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"Real life is equally funny and absurd — sometimes even more than we could possibly make up." p. 46

Northwestern

FALL 2021

Mars Awaits

Northwestern expertise will help us get there.

p. 24

Sound Cloud

In April, the Bienen School of Music presented its first in-person performances in more than a year with the premiere of *Eclipse*, a work designed to be performed in a socially distanced setting under a full moon. The piece featured more than 60 performers, stationed at intervals along the lakefront, creating a cloud of sound amplified by illuminated megaphones. Composers Donald Nally, professor of conducting and ensembles, and Kevin Vondrak '17 MMus drew their inspiration from the poem "Eclipse" by Illinois Poet Laureate Angela Jackson '77.



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Every year more than 13,000 people in the U.S. are diagnosed with glioblastoma. But Northwestern scientists are fighting back against this deadly brain cancer.

By Clare Milliken



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← “Being gay and having been effeminate most of my life, I never really thought that ... I could use [that] as a positive to find my place in this really competitive operatic world. But as a countertenor, I could.”

— Kangmin Justin Kim '11, rising opera star

JACKSON: SHANE COLLINS; KIM: VICTOR SANTIAGO

Cover: A Martian dust storm. NASA/JPL-Caltech/MSSS



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No Kidding Around

Theater for young audiences entertains and changes lives.

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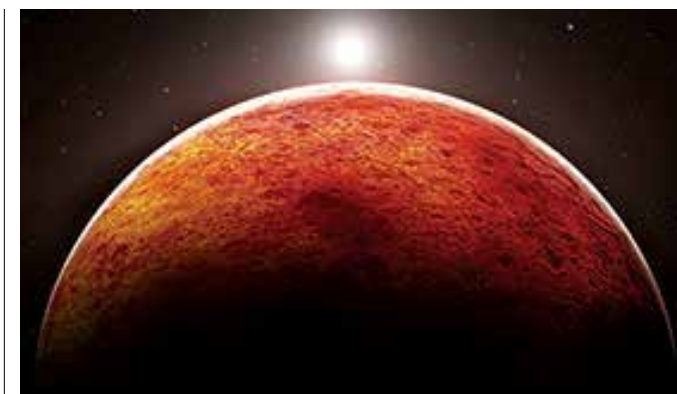


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George R.R. Martin '70, '71 MS, '21 H urges Medill grads to fight for facts.

MARTIN: JENNA BRAUNSTEIN; MARS: ISTOCK; THEATER: JUSTIN BARBIN '11



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Mission to Mars

From assembling teams to building habitats, Northwestern faculty and alumni are helping to prepare for a human expedition to the red planet. By Emily Ayshford

Generous Support Transforms Northwestern for Today — and the Future

Seven years have made a difference that will last forever. In the spring of 2014, Northwestern publicly launched **We Will. The Campaign for Northwestern**. When we wrapped up the “We Will” Campaign this past summer, more than 174,000 individual donors had committed more than \$6 billion, helping strengthen Northwestern’s position as one of the world’s finest universities for teaching, research and public service — a position that it can now hold on to in perpetuity.

I want to thank all our alumni, parents and friends, because your extraordinary, ongoing expression of love for Northwestern was the fuel for our progress. It funded immediate investments in our campuses that have helped our scholars do their best work, and it added long-term support for our people and programs.

We had initially set out to find 141,000 donors who could help us raise \$3.75 billion by 2020. That was by far the most ambitious fundraising goal in Northwestern history. But the Northwestern community blew the roof off those targets, as nearly 150,000 donors helped us reach the dollar goal two years ahead of schedule.

We realized that we had the chance to extend that momentum and build on the intense desire of Wildcats around the world to see Northwestern move closer to reaching its full potential. So we extended the Campaign, setting new goals of 170,000 donors and \$5 billion. In the end, even a global pandemic couldn’t slow down Northwestern, and we closed the books on one of the most successful fundraising campaigns in the history of higher education, with every academic unit surpassing its goal, thanks to the brilliant leadership of our deans.

The Campaign was built on the foundation of an academic blueprint developed by our faculty

and campus leaders: *Northwestern Will*, the University-wide strategic plan established a decade ago. *Northwestern Will* focused us on four pillars:

- Supporting research that tangibly improves society and the lives of people within it.
- Integrating students’ learning experiences with the world beyond the classroom.
- Fostering diversity that can meaningfully connect people from many backgrounds and enrich our academic work.
- Engaging in strategic local, national and international partnerships in order to serve the global good.

The generosity of Northwestern’s supporters, particularly our alumni, is evident in every aspect of campus life. First of all, a truly premier university needs to be able to attract and retain the world’s best faculty. The “We Will” Campaign dramatically boosted our efforts here by establishing more than 85 new endowed professorships. Twenty-five of these professorships were supported in part by alumni Patrick G. ’59, ’09 H and Shirley W. Ryan ’61, ’19 H through the Ryan Family Chair Challenge, which matched gifts made by other Northwestern supporters to establish new endowed professorships, or chairs, across a wide range of disciplines.

The Campaign also turbocharged our ability to support a diverse and immensely talented student body and help students thrive on campus.

We were able to establish more than 525 new endowed scholarships and fellowships that will benefit thousands of undergraduate and graduate students each year, in perpetuity. We raised more than \$522 million for scholarships and fellowships, including more than \$230 million for undergraduate scholarships. We created 19 endowed scholarships through the Buffett Matching Challenge for International Student Scholarships.

The “We Will” Campaign also made possible new and renovated facilities that have elevated our research enterprise and expanded our capacity for discovery and innovation. These include the Simpson Querrey Biomedical Research Center, the Willens Center for Nano Oncology, the Querrey Simpson Institute for Bioelectronics, the Simpson Querrey Institute, and the Ubben Program for Climate and Carbon Science at the Institute for Sustainability and Energy at Northwestern.

And donor support has helped increase opportunities for undergraduates to conduct research alongside superstar faculty in new laboratories.

The Campaign has transformed the Evanston and Chicago campuses with new and improved facilities for academics, athletics and the arts as well — from the construction of the Kellogg Global Hub, Ryan Center for the Musical Arts and Walter Athletics Center to the renovation of Kresge Hall and the addition of several research wings to the

Technological Institute. We also added and renovated residence halls: 560 Lincoln opened in September 2017, and Willard Hall was rededicated in January 2018.

Our alumni and supporters gave admirably to efforts to strengthen the University for the long term. And I’m especially grateful for the many ways in which they stepped forward to help those in need due to the sudden arrival of the global coronavirus pandemic in spring 2020.

The University shifted its focus toward funding needs that emerged due to the pandemic, including emergency student assistance, support for the University’s research enterprise and community initiatives.

The Campaign has also advanced programs focused on diversity, equity and inclusion (DEI), especially over the past year-plus, amid the heightened national conversation about racial and social justice. More than \$95 million has been raised toward 180 DEI-focused

initiatives on our campuses, including the Black House renovations, social justice education, and programs at the Center for Native American and Indigenous Research, the Institute for Sexual and Gender Minority Health and Wellbeing, and the Center for the Study of Diversity and Democracy.

The conclusion of such a historic campaign is a time to celebrate and to appreciate the stunning collective power of the people of Northwestern. We said, “We Will,” and we did.

But that doesn’t mean our work is finished; it only points toward the excellence that’s still within reach.

In the coming months, we will need to continue to address University priorities, especially DEI initiatives; undergraduate financial aid, graduate fellowships and programs that allow students with financial need to participate fully in the life of the University; new research initiatives across our campuses and the translation of those discoveries into commercial enterprises; and much more.

Along the way, that fierce optimism of our community, which was tested and refined during the difficult times of the past year, will continue to define Northwestern going forward.

Anyone who loves higher education has an appreciation for what a great university can do: It can equip a new generation with the wisdom and insight to lead; it can build strong, diverse, intergenerational and international networks; it can foster discovery, spark innovation and nurture culture; and it can heal and strengthen communities. In short, it can address society’s deepest needs and highest aspirations. The fact that the Northwestern community has been so generously supportive of our University’s efforts in this regard is extraordinarily inspiring.

Thank you.



Morton Schapiro
President and Professor



JIM PRISCHING

Northwestern Magazine

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Talk Back

CLEARING THE AIR

“Airpocalypse Now” [spring 2021], about the deadly consequences of air pollution, makes the case for Northwestern to be a leader in moving away from the fossil fuels that cause this pollution. The campus could gain prominence by becoming a functioning laboratory and demonstration for solar panels, geothermal energy and wind turbines, as well as for energy efficiency, electric vehicles and storage batteries. Richard Barsanti '61 Western Springs, Ill.

As a recent Wall Street Journal article explains, “The environmental cost of a car includes both building it and fueling it. That means factoring in emissions associated with oil drilling and power plant smokestacks, as well as from mining metals such as nickel and cobalt that are needed for electric car batteries.”

The full environmental cost to produce an electric vehicle is much higher than to produce an internal-combustion vehicle.

It's only after many years of use that the cumulative environmental cost of an electric vehicle is less than an internal-combustion vehicle. Nello Lucchesi '77, '79 MBA Glencoe, Ill.

It would be my hope that Northwestern's magazine would be a vehicle to support transcending the binary of renewables and fossil fuels, further highlighting transitional technologies that source fossil fuels with near zero emissions. There

is no fundamental reason why energy production should continue to contribute to climate change when transitional technologies like carbon capture exist. These technologies are a critical element to achieving mitigation targets during the energy technology transition. Catherine Conley '97 MBA Lake Bluff, Ill.

STUDENT MOVEMENTS

When you profiled student movements at Northwestern [page 30, spring 2021], how could you have left out the role of Northwestern students in the 1980s' anti-apartheid movement? The protesters built a shanty town on campus to show the living conditions of South African workers, and they boycotted and picketed the 1981 Ford Foundation/Northwestern-sponsored campus conference that sought to diminish the power of the divestment from South Africa movement. The protesters also pushed for Northwestern's divestment. Some Northwestern faculty and staff supported students in these efforts. Cheryl Johnson-Odim '75 MA, '78 PhD Evanston

A TIDE OF CHANGE

Thank you for featuring GiGi Lucas [“Breaking New Waves”] on the cover of the spring 2021 issue. It was inspiring to read about her personal journey and the work she is doing to make surfing more accessible to the next generation of surfers of color. Ifeolu Babatunde Sered '11 MBA Brooklyn

“The spring issue is jam-packed with interesting articles and photos on Wildcats past and present. Don’t let anyone tell you otherwise.”

— David Cohen '85 Rockville, Md.

GiGi Lucas needs some surf time in Hawaii, the birthplace of surfing. There is no exclusivity here about surfing. It's all about talent, focus and an eagerness to learn.

Anne Wright Honolulu

CLASS NOTES

I nearly missed the notice about Garfield Lillard in “Medill Turns 100” [Class Notes, page 58, spring 2021]. We didn't think of him as “Medill's first African American faculty member.” We thought of him as Gar, a gentle, quietly humorous, brilliant artist and craftsman who taught his students the art of photography. He inspired in his students a lifelong love of the photographic image, as well as friendships that continued the rest of his life. Georgianne Ensign Kent '61 Kent, Conn.

Correction: We incorrectly listed Dominic Mancuso Jr. '81 MBA in the In Memoriam section of the spring 2021 issue. He is alive and well. We regret the error. See Mancuso's Class Note on page 54.

Voices

COMMUNICATIONS

Medill Poised to Lead a Changing Media World

By Charles Whitaker

When I tell people that I am the dean of a journalism and marketing communications school, I am often greeted with looks that border on bemusement and pity.

I get it. The news that most people hear about journalism and media is pretty dismal. Newspapers and magazines are folding at an alarming clip. Chicago's two major dailies — the Tribune and

Sun-Times — have drastically reduced their newsroom staffs through a series of layoffs and buyouts over the past 15 years. More than half the country does not trust the information they receive from legacy news outlets. Admittedly, it's a somewhat dreary picture.

Yet, as the Medill School of Journalism, Media, Integrated Marketing Communications celebrates its centennial, I am incredibly bullish about the future of media and the school's role in shaping that future. While the business model for the industries we serve is indeed in shambles, there are still plenty of reasons to be excited about the information age.

Technology enables us to tell stories and engage with readers, viewers and consumers in ways we never could have imagined when I was enrolled in Medill more than 40 years ago. Today, Medill students and faculty are at the forefront of this revolution in storytelling and marketing, using a wide variety of techniques and platforms — from artificial intelligence to data visualization to new



↑ Charles Whitaker

media outlets for specific communities — to inform and influence audiences.

But this unlimited storytelling potential also brings new ethical and fact-checking challenges that rend the fabric of our fragile democracy, as recent events — including the contentious 2020 election, the global pandemic and social movements against racial injustice — have made clear. Medill's role in this fraught and balkanized media landscape is not merely to train the next generation of media professionals and leaders. It is also to be the authors of and evangelists for the ethics and standards that should guide our industries in this brave new world. We also must reach beyond our student population to promote media literacy in the general public and help ensure that the body politic is composed of more discerning media consumers.

Moreover, I am excited about the role that Medill can and will play in the ongoing conversations about representation both in media coverage and marketing depictions, as well as in the composition of newsrooms and companies. We do this by teaching our students to build trust with various communities and preparing students from diverse backgrounds for careers in journalism, marketing and communications. As our industries try to come to grips with — and correct — past failings, Medill can move beyond providing lip service to diversity and champion a model of what covering and marketing to a diverse populace should look like.

Of course, this means getting our own house in order with an honest assessment of our past and reckoning with our shortcomings. I welcome the opportunity to hire diverse faculty and staff, recruit students from varied backgrounds and incorporate discussions of marginalized communities into our classrooms.

So contrary to popular belief, it is an amazing time to be leading Medill. With our combination of talented faculty and students, not to mention our cadre of influential alumni, I can think of no institution that is better positioned to help chart the course for the future of media over the next hundred years.

Charles Whitaker '80, '81 MS is dean of the Medill School of Journalism, Media, Integrated Marketing Communications.

CRYSTAL WILEY-BROWN

SOUND OFF

Silver Linings

What will you keep from the COVID-19 era?

June M. McKoy '01 GME, '05 LLM, '10 MBA, associate professor of medicine and program director of the Geriatric Medicine Fellowship at the Feinberg School of Medicine

"I lost my mother and my cousin to COVID-19 and thought I would never see a silver lining in this pandemic. However, the pandemic unwittingly gifted me with time and solitude. While I missed friends, colleagues and family, I reveled in the previously elusive gift of silence. Unencumbered by the usual social obligations, I spent 'free' time with strangers on the bus and argued with characters tubed in black and white. I wrote more poetry, mailed more letters and played more music on my piano. I cooked more meals. I communed with God. As bizarre as it might seem, sometimes I think the pandemic saved my life. I needed to slow down, and it ultimately brought me sanity."

Mikenzie Roberts, a junior in the School of Education and Social Policy

"When the pandemic sent me back home to Indiana, I deeply missed being on campus. Looking back, however, I see that my relationship with my family has grown stronger over the past year. I was home for the birth of my sister. I have spent more time with my 3- and 5-year-old brothers than I thought possible during my adult years, and I've grown much closer to my 17-year-old brother, who introduced me to *The West*

Wing during lockdown. Going forward, I will strive to keep spending more time with my family."

Robert Brown, director of social justice education, Division of Student Affairs

"This past year has been incredibly overwhelming. During the initial months of the pandemic and at the height of the racial uprising last summer, my family's vision center in Chicago was looted, creating an immensely complex and difficult situation. I didn't realize how many stressors I was reacting to, and how much I was running from one thing to the next, all of which took a toll on me. I learned the importance of pausing, of taking a step back when things feel like they are spinning out of control. It has been in those moments of pause that I have been able to reflect, refocus, breathe and find joy."

Tracy Foster '04, founder of START | Stand Together and Rethink Technology

"Screen-time pressures have peaked during the pandemic, bringing with it increased anxiety, unhealthy comparisons of oneself to others, loneliness, polarization and exposure to online predators — all issues that are especially harmful to youth. My nonprofit helps parents guide children in pursuing 'digital health,' and our new virtual-only reality has allowed us to expand our reach. As we emerge from a year of virtual living, now is the perfect time to reevaluate how we can navigate an increasingly digital world in a healthy way."

Read more perspectives and share your own silver linings at alummag.nu/silver-linings.



SOCIAL FEEDS

Members of the Class of 2021 reflect on their Northwestern experience.

"My experience working with juvenile prisoners to create hip-hop music has inspired me to be a music teacher in the Chicago Public Schools system."

@lauren_reynolds98 @



"Some of my greatest memories involve my work with the Office of New Student and Family Programs (now New Student Experience)."

@j_kurian98 @

"At the Bluhm Legal Clinic, we had the privilege of working with a young girl who was seeking asylum and had gone through unimaginable hardships. No matter what the future holds, I want to continue to use my legal skills to help others."

@brookelynn118 @

Read more reflections at alummag.nu/grads-2021.

