuses on enterprise software, as well as investments that promote what he and his colleagues call American dynamism, including those related to defense, national security, public safety, housing, education and more. Ulevitch also is an active alumni leader, having served in numerous volunteer capacities in the Bay Area and as a mentor to WashU grads.

HOW HAS YOUR ANTHROPOLOGY DEGREE INFORMED YOUR CAREER?

Ulevitch: I often joke that it has turned out to be way more useful than I expected, and it's really true. Studying human behavior, different cultures and differences across communities has given me a broad worldview and made me more open-minded and curious.

Technology interacts with people. Understanding cultural nuance and what makes people different helps you build better companies, better teams and better products for your customers.

For example, one part of our business at OpenDNS was parental controls, which restrict children's access to internet content. We quickly discovered that what a mother in Berkeley, California,

considers inappropriate for kids varies significantly from the views of a mother in Salt Lake City or father in Boston. We can't throw the same technology solution at everyone; we need to appreciate differences and think more broadly about how we solve problems. I really value the framework and grounding that anthropology gave me.

DESCRIBE MAKING THE SWITCH FROM ENTREPRENEUR TO INVESTOR.

Ulevitch: I never thought I wanted to be an investor because I love the thrill and satisfaction of operating a company. When I was running OpenDNS, I had mixed experiences with my investors, but one really became a mentor to me. Dave Strohm from Greylock Partners instilled in me a set of corporate governance controls and management behaviors that equipped me for long-term success as a leader.

When Ben Horowitz, the co-founder of Andreessen Horowitz, recruited me, he said, "If you come here, you can be the kind of investor you wish you had when you were an entrepreneur." I got excited about filling that role for others and being the person whom entrepreneurs call when they're having a tough moment or are at a strategic crossroads.

I joined Andreessen Horowitz in late 2018 because it offered an environment in which I thought I could be successful. Most of the partners are former founders or CEOs, which means we are good at working with entrepreneurs. We also are former managers, so the firm is very well-organized. While we do have guardrails in place, our firm allows partners independence in making investment decisions. I enjoy being able to own my decisions just as I did as an entrepreneur.

WHY DO YOU MAKE TIME TO ENGAGE WITH ALUMNI?

Ulevitch: After graduation I moved to San Francisco and began attending young alumni events in the Bay Area. It was great to meet up with other WashU grads to tour a museum, have a meal or go to a ball game. I also served on a couple of alumni committees like the Alumni Board of Governors, which helped me feel connected to the university.

Not long after I got settled in California, I started getting emails from recent grads and students about to graduate. They would say, "Hey, you work with technology in the Bay Area. I want to come out there and join a startup or start a company." I'd always try to take those meetings. It made me happy to see the alumni population growing in the area and to be connected to other alumni in the startup community.

Over the years, I've hired many WashU alumni or invested in their companies. They are smart and collaborative, and they make great team members and leaders. It feels like there is a WashU grad inside every successful startup I hear about these days.

WHY DOES WASHU MATTER TO YOU?

Ulevitch: I am very grateful for my WashU experience, which was one of the most transformational of my life. The university offers a supportive and student-oriented environment where you can learn and grow as a person. I also gained lasting friendships. I will continue to do what I can as an advocate for the university to make sure that more and more people have the same opportunity and experience that I did.

■ TRICIA HENDRICKS



People power

WashU's greatest source of renewable energy is its alumni.

On Saturdays, **Vince Belusko, BS '78**, wears Washington University gear. As an alumnus, parent of two graduates and chair of the Alumni Board of Governors (ABG), he has amassed a considerable collection of WashU T-shirts, sweatshirts and baseball caps over the years. A decade ago, Belusko's sartorial spirit went largely unremarked in his Southern California hometown. But as the years pass by, more and more friendly strangers stop to tell him about their grandson who went to WashU or their daughter's friend who is a current student or even their own student days. WashU may be in St. Louis, but its alumni – and their friends and family – are everywhere now.

While the university's official motto is "Per Veritatem Vis," or "strength through truth," its unofficial motto could just as easily be "strength in numbers." There are more than 150,000 WashU graduates living across the globe. The ABG partners with the Office of Alumni and Constituent Engagement (ACE) to foster ties between these alumni and the broader community of WashU leaders, students and parents. The advisory board, which numbers 48 active and 17 emeritus members from all seven schools, acts as a critical bridge, simultaneously representing the interests of alumni and the university's strategic priorities.

Susan Cohen, associate vice chancellor of ACE, is grateful to the ABG members whose volunteer time and participation enrich the alumni network. "The feedback we receive from the board is indispensable," she says. "Their input helps us

enhance our programming and forge stronger bonds between WashU alumni and the university."

WashU Reunion and Founders Day are two marquee events for which the ABG reliably lends assistance. Each year, members of the ABG review nominations for the Distinguished Alumni Awards and choose the recipients honored at Founders Day. The selection process is a humbling affair for Belusko and the rest of the board, one that pulls into focus the incredible and wide-ranging accomplishments of the university's graduates.

Although the influence of WashU alumni never fails to impress, Belusko remains even more amazed by students. Like many alumni, he jokes that he would never gain admission to WashU now. "The quality of the student body is so high, and it continually gets better," he says.

Today's students represent the next generation of Founders Day honorees, and the ABG is committed to helping them establish a meaningful lifelong relationship with the university. One of the board's major goals is to grow the alumni network by engaging students *before* they graduate. They urge students to consider themselves part of the alumni community and, perhaps most important, to take advantage of it as they enter a new chapter of their lives.

In order to achieve this, the ABG is increasingly trying to meet students and recent graduates where they are, which is often online or on social media. WashU CNX, a virtual networking hub for alumni, students and parents, is one step in this ongoing work. Developing a professional mentoring platform like WashU CNX has long been a top priority for the group. ABG members beta tested the site and helped rally the first wave of subscribers.

Since it launched in early 2020, more than 5,700 people have signed on to WashU CNX. It is a solid start, but Belusko would like to see the number multiply at least tenfold in the coming years. He sees WashU CNX

as an accessible way for younger generations, in particular, to tap into the experience of alumni and parents. That might mean using the site to seek out professional advice, explore internship and career opportunities, or make contacts in a new city. WashU CNX is also a means for alumni, wherever they are in life, to share their knowledge with the WashU community.

Some young alumni are also offering their perspectives by serving on the ABG as associate members. Associate members are under the age of 35 or have graduated within 10 years of their nomination. The board added this membership level to “keep a pulse on and provide the viewpoints of young alumni to the larger group,” explains **Chisom Uche, AB ’14**, who recently completed a three-year term. Uche was excited to be a part of the ABG’s efforts to add more alumni voices to the mix.

Giving voice to a wider range of student and alumni experiences is equally important to **April Mickens Jolly, BSBA ’02**, an ABG vice chair. She found her voice at WashU, and she continues to use it to champion institutions and causes that matter to her. To Jolly, WashU is more than just a beloved alma mater. It is an engine for advancing issues like educational equity and health-care access. “WashU is an anchor of the St. Louis region,” she says. “I appreciate being able to help expand the university’s role as a regional partner through my ABG involvement.”

