“I’m a person of faith, and the Bible gives me a glimpse into what is beyond my science.”

KATHRYN HAHN Gets Messy
Screen star finds creative freedom in complexity.

p. 34

COVID Survivors Get New Lungs p. 13 ... Northwestern’s Miracle Maker p. 26 ... Teaching All of America’s Past p. 40 ... Robot Quarterback Hits the Field p. 46 ... A New Podcast Standard p. 64
Chemistry professor William Dichtel planned to swim the English Channel in June 2020, but the pandemic interrupted those plans. Instead, he completed the Chicago Skyline Swim, which runs the length of the city in Lake Michigan. Finishing the overnight swim in a record 12 hours, 27 minutes and 50 seconds, he swam 26.2 miles from Juneway Beach in Rogers Park to Calumet Beach in Calumet Park. Dichtel, the Robert L. Letsinger Professor of Chemistry, is co-founder of Cyclopure, a company that uses innovative technologies to remove micropollutants from water.
Firefly Procession

With in-person theater shut down due to the pandemic, members of the Northwestern arts community brought safe, outdoor performances to Chicago-area communities last summer and fall. The Art of Spontaneous Spectacle, organized in part by associate professor of theater Jessica Treadway ’91 MA, ’97 PhD, produced socially distanced participatory processions along Chicago’s lakefront with props, life-size puppets and music. A crowd of roughly 75 people of all ages participated in the “Firefly Procession” at Loyola Beach on Chicago’s North Side in September.

PHOTO: JUSTIN BABIN ’11
34 Free to Play
After a number of parts in "big-swing comedies," Kathryn Hahn '95 moved to more substantial roles that cemented her place as a sought-after star. It’s clear now that she’s in love with her work: the deep dives into character, the exploration and messiness each role brings, the dedication to her fellow actors — and the creative magic that results. By Clare Milliken

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Northwestern Medicine surgeons perform double-lung transplants, giving new life to seven COVID-19 survivors.

26 Stretching the Imagination
John Rogers founded a whole new field of bioelectronics to improve human health.

40 “We have a responsibility to situate all of our work in a historical context so we can realize that history isn’t this thing of the past, but it’s something that we experience now.”
— Evanston Township High School history teacher Corey Winchester ’10, ’20 MA, left, with his brother, Jason Deas, who graduated from high school in 2020

34 → We have a responsibility to situate all of our work in a historical context so we can realize that history isn’t this thing of the past, but it’s something that we experience now.”
— Evanston Township High School history teacher Corey Winchester ’10, ’20 MA, left, with his brother, Jason Deas, who graduated from high school in 2020

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John Rogers founded a whole new field of bioelectronics to improve human health.

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John Rogers tests his latest technology — on himself!

18 Big Cities Still Matter
Innovation depends on the rate of human interaction. Kellogg professor Hyejin Yoon identifies a key population threshold that allows large metro areas to become innovation hubs.
TALK BACK

DOCTOR BECOMES PATIENT

Ryan, from what I remember, you always had a positive outlook in our college days. So while I am thankful you are still alive and with us, I’m not completely surprised we are one of the fortunate ones to beat COVID-19. All the best to you in your adventures ahead. Cheers! [In response to the profile of Ryan Padgett, “Doctor Becomes Patient,” “The Stories of Our Lives,” fall 2020].

Jim Miller ’93

Wilminton, Del.

Ryan Padgett was a star student in my neurobiology and behavior class. I moved the final exam so he could attend an NFL tryout, but he did not reciprocate with Rose Bowl tickets. So I waited in line at 6 a.m. in Evanston’s cold December, got tickets for him and myself and followed Ryan and the team to Pasadena, where we saw a great game!

Ryan, glad you recovered.

J.P. Rosenfeld

Professor of psychology

Geneseo, Ill.

IT’S TIME TO ABOLISH SCHOOLS

Thank you for publishing kihana miraya ross’ opinion piece “It’s Time to Abolish Schools” [Opinion, fall 2020]. — and thank you to kihana for writing it! I’ve witnessed firsthand that our education system does not work for Black students the same way it works for me, and not working at a higher education institution where anti-Blackness prevails throughout campus. It’s frightening to think that we’re clinging to white supremacist structures.

Caitlin Elskus ’13 MS

Seattle

Several ideas in kihana miraya ross’ faculty opinion piece strike me as highly problematic. She claims that “students may learn that brutally enslaved Africans (enslaved in the first place by other Africans, it should be mentioned) were ‘workers’ who came to the U.S. in the context of immigration.”

Though some may wonder or wrote that, but such nonsense is certainly not in significant works on slavery published since Kenneth Stampp’s Peculiar Institution (1956). I majored in history at Northwestern and never heard such an idea there.

Her idea of anti-Blackness, I take it, relates to anti-Semitism. There are certainly parallels between the two. But Professor ross must know that Nazi anti-Semitism is not the same as anti-Semitism that informed us of who we had become as adults and showed a wonderful example of what adulthood could be.

And to a very large number of us, I’m sorry to say, Shep Shanley was a lifelong friend. There will come a time — soon, I hope — when students will again be allowed to fully join one another in the thriving river that is university life. Those tasked with relighting the fires in the temples of society and leading the social reawakening should do well to consider Shep’s contributions to Northwestern and Willard Residential College alumni and the remarkable community that stands united as his legacy.

Kenneth J. Schaffe ’90

New York City

INVENTION: AN IMPROVED SWAB

The creation of a new nasal swab [“An Improved Swab,” Innovation, fall 2020] is great news. I recently had to take a COVID-19 test and was astounded at how far back the swab had to go. So unpleasant.

Glad to see that Northwestern is at the forefront of innovation in the midst of the global pandemic.

Josh Zulli

Santa Clara, Calif.

We want to hear from you: letters@northwestern.edu @NorthwesternU /NorthwesternU /NorthwesternU

TALK BACK

PhD and Happy New Year! Have you ever sounded so sweet? Welcome to 2021. It’s time for a fresh start.

I want to take this opportunity to introduce myself. My name is Sean Hargadon, and I am the new editor in chief of Northwestern Magazine. Though I am new to the position, I am certainly not new to the magazine or the University. Since 2003 I have been part of the team that has brought you Northwestern as a print publication and, increasingly, via our digital magazine and email newsletter.

At its heart, an alumni magazine should continue our relationship with the university, while also educating, entertaining and building community. Our team strives to bring you outstanding content in a sophisticated design, addressing key national and global topics across all disciplines. Our goal is to create a magazine anyone would enjoy reading.

My vision is to welcome new voices into the magazine and to add diverse perspectives from across the University community while continuing to tell stories that endear and enlighten.

In short, we want to bring you the best stories about the University and its people, and we want to bring those stories to you in the format that works best for you. In addition to producing three print issues per year, we will continue to make our digital magazine a place to see and hear more from the people who make Northwestern great.

And while we’re talking about people who make Northwestern great, I would like to recognize former executive editor Stephanie Russell for her three decades of outstanding service to the University and her leadership of, first, Northwestern Perspective and, for the last 20 years, Northwestern Magazine.

Stephanie loved sharing stories about the University and its people and bringing humanity to this institution. It’s an honor to work with her, and we wish her all the best in her retirement.

In closing, I hope that you and your loved ones are safe and healthy. I look forward to connecting with you via email at letters@northwestern.edu, across social media @NorthwesternU and, yes, via good, old-fashioned letters mailed to 1603 Orrington Ave., Suite 200, Evanston IL 60201.

I hope that you enjoy this issue of Northwestern Magazine.

Sincerely,

Sean Hargadon

Northwestern Winter 2021

We are featured on page 10 [“Profs Discuss Racial Justice,” Voices, fall 2020] and Attica Locke gets a glowing article [“The Write Path,” fall 2020]. It is so possible for talented Black people to get excellent jobs and speak openly about America life. If anti-Blackness is still a policy anywhere, it is under strong attack.

Ross’ suggestion to abolish schools may be only a provocative idea, but she presents no alternative. She has every right to be enraged about discrimination and the murder of Black people. However, as hard as it may be for African Americans, we all need to speak calmly, refer to major studies of slavery and injustice, and recognize current remedial efforts as we work to fix our society.

Robert W. Thurston ’71

Oxford, Ohio

A NORTHWESTERN LEGEND

As duly noted in the title “A Legend Retires” [Close-up, fall 2020], Shep Shanley is indeed a legend who has made an enormous impact on the minds and lives of thousands of Northwestern students.

To congratulate Shep and recognize his extraordinary 50 years at Northwestern, ’70 Northwestern and Willard Residential College alumni worked in secret to organize a surprise tribute in the form of video messages, photographs and written messages that express what their time at Willard and Northwestern means to them. This inspired 36 video testimonials (featuring individuals and groups), hundreds of photographs and a huge volume of written messages, all filled with joyous reflection and an outpouring of respect, gratitude and appreciation.

The alumni testimonials are highly consistent on many points: Shep knew us from our applications and interviews, before we ever moved on campus. He greeted us when we arrived and welcomed us as adults, free to declare our own terms. At Willard, he maintained a custom of inviting groups of newly arrived freshmen to his home for Sunday brunch, an experience many alumni recall vividly to this day. Shep would often join us for lunch in the Willard cafeteria and regularly led the French-speaking table. He was the undisputed guest of honor and guiding presence at all our events and parties — entirely with, but not of, the students.