MIKENZIE ROBERTS: MADELINE GARCIA



By Diane Whitmore Schanzenbach

The Margaret Walker Alexander Professor of Human Development and Social Policy in the School of Education and Social Policy and director of Northwestern's Institute for Policy Research

MY NORTHWESTERN DIRECTION

Multiple Perspectives Lead to Better Research

I have always been interested in studying big social issues. Tackling complex questions — how to reduce poverty or how to improve the education system — can't be done from a single perspective or discipline. When the opportunity arose to come to Northwestern in 2010, my friend David Figlio (now dean of the School of Education and Social Policy) told me that Northwestern's interdisciplinarity would improve my work and push me in new research directions. He couldn't have been more right. The Institute for Policy Research, which has been my primary intellectual community here at Northwestern, brings together social scientists from all across campus. Learning about others' cutting-edge policy research

and hearing the range of questions and comments raised from these diverse perspectives have changed how I approach my research. In many places, commitment to interdisciplinary work is shallow. Frankly, it's hard work to foster the trust and respect that it takes to really collaborate across silos. But at Northwestern we have been building these connections for decades — IPR recently celebrated its 50th anniversary. It's fundamentally who we are. Being at Northwestern has sharpened my research on how policies that impact early-life conditions can significantly affect later-life outcomes. For example, I found that children who had access to the food stamp program were more likely to graduate from high school and now as adults are healthier and more

“In many places, commitment to interdisciplinary work is shallow. ... But at Northwestern we have been building these connections for decades.”

economically successful. Input from anthropologists, psychologists and sociologists helped me understand the potential biological and social mechanisms behind these results, and political scientists helped me identify other concurrent policies and trends that could potentially influence the outcomes as well. More recently, I've been trying to understand how the social safety net has (and has not) worked in the past few years and during COVID-19. Over the past few decades we have shifted toward providing more safety net support that is dependent on employment. During the COVID-19 recession, a lot of families who lost their jobs or saw their hours cut did not receive enough relief to keep food on their table. My research has kicked into overdrive as I try to understand the impact of the recession on the poor by tracking their rates of hunger and tracing the effects of new policies aimed at helping them. I partnered with Natalie Tomeh '21, whose data science expertise allowed us to create a tool for data visualization that has been used widely by federal and state policymakers. My Northwestern story also includes a two-year leave of absence to temporarily direct the Hamilton Project, an economic policy think tank in Washington, D.C. During my time there, I learned about how data and research get used in policymaking — lessons that I have used to help IPR increase the impact of our cutting-edge research. I often think of my first time on Northwestern's campus, in fall 1991, on a visit to see my high school best friend who was an undergraduate at the time. We walked down Orrington Avenue beneath the changing leaves, and it took my breath away. I thought it must be a dream job to be a professor here. All these years later, driving or biking down Orrington still takes my breath away. And it has been a dream job to find such a productive and fruitful intellectual home here at Northwestern.

WHAT INSPIRES ME

The Lightbulb Moment

Writer and scholar often gets her best ideas when she ventures outside academia.

Lauren Michele Jackson, assistant professor of English

“The languor of good work — the kind of work that approaches its topic as a curiosity — is so glorious you want to sink into it, letting it lap you like the contained ripples in a sturdy, antique bathtub. This inspires me, the good work of others with whom I can’t help but join in thrilling conversation and scholarship.

“The ‘lightbulb moment,’ I find, rarely comes in utter solitude but rather during the moments when I’ve made myself receptive to all kinds of surprising art and research and writing, including — and perhaps especially — outside of a formally academic context. I go out and go online and watch television and read, and all these things provoke ideation.

“I feel fortunate to contribute to a discipline that leaves itself open to the weird and the ordinary, where nothing is too out-of-bounds to take seriously.”

Lauren Michele Jackson teaches courses on Black literature and culture, affect theory and contemporary American literature. Her first book, White Negroes (2019), is a collection of critical essays on appropriation in popular culture and was long-listed for the Museum of African American History Stone Book Award. Her essay collection Back: An American Tale is forthcoming from Amistad Press. She is a contributing writer for the New Yorker, and her work can be found in the Atlantic, Feminist Media Studies and the Washington Post.



↑ Lauren Michele Jackson at the Low-Line in Chicago’s Lakeview neighborhood

COMMENCEMENT 2021

Uplifting Words

When science fiction and fantasy writer George R.R. Martin delivered the keynote speech to Medill graduates, he stressed the importance of facts in the fight against misinformation.

Other speakers offered words of inspiration and encouragement after a difficult year.

“I’ve written stories about ... wild, fantastical things, but none half so unlikely as the sinister global conspiracies that a large portion of the population seem to believe. ... It is a heroic thing to find the facts, especially when those things are unpopular. ... Your generation faces [this] struggle: a war for truth ... for the soul of a nation.” **George R.R. Martin** ’70, ’71 MS, ’21 H at the Medill School of Journalism, Media, Integrated Marketing Communications Convocation

“It is time to heal after this collective trauma. It will be our duty to help our communities recover from this dark year by channeling the profound, humanizing force of music to create meaningful, lasting and healing transformation. ... Remember that music is just a tool. It’s the tool we use to do our real job, which is reaching, teaching, serving, healing, transforming and inspiring people.” **Giancarlo Guerrero** ’92 MMus at the Bienen School of Music Convocation

“Everywhere you go, people are going to try to label you. ... And that can be so, so suffocating. Because if you give in to these labels, you’ll find yourself limited, not just in what you can do but who you can be. ... The point is, there are no hard and fast rules for how to live your life. ... Remember that you are more than any label that people try to give you.” **Ebs Burnough** ’02 at the School of Communication Convocation

“When people look at my résumé ... they don’t see the multiple times that powerful people told me I could not do the job. ... I know many of you have been told ‘no’ because of your age, background, race or gender. ... But you not only finished your education, many of you did it while working or taking care of family. ... You have shown perseverance. Don’t let anyone underestimate you.” **Kaitlin Fahey** ’12 MA at the School of Professional Studies Convocation

SHANE COLLINS

News

Fulbright fellows around the globe p.13

Izzy Scane sets new records in lacrosse p.14

New trophy honors Black football pioneer p.15

Blip makes power more affordable p.19

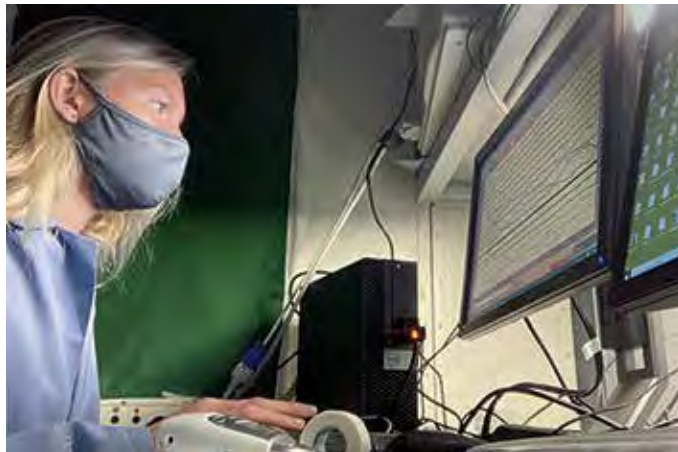
SCIENCE

Dream Dialogue

People can communicate, follow instructions and do simple math while “interactive dreaming.”

Dreams take us to an alternate reality. They also happen while we’re fast asleep. And a new study led by Northwestern researchers shows that a person in the midst of a vivid dream can perceive incoming questions and provide answers to them.

The researchers studied people attempting to have lucid dreams — dreams in which people are aware they’re dreaming. The team based its experiment on two known premises: first, that lucid dreamers can signal to an observer by moving their eyes; and second, that



Psychology doctoral student Karen Konkoly watches brain signals from a sleep study participant in the lab.

that dreamers are capable of comprehending questions, engaging in working memory operations and producing answers.

“Most people might predict that this would not be possible — that people would either wake up when asked a question or fail to answer, and certainly not comprehend a question without misconstruing it.”

While dreams are a common experience, scientists still haven’t adequately explained them. Relying on a person’s recounting of dreams is also fraught with distortions and forgotten details. So Paller and colleagues decided to attempt communication with people during lucid dreams.

“Our experimental goal is akin to finding a way to talk with an astronaut who is on another world, but in this case, the world is entirely fabricated on the basis of memories stored in the brain,” the researchers wrote in the journal *Current Biology*.

Future studies of dreaming could use these same methods to assess cognitive abilities during dreams compared with wakefulness, according to psychology doctoral student Karen Konkoly ’21 MS, the study’s first author. These methods also could help verify the accuracy of dreamers’ post-awakening reports. Outside of the laboratory, the methods could be used to help people solve problems during sleep or offer nightmare sufferers novel ways to cope.

sensory stimuli (such as flashing lights or gentle beeping sounds) can be presented to dreamers in a way that would register and alter their memory processing but not wake them.

Study participants were trained in techniques to improve their likelihood of having a lucid dream. They were then instructed to signal to researchers when they experienced such a dream, usually with a sequence of eye movements to the left and right.

The researchers used brain wave data to confirm that study participants had reached the REM (rapid eye movement) stage of sleep, a phase in which lucid dreaming can occur.

The investigators found that it was possible for people, while dreaming, to follow instructions, do simple math, answer yes-or-no questions and differentiate between sensory stimuli. They could respond using eye movements or by twitching facial muscles. The researchers refer to these successful conversations as “interactive dreaming.”

“We found that individuals in REM sleep can interact with an experimenter and engage in real-time communication,” says senior author Ken Paller, professor of psychology and director of the Cognitive Neuroscience Program in the Weinberg College of Arts and Sciences. “We also showed

“Individuals in REM sleep can ... engage in real-time communication.”

— Ken Paller



LOIS BIGGS
England

Lois Biggs ’20 was one of a handful of Fulbrighters who were able to start their fellowships on time despite the pandemic. She arrived in Leeds, England, in September 2020 and enrolled in a master’s program on the social and political dimensions of art history at the University of Leeds. Biggs is working on a dissertation project that will rethink practices of Native and Indigenous art criticism through an examination of Saulteaux First Nation artist Robert Houle’s installation *Paris/Ojibwa*.

GLOBAL

Delayed but Not Deterred

Though the COVID-19 pandemic interrupted travel for many, 2020–21 Fulbright fellows have found ways to make an impact around the globe.



GIOVANNI GAMALONG
Bulgaria

After his plans to teach English in Indonesia fell through due to the pandemic, Giovanni Gamalong ’20 relocated his Fulbright to Bulgaria. “It’s a once-in-a-lifetime opportunity that will cultivate my future career as a physician and global health leader,” he says of the experience. Gamalong planned to arrive in Sofia, Bulgaria, in August. In the meantime, he stayed in touch with his Fulbright cohort through a Bulgarian book club and took a Bulgarian language and culture class to help him prepare.

SAYEED SANCHEZ JOHNSON
Spain

On Jan. 6, Sayeed Sanchez Johnson ’20 arrived in Madrid, where he worked remotely as an English teaching assistant at Spain’s international IE University. He co-taught workshops on the mechanics of writing and rhetoric and also ran a workshop for staff on the racialization of language, dialects and accents. Next year, Johnson will continue as an English teaching assistant and mentor for incoming Fulbrighters in Madrid. “In the meantime, I’m continuing to enjoy Madrid’s robust public infrastructure (health care and public transit), numerous parks and a culture that encourages relaxation,” he says.



GETTY: ELOI OMELLA

LILLIAN GUO
Taiwan

In January, Lillian Guo ’20 arrived in Taiwan, which had been relatively unaffected by the pandemic. “It was the greatest breath of fresh air of my life,” she says. Guo worked at Bo Tsun Primary School as an English teaching assistant and met with students and staff in person. In the final weeks of Guo’s grant period, however, Taiwan experienced a surge in COVID-19 cases, sending the country into lockdown. Still, Guo planned to return in August for a second-year English teaching grant. “I believe in the resiliency of Taiwan,” she says.



CHRISTOPHER LA MOUNTAIN
India

After deferring his Fulbright research award by a year, Christopher La Mountain ’20 planned to travel to India to study the devotional music of the Lotus Temple in New Delhi, focusing on how local religious traditions have influenced its music in a unique way, compared with the music of other faith spaces. “It will be important to capture this moment in time through such a project, especially considering the musical and religious vibrancy of Delhi,” La Mountain says. The Lotus Temple is one of seven major Bahá’í houses of worship in the world, a counterpart to the Bahá’í Temple in Wilmette, Ill.

The Ticker

● **Hari M. Osofsky**, a leading scholar of public policy work on energy transition and climate change, was appointed dean of Northwestern Pritzker School of Law. She was also appointed the Myra and James Bradwell Professor. Osofsky had been dean of Penn State Law and the Penn State School of International Affairs.



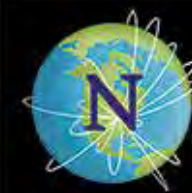
● Faculty members Linda Broadbelt, Joseph Hupp, Vicky Kalogera, Thomas McDade, Elizabeth McNally and Catherine Woolley were elected to the **American Academy of Arts and Sciences**.



● The **Northwestern Prison Education Program** admitted its first cohort of women in an expansion made possible by a \$1 million grant from the Andrew W. Mellon Foundation. The 20 students at Illinois’ Logan Correctional Center completed their first courses, in art history and math, via written correspondence in June.



● Northwestern has been elected to serve as the first secretariat of the **U7+ Alliance of World Universities**, which seeks solutions to the greatest global challenges by coordinating with G-7 governments and beyond. During the three-year term, the secretariat will be housed at the Roberta Buffett Institute for Global Affairs.



SPORTS

On the Attack

Izzy Scane led the Wildcats' record-breaking offense in a one-loss season.

Izzy Scane's offensive dominance on the lacrosse field earned her the nickname the "Scane Train" — and for good reason. The attacker has gone full steam ahead through some of the best defenses in the country.

Scane finished the 2021 season having scored 98 goals — a Northwestern single-season record. She set a new Wildcats single-game standard with a career-high 10 goals against Rutgers and scored nine goals three times in the season, including in Northwestern's 17-12 win over Maryland in the Big Ten Championship. Her 6.13 goals per game topped the previous NCAA record of 5.71.

Despite playing in just seven games during the pandemic-shortened 2020 season, the rising senior now ranks eighth in career goals at Northwestern.

The Big Ten Attacker of the Year earned first team all-conference honors and was named a finalist for the Tewaaron Award, given

annually to the nation's best college lacrosse player.

"She's grown in consistency," coach Kelly Amonte Hiller told the *Daily Northwestern*. "Even when she's not having her best day, she will find ways to impact the team in a positive way. She's become a real leader."

Scane helped lead Northwestern to an NCAA record 20.12 goals per game as the Wildcats completed an undefeated 2021 regular season. Scane and her teammates then secured their second consecutive Big Ten Tournament title, with Scane earning MVP honors.

Yet in each of the last two seasons, Northwestern's bid for a title was cut short in the NCAA Tournament semifinals. The Wildcats' record-breaking 2021 campaign came to a close in a 21-13 loss to Syracuse in the semifinals. The team finished the season 15-1.

After the season, Scane and former teammate Lindsey McKone '20 were invited to a training camp for the U.S. women's national team.

→
Izzy Scane led the nation in goals per game, breaking an NCAA record.



JOHN KONSTANTARAS

CAMPUS RENOVATIONS

The Black House, which opened in fall 1968 and moved to its current location at 1914 Sheridan Road during the 1972-73 academic year, resulted from Black students' fight for equality during the 1968 takeover of Northwestern's Bursar's Office. The Black House Renovation Steering Committee, composed of students, faculty, staff and alumni, formed in 2016 after Moody Nolan, the

largest Black-owned architecture firm in the U.S., was hired to conduct a feasibility study of the building. GMA Construction Group, owned and led by Cornelius Griggs '14 CERT, was hired as the construction firm for the project. The renovated first floor will feature a new mural designed with insights from students and created by Dwight White II '16, '17 MS. Reopening ceremonies will be held in October.

'CAT TALES

Trophy Honors Football Pioneer



Northwestern and the University of Michigan established the George Jewett Trophy, the first college football rivalry game trophy named for an African American player in the history of the Football Bowl Subdivision. Jewett was the first African American student-athlete to play football at the two universities. Michigan and Northwestern will compete for the trophy each time they meet on the football field. While studying medicine at Michigan, Jewett played fullback, halfback and kicker during the Wolverines' 1890 and 1892 seasons. He left Michigan in 1893 to finish his medical degree at Northwestern, where he played two seasons with the Wildcats. After graduation, Jewett became a doctor in Chicago before returning to Ann Arbor in 1899 and later starting a dry-cleaning business. Jewett died in 1908 at age 38.

JEWETT: NORTHWESTERN UNIVERSITY ARCHIVES; COMMENCEMENT: JIM PRISCHING



COMMENCEMENT

A Well-Earned Celebration

In Commencement keynote, alumna Gwynne Shotwell urges graduates to set goals and take risks.

Northwestern's 163rd Commencement ceremony honored the resilience of the 5,973 students who earned undergraduate and graduate degrees in the Class of 2021. It was part of a jubilant weekend of both in-person school convocations and virtual special events in June. Aerospace pioneer Gwynne Shotwell '86, '88 MS, '21 H keynoted the virtual

Commencement ceremony, noting the challenges that graduates faced as they completed their education.

"All graduations deserve a celebration, but you, this Class of 2021, have an even greater achievement," said Shotwell, president and COO of SpaceX. "You not only survived but succeeded throughout the insanity of 2020 and into this year. You were able to focus and invest in your future

during a period of immense suffering."

Shotwell was one of four people who received honorary degrees. Activist and 'me too.' Movement founder Tarana J. Burke '21 H, renowned medical researcher Helen H. Hobbs '21 H and best-selling author George R.R. Martin '70, '71 MS, '21 H also were recognized as distinguished leaders in public service and the arts and sciences.

Discovery

MEDICINE

Untangling the Mysteries of Alzheimer's

The brains of “SuperAgers” resist protein tangles that lead to the disease.

Some older adults have a natural resistance to developing Alzheimer's disease.

Known as cognitive “SuperAgers,” these unique adults over age 80 show outstanding memory capacity at a level consistent with people 20 to 30 years younger.

A Northwestern Medicine study, led by researchers at the Mesulam Center for Cognitive Neurology and Alzheimer's Disease, shows that SuperAgers have resistance to the development of fibrous tangles in the entorhinal cortex, a brain region heavily responsible for memory. These tangles are known markers of Alzheimer's disease.

The tangles are made of the tau protein, which forms structures that transport nutrients within the nerve cell. Tangles disrupt the cell's transport system, hampering communication within the neuron and preventing nutrients from performing their particular job within the cell, ultimately resulting in cell death.