Although Jolly deeply values her relationship with WashU, she is honest about areas where the university can improve. That includes creating a

more inclusive environment for students and alumni alike. During her undergraduate years at WashU, Jolly met people from all walks of life. She credits the ABG for diversifying its own ranks by recruiting more alumni from outside St. Louis and even the United States. And she is encouraged by the university’s willingness to examine the current student experience through multiple lenses, including race and income.

Jolly says she can draw a direct line from her work with the ABG to improvements happening on campus today. “Through the ABG, I have been able to connect my past as a student to the university’s future,” she says.

WashU provides students with a foundation for success. Once alumni, they become the university’s most powerful supply of renewable energy.

■ EMMA DENT, AB ’09

Photo, top left: ABG members Kirk Wrobley, MBA ’91; Vince Belusko, BS ’78; Susan O. Warshaw, MSW ’79; Jamie Fleischner, AB ’95; and Lisa Perlmutter, AB ’93, BSOT ’97, were on campus for fall 2021 Move-In Day. Fleischner and Perlmutter are both parents of students in the Class of 2025 who moved into their first-year dorms that day.

Photos, bottom left (from top): April Mickens Jolly, BSBA ’02, and Chisom Uche, AB ’14.



Still curious about the Alumni Board of Governors? Go to alumni.wustl.edu/ABG for more information.



Photo: S.M. Marriott Photography



Courtesy photo

WashU·CNX
COMMUNITY · NETWORK · EXCHANGE

Join WashU CNX

Short for **community, network and exchange**, WashU CNX is the university’s official online networking platform for current students and alumni. Participating in this virtual community is a simple but powerful way for alumni to help students succeed and for students to build their professional profiles. Sign up today at cnx.wustl.edu.

Next

Class Notes



Photo : Washington University Archives



WashU Libraries' Film & Media Archive and University Archives received a National Film Preservation Foundation Basic Preservation Grant to preserve and digitize the short silent film *The Maid of McMillan*. WashU students J. D. Wooster Lambert, Dan Bartlett, JD '20, and Donald Stewart, JD '17, filmed *The Maid of McMillan* in the spring of 1916 on campus and in nearby neighborhoods. The students were part of the Thyrsus student drama club and created the film to be the centerpiece of that year's Univee Surkuss, the precursor to the ThurtenE Carnival. (See <https://source.wustl.edu/2022/02/one-of-the-nations-earliest-student-films-gets-new-life/> for more.)

What's New?

Let us know about recent honors, promotions, appointments, travels, marriages and births, so we can keep your classmates informed of important changes in your lives.



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Entries may take up to three issues after submission to appear in the magazine; they are published in the order in which they are received.

ALUMNI CODES

AR	Architecture
BU	Business
DE	Dentistry
EMBA	Executive MBA
EN	Engineering
FA	Art
GA	Graduate Architecture
GB	Graduate Business
GD	Graduate Dentistry
GF	Graduate Art
GL	Graduate Law
GM	Graduate Medicine
GN	Graduate Nursing
GR	Graduate Arts & Sciences
HA	Health Care Administration
HS	House Staff (Residency)
LA	Arts & Sciences
LW	Law
MD	Medicine
MT	Manual Training
NU	Nursing
OT	Occupational Therapy
PMBA	Professional MBA
PT	Physical Therapy
SI	Sever Institute
SU	Sever Institute Undergraduate
SW	Social Work
TI	Technology & Information Management
UC	University College

1950

Burton "Buddy" Resnic, LA50, retired as an active lawyer in 2019 at age 91. He sends greetings to his classmates, calls WashU "a great school" and shares his fond memories of Zeta Beta Tau. Resnic's daughter, **Joanne (Resnic) Lippman**, LA87; son-in-law, **Neil Lippman**, LA87; and granddaughter, **Carly Lippman**, LA15, are also WashU alums.

1952

Frank S. Thomas III, EN52, celebrated his 92nd birthday last July. His career included 30 years at Universal Match and McDonnell Douglas, then 28 years at First Financial Planners. Along the way, he sang with the Washington University Civic Chorus for about a dozen years, performing in Washington, D.C., and in New York City at Carnegie Hall. He and his wife live with their adult son, who is their caregiver.

1962

Michael J. Kearney, EN62, enjoyed lunch recently with three fraternity brothers from WashU's Beta Theta Pi chapter. Joining Kearney in Schaumburg, Ill., were **John Jackson**, BU62, **Bill Kelley**, LA62, and **Gary Bayer**, LA63.

Reinhard A. "Bud" Wobus, LA62, retired last summer after 55 years teaching geology at Williams College, Williamstown, Mass. A group of former students honored him by organizing a daylong technical session at the Geological Society of America's 2021 annual meeting in Portland, Ore., in October.

1963

Robert Zaller, GR63, GR68, penned *The Atom to Be Split: New and Selected Essays on Robinson Jeffers* (Tor House Press, 2019); *The Dresden Zoo*, a poem with commentary about the firebombing of Dresden (Moonstone Press, 2019); and a new version of Euripides' classic text that sharpens its themes for a modern audience, *The Bacchae* (Somerset Hall Press).

1965

William J. Betz, LA65, has retired.

1967

Steven Bloomfield, LA67, and his firm, Bloomfield/Schon, were recognized by the state of Ohio for the renovation and repurposing of the Peters Cartridge Factory into a mixed-use community. It was the firm's fifth major historic renovation project.

James Schwartzman, LA67, an attorney with Stevens and Lee and the chair of the firm's Ethics and Professional Responsibility Group, was elected president judge of the Pennsylvania Court of Judicial Discipline, which hears complaints against judges in

the state. He and his wife, Nancy, and their children and grandchildren live in the western suburbs of Philadelphia.

1969

Elinda Fishman Kiss, LA69, moved to Deerfield Beach, Fla. She still teaches finance courses at the University of Maryland's Robert H. Smith School of Business, primarily online.

David Leeper, EN69, a retired engineer, is a volunteer science teacher at AzScienceLab.com and a volunteer reader for visually impaired individuals on a National Public Radio affiliate. During his career, his positions ranged from lab technician to technical vice president at AT&T Bell Labs, and he also worked for Bellcore, Motorola and Intel. Leeper holds 16 U.S. patents in telecom technology and has written for technical journals. He and his wife of 48 years live in Scottsdale, Ariz.

1970

Stan Eisenhammer, LA70, a partner with Hodges Loizzi, O'Fallon, Ill., received the Excellence in Pro Bono and Public Interest Service award from the federal judges of the U.S. District Court for the Northern District of Illinois and the Chicago Chapter of the Federal Bar Association. Eisenhammer was honored for his work on the 2016 pro bono case *Manuel v. City of Joliet*, which was successfully appealed all the way to the U.S. Supreme Court.

1972

Ronald Klein, BU72, was awarded the California Society of CPAs' Distinguished Service Award for 35 years of service to the profession — although Klein isn't a CPA. As a lawyer, he serves the profession in the legal, legislative and risk-management realms.