At Willard, Shep created and curated a respect, consideration and companionship. A feeling that started around a joyful embrace of life, he led by example with graciousness, warmth and wisdom. Through Willard, he provided a context for all of us, Shep Shanley and his father, to be able to talk about American life. If Ross teaches us from our applications, then I must be Shep’s mistake.

I am sure that Shep is retiring. Whatever Northwestern admitted me. And it has been a privilege to know Shep and a singular pleasure to have enjoyed his wonderful campus over the subsequent decades. An added bonus, I also got to know his delightful and engaging father, Lyn. The apple, as my mother often said, doesn’t fall far from the tree. And Shep and his father have been and had been metaphorical trees on the campus. It is possible — hope for generations: welcoming, graceful and stately.

Holy God, I bet I wrote something rather awful and totally sappy like that on my application essay! And they still let me in! Like I said, I must be Shep’s mistake. I’m happy that he made one. Kevin Leonard ’77, ’82 MA

Northwestern University archivist Evanston

It brings tears to my eyes to think that Shep is retiring. As an Alumni Board Council member for more than 25 years and a director for most of that time, I know the AAC would not have been

Northwestern Winter 2021

FROM THE EDITOR/TALK BACK


Josh Zulli

Santa Clara, Calif.

Northwestern is at the forefront of innovation in the midst of the global pandemic.

Josh Zulli

Northwestern; four other, University and many other groups and organizations are now deeply engaged in anti-Blackness. Anti-Blackness does exist in this country; yet Ross teaches at Northwestern; four other, apparently Black, professors
GRATITUDE FOR FINANCIAL SUPPORT

For personal reasons, I appreciated the short article in the fall 2020 issue on a special fund set aside to help meet emergency financial needs. I don’t think it had a special name at the time, but in the late 1970s Northwestern also maintained such a fund. As I remember it, I applied for and received an immediate $25 “loan” to help me through the weekend at a time when I was literally broke. More broadly, thanks to financial assistance from Northwestern, I graduated from Medill in 1979, embarking on a 32-year foreign service career that included service as U.S. ambassador to Mongolia.

LOCAL NEWS INITIATIVE

The Local News Initiative (“Fighting for Local News — and Democracy,” fall 2020) has done some great work, but I think many of these ideas assume an outmoded view of the tech capability on the staffs of local news sites. We’ve been successful at Mission Local in publishing first-rate content. But if I knew what I know now, I would never have started a local site without a strong tech person on board as an equal partner. All of the experimenting around engagement really requires that — even much of the innovative storytelling needs some tech expertise. My first piece of advice to anyone interested in starting a local site would be: Don’t do it without a full-time tech person.

Emergency and Essential Needs funds have provided such resources. I don’t think it had a special name at the time, but in the late 1970s Northwestern also maintained such a fund. As I remember it, I applied for and received an immediate $25 “loan” to help me through the weekend at a time when I was literally broke. More broadly, thanks to financial assistance from Northwestern, I graduated from Medill in 1979, embarking on a 32-year foreign service career that included service as U.S. ambassador to Mongolia.

GRATITUDE FOR FINANCIAL SUPPORT

For personal reasons, I appreciated the short article in the fall 2020 issue on a special fund set aside to help meet emergency financial needs (“Showing Support,” “We Will” Update). It noted that since 2017, student Emergency and Essential Needs funds have provided such resources. I don’t think it had a special name at the time, but in the late 1970s Northwestern also maintained such a fund. As I remember it, I applied for and received an immediate $25 “loan” to help me through the weekend at a time when I was literally broke. More broadly, thanks to financial assistance from Northwestern, I graduated from Medill in 1979, embarking on a 32-year foreign service career that included service as U.S. ambassador to Mongolia. Jonathan Addleton ’79

Macon, Ga.

FACULTY OPINION

Science and Faith in Strange Times

BY GERALD GABRIELSE

A great mystery of modern physics is that the fundamental mathematical description of physical reality (the Standard Model of particle physics) accurately predicts the results of all laboratory measurements and yet is unable to explain basic features of our universe — for example, how a universe made of matter survived an inflationary Big Bang. It has been my privilege to work with 80 Harvard and Northwestern doctoral students investigating this mystery. We measure an electron’s magnetism — by suspending a single electron for months using batteries and magnets — to test the most accurate prediction of the Standard Model. We also use lasers to produce molecules within which we probe for lumpiness in the electron charge that would indicate new physics beyond the standard description.

I am a person of faith, and the Bible gives me a glimpse into what is beyond my science, introducing me to a God who is intensely proud of the reality he wills into being. I believe that there is delight in heaven as my students and I peck back the layers of God’s “union.” This motivates me and frees me to do curiosity-driven science well before I perceive how the insights to be gained will profit a modern society. My God — a God worth having — is far beyond description using the language of human experience and the methods of science. There can be no contradiction between what science reveals about the physical reality that such a God sustains, and the perplex beyond that reality that God provides in the Bible. Physicists and Christians seem like natural allies to me. Aved by the vast and intrinsically powerful, both celebrate a reality that is infinitely larger than we are and acknowledge our small place as temporary caretakers of planet Earth. Verification of what is true is intrinsic to the scientific process. My Christian faith also requires truthfulness. I must honestly acknowledge my place in God’s universe, that I am unable to live up to God’s standards, that I need forgiveness, and that I must accept the redemption offered by Jesus Christ.

A troubling feature of our strange times is that oft-repeated false statements are increasingly accepted as alternatives to reality-based findings. False statements about the COVID-19 threat, the number of deaths, the efficacy of face masks, the need and role for testing, bogus therapies, and the timeline for creating and injecting safe vaccines continue to result in much harm.

We had many lovely, thoughtful, endearing conversations, and I learned so much.

That first May, this young girl was standing there, freezing in her coat in the wind. The poor daffodils were barely up and looked as though they wanted to dive back under the bits of snow still scattered on the ground. I looked at Shep and said, “This is a poor excuse for May.” Shep looked at me with his memorable, wonky look and said, “Well, no one goes to Paris for the weather.” Now that I live in the Northwest, I use that line all the time.

The wind. The poor daffodils were barely up and looked as though they wanted to dive back under the bits of snow still scattered on the ground. I looked at Shep and said, “This is a poor excuse for May.” Shep looked at me with his memorable, wonky look and said, “Well, no one goes to Paris for the weather.” Now that I live in the Northwest, I use that line all the time.

I’m a person of faith, and the Bible provides a God who is intensely proud of the reality that he wills into being. I believe that there is delight in heaven as my students and I peel back the layers of God’s “union.” This motivates me and frees me to do curiosity-driven science well before I perceive how the insights to be gained will profit a modern society. My God — a God worth having — is far beyond description using the language of human experience and the methods of science. There can be no contradiction between what science reveals about the physical reality that such a God sustains, and the perplex beyond that reality that God provides in the Bible. Physicists and Christians seem like natural allies to me. Aved by the vast and intrinsically powerful, both celebrate a reality that is infinitely larger than we are and acknowledge our small place as temporary caretakers of planet Earth. Verification of what is true is intrinsic to the scientific process. My Christian faith also requires truthfulness. I must honestly acknowledge my place in God’s universe, that I am unable to live up to God’s standards, that I need forgiveness, and that I must accept the redemption offered by Jesus Christ.

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Understanding Incivility
What has led to the current divisiveness within the United States, and how has that impacted civility and the ability to compromise?

Laurel Harbridge-Yong, associate professor of political science and a faculty fellow at the Institute for Policy Research

“Even from members of Congress we see that if you’re not on our team, you’re anti-American. The same is true among the public. A person’s political party has become increasingly aligned with their other social identities. This helps make party allegiance an increasingly salient social identity, leading to in-group favoritism and the desire to maintain psychological distance from the out-group. This focus on partisanship as a social identity makes it easy to demonize the other side and live in a bubble among people who think like you do.”

Tabitha Bonilla, assistant professor of human development and social policy and of political science and a faculty fellow at the Institute for Policy Research

“As presidential candidates take positions with more explicit promises, voters react much more strongly to those policy positions. I can’t say that the promises themselves are what’s causing the incivility, but I do think promises reinforce it. Voter responses to candidates who promise are polarized. My research demonstrates that elected officials are making more promises than they used to, meaning their policy positions are more committed. There is a lack of room for these candidates to compromise because they’re trying to mobilize voter bases.”

Silver Linings from a Pandemic Graduation

“I credit Professor Meade with shaping much of my academic journey; his enthusiasm for his work and dedication to his students inspired me to pursue a career in academia. Earning my PhD will be one more milestone on my journey. I reached another type of milestone one day. I was placed in the top 10 at Miss USA. I’ve dreamed of competing in the pageant since I was a young girl. I’m often asked how anyone can balance the vastly different spheres of pageantry and academics. Rather than try to balance them, I find the overlap between them. Pageantry gives women an incredible platform to advocate for causes. Mine is gender equality in STEM fields. As Miss Illinois USA, I’ve worked with the Illinois House of Representatives, Girl Scouts and other organizations to make “my mission” a “mission.” So, while my house of cards may have fallen apart, I’m often asked how anyone can balance the vastly different spheres of pageantry and academics. Rather than try to balance them, I find the overlap between them. Pageantry gives women an incredible platform to advocate for causes. Mine is gender equality in STEM fields. As Miss Illinois USA, I’ve worked with the Illinois House of Representatives, Girl Scouts and other organizations to make “my mission” a “mission.”