“The results suggest resistance to age-related tau degeneration in the cortex may be one factor contributing to preserved memory in SuperAgers,” says lead study author Tamar Gefen '12 MS, '15 PhD, an assistant professor of psychiatry and behavioral sciences at the Feinberg School of Medicine.

The seminal characteristics of Alzheimer's are amyloid

plaques (misfolded proteins that collect between nerve cells) and tau-containing neurofibrillary tangles found after autopsy in the brains of people with the disease.

The study quantified the amount of plaques and tangles in the entorhinal cortex of seven living SuperAgers compared with six age-matched, cognitively healthy people. Researchers found significantly fewer tangles in the brains of SuperAgers than in cognitively healthy controls, by a difference of nearly threefold.

“This finding helps us better identify the factors that may contribute to the preservation of memory in old age,” Gefen says. “This

research highlighted there are gradients of vulnerability to cell death in the brain. ... Individuals with significant memory impairment due to Alzheimer's disease showed nearly 100 times more tangles in the entorhinal cortex compared with SuperAgers.”

While these plaques and tangles are most commonly found in the brains of those with memory impairment, they are also found in a more limited distribution in cognitively healthy older adults.

Because advancing age is typically associated with declining memory abilities and increased risk of developing Alzheimer's disease, the Mesulam Center

studies SuperAgers to better understand what is going *right* in their brains.

“There is a strong relationship between tau tangles and memory loss, and these findings in a unique SuperAging cohort could guide research in a new direction,” says Gefen.

Surprisingly, the study also found that there were no significant differences in amyloid plaque density in SuperAgers compared with cognitively healthy older people.

“Many investigators have long thought that amyloid plaques are drivers of memory loss, which isn't what we found,” Gefen says.

Yet more research is needed to fully understand

the cause of memory loss. Gefen wants to explore the interaction and collective impact of genetics, environment and lifestyle on brain cells in SuperAgers.

“Why are memory cells selectively vulnerable to tangles in the first place?” she asks. “What is it about the cellular environment in the brains of SuperAgers that seems to protect them from tangles? Are the behaviors of SuperAgers somehow building up resistance in the brain?”

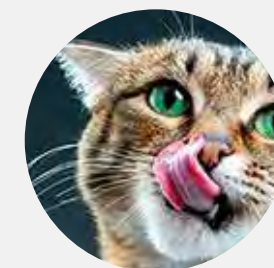
At the Mesulam Center, SuperAgers are evaluated annually and may choose to donate their brains for postmortem evaluation by Northwestern scientists to help further this research.



GETTY/GLAMSTOCK/IMAZINS

RESEARCH

Secrets Behind Whiskers and Self-Driving Cars



1

WHISKER SIMULATION

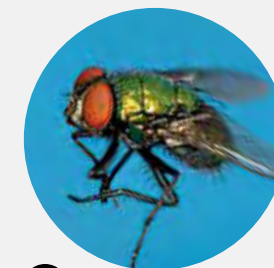
In a recent study, Northwestern researchers developed the first mechanical model simulating how a mammal's whisker bends inside a follicle, a hidden process that is difficult to study. The model shows that when whiskers touch an object, they form an S-shaped bend within the follicle. That bending motion triggers sensor cells that send touch signals to the brain. “Whiskers provide a simplified model to understand the complex, mysterious nature of touch,” says professor of biomedical engineering Mitra Hartmann, the study's senior author.

2

WOMEN BILL LESS IN GIG ECONOMY

Associate professor of mechanical engineering Elizabeth Gerber and her colleagues at Northwestern investigated whether the gig economy helps to mitigate the gender pay gap. After examining data

for 48,019 U.S.-based workers on Upwork, an online labor marketplace, they discovered that \$26 per hour was the median amount requested by women, while men requested \$35. Women, however, ended up earning about as much as men in median hourly revenue because they worked nearly 50% more hours than men did.



3

FRUIT FLIES AND AUTONOMOUS VEHICLES

Fruit flies may offer key insights for developing safe self-driving cars, according to a new Northwestern study. Associate professor of neurobiology Marco Gallio and his team found that flies use rapid decision-making, learning and memory to escape hot temperatures and avoid harm. Gallio says the questions behind this study are similar to those vexing engineers who are building cars that move on their own: How does a car react to unexpected obstacles? And how can we build a car that adapts to new conditions flexibly and reliably?

Innovation

FASHION

Stylish and Sustainable

Student startup Cerer is a one-stop shop for eco-friendly fashion.

Growing up in the San Francisco Bay area, communication studies senior Anna Lise Ericson always wanted a career in fashion, but the American Environmental History class she took during her first year at Northwestern showed her that the apparel industry is far from green. “I learned that the industry contributes almost 10% of global emissions annually,” Ericson says. “I didn’t understand how I could work in fashion knowing that.”

That summer, Ericson wrote up a business plan for Cerer, an e-commerce platform that offers women’s clothing and accessories from brands committed to ethical and eco-minded practices. She reached out to 150 brands, including some, like Girlfriend Collective and

Whimsy + Row, that are now part of Cerer’s offerings.

The platform launched in January 2020, bringing in \$10,000 in sales in its first year. The team now includes Ericson, sophomore Ilise Angel and Katie Karmin ’21.

Cerer is committed to its own sustainable practices, shipping orders in boxes made from recyclable and biodegradable mailing materials. Much of Cerer’s shipments are carbon neutral too. But Ericson doesn’t want to stop there.

“We’re trying to analyze everything we do in terms of how many shipments go out a day, what products are not getting sold and what we are going to do with those products afterward — recycle them or donate them,” Ericson says. “How do we incorporate sustainability into everything we do?”



Cerer founder Anna Lise Ericson, center, and colleagues Katie Karmin, left, and Ilise Angel, all wearing Cerer brands

The Garage, Northwestern’s hub for entrepreneurship and innovation, has been invaluable to Cerer’s development. “They foster this community where people push each other — but also prop each other up — and support each other to think of things in a more innovative way,” says Ericson.

She knows that sustainable fashion has work to do in terms of accessibility and inclusivity, and she hopes that brands — and the apparel industry overall — continue to make progress on those fronts.

“It’s important to recognize that shopping sustainably is a great idea in theory,” Ericson says, “but it’s limited to people with the financial means or people with the physical body to fit into those clothes because it’s not a very size-inclusive space either.”

After graduation, Ericson plans to earn her MBA with a focus on sustainable business practices while continuing to grow Cerer. “My goal is that people can come to [Cerer] and buy items that are going to last for years because they’re good quality and they transcend the ever-changing trends.”



HEALTH CARE

As the pediatric nephrology director at Rush University Children’s Hospital, Sara Jandeska ’07 GME, ’21 MBA sees a lot of cases of strep throat in children. In 2020 Jandeska and Rashmi Babbtiwale ’21 MBA started **Blue Comet Medical Solutions** and designed a noninvasive, at-home diagnostic test for strep. The founders are working on a new, user-friendly, breath-based detection approach and hope to optimize Blue Comet’s technology for use by schools and parents.

SHANE COLLINS

INVENTION

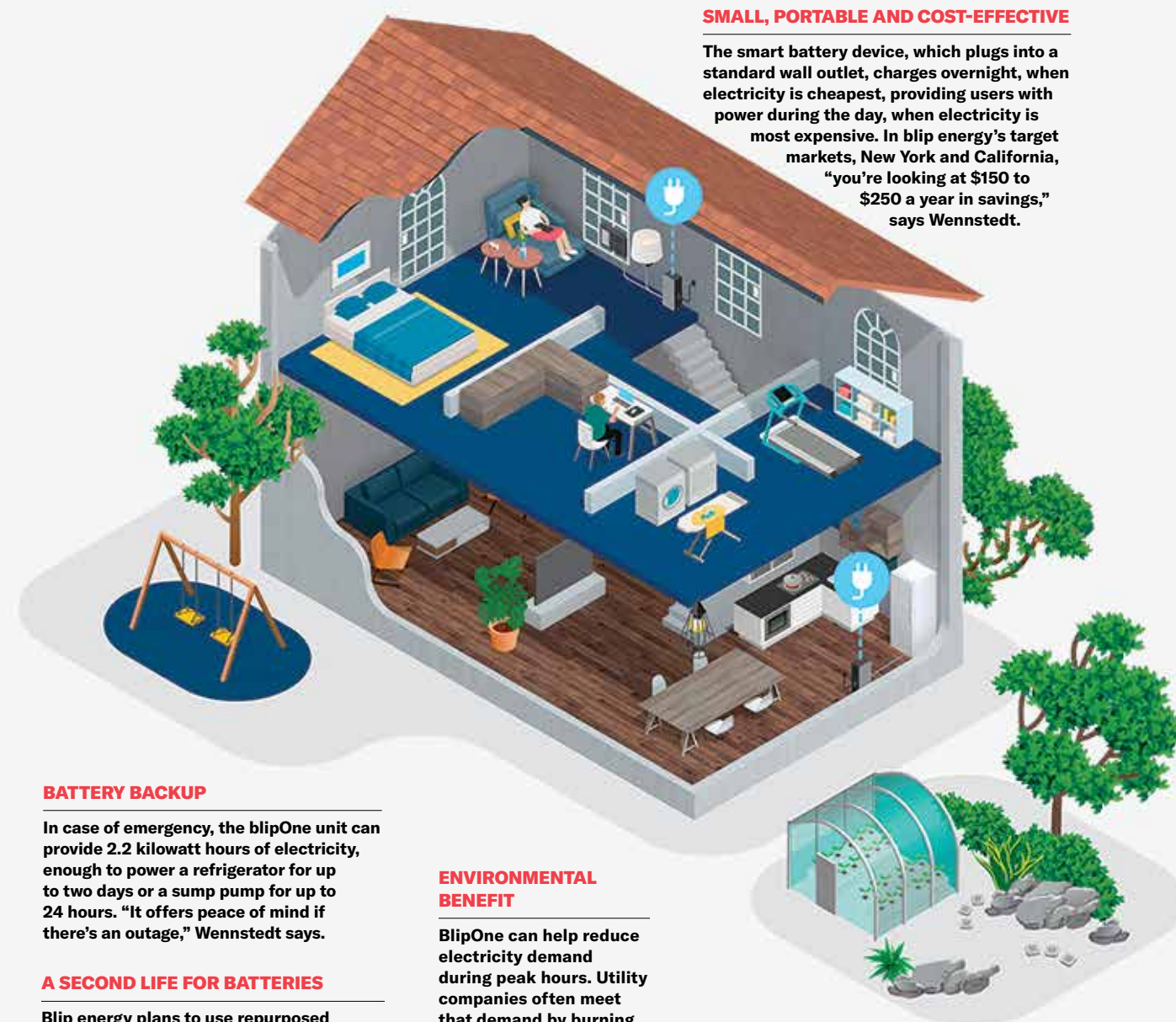
blipOne

Blip energy CEO Sophia Wennstedt, a second-year student in the University’s MBA and design innovation dual-degree program, and her team of Northwestern entrepreneurs created blipOne, a device that allows users to store electricity when it is cheap and discharge power when

it is expensive. Launched through the Farley Center for Entrepreneurship and Innovation’s NUvention: Energy course, blip energy is working with an engineering services firm to build a mass-manufacturable prototype of blipOne before launching a preorder initiative.

SMALL, PORTABLE AND COST-EFFECTIVE

The smart battery device, which plugs into a standard wall outlet, charges overnight, when electricity is cheapest, providing users with power during the day, when electricity is most expensive. In blip energy’s target markets, New York and California, “you’re looking at \$150 to \$250 a year in savings,” says Wennstedt.



BATTERY BACKUP

In case of emergency, the blipOne unit can provide 2.2 kilowatt hours of electricity, enough to power a refrigerator for up to two days or a sump pump for up to 24 hours. “It offers peace of mind if there’s an outage,” Wennstedt says.

A SECOND LIFE FOR BATTERIES

Blip energy plans to use repurposed electric vehicle batteries, which, after eight to 10 years on the road, are not reliable enough for use in a car. The second-life batteries have another eight to 10 years of functionality for stationary applications.

ENVIRONMENTAL BENEFIT

BlipOne can help reduce electricity demand during peak hours. Utility companies often meet that demand by burning fossil fuels, Wennstedt says, “so by eliminating the need for peak generation capacity, we’re eliminating CO₂ from the grid.”

JING ZHANG



CAMPUS

‘We Will’ Campaign Unites Northwestern Community

More than 174,000 donors worldwide came together for the University’s historic fundraising initiative.

We Will. The Campaign for Northwestern, which was publicly announced in 2014, set out to amplify the University’s local and global impact and to elevate its status as a leading teaching and research institution. Seven years later, the Campaign’s effects can be felt everywhere — from campus life to facilities and the research enterprise — and by everyone — from students to faculty and staff. Success was achieved by connecting the larger University

community to the cause of transforming Northwestern. The “We Will” Campaign surpassed its goals not once, but twice, ultimately bringing in more than \$6 billion from 174,000-plus unique donors — alumni, parents, students, faculty, staff and friends. Those contributions went to support every corner of the University. “You can’t set foot on campus or read anything about Northwestern and not see the impact the Campaign has had,” says Campaign Co-Chair and University

Trustee Bon French ’75, ’76 MBA. “Physically, look at all the new buildings we’ve built in Evanston and downtown Chicago — whether it’s the Ryan Center for the Musical Arts, Kellogg Global Hub or Simpson Querrey Biomedical Research Center.” Northwestern Athletics also benefited from the addition of new and renovated spaces for the University’s 500-plus student-athletes. Altogether, 61 buildings were renovated or constructed during the Campaign.

The Campaign also enhanced the activities conducted in those facilities, including groundbreaking research in areas such as sustainability and global health. Funding for research has escalated since the Campaign began. Awards from federal agencies, foundations and corporations totaled \$887.3 million in 2020 — an increase of more than 11% over the previous year — making Northwestern the largest academic research site in Illinois. Additionally, philanthropic gifts to Northwestern Medicine helped drive high-impact clinical innovation, accelerate cutting-edge scientific discovery and educate the next generation of medical leaders. Nearly half of the funds raised in the Campaign, more than \$2.74 billion, have been designated to Northwestern Medicine.

← A total of 61 buildings were renovated or built on Northwestern’s campuses during the “We Will” Campaign.

Paula B. Pretlow ’77, ’78 MBA, University trustee and Campaign co-chair for participation, adds: “We’ve been able to fund interdisciplinary research and see the results of discoveries that will make the world a better place.” Much of that research is led by faculty, whose recruitment and retention are critical to the University’s long-term success. More than 85 endowed professorships were established during the Campaign. Meanwhile, more than 525 endowed scholarships and fellowships were made possible. In total, Campaign giving to financial aid topped \$522.8 million, 44% of which is for undergraduate scholarships.

Northwestern had to pivot in 2020 with the onset of the COVID-19 pandemic, during which the University provided financial support for students adjusting to a virtual learning environment. At the same time, Northwestern sharpened its focus on diversity, equity and inclusion, making a

commitment to advance racial and social justice and make the University more inclusive. “The scholarships and other opportunities created by the Campaign will allow for even greater diversity of our students and our faculty,” says Pretlow, noting that 21% of the incoming Class of 2025 is Pell Grant eligible. “We have paved the way for Northwestern to stand out in terms of diversity among its peer institutions.”

The Campaign ended on a high note for all involved. More than 925 volunteers contributed to its completion, including members of regional, international, gift planning, and school and program committees.

Serving as Campaign co-chair for participation allowed Pretlow to share her Purple Pride, as well as “highlight what a great institution we are,” she says. “I’ve loved having the opportunity to meet so many fellow alums and friends of the University — it’s been energizing.”

→ The Lanny and Sharon Martin Atrium at Northwestern Pritzker School of Law in Chicago was completed during the Campaign.

Meeting so many “gracious and generous alumni” was a highlight for French too, he says. “I’m so grateful for how Northwestern changed my life, both as an undergrad and as a Kellogg student. It’s been very meaningful for me to contribute as co-chair of the ‘We Will’ Campaign.”

In looking back at everything Northwestern accomplished these past few years, “I’m most proud of the way the University, the trustees and the alumni came together to support the Campaign,” French continues. “It built momentum and was really inspiring.”

That momentum will continue beyond the Campaign, which helped broaden and deepen philanthropic support for the University — and will impact generations to come. “Every student deserves the opportunity to thrive once they arrive at Northwestern,” Pretlow says. “We are securing the future of students yet to be.”

For a complete list of the Campaign Steering Committee members who helped lead “We Will” fundraising efforts, turn to page 59. To make a gift to Northwestern, visit giving.northwestern.edu.



Campaign by the Numbers

As of June 30, 2021

\$6 billion+
Total amount raised

525+
Endowed scholarships and fellowships created

174,000+
Total number of donors

85+
Endowed professorships created



← Members of the Northwestern University Symphony Orchestra perform in Shanghai Symphony Hall in 2018.

School after traveling with the Northwestern University Symphony Orchestra as part of its first international tour, in Asia in 2018.

The couple’s latest philanthropy also includes an impactful gift in support of students who come to Northwestern from Chicago Public Schools — with a preference for those who will attend the McCormick School of Engineering, which seeks to recruit the best and brightest students, regardless of financial need. More CPS graduates have chosen to attend the University in recent years. The number of CPS alumni enrolled at Northwestern increased 152% from 210 students in the 2011–12 academic year to 529 students in 2019–20. Endowed scholarships help the University to maintain its commitment to attracting more public school students far into the future.

“With this scholarship, we are giving more CPS students the opportunity not only to attend Northwestern but to study at a top engineering program and to build brighter futures for themselves,” says Peter Barris, an alumnus of the McCormick School of Engineering who majored in electrical and computer engineering and now serves on the McCormick Advisory Council. He also is vice chair of the Northwestern Board of Trustees. The Barrises previously made a gift to the University to establish the Peter and Adrienne Barris Chair of Computer Science.