1973

Anita Diamant, LA73, wrote *Period. End of Sentence. A New Chapter in the Fight for Menstrual Justice* (Scribner, May 2021). The book investigates the long-taboo topic of menstruation and the evolving international movement challenging the shame and stigma that shroud this essential human process. The book expands on issues she raised in a documentary that won an Oscar in 2019.

Molly (Maginnis) Tippe, FA73, a costume designer for film and television, recently completed work on "The Terminal List," which stars Chris Pratt and is scheduled for release on Amazon in early 2022. Tippe previously lent her costuming talents to the big screen's "The Patriot" and "Jack Ryan" and to the TV series "Perpetual Grace LTD."



1975

James Langenfeld, GR75, GR83, joined the Berkeley Research Group as a managing director in the firm's Washington, D.C., office. He provides economic analyses and expert testimony for litigation, regulatory actions and economic policy as part of the firm's antitrust and competition policy practice. During his 30-year career, Langenfeld has handled antitrust work for the Federal Trade Commission's Bureau of Economics and worked as a senior economist at General Motors.

1977

Gerry Yokota-Murakami, LA77, reached Osaka University's mandatory retirement age and retired in March 2020 after 32 years at the university. He still teaches a course in international college at a private university.

1978

Daniel Lamaute, GB78, was named to the board of directors of Pathfinder International, a sexual and reproductive health and rights organization. An entrepreneur, he founded Lamaute Capital. Recently, Lamaute served as a Fulbright specialist in South Korea, providing strategic direction to Solbridge International School of Business Center for Entrepreneurship, and as an independent consultant advising on the creation of a stock exchange in Cambodia.

Nina (Gilden) Seavey, LA78, an Emmy award-winning documentarian, is the host of the eight-part podcast "My Fugitive," which recounts the long-ripple effect of the May 5, 1970, burning of the Washington University ROTC building. Seavey's father, longtime civil rights attorney Louis Gilden, was the attorney for Howard Mechanic, one of the students

arrested and sentenced to five years in prison for his participation in the riot. The series rose to No. 3 on the Apple History podcasts. Website: myfugitivepodcast.com

1979

Nancy Ellis-Ordway, SW79, coedited *Weight Bias in Health Education: Critical Perspectives for Pedagogy and Practice* (Routledge, September 2021), in addition to writing one chapter and co-writing two others. She is also the author of *Thrive at Any Weight: Eating to Nourish Body, Soul, and Self-Esteem* (Praeger, 2019). Ellis-Ordway has a private psychotherapy practice in Jefferson City, Mo.

1981

Cletus Glasener, LA81, retired from Elbit Systems of America, Fort Worth, Texas, after serving a long career in the aerospace and defense industry, including 13 years as the company's CFO. He and his wife, Rona, look forward to spending more time at their ranch in central Texas and participating in activities to help people. They have four daughters living in the area.

Thomas Liu, SI81, in 2018 earned a doctor of ministry degree from Houston Graduate School of Theology. Liu is donating the proceeds from his recent book, *Alzheimer's & Theology: Theological Dynamic of the Human Experience of Dementia* (Authorhouse, June 2021), to Alzheimer's research.

1981

David Simkins, EN81, and **Eileen Zornow**, FA82, write that they're the proud grandparents of two girls and a boy.

Lawrence "Bud" Wittels, LA81, LW84, joined the Mediator Panel of United States Arbitration & Mediation, the country's leading provider of mediation and arbitration services.

1983

Jeanette Meyer, LA83, of RE/MAX Alliance, earned the RE/MAX Lifetime Achievement Award honoring highly successful agents who have completed at least seven years of service with the company.

David Rubenstein, EN83, and his wife, **Debra Levine**, BU83, who after 15 years were weary of New England winters, now live in El Dorado Hills, Calif. David is an aerospace engineering consultant, currently working on flight-control algorithms for reusable launch vehicles, including Blue Origin's New Glenn rocket. Debra, a retirement plan consultant, works for a small, private firm based on the East Coast. The couple loves hiking in the Sierra foothills, visiting state and national parks, and exploring California's wine regions.

1984

Pete Woods, LW84, was recognized in the 2022 edition of *The Best Lawyers in America* in the practice areas of family law and commercial litigation. Woods is the managing partner and a family law and commercial litigation attorney at the St. Louis firm Haar & Woods, LLP.

1985

Thomas S. Chang, MD85, was tapped for the Gold Medallion Award by the Pennsylvania Radiological Society for his contributions to society and the field of radiology.



1987

K. Sean Kimbro, LA87, a professor in the Department of Biomedical and Biological Sciences at North Carolina Central University, is a principal investigator on a National Institutes of Health grant that supports highly innovative and broadly impactful biomedical or behavioral research through the Common Fund's High-Risk, High-Reward Research Program. The university's research focuses on establishing new paradigms to address the functional consequences of health disparities in drug development.

1989

Dean VonDras, GR89, GR93, a professor of psychology at the University of Wisconsin-Green Bay, co-wrote *Music, Wellness, and Aging: Defining, Directing, and Celebrating Life* (Cambridge University Press, October 2021). The book discusses the intersection between music, wellness and aging, and explores deeper aspects of human nature and later life.

1990

David W. Braswell, UC90, UC92, was elected chairman of Armstrong Teasdale. Braswell was instrumental in the firm's growth, adding offices in New York; Salt Lake City; Philadelphia; Boston; Princeton, N.J.; Wilmington, Del.; Edwardsville, Ill.; and London, England. While actively practicing, Braswell was involved in high-profile mergers and acquisitions, providing guidance on transactional and compliance issues.

Brian Siegel, SI90, writes with pride that his daughters are students at WashU.

1991

Gretchen Cowman, EN91, is a captain in the U.S. Public Health Service and manages the laboratory renovation and construction program at the National Institutes of Health, Bethesda, Md. Early during the COVID-19 pandemic, she deployed to the Navajo Nation to expand access to safe water and sanitation and to San Antonio, Texas, to support the influx of unaccompanied migrant children. Cowman is active in three hiking clubs in the Washington, D.C., area.

1992

Kristin Burns, LA92, on behalf of her two children, advocates for children's rights overall and within the legal system. She also works for the rights and protections of victims and witnesses of crimes. Her article, "Our real, local, national, and global needs," which discusses issues facing the country and the world, appeared in the *Fairfax Times*.

1994

Ben Blount, FA94, shares that his letterpress poster installation, "Eyes Wide Shut," was displayed on the windows of the Minnesota Center for Book Arts from Jan. 11–March 28, 2021. His display, he writes, "is an examination of our relationship to white supremacy in the United States. It's ubiquitous, yet unseen. Both monumental and myth. Are we safe or are we surrounded?" From July 2021–January 2022, a collection of Blount's posters was on display at The Met Fifth Avenue as part of an exhibition on revolution, resistance and activism.

Joe Daniels, LA94, was named president and CEO of America250, the nationwide commemoration of America's 250th

anniversary in 2026 led by the U.S. Semiquincentennial Commission. Previously, Daniels led the National Medal of Honor Museum and was the president and CEO of the 9/11 Museum and Memorial in New York City.