Illustration by Bruce Morser
The Dance of History

A former journalist digs deep into her Latin American roots to understand the past and reframe the present.

Lina Britto, associate professor of history

"I worked as a journalist for many years in my 20s, because I wanted to tell stories about the social life around me. When I migrated to the U.S., I continued doing print and online journalism in Spanish. I had just lived through the rise of the 'pink tide' in Bolivia and was writing stories about what was happening in Latin America, where social movements were producing deep and radical structural changes. I realized that journalism was not enough for the kind of stories that I wanted to write."

"Obviously, my own country, Colombia, is a huge source of inspiration. I grew up in Medellín during the rise and consolidation of the Medellín cartel. That is always in the back of my mind, prompting me to ask questions and to understand that very complex society that I witnessed as a child."

"I’m always in a dialectical conversation between past and present, seeing how the past is reflected in the present, but also how the present reframes and rewrites the past. That dance between past and present is a source of fascination, curiosity and inspiration for me."

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Lina Britto teaches courses that examine Latin American and Caribbean history with a focus on the drug trade and the war on drugs, the impact of music on nation building, and Cold War terror. Her latest book, Marijuana Boom: The Rise and Fall of Colombia’s First Drug Paradise (2020), explores how and why the country became one of the world’s premier sources of illegal drugs.

History in the Making

From racial justice to the effects of the coronavirus, Northwestern faculty members shared their opinions on the issues of the moment.

The decision by a Kentucky grand jury not to charge any of the officers in the death of 26-year-old Breonna Taylor has left many Black women, including myself, traumatized. We are worried about our own safety and well-being. We are outraged we live in a society where we can be robbed of our lives with no consequences." Inger Burnett-Zeigler, associate professor of psychology, in the Chicago Tribune

"Encephalopathy, which is characterized by altered mental function ranging from mild confusion to coma, is the most severe neurologic manifestation of COVID-19." Igor Koralnik, professor of neurology, in USA Today

"We were making slow and steady progress until [the pandemic]. It’s likely we will have wiped out a lot of the progress that we’ve made over the last decade in childhood obesity." Diane Whitmore Schanzenbach, left, director of the Institute for Policy Research and the Margaret Walker Alexander Professor of Human Development and Social Policy, in USA Today

"We dodged a meltdown of our systems in this election because the pandemic created an early sense of urgency and motivated enormous efforts to make the election a success, despite profound challenges. But unless we think affirmatively about what we need to do next time, we’re unlikely to be so lucky again." Michael Kang, the William G. and Virginia K. Karnes Research Professor at Northwestern Pritzker School of Law, in NBC News

Hope After COVID

Northwestern surgeons perform the first known double-lung transplants on COVID-19 survivors.

Last summer, Northwestern Medicine surgeons performed lifesaving double-lung transplants on two patients whose lungs were severely damaged by COVID-19, offering a potential path to recovery from the devastating effects of the virus.

"We are one of the first health systems to successfully perform a lung transplant on a patient recovering from COVID-19," says Ankit Bharat, chief of thoracic surgery and surgical director of the Northwestern Medicine Lung Health Systems to successfully perform a lung transplant on a patient recovering from COVID-19," says Ankit Bharat, chief of thoracic surgery and surgical director of the Northwestern Medicine Lung Health Systems to successfully perform a lung transplant on a patient recovering from COVID-19," says Ankit Bharat, chief of thoracic surgery and surgical director of the Northwestern Medicine Lung
Transplant Program and associate professor of surgery and medicine at the Feinberg School of Medicine. “We want other transplant centers to know that while the transplant procedure in these patients is quite technically challenging, it can be done safely, and it offers the terminally ill COVID-19 patients another option for survival.”

The first patient, 28-year-old Mayra Ramirez, spent six weeks in the COVID ICU on a ventilator and extracorporeal membrane oxygenation (ECMO), a life support machine that does the work of the heart and lungs. While her body cleared the virus, her lungs were damaged beyond repair. “For many days, she was the sickest person in the COVID ICU — and possibly the entire hospital,” explains Beth Malish ’19 GME, a pulmonary and critical care specialist at Northwestern Memorial Hospital and an instructor of medicine at Feinberg. “There were so many times our team had to react quickly to help her oxygenation and support her other organs to make sure they were healthy enough to support a transplant if and when the opportunity came. One of the most exciting times was when the first coronavirus test came back negative and we had the first sign she may have cleared the virus to become eligible for a life-saving transplant.”

The lung transplant team listed Ramirez for the transplant, and 48 hours later, she became the first known COVID-19 patient in the United States to receive a double-lung transplant.

The second patient, Brian Kuhns, an Illinois man in his 60s, spent 100 days on ECMO. He received the majority of his treatment at another health system before being transferred to Northwestern.

“To his arrival at Northwestern Memorial, the patient developed an invasive infection that required a major chest surgery. This was going to make the double-lung transplant substantially more difficult,” says Northwestern Medicine thoracic surgeon and Feinberg associate professor of surgery and medicine Samuel Kim, who assisted in the double-lung transplant alongside Bharat. “His lung damage was among the worst I’ve ever seen. When we opened the chest cavity there was a lot of evidence of infection; everything we touched or dissected started bleeding, and one misstep could have led to catastrophic consequences.”

Typically, a double-lung transplant takes six to seven hours, but this surgery took about 10 hours due to lung necrosis and severe inflammation.

Bharat’s team is optimistic that both patients will make a full recovery. The surgeons are now offering guidance to other transplant centers. By early November, Northwestern surgeons had performed double-lung transplants on seven COVID-19 survivors.

**FOCUS ON CHILDREN’S RIGHTS**

*Argentina*

Last fall Weinberg College of Arts and Sciences sophomore Kelly Bates interned with Fundación por Nuestros Niños through the virtual Global Engagement Studies Institute. The Salta, Argentina-based program advocates for children’s rights, with a focus on violence prevention, health and education. Bates, whose family is from Argentina, appreciates the opportunity to immerse herself in Argentine culture while making a positive impact in a “country that gave so much to me and my family.”

**REPORTING FROM BAGHDAD**

Iraq

Amina Ismail ’05 MS was named Reuters’ Reporter of the Year in March 2020, along with Angus Berwick, a correspondent in Venezuela. She won the award for her reporting on Egyptian president Abdel Fattah Al-Sisi’s authoritarian rule. Ismail joined Reuters in 2016 and is currently a senior correspondent based in Baghdad, where her coverage covers human rights and politics. Prior to joining Reuters, Ismail worked at the New York Times as a reporter.

**HALTING HUMAN TRAFFICKING**

Ghana

Sophomore Bensi Rwabuhemba is passionate about advocacy for children’s and women’s rights. Through the virtual Global Engagement Studies Institute, Rwabuhemba is working with the Center for Initiatives Against Human Trafficking in Tamale, Ghana. The organization aims to empower women and children while educating the public about child labor and child marriages.

**MAKE A MASK**

Pakistan

In April, Northwestern University in Qatar junior Adan Ali helped launch the student-led Mask Banoo campaign, which shares information about making masks at home and promotes mask usage and awareness. Ali and his colleagues also work with factories to produce and distribute cloth masks to Pakistani communities, including people living in poverty. The multinational team has seen Pakistani attitudes toward masks grow more positive.

**NORTHWESTERN**

WINTER 2021

**THE TICKER**

Northwestern research funding reached $864 million for fiscal year 2020. This marks an 11% increase over last year’s total.

The Department of Energy’s Fermi National Accelerator Laboratory in Chicago’s western suburbs will lead one of five national centers aimed at advancements in quantum information science, and Northwestern was a proposal to the initiative. Seventeen Northwestern faculty members are affiliated with the new center.

Northwestern has again been ranked among the nation’s top 10 universities. The University ranked No. 9 in U.S. News & World Report’s “2021 Best Colleges” report, Northwestern also ranked in the top 20 in each of the five graduate education categories. It is one of only four top-10 U.S. universities to achieve that feat.

Northwestern researchers have been awarded Rapid Response Research (RAPID) grants by the National Institute of Health — more than any other top-10 university. The grants will be used to further COVID-19 pandemic research efforts and projects, which include a wearable symptom sensor and a self-sanitizing face mask.

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**GLOBAL BEACH**

Staying Safe, Wildcats Make a Difference Worldwide
**ARTS & ENTERTAINMENT**

**The Show Must Go On**

When student performance groups returned to campus in the fall, social distancing and crowd safety guidelines forced them to adjust their art to a new, virtual reality. For example, Refresh Dance Crew, which performs to hip-hop and pop songs, had its members record themselves performing dance moves at home, then compiled the videos to create coordinated online performances.

Lovers & Madmen, a Northwestern Student Theatre Coalition organization centered around classical performances, put on its production of *The Trojan Women* using StreamYard, a live streaming service. “One of the hardest parts about switching to a virtual format is that you don’t have the audience with you,” says sophomore Arella Flur, the show’s producer. “StreamYard allows comments to feed into the actors’ streams, so they can all see the audience giving them love during the show.”