TODD ROSENBERG

FINANCIAL AID

Scholarships to Benefit Music and Engineering Students

Gifts from Peter and Adrienne Barris will support top artist-scholars and Chicago Public Schools grads.

A generous gift from University Trustee Peter Barris ’74 and Adrienne Barris will establish two endowed scholarships for undergraduates in Northwestern’s Bienen School of Music and McCormick School of Engineering.

The Gus and Diane Chagares Music Scholarship will help the Bienen School attract top student musicians. The merit-based scholarship, named for Adrienne Barris’ parents, will provide recipients with full tuition and room and board. It also will be the first of its kind to include a stipend to offset additional expenses incurred by music students, including participation in summer

music programs, instrument purchases and maintenance costs, and costs associated with audition trips.

“My parents shared a love of music,” Adrienne Barris says. “When I was a child, they would take me to the concerts at Northwestern’s Pick-Staiger Concert Hall, and my father was a clarinetist who played in a local orchestra for many years. This gift to the Bienen School of Music honors their memory.”

Increased merit aid for undergraduate and graduate performance majors is a top priority for the Bienen School. Scholarships allow the school to better compete with peer institutions in

recruiting and retaining exceptional music students from around the world across instruments, vocal ranges and other areas of study.

The Barrises were inspired to make a gift to the Bienen

“With this scholarship, we are giving more CPS students the opportunity... to build brighter futures for themselves.”

— Peter Barris

BUSINESS

Supporting Women Business Leaders at Kellogg

Alumna Ann Drake advances network-building, new faculty hires and scholarships through her philanthropy.

Northwestern’s Kellogg School of Management has received a transformative gift from Ann M. Drake ’84 MBA to establish the Drake Scholar Network — a powerful intergenerational and global network of women students, faculty and alumnae.

“Kellogg has a legacy of breaking new ground in the education and professional advancement of women, but there is still much work to be done to address gender-based disparities in the business world,” says Francesca Cornelli, dean of the school. “Ann’s gift will help reinforce Kellogg’s standing as the premier global business school that equips high-potential women to become impactful, inclusive leaders.”

The Drake Scholar Network will focus on three areas: enhanced educational programming and intergenerational network-building; recruitment of faculty thought leaders; and continued scholarship support through the Drake Scholars program, which has provided significant student funding since 2017. Over five years, the gift will fund a network that reaches more than 5,000 women; a biennial women’s summit; the recruitment of five to seven new faculty and two full-time staff; and 30 to 35 student scholarships.

The new program builds on Kellogg’s long-standing

commitment to supporting, educating and advancing women business leaders. The school’s many milestones include establishing the Kellogg Center for Executive Women in 2001, a first for a major business school. In 2010 Kellogg became the first top-ranked global business school to appoint a woman dean, Sally Blount ’91 MS, ’92 PhD.

Drake built her reputation in the logistics and supply chain management field after joining her family enterprise, the former Dry Storage Corp., in 1990. She grew DSC Logistics into one of the nation’s leading

supply chain management companies, becoming CEO in 1994. Drake expanded her entrepreneurial skill set by completing Kellogg’s

“Ann’s gift will help reinforce Kellogg’s standing as the premier global business school that equips high-potential women to become impactful, inclusive leaders.”

— Francesca Cornelli

Executive MBA program and has remained engaged as an alumna, establishing the Drake Scholars Fund and serving on Kellogg’s Global Advisory Board. She received Kellogg’s Distinguished Alumni Service Award in 2018.

“My experience at Kellogg gave me not only a foundational education to transform my company but a tight network of women who were crucial sounding boards and partners as I advanced in the logistics industry,” Drake says. “With this gift, I hope to make that experience possible for more women, equipping them to pursue, navigate and sustain careers that drive organizational and societal impact and create lives of personal meaning.”

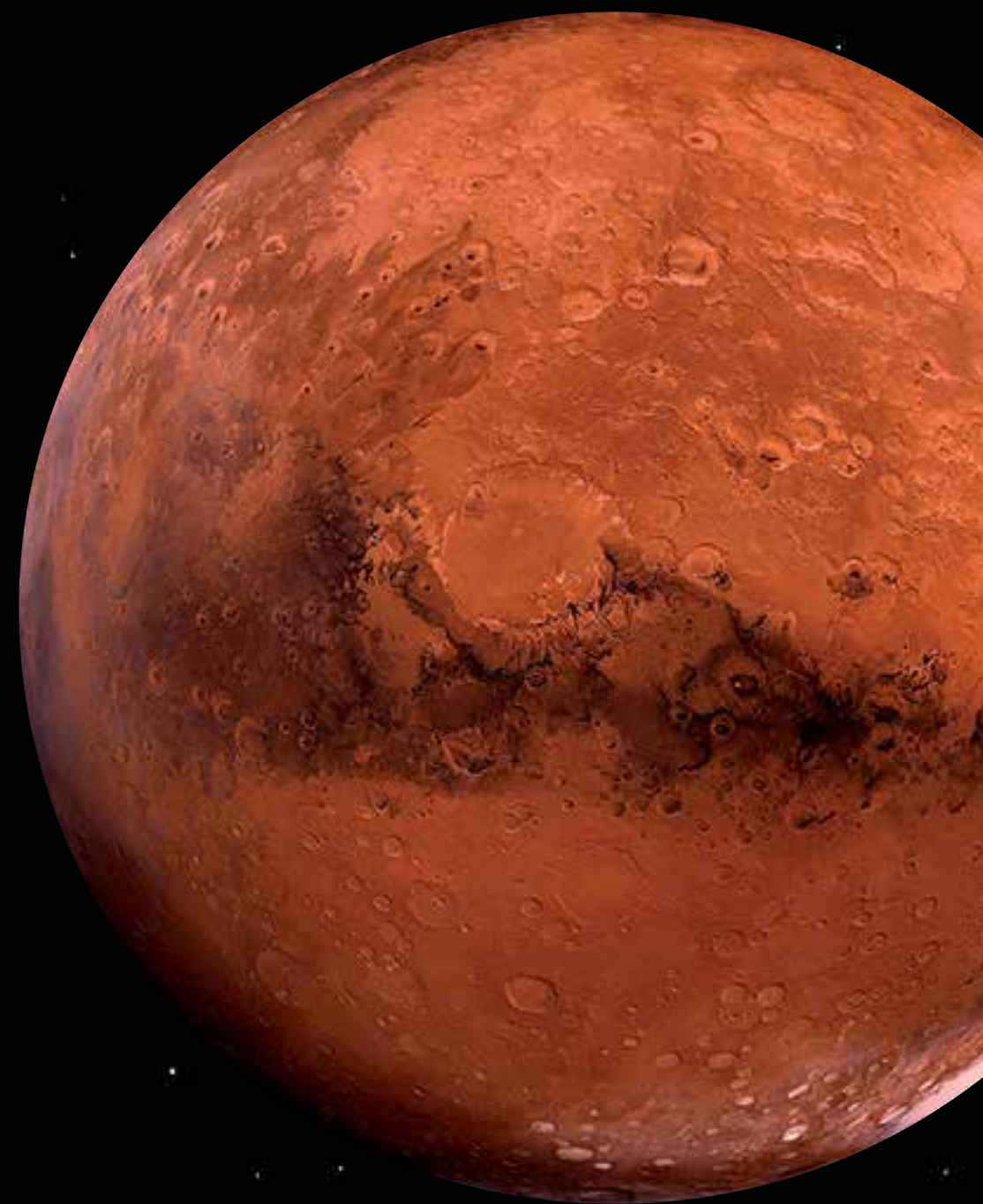
↓ Ann Drake, center, supports women students through the Drake Scholars program. She is pictured with Kellogg Dean Francesca Cornelli, far left, and past scholarship recipients.



SO FAR YET SO CLOSE

A human mission to Mars could be less than a decade away. Northwestern faculty and alumni are providing their expertise.

BY EMILY AYSHFORD



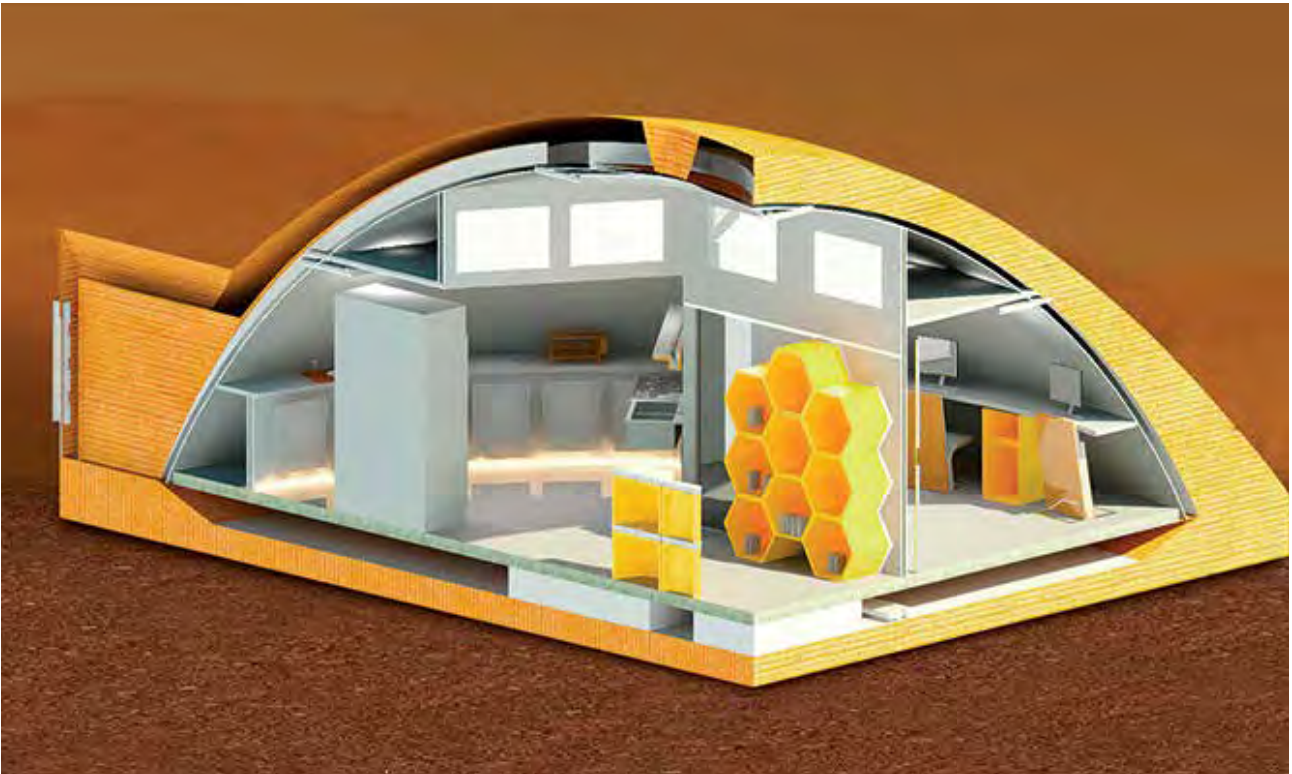
For the first settlers,

the sunrise on the first morning would look unusually faint — a distant sun peeking over a dusty horizon. Breakfast would consist of shelf-stable foods, perhaps some freeze-dried fruit, and a fresh plant or two, grown throughout the long journey. Walking around the habitat, the travelers would feel out of sorts, their bodies buoyant, unmoored in this slighter gravity, and fatigued from the long journey that would have already exposed them to numerous risks: loss of muscle mass and performance, high levels of radiation and the psychological pitfalls of a lengthy, confined expedition.

Yet with great risk comes great reward. When they pull on their spacesuits, unlock the hatch and step outside, they would be greeted by a terrain no human has walked upon before: the cold, dusty, rocky landscape of the red planet.

It's not an exaggeration to say that sending humans to Mars would be one of the greatest feats of human ingenuity ever. It is perhaps even the inevitable next step in our desire to explore. For decades, scientists and engineers have been preparing for the journey. Now human missions finally seem on the horizon: NASA hopes to send astronauts to Mars in the 2030s, and SpaceX hopes to go even sooner, by 2026.

Ensuring humans can survive together on a small spacecraft and then thrive on an unforgiving planet still requires much more work. NASA has outlined several specific hazards that astronauts will face, including microgravity, social isolation and confinement, and hostile or closed environments, which include small spacecraft and habitats that must keep



↑ A Northwestern team's Martian habitat design for NASA's 3D-Printed Habitat Challenge

astronauts safe and healthy. Each inspires its own set of threats.

Yet outer space has a way of inspiring good work. Northwestern researchers, students and alumni are part of a global undertaking aimed at both understanding and mitigating such hazards. Though they will likely never visit the red planet, they are helping to pave the way for those who will.

HAZARD: Gravity (or lack thereof)

It begins with a rumbling, as the engine systems start up. Soon, the rumbling turns into a shaking, and before long

you feel the spacecraft begin to rise into the air, away from Earth. It accelerates rapidly, the gravitational force pushing you back against your seat. Your body shakes and rattles as the rocket speeds up, rising into the stratosphere. You hear several loud bangs as the boosters and other pieces of the spacecraft detach, falling back to Earth.

And then, just a few minutes after launch, Earth's gravitational force drops, and the feeling hits you: microgravity.

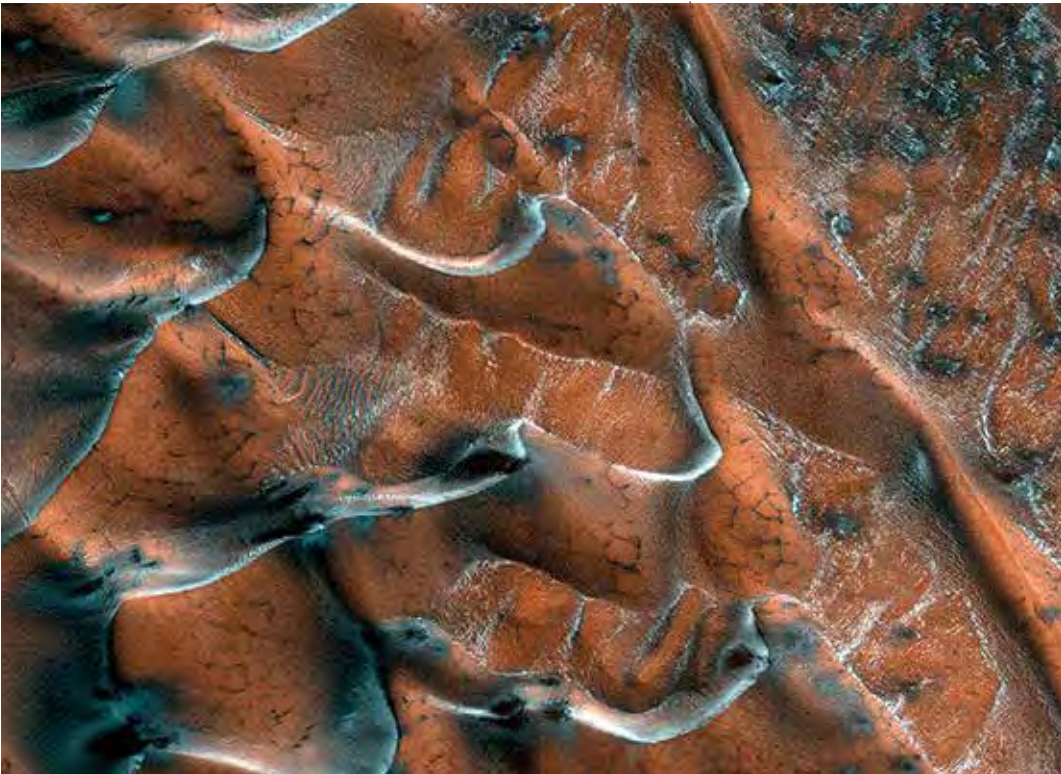
"Microgravity gives you a psychological high of realizing that you're no longer confined to Earth," says neurobiology professor Fred Turek,

who has flown many times on NASA's "Vomit Comet," an airplane that gives passengers the free-floating feeling of microgravity by climbing to 35,000 feet, then nosediving. The effect induces nausea for some, euphoria in others. "You can do somersaults in the air, over and over. It's a feeling of, 'Wow, this is fantastic!'"

But microgravity can wreak havoc on our made-for-Earth bodies. It causes our muscles to lose mass, our bones to lose density and the fluids in our bodies to shift up into our heads, causing vision problems. A trip to Mars would expose astronauts to several shifts in gravity, including weightlessness on the six-plus-month voyage, then Martian gravity, which is just 38% the strength of Earth's gravity.

To better understand how this could affect astronauts' bodies, NASA has been studying the effects of microgravity, most famously on astronaut Scott Kelly, who was aboard the International Space Station for 340 days in 2015–16, the longest single mission for a NASA astronaut.

Turek, the Charles and Emma Morrison Professor of Neurobiology, and research



↑ Sand dunes in a crater in the northern plains of Mars

professor Martha Vitaterna '92 PhD, both from the Weinberg College of Arts and Sciences, were part of a team of scientists who studied the effects of space travel on Kelly's body. They had a built-in control with Scott's twin brother, Mark, an astronaut who remained back on Earth.

They found that Scott's microbiome — the trillions of bacteria and organisms that line our gut, help us digest food and send molecules throughout our bodies — shifted during his time in space. More than 90% of gut bacteria belongs to two categories: Firmicutes and Bacteroidetes, both of which contain a mix of good and bad bacteria. Scott's ratio of these two groups shifted while in space: The number of Firmicutes increased, while the number of Bacteroidetes decreased.

Though Scott and his brother ate different foods, the shift couldn't be attributed to diet alone: Researchers also saw the same shift in a group of mice who spent time aboard the ISS, and not in their control counterparts who ate the same food on Earth.