Evan Sotiriou, EN94, LW97, joined Tucker Ellis LLP as counsel in the firm's intellectual property department. A registered U.S. patent attorney, Sotiriou has focused on patent preparation and prosecution for more than two decades.

David Straker, LA94, was listed as a Top Psychiatrist in *Super Doctors* for the fourth consecutive year. He also was tapped by the American Psychiatric Association as a Distinguished Fellow and appointed Psychiatry Clerkship Director for third-year medical students at Nova Southeastern University Allopathic School of Medicine. Straker continues to maintain a private practice.

1996

Craig Tingle, LW96, earned a master's degree from the London Business School in July and was board certified in real estate law by the Florida Bar Association.

2000

Paul Gasset, PMBA00, joined the leadership team at Obata Marketing and Design in St. Louis as vice president.

Kristen Johnson, LA00, joined the Arizona Department of Water Resources as manager of the Colorado River Section in the Water Planning and Permitting Division. Johnson manages a technical staff and supports the director and deputy director in a number of

policy priorities in anticipation of a cut to the state's Colorado River allocation in 2022 by the U.S. Bureau of Reclamation.

2001

Jill Downen, GF01, shares that her work, "Speak Truth," was exhibited from Nov. 19, 2021–March 5, 2022, at the Bruno David Gallery in St. Louis. Downen's artworks in the exhibit reveal patterns of meaning in value systems such as identity, family and the importance of voice. Website: www.artsy.net/partner/bruno-david-gallery

Jayson Johnson, LA01, was elected to the San Francisco Ballet's board of trustees.

Pratik Patel, LA01, GR04, is vice president of marketing for ICBiome (Innovative Computing for Biomedical Sciences), a provider of cloud-based genomics software that assists hospitals in combatting pathogens. Patel has built and launched more than 50 FDA-cleared medical products to market and led marketing teams in building brand awareness, generating demand and empowering sales to better sell medical technology.

2003

Art Carden, GR03, GR06, professor of economics at Samford University's Brock School of Business, earned the Outstanding Faculty Scholarship Award in recognition of his scholarly work across his career. His research has appeared in economic journals, in *USA Today* and on Forbes.com, among other outlets. His collection of commentaries, *Strangers with Candy: Observations from the Ordinary Business of Life*, will be released this year by the American Institute for Economic Research.

Tim Gronewold, BU03, LW08, a commercial litigator with Howard & Howard, was elected to a two-year term, starting in June, as chair of the board of the American Red Cross of Central Illinois; he has been actively involved with the Red Cross for over a decade. Gronewold is also on the committee of a Howard & Howard community employee-funded trust that has donated more than \$6 million to local charitable organizations since 1986.

Joshua Isaacs, LA03, and his wife, Laurie Kirkland, welcomed a daughter, Norah Isabela Isaacs, on June 7, 2021. Last May, Isaacs joined the law firm of Redmon Peyton & Braswell, LLP in Alexandria, Va., as a partner; his practice area focuses on family law and domestic relations. Joshua, Laurie and Norah live in Washington, D.C.

Rebecca "Becca" Niburg, GR03, LW03, an attorney with Elpis Legal LLC, which represents immigrants and their families before the Department of Homeland Security and the Department of Justice, has thrown her hat in the ring for the District 13 seat in the Maryland House of Delegates. On her

campaign website (www.beccaniburg.com), Niburg writes, "I am running for Delegate to bring the experiences of working directly with survivors of trauma, those who have suffered from mental health crises, and those outside the circles of power to Annapolis. ... I am ready to bring all of our voices to Annapolis."

Robyn (Jimenez) Popa, GA03, was promoted from senior project manager overseeing projects for school districts to managing principal at Pfluger Architects' San Antonio office. She has been with the firm since 2006, when she launched her career as an architect.

2004

Merissa Nathan Gerson, LA04, authored *Forget Prayers, Bring Cake: A Single Woman's Guide to Grieving* (Mandala Publishing, August 2021). The memoir — of loss, love, New Orleans and life — doubles as a guide for those in the process of grieving. Gerson shares that her book contains the guidance and grief medicine that she wished she'd had after the 2019 death of her father.

Craig Pirner, LA04, joined Crate & Barrel as the leader of talent and organizational development. Previously, he spent 16 years with Advisory Board, a health-care research and consulting firm. Pirner continues to live in Chicago with his partner, Mark.

K. Alex Smith, LA04, has served as medical director at LifeServe Blood Center since 2015. When not spending time with his family, he enjoys community service and advocacy. Elected to the Waukeet School District board in 2019, Smith also holds several positions with the Iowa Association of School Boards and serves on the National Alliance on Mental Illness Iowa Advocacy Committee.

2005

Keith Beutler, GR05, a history professor at Missouri Baptist University, penned *George Washington's Hair: How Early Americans Remembered the Founders* (University of Virginia Press, November 2021). The book follows 19th-century antiquarians, free Blacks, educators and evangelicals as they tried to hold on to the founding era while making sense of their own.

2006

Alona (Banai) Fisher, LA06, and **Tim Fisher**, LA06, met serendipitously in Chicago 12 years after graduating from WashU. The two married in 2019 and welcomed a son, Miles Aubrey Fisher, in July 2020. The family, along with their Corgi, Dennis, resides happily in Seattle, where Tim works in transfer pricing at Amazon and Alona cares for Miles and works on contract with the Chicago Area Runners Association and Sustainable Ballard.

Anne Wynter, LA06, has written two more books for children: *Hands On!* and *One Big Day* (Balzer + Bray/HarperCollins, January 2022). Both are board books illustrated by Alea Marley.

2007

Rebecca Lester, SW07, earned a 2021 Eileen Basker Memorial Prize Honorable Mention from the Society for Medical Anthropology for *Famished: Eating Disorders and Failed Care in America* (University of California Press, November 2021). Lester is a professor of sociocultural anthropology at WashU.

Daniel Mamah, GM07, was tapped for the Dr. John M. Anderson Excellence in Mental Health Award by the St. Louis American Foundation/St. Louis Children's Service Fund for his significant contributions in the field of behavioral health. He is the founder and director of the Washington Early Recognition Center at the School of Medicine, which identifies and treats young people in the early course of their illness. There is no charge for the clinic's services.

Rebecca S. Silverman, LA07, earned a master of public health degree from the University of Illinois Chicago in May 2021.

Leana Wen, MD07, wrote *Lifelines: A Doctor's Journey in the Fight for Public Health* (Metropolitan Books, July 2021). Much of the book focuses on the work Wen did in Baltimore to tackle the opioid epidemic, improve maternal and child health, and address violence as a public health issue.

2008

Sebastian Deken, LA08, penned *Final Fantasy VI: Boss Fight Books #28*. In the book, he conducts a critical analysis of the musical structures of the Final Fantasy VI video game, which pushed the Super Nintendo's sound capabilities to their limits and launched composer Nobuo Uematsu's reputation as "the Beethoven of video game music."

Chad Fite, LA08, is vice president and head of data at Machine Learning – Data Science Company. His work centers on improving lives by deriving actionable insights from unstructured and structured data in an automated fashion. Fite has delivered keynote addresses on applying artificial intelligence solutions to industry at several conferences.