Flur’s 25-person team rehearsed remotely, and designers sent actors costumes and props. While the actors had to adjust to singing by themselves, being their own crew and managing microphones and lighting, their efforts were a success. “There’s this whole mentality right now that theater is dying,” says Flur. “But theater has always been a form that has adapted. We’re still doing what theater has always done by telling stories and building communities.”

**PHOTOGRAPHY**

Northwestern’s Block Museum of Art acquired 41 silver gelatin and platinum prints by American artist Edward Steichen from collectors Richard and Jackie Hollander. Expanding the Block’s holdings of vintage Steichen prints, the gift is the third to the museum from the Hollander family, who donated 49 Steichen prints in 2013 and 44 in 2017.

The latest donation includes portraits of historical figures such as Carl Sandburg, Amelia Earhart (shown at left) and Thomas Mann; examples of Steichen’s commercial advertising images; fashion studies for *Vogue* and *Vanity Fair*; and early photographic experiments. Steichen (1879–1973) is regarded as one of the greatest photographers of the 20th century.

The Show’s producer, “StreamYard allows comments to feed into the actors’ streams, so they can all see the audience giving them love during the show.”

Flur’s 25-person team rehearsed remotely, and designers sent actors costumes and props. While the actors had to adjust to singing by themselves, being their own crew and managing microphones and lighting, their efforts were a success. “There’s this whole mentality right now that theater is dying,” says Flur. “But theater has always been a form that has adapted. We’re still doing what theater has always done by telling stories and building communities.”

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If you're currently living in a big city, please stick around. The allure of moving to a more affordable locale to work remotely as COVID-19 upends our lives likely won't hold up in the long run. And that's because places like Chicago, Los Angeles, New York and other large metropolitan areas have the traits that make them hubs for a strong, innovative economy.

Hyejin Youn, assistant professor of management and organizations at the Kellogg School of Management, and her collaborators analyzed industrial employment and population changes in 350 U.S. cities between 1998 and 2013. The survey included more than 100 million workers.

She observed a transition from economies based on manual labor to more innovative, cognitive labor economies when the population reaches a certain sweet spot — around 1.2 million people. Along with population size, she found those cities are also capable of attracting and retaining certain industries that tend to grow much faster than the rate of population growth. Some of these “superlinear industries” include the arts, entertainment, professional services, science and information technology.

“Whatever we observed is not a blip in history,” Youn says. “These two factors [population size and the ability to attract cognitive industries] go hand in hand and depend on one another.” According to Youn, human interactions are known to drive the creation of ideas. In other words, innovation depends on the rate of human interaction, which is pushed forward by increases in population size. Youn thinks the largest cities will likely survive after COVID-19 despite fleeting trends of workers flocking away from major urban centers. But she warns that innovation may take a hit.

Since innovation, in many ways, is driven by strong communication, serendipitous interactions and people being largely together in the same physical space for quick decision-making, Youn warns that new ideas and breakthroughs might slow down as we continue to work from home.

“Remote work is efficient only if communication processes are well established and most tasks are well defined with little room for ambiguity,” says Youn. “If you’re presenting a new idea to your company, you will need multiple ways of communicating it, and it will probably not be understood the first time. This is very hard to do online compared with face-to-face interactions.”

Cities account for 90% of the U.S. economic output and are home to 86% of the population, according to recent data from the Bureau of Economic Analysis and the Census Bureau.

Youn’s study may have implications for policymakers, especially mayors who are trying to transform their cities’ economies. For example, cities losing more people than they gain must look at population size as a strategic priority, according to Youn. “They wouldn’t be losing only economically but also squandering a lot of possible innovative power.”

Areas in the United States that have typically relied on manufacturing but now face challenges due to outsourcing and globalization may consider a policy of “upskilling,” where they make their workforce employable in more advanced industries. “The caveat here is this transformation may be more dependent on national rather than city policy,” Youn said. “The federal government needs to think about the industrial composition of the country as a whole.”

— Aderonke Pederson, Medicine psychiatrists.

Make Time for Mental Health

Avoid a global pandemic and socially distanced holidays, winter will be even more challenging this year, say Northwestern Medicine psychiatrists. Aderonke Pederson, Feinberg School of Medicine instructor of psychiatry and behavioral sciences, and Inger Burnett-Zeigler, associate professor of psychiatry and behavioral sciences, offer tips to protect your mental health this winter.

1. Get outside and stay active. Even if it’s cold, take advantage of the sunlight, Burnett-Zeigler says. Find ways to be active and connect with others.
2. Enlist your social circle. “Ask your family and friends to form accountability groups, where you have a clear sense of how you will check in on each other,” says Pederson. A buddy system could be helpful as well.
3. Be patient with yourself and others. “Everyone is under a great deal of stress,” Pederson says, adding that changes in sleep, appetite, anxiety and energy levels are expected.
4. Take time to recharge. “Identify what foods you emotionally,” Pederson says. “Make a list of activities you enjoy and add them to your routine.”

The largest cities will likely survive after COVID-19 despite trends of workers flocking away from major urban centers. But innovation may take a hit.

### Social Science

### Big Cities Still Matter

Kellogg professor identifies key population threshold that allows large metro areas to become innovation hubs.

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### Wellness

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Innovation

DNA Testing at Home

Student-run Acorn Genetics creates a genetic analysis tool that maintains a user’s privacy.

A na Cornell wanted to learn about her genetic background but shied away from trying a commercially available DNA test kit because of privacy concerns. She couldn’t find a test that could be taken and analyzed at home. So the McCormick School of Engineering junior set out to build one.

DNA testing services allow more people to learn about their genealogy, genetic makeup and associated health risks, and other information. However, privacy concerns loom large, as genetic testing companies often make money by sharing their user’s genetic information with third parties.

To address this issue, Cornell led the creation of GenomeLock, a DNA testing kit that turns a simple cheek swab into usable, private genetic data without the user’s DNA ever leaving the home. Here’s how it works: First, users take a cheek swab, which they run through the kit’s DNA extractor and then place in GenomeLock’s polymerase chain reaction machine—a thermal cycler that uses enzymes to amplify the segment of DNA being analyzed.

The sample is then inserted into a handheld genetic sequencer, which analyzes the data and produces results. Users can order enzymes from Cornell’s startup, GenomeLock-maker Acorn Genetics. They can use those enzymes to test for certain diseases, such as Alzheimer’s. After the DNA sequencer finishes, the analytics can be viewed on a computer. Users learn about any abnormalities found, if they are at risk for a certain disease and recommendations for action moving forward.

“We’re finding out that people have genetic predispositions to certain diseases,” Cornell says, “but if they adjust their lifestyle in a certain way, they can cause epigenetic changes that could strongly decrease the chance of getting that disease.” GenomeLock is the first product from Acorn Genetics, which was formed in the Principles of Entrepreneurship course taught by industrial engineering and management sciences professor Michael Marasco. The company currently consists of four core members: Cornell, sophomores Jakub Wolsza and Mark Ogarek and junior Kate Conner.

Acorn Genetics serves as an early steppingstone to Cornell’s goal of making health care more accessible and transparent. For her work, she earned a Propel Program grant, awarded to female entrepreneurs at The Garage, Northwestern’s student entrepreneurship incubator. She was also named to Chicago Inno’s “25 Under 25.”

Futurebus

A new public transportation design concept aims to once again give passengers the confidence to ride the bus. The Futurebus, designed for the COVID-19 era by an international team that includes Northwestern senior Ryan Teo, reduces contact between passengers and uses antimicrobial fabric and self-sanitizing handles. “We got our inspiration from the dandelion flower,” says Teo, an international student from Singapore who studies product design, engineering and anthropology as part of the McCormick Integrated Engineering Studies program. “The dandelion opens its petals widely, allowing its seeds to be dispersed freely. We wanted to give passengers that same freedom of movement to minimize contact.” The design won the top prize in the FourC Challenge, a 24-hour international competition sponsored by the Shanghai Jiao Tong University School of Design.
Donor Gifts Advance Diversity, Equity and Inclusion
Initiatives seek to diversify the Northwestern community, propel research and education, and enrich the student experience.

The national conversation surrounding diversity, equity and inclusion is ongoing. Northwestern has responded by committing to advancing racial and social justice and making the University a more equitable and inclusive place for all — and generous donors are bolstering these efforts.

The renovation of the Black House — a space dedicated to serving Black students within the Northwestern community as a result of the 1968 Bursar’s Office Takeover — is being led by Multicultural Student Affairs and Campus Inclusion and Community, which strive to make Northwestern a place where students are safe and feel a sense of belonging. Structural, technological and aesthetic improvements include dedicated areas for large gatherings, quiet spaces for studying and updated offices on the upper floors. Construction began in summer 2019 and is expected to be completed this spring.

While the University funded the renovation, donor gifts will enhance and care for the space. The Black House has received support from Alma Cates ’78 and Michael Sutton ’75, alumni who felt its impact firsthand. The couple also made a gift toward programming related to the Black student experience. “The support and counsel I received from the Black House administration inspired me to work hard and strengthen my resolve to complete my degree under sometimes very trying circumstances,” says Sutton, who graduated from the McCormick School of Engineering. “The camaraderie and meetings at the Black House with other Black students provided meaningful social interaction and intellectual stimulation.”