The change could be due to microgravity, but the results need further study. The answer could have profound implications for long-term space

travel, since the microbiome has been implicated in many immune diseases and even mental health issues such as anxiety and depression. The ultimate goal is to understand what interventions would be needed to maintain microbiome health throughout the journey.

"If you're sending an astronaut to Mars, you're sending them with millions of their little bacterial friends," Vitaterna says. "It's an important part of the body, and you want to use anything you can to safeguard the health and well-being of that body."

To continue this research, Vitaterna is participating in an experiment with the Japan Aerospace Exploration Agency to put mice in artificial gravity — including at levels that approximate the gravity of Mars — to further study the effect on their microbiomes.

HAZARD: Isolation and confinement

"All the conditions necessary for murder are met if you shut two [people] in a cabin measuring 18 feet by 20 and leave them together for two months," former Soviet cosmonaut Valery Ryumin wrote in his diary in 1980.

Getting to Mars



Duration of trip there:
Six to 12 months

Average distance from Earth:
140 million miles (ranging from about 34 million to 250 million miles, depending on each planet's orbit)



394 feet



365 feet



305 feet

Vehicle:
SpaceX hopes to use its **Starship spacecraft with its Super Heavy rocket** (far left), while NASA plans to use its **Space Launch System rocket and Orion spacecraft** (middle) for upcoming trips to the moon and beyond.

MARTIAN 3D DESIGN BY NORTHWESTERN TEAM

NASA/JPL-CALTECH/UNIVERSITY OF ARIZONA



↑ Participants live in a space-like habitat at NASA's Human Exploration Resource Analog.

Astronauts traveling to Mars are the ultimate isolated team. Not only must they work long hours and live with their co-workers in a confined environment, they must do it without much additional support: As they travel farther from Earth, messages from Mission Control could take up to 20 minutes to reach them.

If those conditions are indeed ripe for murder, behavioral science researchers Noshir Contractor and Leslie DeChurch are prescient detectives, working to suss out a crime before it happens. Both are experts on team performance, as well as space travel buffs: As a child, DeChurch watched from a Florida beach as the space shuttle Challenger exploded in 1986, and

Contractor interned for the India Space Research Organization in college.

Contractor, the Jane S. and William J. White Professor of Behavioral Sciences, studies teams as networks — how relationships among members affect overall team performance — while DeChurch, professor of communication studies and chair of the department, studies the psychology of teamwork and leadership. Though the two researchers study team dynamics from different angles, they have been building a model to determine how to build astronaut teams that can work together in isolated environments and how to repair teams that aren't working well together.

“All the conditions necessary for murder are met if you shut two [people] in a cabin measuring 18 feet by 20 and leave them together for two months.”

— Valery Ryumin, cosmonaut

To do so, the researchers and their teams have interviewed astronauts who formerly lived on the ISS and have studied teams within 17 different space mission analogs — where regular people live in an isolated, space-like environment for weeks or months on end. Much of their data has come from the Human Exploration Research Analog at NASA's Johnson Space Center in Houston.

Some insights seem self-evident: the importance of team members simply saying “please” and “thank you” to each other, and the value of meticulous scheduling that creates a familiar rhythm to the day. Other insights could have the potential to change the outcome of a mission entirely. For example, when an astronaut has to perform a stressful task, like a spacewalk, it can consume their mind for the entire day, meaning tasks they perform beforehand might not receive as much thought and care.

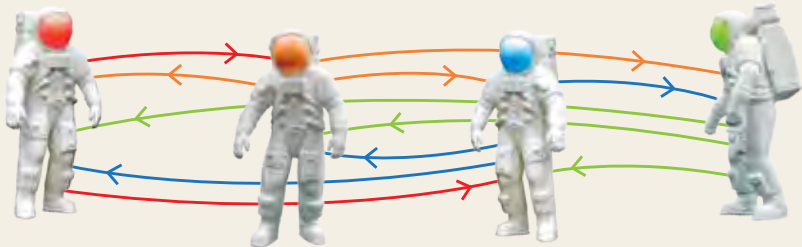
Importantly, researchers also found that creative thinking and decision making decline after the midpoint of the mission — an especially consequential insight, considering the duration of a Mars mission. Part of that is due to the decreased stimuli in the environment: eating the same foods, talking with the same people, looking at the same dark view, hour after hour. The insight also reflects what is called the “third-quarter phenomenon.” During this time, the excitement of the beginning has waned, but the end of the long trip is not quite in sight. Motivation is down; tensions are up.

“This shows that teams really do need care along the way to ensure they continue performing at high levels,” DeChurch says.

HERA PHOTOS: BILL STAFFORD/NASA/JSC

Outer Space Insights: Research on Astronauts Can Help Us Work Together — Even When We're Apart

For the past year, many have felt like they were isolated in their own private spaceship, only connecting with others through virtual meetings. Professors Noshir Contractor and Leslie DeChurch offer tips on how to maximize your team in a virtual world.



“Re-pair” your team

If your team (or family members) are not playing well together, try to change who is working closely together and give team members tasks they want to do.

Promote positive small-group living

Positive small-group living requires being tolerant of other people, engaging in constructive conflict, providing support and understanding differences. Create rituals that bring you together.

Manage the third quarter

The third-quarter phenomenon occurs when the excitement of a new journey or task fades but the end is not quite in sight. Mood and motivation drop. Knowing this will happen, you can work to manage it.

Create structure and meaningful routines

When explorer Ernest Shackleton and his crew were trapped in the ice of Antarctica, he worked to create a structure for their day that would ensure the crew wouldn't lose hope. By creating a regular schedule, you can find structure in endless days and adjust more easily to a new environment.

Remember that humor is a coping style

In any situation, humor can diffuse conflict and bring joy. — E.A.

Using this data, the duo is creating a model that NASA could incorporate into a mission dashboard for its upcoming Artemis missions to the moon — a precursor to Mars missions. The model can predict with 80% accuracy how teams will work together. It can then use that information to “re-pair” teams throughout the mission. That is, if two team members aren't getting along, they can be paired with other team members for certain tasks.

“We want to not just predict what will happen within teams,” Contractor says. “We want to be able to change it and optimize it. Perhaps two people will need a cooling-off period or will need to get

reassigned to tasks that they really enjoy doing. We want them to continue to find success together and build better bonds.”

HAZARD: Hostile or closed environments, including small spacecraft and habitats

Keeping the crew alive and thriving during the flight is only the first part of the challenge. When humans land on Mars, they will disembark to find a cold, rocky landscape rife with dust storms and radiation from outer space, knowing that this is the place they will call home for months or even years to come.

Such isolation and self-reliance have been common challenges in voyages throughout most of human history. Explorer Ernest Shackleton wrote that his ill-fated trip across Antarctica that began in 1914 was full of “high adventure, strenuous days, lonely nights, unique experiences and, above all, records of unflinching determination, supreme loyalty and generous self-sacrifice.”

But in our hyperconnected, constructed world, it can be difficult to imagine such a dangerous, remote existence, or how such a landscape would affect the very team meant to study it.

That's what Mars analog missions are for. Brian Shiro '00, an aspiring astronaut, has been a pseudo-Martian several times, including at the Flashline Mars Arctic Research Station on Canada's Devon Island, the Mars Desert Research Station in Utah and the NASA-funded Hawaii Space Exploration Analog and Simulation (HI-SEAS).

At these analog sites, the crew lives and works under constraints similar to those they would face on Mars. Days are filled with performing extravehicular activities, running research projects, writing research reports to mission support, and doing chores such as habitat maintenance and cooking meals. The rules are strict: No going outside without wearing a spacesuit, no real-time communication with Earth, no browsing the internet, no more than five minutes of shower time per week. And anything that breaks must be fixed with available tools and materials.

Shiro, a geologist who studied volcanoes in Hawaii for his doctorate, was co-investigator from 2013 to 2018 at the HI-SEAS site, where he trained crews to navigate rocky landscapes in their spacesuits and collect geological data. He also studied the effects of isolation on teamwork and crew performance in harsh environments.

Shiro applied to be an astronaut multiple times and was among a group of highly qualified top applicants. Though he was not selected, he still holds out hope for private space travel.

Living on Mars, he says, “the goal would be to keep everyone alive and working well together, to make sure crews stay sane, happy and healthy.”

But to create a livable community on Mars, astronauts would need shelter

“There’s a lot of interest in large-scale 3D printing of concrete. It opens the doors to new kinds of concrete structures.”

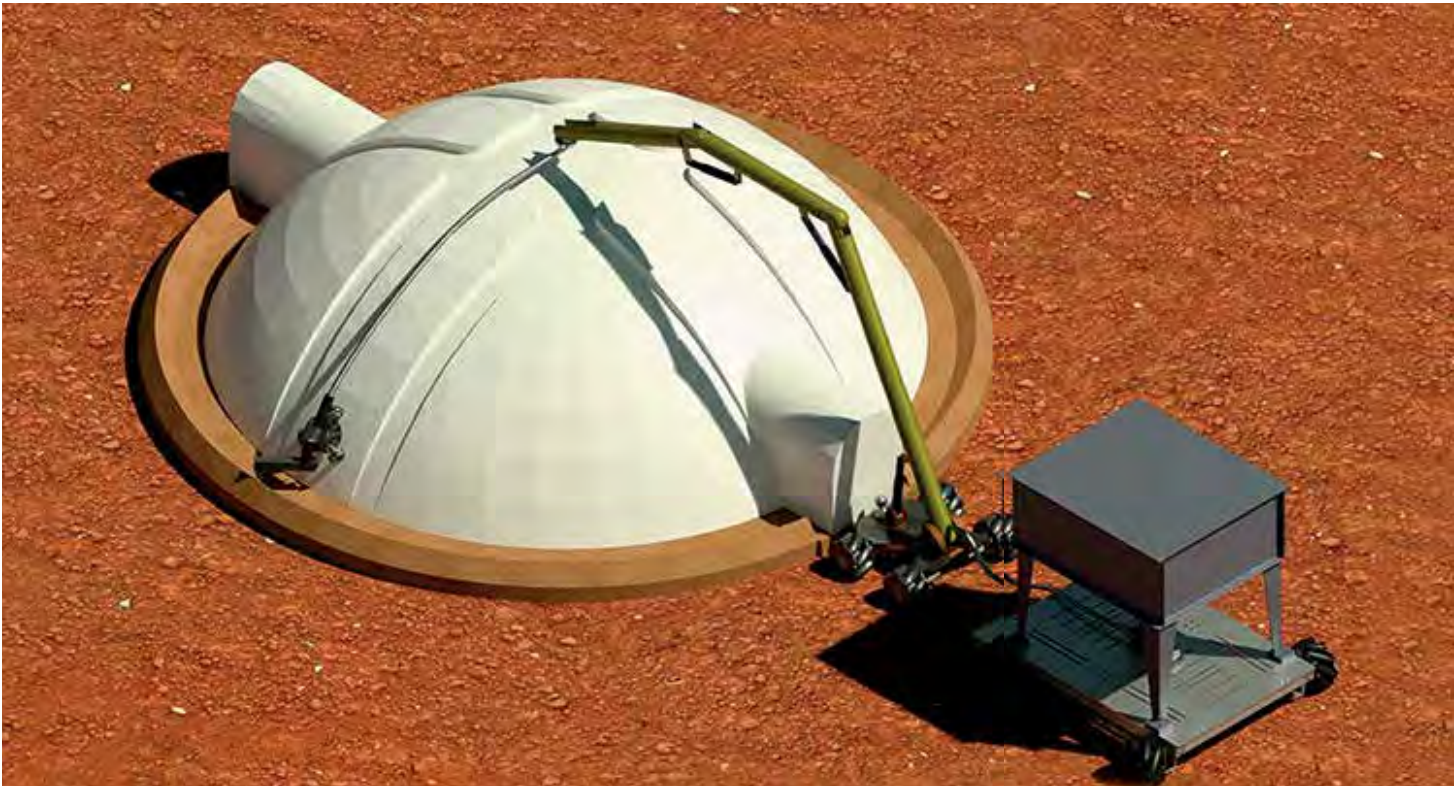
— Matthew Troemner

— ideally one that was ready for them when they landed. NASA has said that it could send 3D-printing robots to Mars to build shelters in advance of human arrival, but what materials they would use remains an open question.

“You cannot ship cement bags from Home Depot to Mars,” says Gianluca Cusatis, professor of civil and environmental engineering.

Several years ago, Cusatis and his graduate student Matthew Troemner developed an answer to the Mars construction problem: Marscrete, a concrete made from a Martian soil simulant and sulfur, which is abundant on the planet.

Marscrete was a success: It is two to three times stronger than Earth-based sulfur concrete, and it reacts with the metals in the Martian soil, making the material as strong as the concrete used to build skyscrapers on Earth (typically made of gravel, cement and water). That’s important, because the planet faces several meteorological and astronomical hazards, from dust storms to radiation to meteor strikes.



↑ A depiction of the envisioned 3D-printing process to form the habitat’s protective shell

In 2018, Troemner, Cusatis and other team members put Marscrete to the test when they designed a Martian habitat as an entry into NASA’s 3D-Printed Habitat Challenge. The igloo-like structure includes a lab, kitchen, bathroom and private bedrooms and takes into account Martian gravity and the planet’s shifting sand dunes.

They knew they had a strong enough design to withstand the climate, but to make the design human-friendly, they consulted with professors from across the University. Turek, an expert on circadian rhythms, suggested a design that would

help maintain astronauts’ sleep-wake cycles during a Martian solar day, which is 24 hours and 39 minutes. That led the team to include hue-changing lights that shine cooler colors during the day and more reddish tones in the evening. They also included monitors that showed a video feed of the area outside — a pseudo-window to the Martian day.

The design won fifth place in the Level 1 Virtual Design Challenge. The next step was to build the shelter. To do so, they designed a 3D printer and created a specialized 3D-printing facility on campus capable of printing Marscrete.

MARTIAN 3D DESIGN BY NORTHWESTERN TEAM

Though they did not advance in the NASA challenge, the team plans to use the facility for concrete research, both with sulfur and other earthly materials. “There’s a lot of interest in large-scale 3D printing of concrete,” Troemner says. “It opens the door to new kinds of concrete structures.”

Return to Earth
When the first astronauts on Mars ultimately return to Earth, they face months or even a year of readjusting to a life of Earth-level gravity, an assortment

of tastes, smells and sounds, and a new daily routine of endless choices.

And for the rest of the earthbound world, the research that helped get astronauts to Mars and back will lead to a better understanding of our bodies and our relationships.

Knowing that astronauts can be stressed out before they take a spacewalk can give us insights into our own workflows. If you have a difficult task coming up, DeChurch says, don’t schedule important work beforehand. And also recognize the importance of a daily rhythm and flow, Contractor says.

“The people who report having good mental health, especially in a crisis, create structure that they adhere to that makes it possible to add meaning to their lives,” he says.

Cusatis and Troemner are using what they’ve learned to partner with companies to develop sulfur-based concrete as a more environmentally friendly alternative to regular concrete. Oil companies, for example, have an abundance of sulfur left over from the refining process. Finding a way to integrate that into 3D-printed concrete could be a way to use the material in new situations, such as military deployments or disaster relief.

“Students get excited about working on projects related to Mars,” Cusatis says. “But it’s not just about designing for NASA challenges. Our work in 3D printing and using new materials for structures can really be applied to making construction better here on Earth. That will have real consequences for our own planet.”

Emily Ayshford ’12 MFA is a freelance writer in Chicago.

Preventing Wear and Tear on Mars Rovers

Before humans even set foot on Mars, they will already have a cache of Martian rocks and soil to study back on Earth, thanks to the Mars Perseverance rover, which landed on the planet in February.

The rover’s caching system — which uses a drill to capture samples and place them in tubes — was optimized with the help of Ashlie Martini ’98, ’07 PhD, professor of mechanical engineering at the University of California, Merced.

An expert in tribology — the study of friction, wear and lubrication — Martini joined forces with one of her former graduate students who now works at NASA’s Jet Propulsion Laboratory to study lubricants for the rover’s mechanical parts. Because Mars is too cold for normal lubricants like grease to work, engineers use solid lubricant coatings to ensure that mechanical components function smoothly and don’t need maintenance after they leave Earth. So JPL teamed up with Martini and used her lab’s tribometer — an instrument for measuring friction and wear — to test solid lubricant coatings under various environmental conditions.

Martini, who studied under mechanical engineering professor Q. Jane Wang ’93 PhD, says, “tribologists are not in the news a lot, so it’s a neat opportunity for our field to be in the spotlight.” — E.A.

Mars Essentials: Revealing the Red Planet



SAVED BY THE STAGE

Theater for young audiences
entertains and opens minds
— and it's not just for kids.

BY MARTIN WILSON

I SMAEL LARA JR. GREW UP in southeast Texas, in the small town of Palacios, halfway between Galveston and Corpus Christi. He fell in love with theater and the arts in high school, but telling stories was not just a hobby. It was a way to survive.

Lara grew up in a home with domestic violence.

“When my father would act out,” Lara says, “I would go to my baby sisters’ room, throw a sheet over our heads and tell a story. It was a means of escape and a way for me to provide bravery and safety for my sisters.”

Lara, a third-year student in Northwestern’s Master of Fine Arts in Directing program, continues to tell stories for young people, now just on a bigger stage.

He is part of a long line of Northwestern students and alumni who have discovered the world of theater for young audiences (TYA), an approach to family-friendly performance that has the potential to open minds and change lives — for audiences and artists alike.

This past winter Lara directed *Tomás and the Library Lady*, a play by José Cruz González based on Pat Mora’s picture book of the same name. “I am the only Latine-identifying director in the MFA program,” says Lara. “And I think it was important that someone of Latine and/or Chicano heritage and identity lead this show.” (Latine is a gender-neutral term for Latin Americans.)

The play tells the story of a young boy who travels between Texas and Iowa

with his family of itinerant agricultural workers. At the urging of his grandfather, Papa Grande, Tomás visits a library in Iowa that transforms his life by introducing him to the power of books. The story was inspired by the life of scholar and author Tomás Rivera, who became chancellor of the University of California, Riverside.