Tanya Roth, GR08, GR11, penned *Her Cold War: Women in the U.S. Military, 1945–1980* (UNC Press, 2021), an examination of how the armed forces handled permanently integrating women into the military, a traditionally understood all-male bastion. By challenging traditional gender conventions and perceived gender roles, women serving in and with the nation's military renegotiated the meaning of equality and the place of women in the defense of the nation since World War II.

2009

Andia Augustin-Billy, GR09, GR15, GR15, was granted tenure at Centenary College of Louisiana, the first Black professor at the college to achieve the standing in its 196-year history. An award-winning associate professor of French and Francophone studies, she leads students on trips to Paris and to Haiti, where she grew up as the daughter of missionaries. Augustin-Billy's other research interests include analysis of gender and sexuality in 19th- and 20th-century French literature and travel literature.

Vir Singh, LA09, achieved board certification in emergency medicine by the American Board of Emergency Medicine and was named co-director of the Emergency Medicine Clerkship at The University of Texas Rio Grande Valley School of Medicine. Singh was also named medical director of Rio Grande Regional Hospital ER 24/7 in McAllen and San Juan, Texas, and assistant medical director of the hospital's main emergency department.

2010

Nikhil Agrawal, LA10, specializes in reconstructive plastic surgery with an additional focus on hand and nerve surgery at Long Island Plastic Surgical Group. Before joining the practice, Agrawal completed a Hand and Peripheral Nerve Fellowship at Massachusetts General Hospital/Harvard Medical School. Earlier, he had a residency in plastic and reconstructive surgery in the Texas Medical Center at MD Anderson Cancer Center, Baylor College of Medicine.

Mary Bartling, GR10, GR18, launched thisbookisbanned.com, an online literary community that revolves around the close reading of books that have been banned or challenged. The website also provides tools that help readers discover everything a book may have to offer. Website: <https://thisbookisbanned.com>

Daniel Cozzi, LW10, a partner with Donohue Brown Mathewson & Smyth, was named to the *Chicago Daily Law Bulletin's* 2021 list of 40 Illinois Attorneys Under 40 to Watch from a field of more than 1,200 nominees. Cozzi practices in the medical malpractice and mass tort defense area. When not in the courtroom, he tutors underprivileged grade-school students and mentors University of Chicago undergraduates interested in a law career.

2011

Siena Baldi, FA11, was one of 100 artists whom Loew's commissioned to paint murals in 100 cities across the United States in celebration of its centennial. Baldi, who was invited to paint two murals, featured the natural beauty of Kona, Hawaii, from its sunsets to its coral reef. Website: sienabaldi.com

Betty Bayer (Elizabeth Jane Gibson), LA11, opened Betty's Books in Webster Groves, Mo., in October. The bookstore offers comics, graphic novels, children's literature, Japanese manga and more in a family-friendly, welcoming environment.

William Beggs IV, LA11, was promoted to vendor manager at Jones Lang LaSalle for Bank of America in June. He manages outsourced cleaning and janitorial vendor performance and leads special initiatives that have cleaning and janitorial impact, such as return-to-office activities and sustainability for the client's 47.8 million square feet of real estate.

Christian Clerc, GA11, GA11 (architecture and urban design), is chief of data and design innovation at McMahon Group, a St. Louis consulting firm serving private clubs in all aspects of their planning, clubhouse, golf and membership needs. Clerc, who joined McMahon Group in 2015, assists communities with strategic and facility planning, gathering input from all constituencies and then creating plans that balance interests, opinions and constraints.

2012

Marissa Barnathan, LA12, is pursuing a master's degree in fine arts in the directing program at Arizona State University. She has performed in plays and musicals throughout her life and has served as a director, assistant director, choreographer and performer in a variety of shows.

2013

Adrienne Strong, GR13, GR17, won the Society for Medical Anthropology's 2021 Eileen Basker Memorial Prize for *Documenting Death: Maternal Mortality and the Ethics of Care in Tanzania* (University of California Press, October 2020).

2014

Connor Vilenio, LA14, is a machine learning infrastructure engineer with Overjet, an AI startup using computer vision and data science to transform dentistry. Vilenio and his wife, who started dental school last summer, live in Indianapolis.

2016

Casey Breese, LW16, joined Lathrop GPM as an associate in the firm's Denver office in the trusts and estates litigation practice area. Previously, Breese was with Welborn Sullivan Meck & Tooley.

Caitlin Rankin, GR16, GR20, a geoarchaeologist, was spotlighted in the November/December 2021 issue of *National Geographic* for her excavation work at the Cahokia Mounds site in southern Illinois. Her work provided new insight into why the mounds declined and were deserted.

2017

Cary Cheng, BU17, was selected from more than 1,000 applicants to join Georgetown University's master of science in foreign service (MSFS) program in fall 2021 as part of a MSFS/JD dual degree. The focus of the MSFS program is "to prepare women and men to be creative leaders in the public, private and nonprofit sectors of international affairs."

2018

Bryce Bagley, EN18, EN18, in spring 2021 earned a master's degree in biophysics from Stanford University and started a medical degree program at the university in August.

2019

Rebecca Williams, LA19, began a doctoral program in medical/clinical psychology in August at the University of Alabama at Birmingham. Her research is in the field of behavioral sleep medicine.

Tiffany Yao, FA19, walked away with the first runner-up title at the 2021 Miss Asian Pageant in Support of the United Nations 17 Sustainable Development Goals (SDGs). Yao also won the pageant's Champion of Speech contest and was elected an advocate of the UN 17 SDGs.

2020

Asheley Ashithey, LA20, who studied African and African-American studies, earned a Fulbright Scholar Award to pursue gender studies in Lesotho, South Africa. Her work will include documenting the oral histories of the Lesotho National Council of Women.

Daniel Hebert, GL20, coauthored an article that appeared in *The CPA Journal* (October 2021): "Twenty Questions on the Challenges of Maintaining the Quality of Accounting Education During the COVID-19 Pandemic." The peer-refereed journal is published by the New York Society of CPAs for accounting practitioners, educators and other financial professionals across the globe.

2021

Abby McGuire, LA21, is a first-year graduate student at San Diego State University, pursuing studies to become a speech-language pathologist.



The late Walt Spitzmiller, BFA '69, began painting world-renowned golfer Jack Nicklaus in 2005 to tell the story of all his major wins. The eight-year collaboration resulted in 18 paintings, including the above "1986 Masters - Do You Believe in Magic?" which captures Nicklaus' historic one-stroke victory at the 1986 Masters Tournament. Spitzmiller was the perfect artist to capture Nicklaus' wins. Throughout his life, Spitzmiller worked for the PGA Tour and painted Arnold Palmer, Tom Watson and Lee Trevino.

Patricia DuBose Duncan, BFA '54, an artist and natural preservation advocate, died Sept. 17, 2021, in Topsham, Maine. She was 89.

Duncan's art is in permanent collections in nine museums across the country, including the Mildred Lane Kemper Art Museum.