One of those students was Cates, who worked at the Black House while earning her degree from the School of Communication.

Another area of Campus Inclusion and Community, Social Justice Education, creates co-curricular opportunities that foster self-exploration, facilitate conversations and support actions that create social change. A gift from University Trustee Paula Pretlow ’77, ’78 MBA is supporting social justice initiatives that advance equity at Northwestern.

The Peer Inclusion Educators program helps foster an inclusive learning environment by addressing issues surrounding personal awareness of social identities, power, privilege, oppression and social justice. The program hosts workshops for residential communities, athletic teams, student organizations and others. Pretlow’s gift helped increase student engagement through the training of 20 facilitators, who ran 40 workshops in 2019–20.

Pretlow also supported the third annual Justice and Allyship Retreat, during which students met in small groups to discuss the types of oppression individuals of different identities face, what they envision for a socially just world and other topics. One attendee described the retreat as giving them a “newfound energy and sense of action and urgency toward spreading compassion and understanding.”

“My personal priorities and vision for impact at Northwestern are firmly centered in diversity, equity and inclusion,” Pretlow says. “My investment in Social Justice Education was a perfect match. The program continues to grow — now serving more than 3,400 undergraduates — with a preference for those who have shown a commitment to the Black community.

“Speaking from experience, knowledge of and access to resources can be a critical barrier for young, deserving students of color, which is why we created these opportunities,” Adam Karr says. An anonymous gift to Northwestern Engineering supports diversity, equity and inclusion in its computer science department. The gift has enabled the school to partner with Chicago community organizations and the University’s Center for Excellence in Computer Science Education to recruit a diverse group of high school students for a two-week summer program emphasizing the creative and career possibilities of computer science. It also funds a laptop loaner program for students in the department who may not have the resources to replace their computers if it breaks down.

The program has purchased two new computers that allow for the custom installation of software and non-standard operating systems these students require — and inspired students and faculty to donate four used laptops for refurbishment.

“My personal priorities and vision for impact at Northwestern are firmly centered in diversity, equity and inclusion.”

— Paula Pretlow

Social Justice

Architectural rendering of the back of the Black House, which is currently under reconstruction
Connecting Students with Alumni Professionals

The Waldron Connections Program supports Weinberg College students as they embark on their career journeys.

Career exploration is an essential part of defining a student’s path forward after graduation, and Northwestern alumni are uniquely positioned to provide insight and guidance. That is why alumnus Austin J. Waldron ’78 partnered with the Weinberg College of Arts and Sciences to create and endow the Austin J. Waldron Student-Alumni Connections Program, which connects undergraduates with alumni in various fields and across different stages of their careers. The Waldron Connections Program helps students explore career possibilities, hone their networking abilities and learn how to communicate the value of their arts and sciences degrees. Moreover, the opportunity to engage with already-established alumni helps students envision their own professional futures, alleviating concerns about life after graduation.

“So many students get wrapped up in choosing a major, laying out a life plan and thinking it can’t change,” Waldron says. “My journey, and that of many other alumni, is proof that pivoting to a new path can lead to much more satisfaction.”

A lifelong Chicagoan, Waldron is a veteran health care operations executive who spent his 37-year career at Health Care Service Corp., an independent licensee of the Blue Cross and Blue Shield Association. Prior to retiring in 2016, he oversaw claims and account service for 15 million members as senior vice president and chief customer service officer. Waldron earned a bachelor’s degree in psychology from Northwestern and is a member of the Weinberg College Board of Visitors.

“Particularly now, organizations are looking for individuals with balanced backgrounds and the ability to adapt — and that’s what the arts and sciences curriculum provides,” he says.

The Waldron Connections Program typically offers a variety of opportunities each quarter, including panel discussions and industry-specific conversations, professional skill-development workshops and on-site career treks to Chicago and Evanston businesses. In September more than 200 students heard from 45 alumni in diverse industries and roles at the program’s annual Weinberg College Career Summit, which went virtual in 2020. Students attended panels on subjects ranging from big data and entrepreneurship to media and health care, and connected with alumni in small-group breakouts.

“What’s really great about the Waldron Connections Program is that it has different programming for wherever you are on your career journey,” says Madelyn Moy ’22. “Weinberg has a lot of programming for students who need specific conversations, and that pairs an internship with academic coursework.”

In total, the study will evaluate 5,000 participants, testing their blood samples when they enroll and again six months later to determine if the antibodies offer any immunity.

“The study began in summer 2020. Early results, made available last fall, suggest infection rates were higher than previously thought. Nearly one in five participants tested positive for antibodies. If COVID-19 antibodies are found to provide some level of defense, this information will be essential to assuaging the virus.”

Philanthropy Fuels the Fight against COVID-19

As of early November, Northwestern had received more than $4.1 million in gifts and commitments for pandemic-related initiatives.

C oming together to solve the most critical problems is a defining Northwestern characteristic. Since the COVID-19 pandemic began in spring 2020, the University’s philanthropic community has responded by funding high-impact research as well as providing resources to help students learn remotely and return to campus.

Donor support has been crucial to the continuation of Northwestern’s research and teaching missions. Feinberg School of Medicine alumni and University Trustee Andrew “Drew” Senyei ’79 MD and his wife, Noni, made a substantial gift to help launch Northwestern’s Screening for Coronavirus Antibodies in Neighborhoods (SCAN) study, which identifies individuals in Chicago who have been infected with COVID-19 and provides them with at-home antibody tests — a simple finger- prick generates a single drop of blood that is dried on a special filter paper and mailed to a lab for analysis.

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“Given the urgency of the pandemic, philanthropic grants offer the fastest way to empower our researchers so we can develop strategies and policies to mitigate the impact of this health crisis,” Drew Senyei says.

Benefactors also have made in-kind gifts of personal protective equipment (PPE) to help reduce the transmission of COVID-19 at Northwestern. Andrea and Anthony Melchiorre ’89 donated the contents for 15,000 PPE kits for students returning to campus this academic year. Each kit contains five reusable cloth masks, two bottles of hand sanitizer, one packet of disinfectant wipes and a digital thermometer. The couple also donated 11,000 KN95 masks for use by research personnel and students and others in need of this type of PPE.

“For us, this gift is a way to help safeguard the health of those who are on campus,” Andrea Melchiorre says.

Driven by the same goal, Upside Health donated 60,000 three-ply medical face masks — 50,000 for use in Norris University Center and 10,000 for Chicago Field Studies, a Weinberg College of Arts and Sciences program that pairs an internship with academic coursework.

“This pandemic requires everyone to take initiative and do their part,” says Jonathan Hannito ’20, who facilitated the gift along with fellow Northwestern Health volunteers Ryan Teo ’21 and Stella Lin ’21.

Donors also have supported the technology needs — laptops, Wi-Fi hotspots and Internet — of students who started the academic year in a remote learning environment.
Pioneering professor John Rogers founded a new field of bioelectronics to improve human health, making devices that bend, twist, stretch, or melt away.

BY AMANDA MORRIS

John A. Rogers has invented a mind-boggling number of electronic devices. Do you want to measure your sweat’s chemistry to check hydration? There’s a device for that. Monitor exposure to harmful levels of ultraviolet radiation from the sun with a sensor smaller than an M&M? There’s a device for that. Jump-start your heart with an ultrathin, stretchable “sock” that acts as a pacemaker? There’s a device for that.

Or map your brain’s electrical signals with a sensor that softly laminates onto the organ’s wrinkled, folded surface and then harmlessly dissolves, making a second surgery to remove the sensor unnecessary? There’s a device for that, too.

How about “artificial skin” that creates the sensation of touch in virtual reality environments? Or an implant that senses when the user has ingested a fatal level of opioids, delivers a lifesaving antidote and calls emergency responders?

Yes. Believe it or not, Rogers has developed bioelectronics for all these applications and more.
hen talking to Rogers, it’s clear that research is not just an exercise of the mind. It’s a highly competitive, full-contact sport. It’s an arena where boundaries are pushed to extreme limits and electronics become impossibly thin, flexible, stretchy and smart — blurring the distinction between body and device.

“I’m not competitive against other people, necessarily, but competitive with myself,” says Rogers, who directs Northwestern’s Querrey Simpson Institute for Bioelectronics. “In my lab, we want to go as high as we can go in terms of rigor and impact. We want to do more and get to the endpoint faster.”

With more than 750 published journal papers, more than 100 patents and more than 130,000 citations, Rogers is playing his best game. He is the Michael Jordan of technology — unstoppable, unflinching and agile enough to pivot his research when a medical need unexpectedly arises.

“John is truly motivated by his desire to help people,” says longtime collaborator Yonggang Huang, the Jan and Marcia Achenbach Professor of Mechanical Engineering at Northwestern. “The faster he can move from idea to invention, the faster he can get his devices onto the patients who need them. John’s vision is to create a new field that benefits society.”