“I thought about my grandparents, who worked as migrant workers in fields and who paved the way for me to be here at Northwestern doing this magical thing of telling stories,” Lara says. “[That reflection] was really profound for me, and so immediately I said, ‘I want to tell this story.’”

The University played an integral role in the origins of theater for young audiences and, through programs such as Imagine U, has been at the cutting edge of the approach ever since. The very idea of TYA as an art form unto itself grew out of pioneering work by Northwestern professor Winifred Ward (class of 1905), who founded the Children’s Theater of Evanston in 1925.

And today Northwestern students and alumni are doing everything from creating shows for the National Theatre in Washington, D.C., to running multimedia companies with hit podcasts to bring this sophisticated entertainment to audiences worldwide.

“I love the fact that theater for young people is done at a very high level at Northwestern,” says Rives Collins, professor of theater and head of the School of Communication’s theater for



Tomás and the Library Lady
director Ismael Lara Jr. backstage
with the “scary teacher” puppet

Photograph by Shane Collins



young audiences module. “This is a community that takes children and the arts for children very seriously.”

The way TYA is taught and executed at Northwestern creates theater experiences that move beyond the clichés associated with “children’s theater.”

“In the national scene, there is an awful lot of bad theater for young people,” says Collins. “People used to think this is where folks who aren’t really actors can go to be hams, less talented designers can work in primary colors and less gifted writers can offer emotional clichés to our children. I fight against those stereotypes with every fiber of my being.”

For many, the archetype of children’s theater might be a play in a school assembly where performers discuss the food groups and perhaps sing about the importance of eating fruits and vegetables. Collins and the theater

department work in a less pedantic mode, aiming for a higher level of artistry without condescension, and with a more inclusive approach, accessible to more children and reflective of more diverse experiences and communities.

“People like Rives and [Imagine U creative director] Lynn Kelso have studied the form, have spent their lives dedicated to the form and are connected to professionals in the field,” says playwright and senior lecturer Laura Schellhardt ’97. “At Northwestern, we are leading from a place of generosity, kindness and curiosity. Those should be the bedrock of all theater, but they are certainly the bedrock of theater for young audiences.”

REPRESENTATION ON STAGE

From his apartment in January, Lara held virtual rehearsals with the cast and crew of *Tomás and the Library Lady*, the first show to be staged during the pandemic by Imagine U, the theater department’s series for young audiences. Using two laptops simultaneously, one aimed at himself and the second at a one-fourth model of the set, he led a blocking rehearsal, determining each actor’s positioning and movements. From

↑ Sophomore Daniel Calderon, right, as Tomás, discovers the power of books in the Imagine U production of *Tomás and the Library Lady*, with, from left, sophomore Alondra Rios as Josefa, Tomás’ mother; junior Danny Mares as Tomás’ grandfather, Papa Grande; and senior Ruby Gibson as the Library Lady.

Imagine U’s production of *Tomás and the Library Lady* was filmed for streaming by the Wirtz Center for the Performing Arts in accordance with COVID-19 safety protocols.

JUSTIN BARBIN ’11

this makeshift command center, Lara manipulated the scene like a dollhouse, with a figurine representing each actor.

Lara was sanguine about the difficulties of staging a production during a pandemic. “If Northwestern is a research institution, we’re doing research right now,” he declares. “We know how to do an old-fashioned rehearsal. We’re trying to figure this new thing out. This is a fascinating experiment.”

On top of Zoom rehearsals, COVID-19 tests and masked performances, the actors would also eventually be wielding intricate puppets onstage in the Ethel M. Barber Theater.

“I had never touched a puppet in my life,” says Alondra Rios, now a second-year theater major who played Josefa, Tomás’ hardworking mother. “But I definitely wish I had been able to see something like *Tomás* when I was younger.

“There’s not even a Hispanic Disney princess,” she adds. “Being able to see a story that is reflective of your own experience is important.”

On the Zoom call, Danny Mares vibrated with excitement. He played Papa Grande, Tomás’ wise grandfather. “He reminds me of my grandpa, Papa Trino, who worked in Mexico his whole life picking apples,” says Mares. “My dad told me Papa Trino loved to tell stories and to teach — exactly like Papa Grande!

“I’m excited not only to tell the stories in the play but also to tell a story of embracing your identity,” says Mares, now a third-year theater major. “My mother is Caucasian, and my dad is Hispanic. Growing up, I felt like I was a part of both groups but I also wasn’t a part of both groups. I almost wanted to reject my identity. Now I’m trying to get more involved with my Hispanic side. That’s why I’m passionate about playing Papa Grande. I hope I can inspire kids to be proud of their identity.”

In March, Mares and his six masked castmates performed in an empty theater with the same energy as if it were a packed house, singing with gusto in both Spanish and English. The performance was available to stream online.

Helping kids see and experience other perspectives and points of view is one of the fundamental goals of TYA. “We think a lot about representation on our stage,” says Collins. “Our shows are diverse in ways you can see and sometimes diverse in ways you can’t see. But all kids have a chance to see themselves in our productions.”

IMAGINE U BREAKS THE FOURTH WALL

In 2010 Lynn Kelso ’97 MFA created Imagine U as a series of official theater department productions specifically for young people, providing not only entertainment and education for young audiences but also performance and experiential learning opportunities for Northwestern students.

“I didn’t want Imagine U to be a birthday party drop-off destination,” Kelso says, “because the experience is to be shared. The best moments are when I see parents and children talking about the play as they leave the theater.”

When young people walk into a Wirtz Center for the Performing Arts venue for an Imagine U show, the lobby is bustling with creative energy. Before the theater doors even open, kids are handed an activity booklet and encouraged to add their art to the colorful displays along the walls.

“The engagement and educational efforts supplement the in-person show experience,” says Hannah McGrath ’21, who



↑ Professor Rives Collins, former chair of the theater department, performs in his storytelling show, *Stories from the Swamp*. In April, Collins was made a lifetime fellow in the College of Fellows of the American Theatre.

was co-director of education and engagement for Imagine U this past spring. “For *Tomás*, I filmed a tour of the Robert Crown branch of the Evanston Public Library in Spanish and in English. It nicely supplements the plot of the show, which is all about libraries and the power of books.”

“The production itself,” says Collins, “is at the epicenter of a larger learning experience.”

E. Patrick Johnson, dean of the School of Communication, says early exposure to theater and performance work unequivocally changed his life. He knows the art forms’ power.

“In seeing our students’ brilliance on display, feeling that sense of belonging we engender, and understanding they too can and should share their creative voice, children get a crash

course in the power of collective wonder,” Johnson says. “Those moments are pivotal in fostering joy, compassion and curiosity in young minds and hearts.”

OPENING THE DOORS WIDER

There are a number of TYA-focused student groups at Northwestern (see “The Kids Are All Right,” opposite page). Seesaw Theatre specifically focuses on creating multisensory experiences for neurodiverse children, both in its own productions and in collaborations with Imagine U. Seesaw Theatre productions differ somewhat from traditional narrative shows in that kids can participate in any way they want with the characters, music, activities and props.

“Imagine U was one of the first groups to engage the Seesaw artists to do a ‘relaxed’ performance,” Kelso says, “and that has made our shows available to children who otherwise wouldn’t have an opportunity to experience plays.”

One Seesaw Theatre fan is 12-year-old Max Fortmann. He has 1p36 deletion

syndrome, which results in cognitive and developmental disabilities, including difficulty with verbalization, according to his mother, Anna Guillemin. When Seesaw Theatre came to the Park School in Evanston, which works with children who have significant disabilities, Fortmann was thrilled. “He’s very social and driven by sounds and sensory information,” says Guillemin. “So watching the Northwestern students and all their instruments was utterly fascinating to him.”

Every Seesaw Theatre production is flexible and open-ended enough that, by design, no two children necessarily have the exact same experience. “We like to keep a 1-to-1 ratio of Seesaw adventure guides to kids,” says Michael-Ellen Walden ’21, who was Seesaw Theatre’s artistic director in the spring, “so that every audience member has their needs specifically attended to.” Adventure guides are trained students who accompany audience members through a Seesaw Theatre performance.

“We’ve had kids run around the space for 45 minutes and not engage with our characters at all,” explains Susie McCollum ’21, who was executive director of Seesaw Theatre in the spring. “That’s great. And we’ve also had kids really respond to the story. There are experiences available for both of those realities, and in many instances both are happening within the same space.

“The way to be an audience member is something that is so socialized for — and by — neurotypical individuals,” she adds. “Breaking down the othering of the disability community is always a priority for me.”

A PIRATE’S LIFE FOR ME

Collins is proud of the many Northwestern alumni who have gone on to make careers out of their work with young audiences. “We have people who are bringing classrooms to life through drama,” he says. “We have people who are directing and making plays happen. And we have people who are telling stories in extraordinary ways.”

One of those people is Benjamin “Jamie” Salka ’99. He takes children and their ideas very seriously. That’s partly because being taken seriously as a child made a huge difference in his own life.

“My dad died when I was little,” says Salka, “but the story of my childhood is not a tragedy because of the way that the adults in my life supported me. I could have easily been written off, because my childhood trauma left me outwardly very quiet. But there was so much going on inside me — I was answering questions about what is life, what is death, what does it mean to be here.”

When Salka was in sixth grade, his drama teacher asked if he would like to write the school play. “It was the perfect thing for me,” Salka says. “I had been processing the world for years, and I just put everything into this play.”

He wrote and starred in a musical adaptation of *Oedipus Rex* but can’t remember much about it. “What I do remember was the 30 seconds after the play ended, when the entire school was applauding for my work — for something I’d created,” says Salka. “It was a real turning point. Theater is where I found meaning and connection, and it brought me out of myself, to share who I am with the world.”

In 2004 Salka and Lee Overtree ’02 co-founded Story Pirates, which produces a live show where professional comedians, actors and musicians perform playful versions of material submitted by kids.

The idea for Story Pirates and its philosophy took root when Overtree discovered the Northwestern student group Griffin’s Tale, which adapts stories written by Chicago-area students into scenes, songs and sketches. “When I first saw these kids’ stories being brought to life onstage, it jumped out at me that



↑ Emily Komarow ’20, right, and an audience member in *Wanderland*, Seesaw Theatre’s 2018 spring production



↑ The Story Pirates cast takes the stage in New York City, including Emily Olcott ’13, ’13 CERT, front, and, back row from left, Donald Chang, Justin Phillips, Austin Sanders, April Lavelle and Khalia Davis.

The Kids Are All Right
These Northwestern student groups inspire — and draw inspiration from — young audiences. Read more at alummag.nu/tya.

GRIFFIN’S TALE The group, founded in 1990, adapts stories written by elementary school students, then performs their stories for the school. Griffin’s Tale inspired Halena Kays ’96, assistant professor of theater, to form the theater company PlayMakers Laboratory (formerly Barrel of Monkeys). Lee Overtree ’02 also drew on his Griffin’s Tale roots to create Story Pirates.

PURPLE CRAYON PLAYERS Founded in 2005, Purple Crayon Players produces a season of plays for kids every year, often focusing on new and less mainstream work. The group also produces an annual PLAYground Festival that brings professional TYA playwrights to campus to rehearse new material with Northwestern students.

SEESAW THEATRE Seesaw Theatre, which grew out of the Purple Crayon Players and became its own entity in 2012, creates multisensory theater experiences for neurodiverse children, who can interact in any way they choose with the characters, story and activities. Every year, Seesaw Theatre produces the Inclusive Theater Festival to bring together artists, scholars and disability advocates.

these were not ‘just kids,’” says Overtree, Story Pirates’ creative director. “These were individuals with a really unique, filterless way of looking at the world.”

Now Overtree and Salka are taking the philosophy of TYA from Northwestern and bringing it to a global audience.

The *Story Pirates* show started in New York City (in the same basement theater where Lin-Manuel Miranda and Thomas Kail were working on *In the Heights*). It has since added dozens of Northwestern alumni to the cast and expanded to Los Angeles. The arts education and media company now produces the chart-topping *Story Pirates Podcast* and a slate of virtual programming. (Read more about Story Pirates at alummag.nu/pirates.)

“Story Pirates is an overabundance of instant gratification,” says Salka, now CEO of the media company. “There’s almost not a day of the year when I don’t get a note from a parent or a teacher or a principal that says, ‘I’ve seen Story Pirates change my kid’s life.’

“The experience I had of being celebrated for my creative work is happening to thousands and thousands of kids every year because of Story Pirates.”

Theater for young audiences at Northwestern has transformed lives — not just for Benjamin Salka and Max Fortmann and Ismael Lara Jr. and the countless kids who can see themselves represented, but also for the creators who find meaning and purpose in the work.

“People in this field want to be artists, certainly,” says Collins. “But they also want to make a difference in the world. What I’ve seen is a hunger, not only for the art form but for service. And that’s part of what has made this work so vibrant.”

Martin Wilson ’10 MS is director of creative production in Northwestern’s Office of Global Marketing and Communications.

OUTSMARTING THE DEADLIEST BRAIN CANCER

Northwestern scientists are testing novel approaches to break the grip of glioblastoma.

BY CLARE MILLIKEN

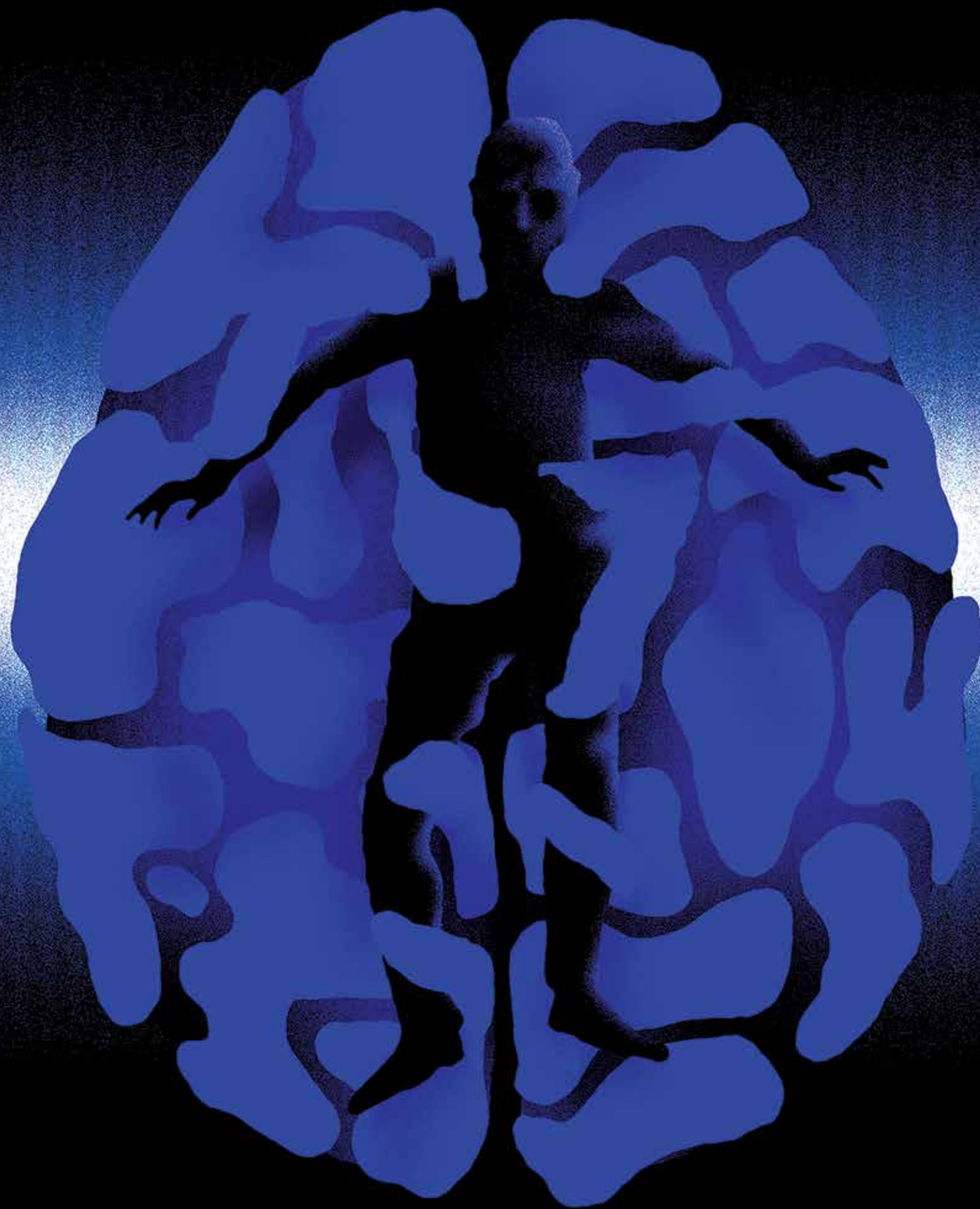
Three years ago, Ned Smith was shopping with his youngest daughter, Cecily, and his wife, Erin. Smith, then 38, had his daughter on his shoulders when he tripped and fell on the sidewalk. Erin insisted they go to the hospital. Her husband had been tired and off balance for a week, and now it was time to investigate.

After several scans and tests, Smith was diagnosed with glioblastoma, the most prevalent, hardest to treat and deadliest of all cancers that begin in the brain.

About 25% of patients with glioblastoma survive two years after their diagnosis. Fewer than 5% survive five years, and fewer than 1% survive 10 years. And those years and months of survival can be brutal — filled with treatment side effects and impairments to speech, cognition, sight, movement and more.

For Smith, his life as a father of four, a husband and an associate professor in the Kellogg School of Management was suddenly interrupted by cycles of radiation and chemotherapy. A social scientist, Smith pored over glioblastoma research studies as the left side of his body went numb. He suffered seizures and devastating fatigue. He spent months in a wheelchair and lost his sense of time.