Throughout her career, Duncan was most proud of her advocacy for the creation of a protected tallgrass prairie. Many had advocated for the creation of such a preserve, but it was stymied by lack of general interest. Duncan's pictures of the natural prairie helped show people the beauty the country was rapidly losing.

To raise even more awareness, Duncan initiated and designed a traveling exhibit for the Smithsonian Institution called "The Tallgrass Prairie: An American Landscape." From 1976 to 1986, the exhibit traveled through all 50 states, being shown in public buildings.

In 1979, in part due to her advocacy for the tallgrass prairie, Washington University awarded Duncan the Distinguished Alumni Award.

Tallgrass Prairie National Preserve was dedicated in 1996, and Duncan was thanked by name.

Duncan was married to Herb Duncan Jr., BArch '54, for 67 years and is remembered as not only a top-tier artist and advocate but also as an exceptional wife and mother.

Ralph Edwards, AB '56, a former lawyer, died Aug. 18, 2021. He was 87.

Edwards grew up in St. Louis and attended Normandy High School. He went on to earn a bachelor's degree in political science from Washington University and his law degree from University of Missouri-Columbia. Edwards also served in the U.S. Army. He worked for Greensfelder, Hemker and Gale for 38 years and was married to Eilah Jane Edwards.

Colin Eugene Kluender, a graduate student in his fourth year in Washington University's Division of Biology & Biomedical Sciences (DBBS), died unexpectedly on Nov. 4, 2021. He was 26.

Kluender started DBBS as part of the Biochemistry, Biophysics and Structural Biology program in 2018, after graduating from the University of Wisconsin-Madison with a bachelor's degree in microbiology and Spanish.

He worked in the lab of Jennifer Alexander-Brett, MD, assistant professor of medicine. His work was recently published in the journal *JCI Insight*, and he had been working toward a follow-up publication.

"Colin was a brilliant scientist, performed impeccable work and was a trusted colleague and loyal friend to many," Alexander-Brett says. "We shared a passion for cool science, nature, social justice and local politics; he poured himself into each with unmatched intensity. He will be greatly missed by his research family."

Barbara (Homan) Kraft, BFA '57, an award-winning artist and member of the St. Louis Artist Guild, died Oct. 4, 2021, at her home in Charlotte, N.C. She was 85.

Kraft showed great talent in art at an early age and pursued an art degree at Washington University. She went on to become a professional artist and was commissioned to do numerous portraits, including for the late Phyllis Diller and the Hon. Lloyd Stark, former governor of Missouri. She earned numerous recognitions in her field and raised money for charities with her artwork.

Kraft was also a mother and grandmother. She met her husband, Ronald, at Washington University and they married in December 1957. The couple had two daughters, four grandchildren and one great-granddaughter.

Denis J. O'Brien, JD '66, a producer of *Monty Python's Life of Brian* and other off-beat films, died of intra-abdominal sepsis on Dec. 3, 2021. He was 80.

O'Brien grew up in Webster Groves, Mo. His father, Albert O'Brien, was president of Ralston Purina.

O'Brien earned a bachelor's degree from Northwestern University and a law degree from WashU. He worked in the Paris law firm Coudert Frères from 1967 to 1969 and went on to work in finance in London. In 1971, he began advising actor Peter Sellers, who connected O'Brien with former Beatle George Harrison.

Harrison was friends with a member of the Monty Python comedy troupe. The troupe was looking for financial backing for Python's next film, *Monty Python's Life of Brian*, about a man who gets mistaken for the Messiah.

O'Brien convinced Harrison to invest, and together they started the production company Handmade Films. *Life of Brian* (1979) was a surprise hit, and O'Brien and Harrison continued working together producing films such as *The Long Good Friday* (1980), *Time Bandits* (1981) and *Mona Lisa* (1986). All of their films were off-beat and encompassed a number of genres including crime drama, adventure fantasy and noir.

Several of their films were not financial successes, including *Shanghai Surprise* (1986), which starred Sean Penn and Madonna. The company fell into financial trouble, and eventually Harrison sued O'Brien for \$11 million. O'Brien filed for bankruptcy.

Toward the end of his life, O'Brien developed dementia and forgot about his falling out with Harrison (who died in 2001). "In this last year, he loved to hear George's music," O'Brien's daughter told the *New York Times*. "And it would transport him back to some really good times in his life. He had nothing but good memories left."

Walter Allwein Ruch Jr., MD '55, a doctor in private practice and for the U.S. Army, died in Fairhope, Ala., on Dec. 16, 2021. He was 91.

Ruch earned a bachelor's degree from Princeton University in 1951. He earned a medical degree from the Washington University School of Medicine in 1955 and completed his residency at Barnes Hospital in obstetrics and gynecology. He then joined the U.S. Army, where he was stationed in Fort Campbell, Ky.

Ruch left the Army in 1962 and joined his older brother in private practice in Memphis, Tenn. Ruch married Carol Henderson in 1983. The two split their time between Memphis and Basalt, Colo. In his retirement, Ruch and Henderson moved to Colorado where they enjoyed snow skiing, fly fishing, cooking and entertaining family and friends.

Allen Sclaroff, DDS, professor of clinical otolaryngology at the School of Medicine, died Aug. 18, 2021, following complications of multiple myeloma. He was 75.

Sclaroff attended the University of Colorado for his bachelor's degree and earned a DDS from Temple University. He

joined the faculty at the School of Dental Medicine in 1978 where he led the graduate education program in the Department of Oral & Maxillofacial Surgery until the school closed in 1991.

Sclaroff was a leader in his field in oral and maxillofacial surgery, caring for both adults and children to treat a variety of diseases including oral cancers, temporomandibular joint disorders (TMJ) and cleft palates. He often gave grand rounds lectures on his areas of expertise, which also included oral and dental care of patients undergoing chemotherapy and for patients undergoing radiation for head and neck cancer.

Walt Spitzmiller, BFA '69, an American illustrator and sporting artist, died Dec. 11, 2020, in Bonita Springs, Fla. He was 75.

Spitzmiller grew up in St. Louis — his family worked in sheet metal and helped build the Gateway Arch. After graduating from WashU, Spitzmiller moved to New York City and began drawing illustrations for *Redbook*, *Ladies Home Journal*, *TV Guide* and other national publications. His first job for *Sports Illustrated* led to a decade-long collaboration with *Sports Illustrated* art director Dick Gangel.

Spitzmiller also became a sought-after sporting artist. His work is in the Baseball Hall of Fame, the Smithsonian Institution, the American Museum of Illustration and the Rodeo Hall of Fame. The PGA Tour commissioned Spitzmiller to paint golf legends such as Arnold Palmer and Jack Nicklaus.

Spitzmiller illustrated a wide range of other sports as well, including hunting and fishing, baseball, football, figure skating and horse racing. He was also known for his images of African and North American wildlife and won many awards from the Society of Illustrators. He did more than 75 paintings for *Sports Illustrated*, including three covers, and once spent three weeks in a studio in Los Angeles to record the 1984 Olympics for *Time* magazine and Nissan Motors.