DISCOVERING RESEARCH Rogers, who is the Louis A. Simpson and Kimberly Querrey Professor of Materials Science and Engineering, Biomedical Engineering and Neurological Surgery, doesn’t just lead the field of stretchable bioelectronics — he founded it. But with his mild demeanor and subtle Texas lilt, Rogers is so unassuming that people might not expect such extraordinary achievements. He is a highly decorated researcher, with a MacArthur “genius grant” to his name. He also is just one of approximately two dozen people in history to be elected to all three national academies: The National Academies of Sciences, Engineering and Medicine.

Rogers caught the research bug while an undergraduate at the University of Texas at Austin. He grew up outside Houston, where his mother wrote science-inspired poetry and his father was a physicist. A double-major in physics and chemistry, Rogers pursued an undergraduate research position in the laboratory of Professor Richard “Dick” Lagow, who was famous for “extreme chemistry,” or research into highly reactive compounds, with a focus on the most reactive element of them all, fluorine.

“He was energized not only by the research but also by the competitive landscape of academic science,” Rogers says of Lagow. “I thought that being an academic meant that you sat in an ivory tower and thought big, profound thoughts. I didn’t fully appreciate that it was also so competitive. Dick enjoyed competing against other labs, trying to do something better or something different. I found that whole environment exciting.”

From there, Rogers pursued a doctorate at the Massachusetts Institute of Technology, where he met Lisa Whitesides ’20 H. Rogers quickly built a reputation for materials science great and renowned chemist George Whitesides ’20 H. Rogers quickly built a reputation for himself. Fellow postdoc Joanna Aizenberg remembers review meetings in which group members presented their research results.

“Nobody wanted to present after John,” says Aizenberg, who is now a materials science professor at Harvard.

“We constantly fought about it. His presentations were awe-inspiring. It was embarrassing to follow that. It was obvious, even back then, that he would do great things.”

After their postdoctoral fellowships ended at Harvard, Rogers and Aizenberg reconnected at the storied Bell Labs, where they shared an office. By this time, Rogers — who grew up playing with Legos and Erector Sets — had realized that he enjoyed building things and designing gadgets, so he expanded his research focus from chemistry and physics to various aspects of engineering. At Bell Labs, he worked on the backplane circuits for electronic paper displays, which became the basis for e-readers such as the Kindle, and on advanced fiber-optic devices for data communications, which became cornerstones for the fastest networks at that time.

Aizenberg describes Rogers as someone who loved his work so thoroughly that he spent days and nights in his lab. “He was working at the interface between science and engineering, in a highly collaborative mode with an eye toward broader impact. Now that he runs his own lab, he aspires to emulate that model. Rogers has one of the biggest labs on campus in terms of the number of students, consisting of approximately 100 postdocs, graduate students and undergraduates — equally split between men and women.

“We give students freedom to choose their own projects and develop a sense of ownership,” Rogers says. “Then they bring their own creativity and come up with new ideas, and they work on interdisciplinary research, interacting with experts in multiple fields of study — the Bell Labs way. That’s an important part of the education process.”

Rogers’ lab model is clearly working. Throughout his career, all but two graduate student mentees have pursued careers in science or engineering. And 117 have become faculty members at universities around the world, including Princeton, Cornell, Duke, Stanford, MIT — and Northwestern.

“He’s trained some wonderful progeny who carry his work forward in many different ways,” says University of Pennsylvania researcher Brian Litt. “There’s a piece of John in all these people, and they will go on to inspire the next generation.” — A.M.

“The faster he can move from idea to invention, the faster he can get his devices onto the patients who need them. John’s vision is to create a new field that benefits society.” — Yonggang Huang
office, listening to heavy metal on his headphones and fueling himself with iced tea. “I don’t think he ever slept,” says Aizenberg. “It was clear that he truly enjoyed his work and being in the office. And for me, it was like being next to greatness. He’s absolutely unmatched.”

BENDING MATERIAL TO MEET NEEDS  
After the dot-com bubble collapsed, taking Bell Labs with it, Rogers came home to academia, joining the University of Illinois at Urbana-Champaign and the Beckman Institute for Advanced Science & Technology in 2003. In 2005 a single thread of silicon changed the direction of his research — and his life.

Rogers sought to develop a hybrid material that could transform brittle, rigid silicon into a flexible and stretchy rubber band. The U.S. military funded Rogers’ lab to create large-format electronic wireless communication systems that could be unfurled in a battlefield situation and then rolled up and tossed into a backpack for urgent, easy transport.

“Prior to that, our work focused on plastic-based materials as the basis for such types of flexible electronic systems,” Rogers says. “That approach can work pretty well for simple devices like displays, but the performance tends to fall short for more demanding applications.”

Rogers knew that thinner materials, by nature, become increasingly flexible. It’s like the thickness of a sheet of paper versus that of a two-by-four. Both are the same width and being in the office. And for me, it was like being next to greatness. He’s absolutely unmatched.”

THE EYE-OPENING BRAIN  
Like many researchers around the globe, Brian Litt, a professor of neurology and bioengineering at the University of Pennsylvania, took note of Rogers’ discovery. Litt has devoted his life to better understanding the brain in order to treat epilepsy patients. To further this work, he envisioned implantable devices to map epileptic networks. He saw the potential for Rogers’ electronics to perhaps achieve the impossible — to monitor select, localized areas of the brain without causing damage. Litt and his team approached Rogers after a presentation.

“They asked if I ever thought about putting my flexible electronics, ‘They asked if I ever thought about putting my flexible electronics, “Rogers says. “That was an eye-opener for me. It represented a new direction, much different than our work on displays and communication systems. A bio-interface sounded really interesting, with clear potential for tremendous societal value in human health.”

HEAD TO TOE  
Throughout his 25-year career, John Rogers has developed 50 categories of ultrathin, stretchable devices that push the boundaries of engineering and medical technology. Here are a select few.

- Electroencephalogram cap  
  Wearable electrodes read brain signals for potential application as a brain-computer interface.

- Shunt monitor  
  Device measures flow through a shunt, which drains fluid from hydrocephalus patient’s brain.

- Sweat patch  
  Skinlike patch analyzes sweat loss and sweat chemistry to track dehydration, body temperature and markers for disease.

- Ultrasound sensor  
  World’s smallest wearable device gauges ultraviolet radiation exposure to decrease the wearer’s skin cancer risk.

- Muscle sensors  
  Band-Aid-like sensors can be worn on the legs, arms and chest to detect motion, muscle activity, sleep and vital signs.

Illustration by Matthew Twombly
The challenge of engineering a device for the brain, however, is enormous and daunting. The human brain is a jiggly maze of wrinkled peaks, shallow grooves and deep fissures. With the consistency of gelatin, it can be depressed by the most delicate touch. Finding new tools to map and stimulate the brain could unlock the potential to restore lost brain function or cure debilitating disease. But failure carries the risk of hemorrhage or even permanent damage to the organ that houses intellect, creativity, emotions and memories.

“This presented a whole new set of challenges from a fundamental materials-science standpoint,” Rogers says. “To integrate an electronic device onto a very complex topographical surface like the brain, and to do so in a manner that doesn’t damage the fragile tissues or the technology, you have to build devices that can conform in very complex ways to follow the irregular geometry — in materials that both are biocompatible and enable high-performance operation."

THE SKIN IS IN

Rogers joined Litt and his team to develop wireless, skinlike, biocompatible monitors for the brain that could last many decades without degrading — or that would, after a set number of days, harmlessly disappear like the serendipitous interaction with Litt some years before, this opportunity developed from a discussion with a laboratory assistant. Matthew Potts, assistant professor of neurological surgery at Feinberg, following a Rogers neurosurgery seminar. "John always has a keen sense of what will happen next in science — before it starts to happen," says Banks, one of Rogers’ closest friends. "He has the ability to predict the next big thing."

UNPREDICTABLE APPLICATIONS

Occasionally, Rogers develops new devices without knowing what future problems the technology might solve. His team developed a sensor to measure blood flow, for example, and then learned it could be used for hydrocephalus patients. Much like the serendipitous interaction with Litt some years before, this opportunity developed from a discussion with Matthew Potts, assistant professor of neurological surgery at the Feinberg School of Medicine, and Amit Ayer ’19 MBA, a recent neurosurgery resident at Feinberg, following a Rogers neurosurgery seminar.

Hydrocephalus, a potentially life-threatening condition in which excess fluid builds up in the brain, affects nearly 1 million Americans. Treatments include surgically implanting a brain shunt, a straw-like catheter that drains fluid from the brain. Shunts have a nearly 100% failure rate over 10 years, and a malfunctioning shunt can cause headaches, fatigue and even death if left untreated.

Rogers repurposed his blood-flow sensor to instead gauge the flow of fluid through a shunt, The Band-Aid-like sensor could recognize the way patients manage hydrocephalus and potentially save the U.S. health care system millions of dollars. Beth Meyer, whose son Willie was diagnosed with hydrocephalus as an infant, is keenly aware of how life-changing the device might be. Over the past 28 years, Willie has undergone more than 190 surgeries to diagnose or repair a malfunctioning shunt. "Shunts work fine for a lot of people, but when they don’t, you’re in big trouble," says Beth, who lives in Arlington Heights, Ill. “Dr. Rogers’ device is a game changer. It’s painless, it’s noninvasive, and you can quickly determine whether the shunt is working properly or not. It could potentially save lives and money — and anxiety."