“Glioblastoma goes to the heart of who we are. It grabs you at the soul,”



Illustrations by Daniel Zender

GLIOBLASTOMA BY THE NUMBERS

MORE THAN
13,000

NUMBER OF PEOPLE
DIAGNOSED WITH
GLIOBLASTOMA EACH
YEAR IN THE U.S.

15 MONTHS

MEDIAN SURVIVAL FOR
PATIENTS DIAGNOSED
WITH GLIOBLASTOMA

1 IN 4

NUMBER OF
GLIOBLASTOMA
PATIENTS TREATED
WITH THE STUPP
PROTOCOL — CREATED
BY PROFESSOR ROGER
STUPP — WHO SURVIVE
BEYOND TWO YEARS

43%

PERCENTAGE OF
GLIOBLASTOMA
PATIENTS TREATED WITH
THE STUPP PROTOCOL
AND TUMOR-TREATING
FIELDS WHO LIVE MORE
THAN TWO YEARS

7

NUMBER OF CLINICAL
TRIALS FOCUSED
ON GLIOBLASTOMA
PATIENTS AT
NORTHWESTERN'S
LURIE CANCER CENTER

says Maciej Lesniak, the Michael J. Marchese Professor of Neurosurgery and chair of neurological surgery at the Feinberg School of Medicine. “Our whole entity — who we are as human beings — is focused on our central nervous system, and this is a cancer that basically liquefies your brain and destroys it.”

At Northwestern, Lesniak and others have spent decades searching for answers to a vexing cancer. From bench to bedside, these scientists have shed new light on glioblastoma, brought new technologies to patients and even developed promising therapies that could revolutionize glioblastoma treatment — and cancer care more broadly. “It’s a field [ripe] for new advances,” says Lesniak, who is also program leader in neuro-oncology at the Robert H. Lurie Comprehensive Cancer Center of Northwestern University. “There is a lot of opportunity here to make a dent in the disease.”

“Early in my career, I would give the diagnosis, and the first question [a patient asked] would be, ‘What’s the prognosis?’” says James Chandler, the Lavin/Fates Professor of Neurological Surgery and vice chair for clinical affairs in the neurological surgery department at Feinberg. “I would go into an explanation about survival curves, and then I had patients who survived five years and 10 years. And I realized everybody’s different, there are new advances every year, and the worst thing that you can do is to strip a patient and their family of hope.”

An Insidious Beast

Glioblastoma is a fast-growing tumor that spreads easily throughout the brain. There are treatments for the initial “primary” tumor, but the cancer survives and grows in nearly all instances, and treatments for recurrent tumors only add months of survival at best. “Remission doesn’t apply to glioblastoma,” Smith says. “The cure rate is essentially zero.”

Newly diagnosed patients typically undergo surgery to remove as much of the tumor as possible. But even that has its limits.

“By the time a patient has symptoms that would cause them to go for a neurological exam, the tumor has existed long enough that its cells have disseminated to near and far regions of the brain,” says C. David James, professor

emeritus of neurological surgery at Feinberg.

Surgery cannot remove all traces of the tumor because glioblastoma spreads throughout the brain. “In other words, what we see on the scan is only the tip of the iceberg,” says Roger Stupp, chief of neuro-oncology and the Paul C. Bucy Professor of Neurological Surgery at Feinberg. “Even the best-skilled surgeon cannot get every last cell.”

The variation of these tumor cells is another critical roadblock. “At a cellular level, the tumor is made up of many different subpopulations of cells, which provides it with an incredible ability to survive,” James says.

“[Glioblastoma] grows really fast, and it’s smart — that’s the headline,” says Priya Kumthekar ’08 GME, ’11 GME, ’12 GME, associate professor of neurology and medicine at Feinberg. “It can change its genetic composition over time and in response to treatment. It can be treated and sit still for six or nine months, and then suddenly it will grow over a three- or four-week period.”

“Glioblastoma goes to the heart of who we are. It grabs you at the soul.”

— Maciej Lesniak

The tumor’s location in the body also poses challenges.

“The brain is our most delicate organ,” Stupp says. “It’s one of the few organs that is not duplicated. I can take out half of the lungs, but I cannot take out half of the brain.”

The organ is also surrounded by the blood-brain barrier, an ordinarily protective structure that, in the treatment of glioblastoma and other brain tumors, hampers success.

“The blood-brain barrier prevents substances from getting into the brain,” Lesniak says, “and it presents some practical difficulties for us to achieve



KUMTHEKAR: MICHAEL PARRA; STEGH: ROBERT KNAPP; MIRKIN: JOEL WINTERMANTLE; LESNIAK: NORTHWESTERN MEDICINE; STUPP AND CHANDLER: MICHAEL PARRA



1 Priya Kumthekar, right, and Karan Dixit review data in a clinic. 2 Alexander Stegh, right, works in a lab. 3 Chad Mirkin meets with his team. 4 Maciej Lesniak in surgery. 5 Roger Stupp, left, and James Chandler, co-directors of the Northwestern Medicine Lou and Jean Malnati Brain Tumor Institute of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University.

things that are easier to do with systemic cancers [like breast or colon cancer].”

Zapping Tumors

Stupp, one of the world’s leading neuro-oncologists, is committed to thinking unconventionally about treating glioblastoma. In the early 2000s he found that the combination of radiation and the chemotherapy drug temozolomide extended the lives of some glioblastoma patients.

With this treatment, the number of glioblastoma patients surviving two years grew from 1 in 10 to 1 in 4. Known today as the Stupp protocol, the combination of radiation and temozolomide has been the standard for newly diagnosed glioblastoma patients since 2005.

Stupp’s outside-the-box thinking didn’t stop there. He began working on a device that uses pulses of electricity to interfere with cancer cell division and ultimately kill cancer cells. The tumor-treating fields (TTFields) device consists of 36 electrodes placed on the patient’s shaved head. Powered by a 3-pound portable battery, the device is worn continuously. Patients don’t feel the pulses at all, and the side effects are relatively minor.

In a clinical trial of almost 700 patients with glioblastoma, those who wore the device while also receiving standard radiation and chemotherapy treatment survived a median of 20.9 months, compared with 16 months for patients who did not use the device. Forty-three percent of patients using radiation and temozolomide plus the TTFields device survived two years.

Ned Smith received radiation and temozolomide. He wore the TTFields device until he became eligible for a clinical trial of a personalized cancer vaccine in Germany.

“When I was waiting to get started in Germany, I didn’t know if I would make it to that point,” says Smith. “I committed to myself and my family that I would keep the device on until I got to Germany.”

Tumor-Eating Viruses

One Northwestern team is studying a treatment that uses viruses to destroy tumors. The investigational treatment leverages an oncolytic virus, which is

“This allows us to take many shots on goal until we get the right therapeutic or right combination of therapeutics to give us the result we want.” — Chad Mirkin

capable of infecting — and potentially destroying — brain cancer cells.

Previous research using this approach has shown the virus struggles to permeate the entire tumor. But Lesniak’s team decided to go in a new direction — becoming the first in the world to use neural stem cells to deliver a virus to the tumor.

“Neural stem cells have been shown in many preclinical and clinical models to be almost like little cars,” Lesniak says. “Once you inject them, they will actually travel throughout tumor masses.”

The treatment, Lesniak says, works like this: During the initial surgery to remove as much of the tumor as possible, the virus-loaded neural stem cells are injected into the brain cavity. The virus has been genetically modified to bind to a protein expressed on the surface of glioblastoma cells. When it recognizes that protein, the virus will infect the cancer cell, replicate within it and ultimately kill the cancer cell.

“Think of this as the missile and warhead of an atomic bomb,” Lesniak says. “There’s a missile that delivers the nuclear warhead. The stem cells are the missile, and the virus is the warhead.”

But unlike an atomic bomb that levels everything indiscriminately, the virus leaves healthy cells unscathed.

Lesniak, who is principal investigator of the virus project, co-directs a five-year, \$11.5 million Specialized Program of Research Excellence grant from the National Cancer Institute. The grant was awarded in 2018 in recognition of the Lurie Cancer Center’s leadership in glioblastoma treatment research.

In a Phase I trial, Lesniak’s team found the virus treatment to be safe and, in some patients, superior to the standard of care. Lesniak cautions,

though, that further study is needed.

If subsequent results are positive and the treatment is approved by the Food and Drug Administration, oncolytic virotherapy could offer a new treatment for primary glioblastoma tumors.

“Many of the clinical trials that we do for glioblastoma are at the time of recurrence,” Lesniak says. “So patients get standard of care, and then when the cancer recurs, the patient signs up for experimental therapies. [But] in this upfront setting, patients would have surgery to remove the tumor followed by an injection of this product and then standard of care. The FDA allowed us to do [this study] in newly diagnosed patients, which hasn’t been done before.”

Spherical Nucleic Acid Therapy

Other Northwestern researchers are exploring novel ways to deliver treatments *across* the blood-brain barrier. Associate professor of neurology and medicine Alexander Stegh is using nanotechnology to penetrate the barrier and target genes implicated in the disease.

During his postdoctoral work at the Dana-Farber Cancer Institute and Harvard Medical School, Stegh was part of a team that discovered the Bcl2L12 gene was significantly overexpressed in glioblastoma and contributed to treatment resistance. By dialing down the expression of the gene, the team reasoned, treatments could be more effective. But conventional therapies cannot target Bcl2L12, Stegh says, necessitating a novel means of drug development and delivery.

At Northwestern, Stegh partnered with Kumthekar and Chad Mirkin, the George B. Rathmann Professor of Chemistry and inventor of spherical

nucleic acids (SNAs). These tiny three-dimensional structures are composed of a nanoparticle core that can be surrounded by RNA or DNA strands. These strands can be selected to target, and dial down, the expression of certain genes. The structure of SNAs offers unique drug delivery benefits as well.

“SNAs, unlike normal DNA and RNA, are naturally taken up by cells,” says Mirkin, who is also the director of Northwestern’s International Institute for Nanotechnology. “Once you get large amounts of DNA and RNA into cells, you think, ‘Wait a second. We could use SNAs as a drug. We could use SNAs to regulate what goes on in cells.’”

In a 2013 study, Mirkin, Stegh and others sought to do just that, injecting SNAs programmed to target Bcl2L12 into mice with glioblastoma. The nanoparticles did what the researchers had hoped, crossing the blood-brain barrier, regulating Bcl2L12 and slowing glioblastoma progression.

“We could actually see that these particles accumulated at very high levels within the glioblastoma tumor,” Stegh says. “And we showed that they actually dial down the expression of cancer-causing genes within the tumor. Based on these studies, we could also show that they can slow down tumor progression.”

Just this year, a subsequent study with glioblastoma patients reported equally impressive results. Patient tumors treated with SNAs expressed markers of tumor cell death, compared with those in patients who did not receive the SNA treatment. These effects were seen even though the researchers were required to use a tiny dose of the treatment — just 1/50 of the dose patients would receive in a clinic if the treatment were approved.

“Imagine if you took a Tylenol at a fraction of the strength of the normal dose and it got rid of your headache,” says Kumthekar, who was the principal investigator of the clinical trial. “You’d

think, ‘Wow, we have something here.’”

Stegh aims to investigate whether SNA-based gene therapy, combined with radiation and temozolomide, can amplify the effect of the therapy. Meanwhile, this research goes beyond Bcl2L12.

“This is a study that tells you that we could go after lots of different genes,” Mirkin says. “We now know SNAs are well tolerated and they can cross the blood-brain barrier, localize in tumors and hit their target. This allows us to take many shots on goal until we get the right therapeutic or right combination of therapeutics to give us the result we want.”

The recent advances in glioblastoma research across Northwestern have been remarkable, says Leonidas Platanius, the Jesse, Sara, Andrew, Abigail, Benjamin and Elizabeth Lurie Professor of Oncology at Feinberg and director of the Lurie Cancer Center. “The science behind these discoveries will help our patients for generations to come.”

Those discoveries cannot come soon enough for the thousands of people diagnosed with glioblastoma each year, who, like Ned Smith, keep parenting, working and living with this deadly disease.

Smith’s MRI in late spring showed no active cancer cell growth in his brain. In July he and Erin traveled to Germany for more treatment. He is able to walk again and is teaching graduate-level management courses. He and Erin counsel families struggling with a new glioblastoma diagnosis, and they’ve created a nonprofit to help children whose parents are going through cancer treatment. He’s deepened his friendships. And he can carry his daughter on his shoulders again.

“But at the same time, I still know I’m dying, and my kids still know I’m dying,” Smith says. “But I’m not dying today. I’m not going to die tomorrow. And so we just keep saying that over and over.”

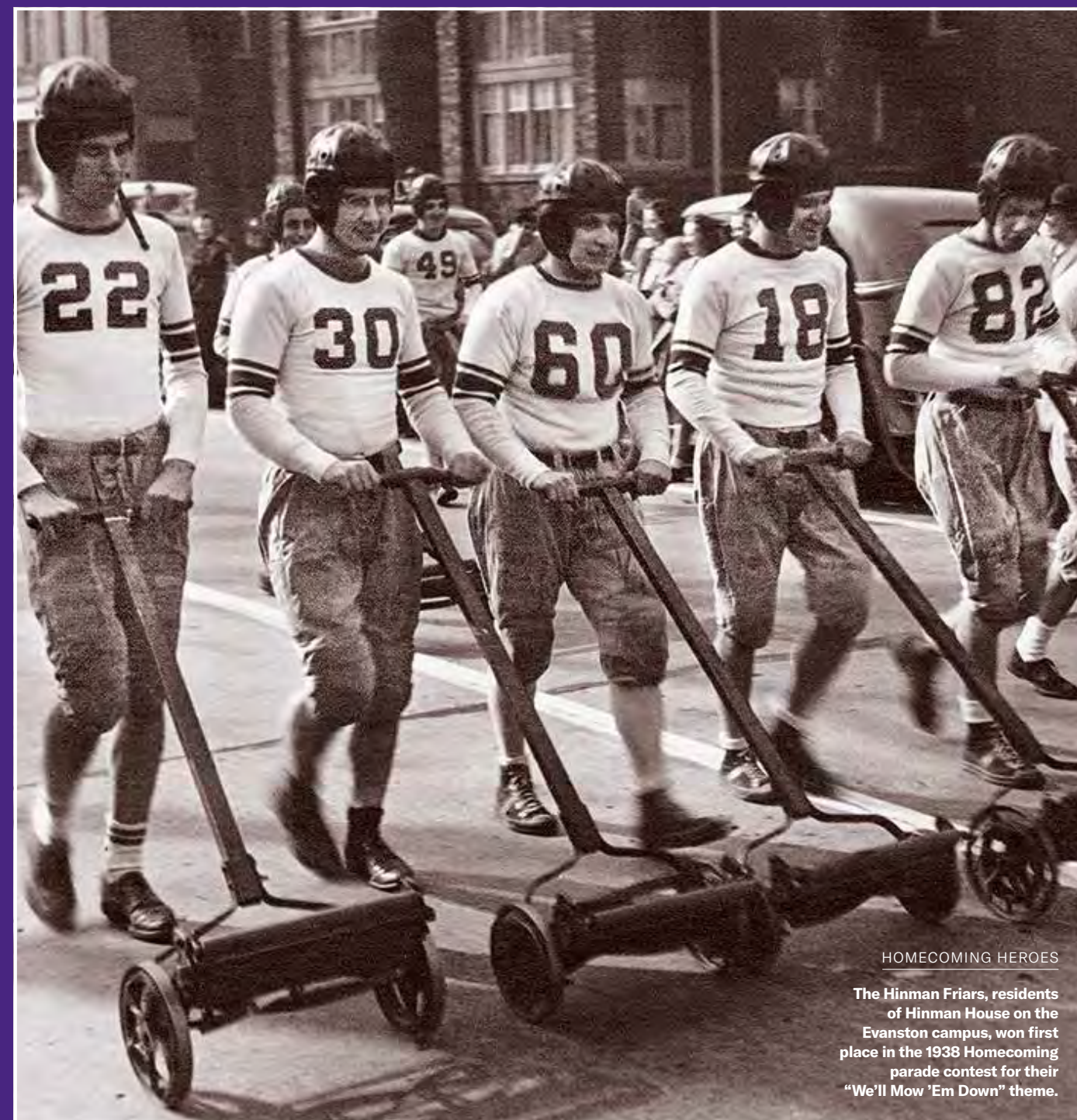
Clare Milliken is senior writer and producer in Northwestern’s Office of Global Marketing and Communications.

Editor’s note: *Chad Mirkin and Alexander Stegh have financial interests in Exicure. Northwestern University also has financial interests in Exicure and intellectual property interests in technologies discussed in this article.*



↑ Ned Smith with his wife, Erin, their four children and the family dog

Alumni



HOMECOMING HEROES

The Hinman Friars, residents of Hinman House on the Evanston campus, won first place in the 1938 Homecoming parade contest for their “We’ll Mow ‘Em Down” theme.

Creation



ARTS & ENTERTAINMENT

Five Questions with Gita Pullapilly '01 MS

Filmmaker says completing *Queenpins* during a pandemic was nothing short of a miracle. Now she hopes audiences are ready to laugh.

1

What is *Queenpins*?

It's a comedy inspired by the true story of two women [played by Kristen Bell and Kirby Howell-Baptiste] in Phoenix who created a \$40 million coupon scam. Vince Vaughn and

Paul Walter Hauser play a postal inspector and a loss prevention officer who go after these two women. On the surface, you think it's about coupons. And then you realize it's about finding happiness in life. All four of our characters are undervalued, just like coupons.

2

Where did you find the inspiration for the film?

My husband [Aron Gaudet, at left in photo] and I wrote the script and directed the film. Our niche is narrative films based on true stories. I found a coupon blog that talked about this scam. I thought it was a joke at first. Fortunately the blog included the name of a detective from Phoenix who had the police report and all the interviews. We spent some time with him and got a sense of what that world was like.