Spitzmiller was also a gifted carpenter and a devoted husband to his wife of 54 years, Connie.

Mark S. Weil, the E. Desmond Lee Professor Emeritus for Collaboration in the Arts, died at his home in Jamestown, R.I., on Nov. 18, 2021. He was 82.

Weil grew up in St. Louis, and in 1961, he earned a bachelor's degree from Washington University in art history and archaeology in Arts & Sciences. He went on to earn master's and doctoral degrees from Columbia University.

In 1968, Weil joined the WashU faculty as an assistant professor in the Department of Art History & Archaeology in Arts & Sciences. He served as department chair from 1982-88 and again from 1995-99. Weil helped found a center of archaeometry, which brought together scholars from across campus to apply scientific approaches to art conservation and the analysis of archaeological material. His publications include *The History and Decoration of the Ponte S. Angelo*, as well as numerous articles and exhibition catalogs.

Weil was named director of the university's Gallery of Art, now the Mildred Lane Kemper Art Museum, and organized several major exhibitions. He also helped create the master

plan that would link the museum with the schools of art and architecture to create the Sam Fox School of Design & Visual Arts.

Weil retired in 2005 and relocated to Rhode Island with his wife, Joan Hall, the Kenneth E. Hudson Professor Emerita of Art and former director and master papermaker for WashU's Island Press.

Weil and his family had a deep commitment to Washington University. Steinberg Hall and Steinberg Auditorium, both in the Sam Fox School, were gifts from Weil's grandmother Etta Steinberg, in memory of his grandfather Mark C. Steinberg. Weil's parents contributed many works of art to the university, and his father served on Washington University's Board of Trustees.

In 2018, Weil created the Mark Steinberg Weil Professorship in Art History and Archaeology in Arts & Sciences, currently held by Claudia Swan. The following year, he and Hall established the Mark S. Weil and Joan M. Hall Fund for Art History and Archaeology, again in Arts & Sciences, which supports several annual research awards, fellowships and internships for both faculty and students.

In fall 2021, they expanded those efforts with a substantial gift to found the Mark S. Weil and Joan M. Hall Endowment for Art History and Archaeology to further support student and faculty research projects and collaborative initiatives in the study of the visual arts.

Guido L. Weiss, the Elinor Anheuser Professor Emeritus of Mathematics in Arts & Sciences, died Dec. 25, 2021, of Alzheimer's disease. Weiss was a prominent mathematician and former chair of the Department of Mathematics. He was 92.

Weiss' parents were prominent psychologists in Trieste, Italy, when he was born; his father, Eduardo, had collaborated with Sigmund Freud. The rise of Adolf Hitler and fascism across Europe meant that Weiss had to leave public school because he was Jewish. He attended a special school in Rome until the end of 1939 when his father was sponsored by members of the Menninger family to escape to America. Weiss and his family settled in Kansas before moving to Chicago.

Weiss attended the University of Chicago where he earned bachelor's, master's and doctoral degrees in mathematics. He joined the Washington University faculty in 1961 as an associate professor and spent 52 years at the university. He served as chair of the mathematics department from 1967-70.

In 1967, Weiss won the Chauvenet Prize from the Mathematical Association of America for his work in theoretical mathematics, particularly in harmonic analysis. He was also a fellow of the American Mathematical Society and influenced generations of students and mathematicians with his work, which also included Fourier analysis and interpolation of operators.

Weiss also was an accomplished athlete, particularly in his college days when he played football, basketball and baseball. He also played baseball in the Great Lakes region minor league system. While at WashU, Chancellor William H. Danforth appointed Weiss chair of a committee on the expansion of the athletic facilities. Weiss was also a frequent guest at Chabad House on the Danforth Campus for Shabbat dinner.

The following death notices were submitted from Sept. 1, 2021–Dec. 31, 2021. Please contact Advancement Services at WUADDataChange@wusm.wustl.edu to report the death of an alumnus or alumna. Please submit full obituaries for consideration to wustlmagclassnotes@wustl.edu.

1940–1949

Arthur H. Rosen, BU43; Dec. '21
Lynton (Sullivan) Dilley, AR46; Nov. '21
Dorothy (Wind) Kinyon, BU46; Nov. '21
Ruth (Kahn) Lynford, AR46; Dec. '21
Norma (Cohen) Scallet, LA46; Oct. '21
Maurice S. Eichler, LA47; Oct. '21
Allen L. Furfine, EN47; Sept. '21
Robert A. Gessert, EN47; Nov. '21
Tamadean (Altman) Goldenhersh, SW47; Sept. '21
Joan (Freund) Newman, LA47; Dec. '21
Patsy (Chandler) Walker, NU47; Oct. '21
Earl R. Stuckmeyer, BU48; Nov. '21
Jean (Ondr) Bartel, AR49; Sept. '21

1950–1959

Darwin W. Schlag, BU50; Sept. '21
Gloria (Banghart) Stumbaugh, UC50, GR51; Nov. '21
Kenneth R. Wilson, LA50; Oct. '21
Clifford J. Woehrle, LA50, GR55; Nov. '21
Virginia (Bailey) Allingham, NU51; Oct. '21
Elma I. Armistead, UC51, GR54; Sept. '21
William G. Conway, LA51; Oct. '21
Robert L. Hilton, EN51; Sept. '21
Eugene W. Kellums, BU51; Nov. '21
Adalbert von Gontard, UC51; Oct. '21
Martha (Buschart) Dilthey, OT52; Nov. '21
Thomas J. Fitzsimmons, BU52; Dec. '21
John H. Kendig, LA52, MD56; Nov. '21
June (Jablonsky) Lanz, FA52; Nov. '21
Joann (Johnson) Truss, FA52; Oct. '21
Ramon A. von Drehle, EN52; Oct. '21
Elaine (Starr) Grohman, LA53; Jan. '22
Barbara (Roberts) Mills, UC53; Nov. '21
Ann (Freedman) Avis, LA54; Dec. '21

Patricia Dubose Duncan, FA54; Sept. '21
Jean (Deutsch) Kautzman, OT54; Sept. '21
Walter E. Pate, UC54; June '21
Sally E. Shocklin, LA54; Nov. '21
Sandra (Mizes) Last, LA55; Sept. '21
Walter Allwein Ruch Jr., MD55; Dec. '21
Ralph Edwards, AB56; Aug. '21
Horace W. Scott, MD56; Oct. '21
Carolyn (White) Terry, LA56, MD60; Nov. '21
Jules B. Gerard, LA57, LW58; Nov. '21
Barbara (Homan) Kraft, FA57; Oct. '21
Joel D. Monson, LA57, LW58; Dec. '21
Sheldon Weinhaus, LW57; Oct. '21
Edwin K. Burford Jr., MD58; April '21
Donna (Borresen) Kuhr, SW58; Sept. '21
Robert O. Muether, BU58, GR60; Oct. '21
Victor L. Flack, EN59; Sept. '21