Similarly, Rogers re-engineered his epidermal electronics to monitor premature babies, following a discussion with Amy Paller after a presentation at the annual meeting of the Society of Investigative Dermatology. His team’s resulting wireless device — designed with preemies’ fragile skin in mind — carries the promise of removing the tangle of wires that restrict movement and prevent parent-baby bonding. A father himself, Rogers profoundly understood the project’s potential impact.

After launching the devices in Chicago-area hospitals, the wireless monitoring systems for premature babies have been deployed to families in 26 countries, including resource-poor settings in Zambia, Kenya and Ghana. Now the devices exceed the capabilities of existing, wired monitoring technologies to provide information beyond traditional vital signs, including a baby’s crying, movement, body orientation and sounds. With support from the Bill & Melinda Gates Foundation and Save the Children, Rogers’ team will complete a program of testing the sensors on 15,000 pregnant women and 500 babies by the middle of 2021.

PANDEMIC PILOT

In March 2020 the accelerating momentum of Rogers’ research slammed into the same wall that hit the rest of the world. The coronavirus pandemic shut down Northwestern, and the University’s research operation ground to a halt. As the Technological Institute’s hallways grew quiet, Rogers continued to visit his office and lab every day. Then his colleagues from the Shirley Ryan AbilityLab called, wondering if it might be possible to re-engineer a Band-Aid–sized device that he developed to track swallowing and speech sounds in recovering stroke patients to instead monitor cough, shortness of breath and vital signs in COVID-19 patients and front-line health care workers.

Two weeks after the phone call, Rogers’ team had already produced a working device. A month later, they launched a pilot program to test the device on health care workers and patients at Shirley Ryan AbilityLab and Northwestern Memorial Hospital. Rogers applied for essential status (exemption from the Illinois’ stay-at-home order), and his team manufactured each device in the lab. “John didn’t miss one day of work,” says Banks. “Before professors and postdocs returned, John and I were in the lab making COVID sensors. We personally went down to the hospital to put them on patients and work with the doctors.”

This is no surprise to Shuji “Steve” Xu, medical director and CEO of the Querrey Simpson Institute for Bioelectronics. “I don’t think John gets enough credit for his empathy,” says Xu ’18 GME. “Beyond his technical brilliance, he puts himself in others’ shoes to genuinely understand their problems. And then he will do anything in his power to solve those problems.”

Amanda Morris ’14 MA is senior editor of science and engineering in Northwestern’s Office of Global Marketing and Communications.

Gatorade is one of the many companies that has licensed inventions from Rogers’ laboratory. The sports-drink giant is currently commercializing a skinlike, wearable device that measures electrolyte levels in sweat in tiny fluidic channels. Gatorade teased the product, which will be widely available in 2021, in a string of television commercials that began airing in 2019, showing world-class athletes such as Williams and NBA star Jayson Tatum and Paul George wearing the device while training.

“It’s super cool, obviously,” Rogers says. “Some of the athletes are publicly sharing their thoughts about the importance of quantitative approaches to hydration management enabled by our device. That’s more exciting than seeing the commercials.”

More than 70 of Rogers’ patents have been licensed through both large companies — such as L’Oreal and E Ink — and lean startups, some of which he co-founded. — A.M.
Free
To Play

Kathryn Hahn finds roles that challenge and excite her, rediscovering the relentless curiosity she first fostered at Northwestern. 

BY CLARE MILLIKEN

Photograph by Jesse Dittmar/Redux
For Kathryn Hahn, *Afternoon Delight* was a game changer. In the 2013 film, Hahn ’95 played Rachel, a wife and mother who looks to enliven her marriage by arranging a visit to a strip club with her husband. Rachel forms a bond with one of the dancers, whom she invites to become her young son’s live-in nanny. The film, which exposes painful, even cringe-worthy realities of modern marriage, was described by reviewers as groundbreaking and “meticulously acted.” Hahn’s performance was “disarming and funny,” one reviewer noted.

Filmed in just 21 days, the indie hit was intensive for the cast. A single scene could take all day to shoot, as the actors improvised and fed off one another’s performances. Rehearsals, run-throughs and power naps took place in what Hahn calls a “creative womb,” a rented Southern California bungalow where images and quotes from John Cassavetes — the pioneering independent filmmaker who brought an improvisational, actor-first aesthetic to American cinema — covered the walls.

Hahn drove her own car in the film, and she’d find energy bar wrappers and crushed water bottles “just happened at that moment to meet the messiness each role brings, the dedication to television was not an easy one. "I did come out to Los Angeles a little bit kicking and screaming, ‘Dude, when you shave, please rinse the hair before I do the dishes.’ “ Hahn says. Her first big break came in 2001, when she was cast as a grief counselor in the drama *Crossing Jordan*, which aired for six seasons on NBC. The transition from the stage, once that curtain goes up, it’s ‘f--- its,’ “ she says. “I was screaming, ‘I’m so fed up with off-Broadway shows.’ “

"It was the best time, “ Hahn says, her voice rising with the excitement and the energy bar wrappers and crushed water bottles

Hahn began getting smaller parts in movies — including the “big-swing comedies” *How to Lose a Guy in 10 Days* (2003) and *Juno* (2007). She was a game changer.

Despite notable successes, “I never could figure out the rules of this game.” Hahn says of working on camera. “I just couldn’t find the total freedom. On the stage, once that curtain goes up, it belongs to you and your fellow actors, and it all just about breathing together and the relationship with the audience. And I just never could find that on camera.”

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Amazon’s I Love Dick (2016–17), a short-lived series created by Soloway and Sarah Gubbins ‘97, ‘08 MFA and based on a book of the same name, Hahn plays a woman who becomes infatuated with Dick (played by Kevin Bacon), the head of her writer husband’s residency program in Marfa, Texas.

“That role was difficult because of the mind space. It was a very hungry, tense experience, because [Chris] was always unsatisfied,” Hahn says. “But as for the other creators, cast and crew, she says, “What an amazing group of humans!” The feeling is mutual for Gubbins, who hadn’t met Hahn before I Love Dick and now says she’d “do anything” with Hahn.

“Kathryn never shies away from the messiness [of a role],” Gubbins says, “She locks in emotionally to a character and then puts it through this Kathryn Hahn tunnel. She’s able to take a very static scene and just ignite it with so much vibrating, rich magnetism that you couldn’t miss. You end up finding out more about her character — to explore, investigate and understand them.”

Hahn, who worked in the campus prop shop and as a manager at downtown Evanston’s Unicorn Caffe (which closed in September after 29 years), also met Sandler during her first year on campus. Hahn and Sandler began dating in their sophomore year, and they eloped on their 10-year anniversary, They now have two children, Leonard, 14, and Mae, 11.

“It was like you took two of the most creative and talented minds at Northwestern at the time, put them together and shook them around every day,” Brody says of Hahn and Sandler’s relationship. “It was astonishing to be near.”

Hahn and Sandler performed together in several plays at Northwestern from 1991 to 1995, including David Mamet’s two-hander The Woods. “Kathryn at Northwestern was her Northwestern experience, Hahn is nothing short of ebullient. “It was such a rich, rich experience,” Hahn says, her enthusiasm at a rolling boil. “I think about that space — the theater building — as holding so much vibrating, creative energy and people just wanting to make. And I still hold on to that feeling — of rehearsing at 2 in the morning, not wanting to coast and just wanting to dig into the heart of it. That’s what I definitely have taken away from it — the relentless curiosity.”

In 2018 Hahn took the stage at Northwestern’s Starry Night, a celebratory performance that brought together some of the University’s most famous alumni in entertainment. The event, called Off-Comm Fest, a weekend reunion hosted by the School of Communication. Backstage, Hahn talked to students, fellow stars and others, including Galati, who was thrilled to tell her how much he loved her performance in Transparent.

The afternoon before the show, Hahn and Sandler returned to their old campus haunts. “Walking through the theater building with my husband, I had a lump in my throat the whole time,” Hahn recalls. “I miss those days so much. I will never take that experience for granted. I know how lucky I was to spend four years at Northwestern.”

Clare Milliken is senior writer and producer in the Office of Global Marketing and Communications.
Educators, legislators and families are reigniting a decades-old debate about teaching the full context of American history.

BY ADRIENNE SAMUELS GIBBS
Perhaps you read about a junior high school’s overnight nature camp in Wisconsin that included an Underground Railroad simulation where, according to one student, the Black students had to pretend they were runaway slaves while the white students acted as slave catchers or helpful abolitionists. Or maybe you read about the Chicago elementary school that celebrated Black History Month with an assignment for kindergartners to draw and write about African animals. And though he’s not required to incorporate history at Evanston Township High School, he says, “It’s not the first time that a person in power has sought to influence or remove difficult race histories from K-12 curricula. Northwestern professor Leslie M. Harris points to Lynne Cheney’s crusade to remove Black and Native American history from consideration for curriculum standardization as one example. In the 1990s UCLA historian Gary Nash worked to create a national history standard, partnering with teachers to weave various multicultural histories into one American narrative. When these national standards for U.S. and world history came up for a Senate vote, Cheney and others went on an all-out assault. …”

"The price of ignoring the totality of American history is very high because such erasures promote profound and crippling ignorance.” — Aldon Morris
the thousands of Confederate prisoners of war who died at the Union’s Camp Douglas on Chicago’s South Side.