3

Your earlier films *The Way We Get By* and *Beneath the Harvest Sky* are much more serious. What was it like to make the switch to comedy?

When we told our agents and manager we had just written a comedy script, they said, "We didn't know you guys were funny." We write from a place of truth, and real life is equally funny and absurd — sometimes even more than we could possibly make up. We felt that if we just were honest and truthful to our characters, the humor would come from that.

GRETA RYBUS

4

What was it like to work with stars like Vince Vaughn and Kristen Bell?

Aron and I come from a place of collaboration. We're willing to throw anything away if there's a better idea. We are so grateful because Vince and Kristen and Kirby and Paul were open to our process. Vince told us it was the first time in a very, very long time — since *Swingers* — that he felt like he could come to a set and every idea was tried rather than just "the directors know best."

5

What was it like to make a film during a pandemic?

It was the hardest thing we've ever had to do. COVID was at its peak in Los Angeles. If anyone had gotten COVID, we would have had to shut down production, typically for two weeks. That would cost us hundreds of thousands of dollars a day. Our first day on set, we said to our cast and crew, "We need you to work with us. We don't have huge studios backing us. We have a set amount of money. And it's not what you do on set that's going to matter. It's what you do when you go back home and on the weekends." We asked everyone to make those right decisions with us so we could get to that finish line.

Queenpins will open Sept. 10 in theaters and then will be available for streaming on Paramount+ and Showtime. Read more at alummag.nu/queenpins.



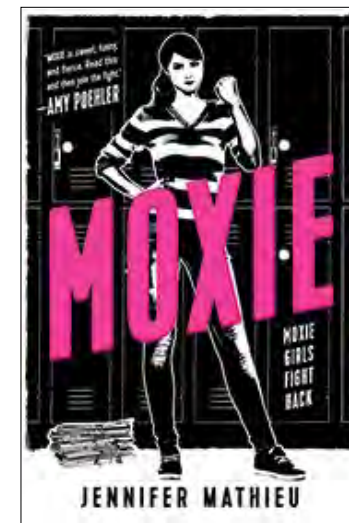
INDIGENOUS ARTISANS

Gabriel Neely-Streit '16 is co-owner of Colores Mexicanos, an importer of handmade art, clothing and accessories from Indigenous communities across Mexico. Colores Mexicanos works directly with dozens of artisans, such as Minerva Lázaro Hernández (above), and aims to help preserve the cultural diversity of Mexico, which is home to more than 60 "living" Indigenous languages and a wide variety of folk art. Before founding the business in 2018, Neely-Streit, a journalism grad and former Fulbright scholar, taught English in Mexico City and traveled to Oaxaca and Chiapas, where he connected with local artisans. They loved their crafts and traditions, he says. "Their goal was simply to make a better living at it." Neely-Streit says Colores Mexicanos provides living wages as well as zero-interest microloans and donations to artisans. In addition to their web store, Neely-Streit and fellow co-owners Erika and Leticia Espinosa opened their first retail location, in Chicago's Riverwalk Community Marketplace, in June.

FILM ADAPTATION

Moxie Magic

Jennifer Mathieu's fourth young adult novel, *Moxie*, was recently adapted into a Netflix feature film directed by Amy Poehler. Mathieu's book tells the story of Vivian, a shy teenager in small-town Texas who starts a zine to combat pervasive sexism in her high school. At Northwestern, Mathieu '98 found a lively feminist community, especially through the Women's Center. After graduating, she created zines to stay in touch with her friends, which served as inspiration for the novel. Mathieu actually created several issues of Vivian's zine, and those appear throughout the novel. She credits her journalism training at Northwestern for many of the skills that have helped her writing career take off, and she's looking forward to the October release



of her next book, *Bad Girls Never Say Die*. "It's sort of my feminist homage to *The Outsiders*," says Mathieu. "I think fans of *Moxie* will enjoy it. It has some of that same feminist spirit, but it also has a lot of action."



Kangmin Justin Kim, seen here posing in Barcelona, performs in operas all over the world.

HIGH NOTES

Finding the Right Voice

Countertenor Kangmin Justin Kim breaks tradition and boundaries.

Kangmin Justin Kim ’11, ’11 CERT grew up singing gospel music — with a twist. “Whenever I heard songs sung by women, I would always sing in their exact register,” he says. At the time, Kim thought his ability to sing high was “just a party trick” — until he realized it could be the key to opera stardom.

A natural tenor/baritone, Kim asked his voice teacher, senior lecturer Theresa Brancaccio ’82, ’83 MMus, if he could try singing in his head voice and falsetto — and discovered his vocal superpower. He was actually a countertenor.

“Countertenor is the word for guys who sing basically in female register,” explains Kim. “It was like seeing the world in Technicolor for the first time. Being gay and having been effeminate most of my life, I never really thought that it could be something I could use as a positive to find my place in this really competitive operatic world. But as a countertenor, I could.”

In his senior year, Kim gave a performance in drag as his favorite opera singer, Cecilia Bartoli. After he uploaded a video of the performance to YouTube, it went viral — “well, by viral standards 10 years ago,” he says. “That got me auditions and job offers from regional opera companies right away.”

Kim decided instead to pursue his master’s degree at the Royal Academy of Music in London. His talent and focus (and lingering viral fame) allowed him to step into lead roles on his own schedule. In 2019 he became the first man to sing the role of Cherubino at London’s Royal Opera House in Sir David McVicar’s production of *The Marriage of Figaro*, conducted by Sir John Eliot Gardiner.

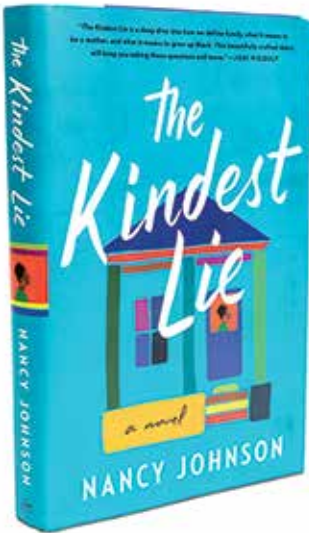
“There were a lot of skeptics who thought a countertenor singing Cherubino would never be right,” says Kim. “But when it was [performed and] broadcast online, the comments were really, really good. It was really a dream come true. And I didn’t even know that I had this dream.”

FICTION

The Kindest Lie

by Nancy Johnson

Nancy Johnson ’93 worked for more than a decade as an award-winning television reporter before moving into corporate communications. “Still,” she says, “I always wanted to tell the stories of my own imagination, particularly those about the Black experience in America.” Johnson has accomplished just that in her debut novel, *The Kindest Lie*. Set in 2008, on the cusp of Barack Obama’s first year in office, the novel follows the story of Ruth Tuttle, a successful Black engineer who begins to search for the child she left behind when Ruth was a teenager. She returns to her Rust Belt hometown in Indiana, a place burdened by unemployment and racism. The Obama-era belief of living in a “post-racial America” is thrown into full relief when Ruth befriends Midnight, a poor, white boy. Despite Ruth’s career success, *Midnight* is still able to move through the world with more privilege, highlighting “the age-old imbalance of equity between white and Black America,” Johnson says. *The Kindest Lie* was named one of the most anticipated books of 2021 by *Newsweek*; *O, The Oprah Magazine*; and *Elle*.



KIM: VICTOR SANTIAGO



NONFICTION

Genre Buster

Award-winning writer Kate Zambreno earns a 2021 Guggenheim Fellowship.

Kate Zambreno ’99 considers herself a late bloomer.

She began her career as a journalist with Chicago alt-weeklies before delving into experimental fiction, pushing the boundaries of traditional forms.

“Much of my writing goes past fact into the realm of fiction,” says Zambreno. The

author of eight books, she is now nationally recognized for writing that “troubles genre,” as she puts it.

Her 2020 novel, *Drifts*, for instance, is composed of fragmented, diaristic entries that lead readers to feel almost as if they are delving into Zambreno’s own memoir. She describes her most recent

book, *To Write as if Already Dead* (2021), as one that continues “thinking through this strange collision between fiction and nonfiction” while exploring themes of bodies, pandemics, ethics and friendship.

In April, Zambreno was named a 2021 Guggenheim Fellow in nonfiction. She currently teaches nonfiction writing at Sarah Lawrence College and Columbia University.

Even as she has forayed into experimental forms of writing, Zambreno says her training at what was then the Medill School of Journalism was undoubtedly a formative experience. “Research, fact-checking, interviewing — all of those are really important aspects that I learned training as a journalist and that I still value in my work,” she says. “A lot of my discipline as a writer and my ability to be very focused on a research project or writing deadline ... was formed in fire from Medill.”

During her fellowship, Zambreno will be working on *The Missing Person*, an essay collection forthcoming from Riverhead. She hopes to do a reading in Chicago soon.

AND THE GUGGENHEIM ALSO GOES TO ... FOUR MORE ALUMNI

L.M. BOGAD ’97 MA, ’02 PhD, professor of political performance at the University of California, Davis, will study global climate-change activism.

ARJUN DEY ’86, an astronomer at the National Optical-Infrared Astronomy Research Laboratory, plans to investigate humanity’s cosmological origins and the nature of dark energy.

KEEANGA-YAMAHTTA TAYLOR ’11 MA, assistant professor of African American studies at Princeton University, is investigating the persistence of racial inequality during the Reagan administration.

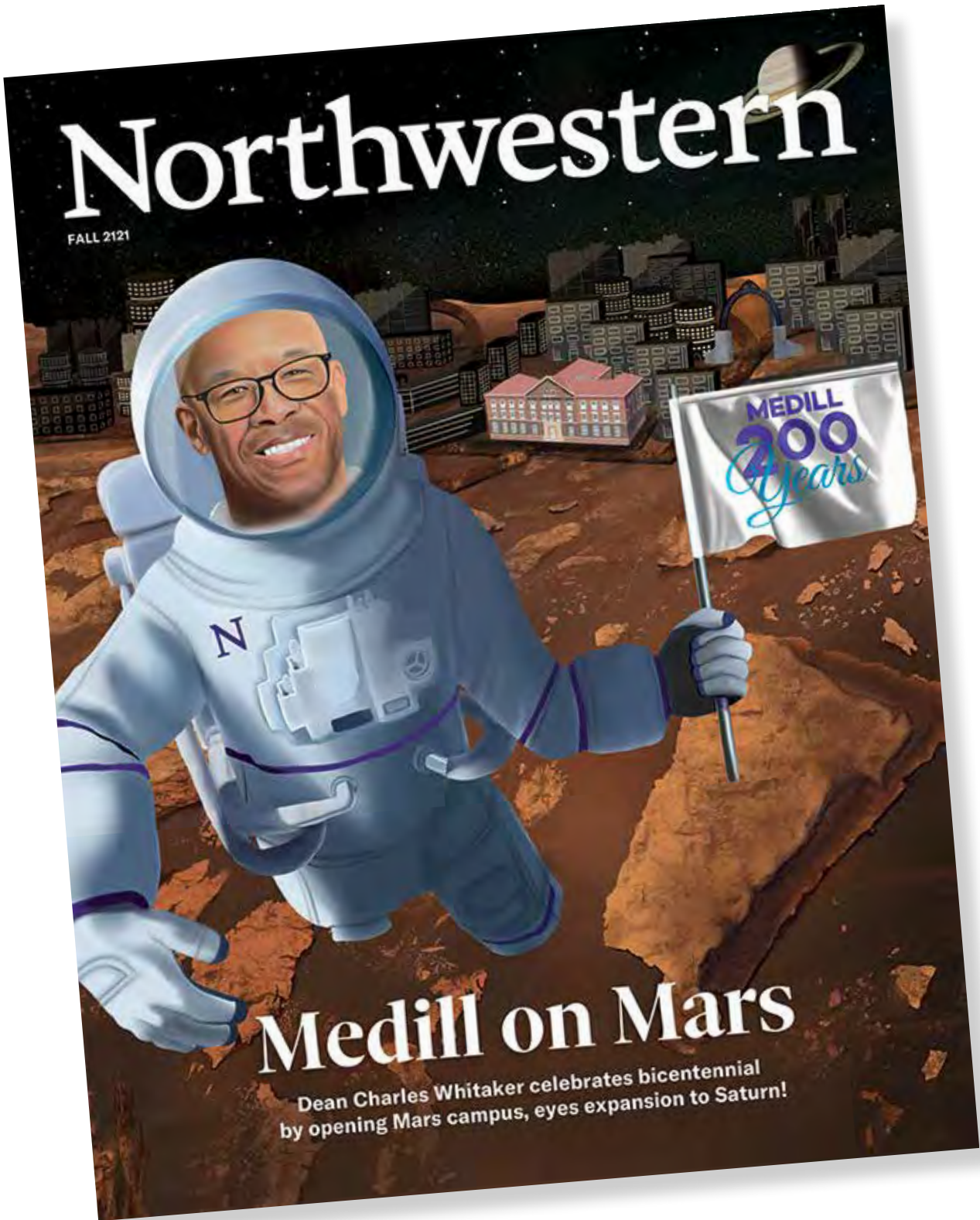
KATHERINE YOUNG ’17 DMA, assistant professor of composition at Emory University, plans to complete a collection of electro-acoustic solo and chamber music pieces.

AWARDS

Music to Your Ears

If you’re a fan of John Legend’s hit song “Conversations in the Dark,” you’re already a fan of Kellen “Pom Pom” Pomeranz ’11. A songwriter and producer, Pomeranz has worked on some of today’s most popular songs, such as “Novocaine” by the Unlikely Candidates, which topped Billboard’s Alternative Songs chart for 33 weeks. She does much of her work behind the scenes — writing songs and working with artists in the recording studio. But in March the Bienen School of Music alumna stole the spotlight when she won a Grammy Award for best R&B album as co-producer and co-songwriter of John Legend’s *Bigger Love* (2020). Pomeranz is also the third woman ever to be featured on Apple Music’s producer playlist series Behind the Boards. That’s a big deal: Between 2012 and 2019, only 2.6% of music producers were women, according to a study by the University of Southern California. Pomeranz says Bienen’s composition and music technology program was instrumental to her success. “Music theory, ear training — those are all skills I learned at Bienen,” she says. “I use them every day.”



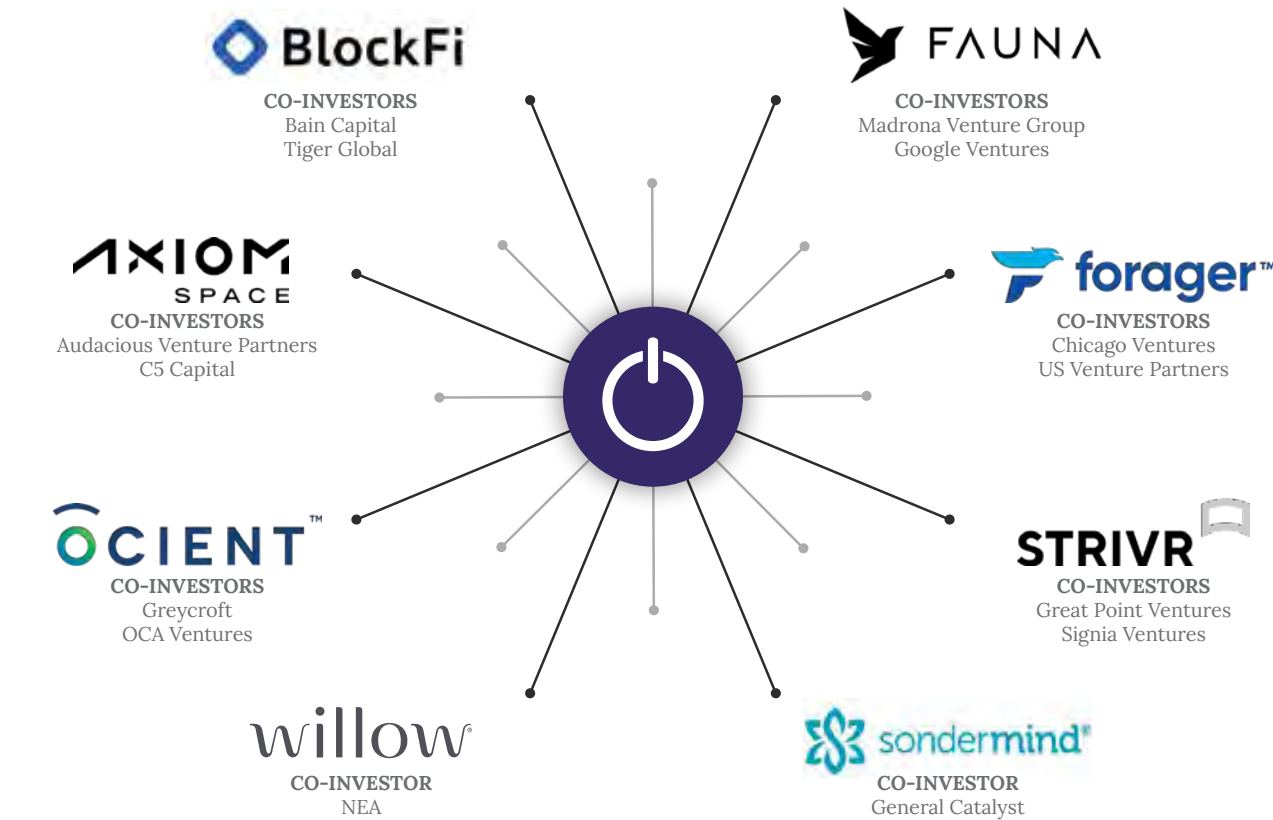


Back on Earth, Charles Whitaker '80, '81 MS weighs in on the future of media as the school celebrates its centennial. See page 7. And Northwestern experts help prepare for human missions to Mars. See page 24.

LESLIE-ANNE MOCK

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