1960–1969

Paula (Limberg) Clayton, MD60; Sept. '21
Norman Foster, EN60, SI64; Oct. '21
Kenneth H. Hanser, AR60; Oct. '21
Kenneth E. Toerper, EN60; Sept. '21
Donald F. Ware, UC60; Oct. '21
Dorothy (Hanson) Burton, UC61; Oct. '21
Herman Geller, EN61; Oct. '21
Sam Mirkin, LW61; Oct. '21
George Palethorpe, GR61; Sept. '21
Mark S. Weil, LA61; Nov. '21
Edward A. Engman, EN62; Nov. '21
Sheldon K. Stock, BU62, LW64; Nov. '21
Mervin D. Shaw, SW63; March '21
Martha (Collins) Jensen, UC64; Sept. '21
John K. Morrical, BU64; Nov. '21
Abraham M. Phillips, LA64, HS71; Sept. '21
Raymond A. Pokoski, UC64; Oct. '21
Ken Heineman, LW66; Sept. '21
Denis J. O'Brien, LW66; Dec. '21
Jill (Frank) Sneider, LA66, GR85, GR12; Nov. '21
Norman P. Swenson, GR67, GR70; Sept. '21
Irvin G. Kappler, GR68; Oct. '21
Betty (Chapin) Gilbert, OT69; Oct. '21
Walt Spitzmiller, FA69; Dec. '20

1970–1979

Fred M. Elliott, GB70; Sept. '21
Richard C. Hercules, TI71; Nov. '21
Linda A. Holtzman, LA71; Sept. '21
Charles A. Nester, GR72; Sept. '21
Stephen D. Kessler, LA73; Dec. '21
Marsha (Tannenbaum) Denny, LA75; Sept. '21
Tommie L. Doss, UC75; Oct. '21
Wendell C. Sleet, EN76; Sept. '21
Raymond D. Wamhoff, AR77; Sept. '21
James V. Brown, TI79; Oct. '21
Howard R. Presser, UC79, UC81; Sept. '21

1980–1989

Steven R. Wilson, DE81; Nov. '21
Mary (Moser) Ernst, GF82; Dec. '21
Mary K. Tuberty, UC85; Oct. '21
Barbara (Fechtman) Wallace, SW87; Sept. '21
Rick J. Randazzo, EMBA89; Sept. '21

1990–1999

Richard A. Bohm, GB90; Nov. '21
Daniel H. Beck, LA91; June '21
Jon W. Boulanger, EN92; Oct. '21
Don Kozlowski, TI92, TI93; Oct. '21
Eli Karsh, LW94; Sept. '21
W. Bruce Blattenberger, SI95; Oct. '21

2000–2009

Laurie M. Delaney, OT03, OT17, GR19; Nov. '21

2010–2019

Gary F. Hammen, GM16, MD16; Sept. '21

2020–2029

Colin Eugene Kluender, LA22; Nov. '21
Melanie Wallace, GL22; Nov. '21





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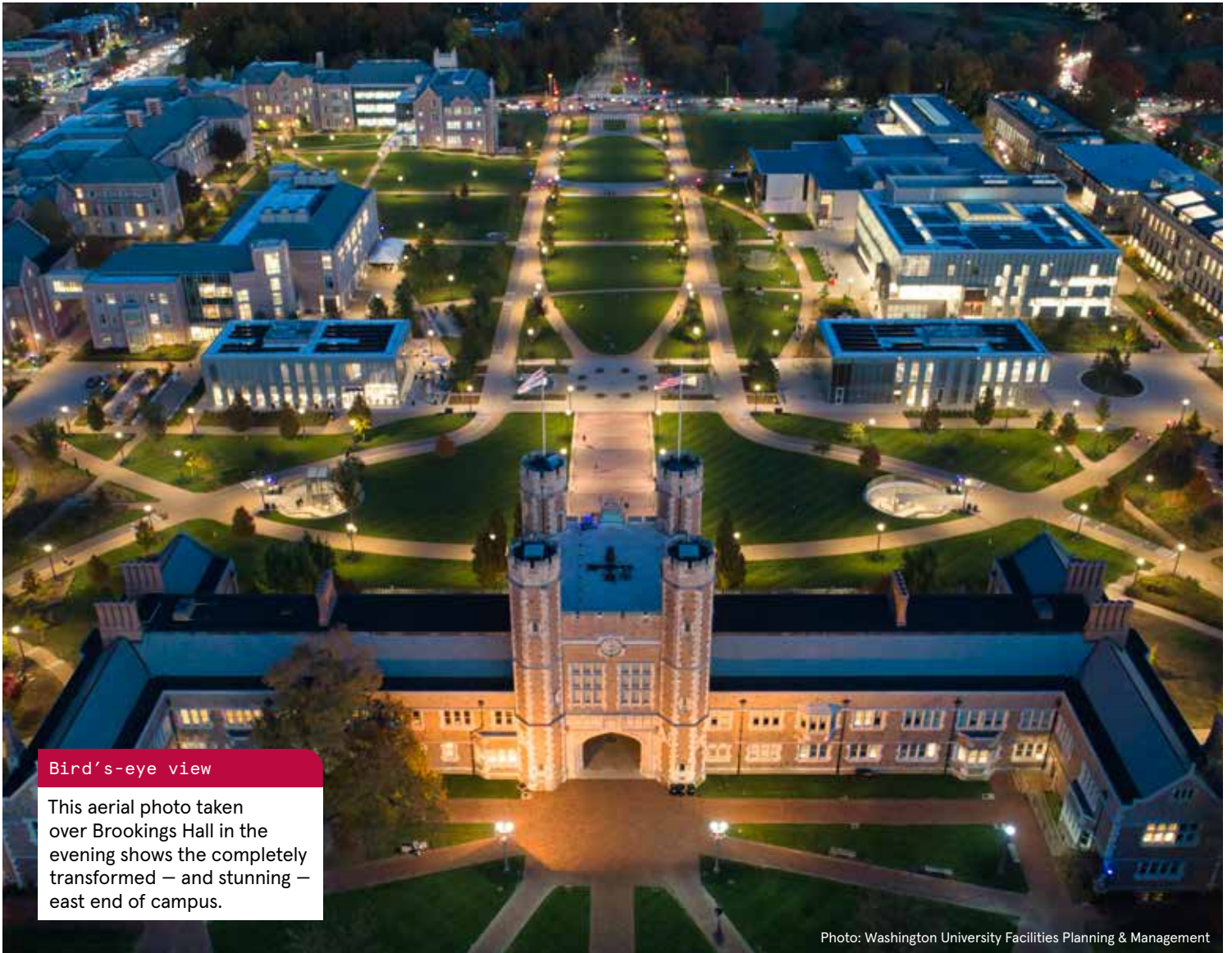


Photo: Washington University Archives



A great shot

The 1990–91 men's basketball Bears were the University Athletic Association (UAA) Champions, finishing the season with a 12–2 UAA and 19–9 overall record. Over 37 seasons, former head coach **Mark Edwards, AB '69**, led the Bears to 15 UAA titles and back-to-back NCAA Division III National Championships in 2008 and 2009. From 1991–2018, he posted a 685–293 (.700) overall record.



Bird's-eye view

This aerial photo taken over Brookings Hall in the evening shows the completely transformed — and stunning — east end of campus.