The Confederate Mound protest was part of “Civil War History: A Call to Action,” an event organized by the Journal of the Civil War Era, which Masur co-edits. Scheduled to coincide with the anniversary of the issuance of the preliminary Emancipation Proclamation, the group demonstration took place for two hours at about a dozen sites across the country, including Gettysburg National Military Park, with historians and community members holding signs and chatting with visitors to offer additional history not represented in markers and monuments.

“We had two goals,” says Masur, an associate professor of history at Northwestern. “One was disrupting what’s called the ‘Lost Cause’ narrative, the idea that the Confederacy was this great, noble cause and that they weren’t really fighting for slavery but rather for states’ rights. We wanted to poke holes in that and tell a fuller story. We also emphasized aspects of African American history that are invisible on the landscape.”

“We want to be a resource for people in trying to move this conversation forward and set the record straight. We’re trying to add more history. Who could object to that, right?”

Masur says that to understand racial injustice, people have to know U.S. history, but this history has not adequately been taught on the K-12 level. In part, that’s due to a decades-long focus on science, technology, engineering and math—a worthy focus that has diverted some resources from history and social studies.

“There’s been a systemic de-emphasis on the teaching of history and humanities in this country for a very long time,” says Masur. “And now? We’re reaping what we sow.”

Unfortunately, it’s often not until students get to college that they get the full context of historical lessons. And “it’s not just Black students who benefit from this history,” says Kibona Baldwin, assistant professor of African American studies. “Everybody benefits. Everybody needs to understand that Black folks were the only race to be ‘freed’ with zero capital—nothing, no housing, no job—nothing except being racialized in a way that made the act of existing a challenge.

Black-History Courses Gain Popularity

Recent social movements are making Black-history classes more popular than ever at Northwestern. Students want to understand the facts behind what’s happening in the streets, says Mary Pattillo, the Harold Washington Professor of Sociology and African American Studies and chair of the Department of African American Studies. In the fall quarter, several classes in the department had waiting lists.

“We definitely experienced an uptick in enrollment,” says Pattillo. “My class [Introduction to Black Social and Political Life] was capped at 30. I have 34 students and had to turn others away.”

She surveyed the class, and just under half said that one of the reasons they enrolled was because of the current conversation about anti-Black violence. “There are also a good number of seniors who said they finally have room in their schedules to take a race class and were especially interested in doing so given the current moment.”

Fall 2020 African American studies courses included:

• Survey of African American Literature—An introduction to critical snapshots of expressive writings by and about African Americans, from the era of U.S. slavery in the 18th century through the contemporary moment

• Introduction to Black Social and Political Life—A study of the social relations, political agency and economic practices of African Americans and other Black folk in the diaspora

• The Black Diaspora and Transnationality—An introduction to critical theories of race, gender and sexuality across the African diaspora

• Major Authors: James Baldwin—A study and meditation with and within Baldwin’s language

“...If people better understood that history, they would be better able to historicize our experiences and connect the past to the present in a way that would meaningfully add some of the obvious racial injustices we continue to see.”

S tudents need to know more than political folktales, says Aldon Morris. Even elementary school students can learn age-appropriate lessons that also discuss the painful narratives of history.

If students don’t get this crucial education early on, Morris cautions, they “will grow up with a very limited view about how America works and how the world works."

Winchester, who is pursuing a doctorate in learning sciences at Northwestern and taught the social studies practicum at the School of Education and Social Policy this past fall, suggests replacing the march-through-time approach to teaching history with a focus on understanding the implications of historical events. He also suggests that K-12 teachers move beyond textbooks and focus instead on supplemental texts that provide the contest routinely taught to college students.

“What can you do at your school level?” asks teachers. “How can you engage in subprocesses that will benefit all students, who need to know the truth so they grow up to be better people and have a better understanding of the world they live in?”

But teachers can’t do it alone. Parents have to push their individual schools and school boards or councils for historical accountability.

Winchester says myths—Santa Claus, the Easter Bunny, the tooth fairy—are part of American culture. But when it comes to teaching history, it’s time to come clean.

“We’ve been lying to our kids for a long time,” says Winchester. “In the U.S., this idea that we’re going to censor things until we think kids are ready—that’s a part of the problem, because eventually you have to unlearn all the things that were partial truths or full-out lies.”

Adrienne Samuel Gibbs ‘79 is the editor of Momentum, a publication that documents the dismantling of anti-Black racism, and the features editor of ZORA, a magazine for women of color. She lives in Chicago.
Five Questions with Igor Karlicic ’12 and Bhargav Maganti ’12

The Dallas-based sports tech innovators from Monarc created the Seeker, a smart quarterback that uses tracking technology.

1. How did you become involved in sports tech?  
Karlicic: We really liked the concept of allowing a receiver to train alone. The only way you can execute that is if you take the player’s data in real time, track his position and velocity using wearable technology, and then layer algorithms to predict where he’s going to be. Being able to train alone while interacting with a robot quarterback that uses the Seeker, a smart sports tech innovators

2. What sets the Seeker apart from other football-passing machines, including the popular JUGS machine?  
Maganti: The patent for JUGS machines was created over 40 years ago, and there hasn’t been much innovation on that front since. We asked, “How can we optimize this technology?” The first thing we focused on was positional tracking. There have been tremendous advances in the tracking space, specifically positional tracking in soccer, over the past decade. We came into the industry at a moment when this tracking technology became more widely available and applied it to the Seeker.

3. What makes the Seeker so important to football?  
Karlicic: We have several universities on board right now. We had planned a road show to hit a lot of Big Ten schools. And then that came to a screeching halt with COVID-19. But the players themselves were reaching out to us. The idea of being able to train alone was extremely compelling.

4. How did you launch Monarc in the midst of a pandemic?  
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5. How has your work at Monarc been informed by your time at Northwestern?  
Maganti: The Engineering Design and Communication courses and the capstone design course that Igor and I took together our senior year were certainly influential in terms of our interest in and passion for design. What also makes Northwestern unique is the amazing Ford Design Center. Igor and I used to go there quite often, just skirking around and learning how to make things.

Creation

COMPETITIVE EDGE

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Food

Taste Maker

Last spring, as millions of Americans quarantined at home, Alex Willis ’17 MS used his lifelong hobby of baking to keep him busy.

Willis, who earned a master’s degree in chemistry at Northwestern, pursued a career in business analytics and strategy after graduation and also rekindled his passion for food creation. This spark led to an appearance on the fifth season of The Great American Baking Show, which aired on ABC last winter. Willis, who earned Star Baker honors twice — during Cake Week and Spice Week — and finished the season in fourth place, called it the time of his life.

“The best thing about being on the show,” he says, “was meeting all of the people: my fellow bakers, who I text all the time, and the production crew and the celebrities.”

In August, Willis hosted a live, virtual baking demonstration with the Northwestern Alumni Association and the Graduate School in celebration of National Potato Day. During the presentation he turned purple sweet potatoes into purple milk bread.

Willis, who lives in West Hollywood, Calif., says his long-term goal is to start or operate a bakery. “It’s important to realize that you should be a multifaceted person and pursue your interests, even if it’s just as a hobby,” he says. “That doesn’t make it any less important or less valuable.”

Get Willis’ purple milk bread recipe at alummag.nu/alex-willis.
Molly Beucher '08 and her friend Georgia Maguire pulled into one of the last stops of their 500-mile motorbike trip across Morocco feeling like small-town heroes. They had just traversed a mountain pass in a snowstorm, and locals were waving and shouting.

“It was a real Rudy moment,” Beucher says. “Then some guy yelled, ‘F*ck Fire!’ and I looked down to see that, sure enough, my bike was probably 30 seconds from erupting in flames.”

Beucher and her bike were both OK — someone rushed over to pour water on the spreading flame. The incident was emblematic of the duo’s seven-day journey: exhilarating, dangerous — and helped tremendously by the kindness of strangers.

In partnership with Education for All Morocco (EFA), an organization focused on educating Moroccan girls in remote areas, Beucher and Maguire set off on their 2018 adventure through the North African country. And they did it all on “monkey bikes” — essentially, miniature motorcycles. The distance traveled each day depended on these bikes, which broke down more often than the women had anticipated.

“We found ourselves in these small towns that aren’t even on a map, asking for a mechanic, who often ended up being the cousin of the guy who just happened to see us do an accidental wheelie off our bikes,” Beucher says. “We were overwhelmed by the generosity of everyone we met.”

Beucher and Maguire — the so-called Monkey Bike Mafia — filmed their journey and posted excerpts on YouTube in seven installments that are equal parts comedy and breakdowns.

“It was so transformative just to be with my friend in a foreign country and figure it out all at once,” says Beucher, who would love to do a Monkey Bike Mafia Ride 2.0. Now, though, she’s focused on a different adventure: motherhood. She gave birth to her first child, William, last September.
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500

Miles driven on monkey bikes by Molly Beucher ’08 and her friend Georgia Maguire during a seven-day journey across Morocco to raise funds for girls’ education. See page 48.