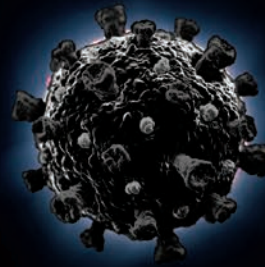


FALL 2020

Medicine on the Midway

THE UNIVERSITY
OF CHICAGO
BIOLOGICAL
SCIENCES DIVISION



Confronting SARS-CoV-2

Researchers, clinicians and trainees
meet the unprecedented challenges
of the COVID-19 pandemic



Since the pandemic began, University of Chicago Medicine physicians and scientists have published about 200 journal articles that have studied COVID-19 or SARS-CoV-2.



Kenneth S. Polonsky, MD

The Richard T. Crane Distinguished Service Professor
Dean of the Biological Sciences Division
and the Pritzker School of Medicine
Executive Vice President for Biology and Medicine
The University of Chicago

Dear Colleagues,

Looking back at 10 months of the COVID-19 pandemic, it's remarkable how much the medical and scientific community has accomplished in a short time. University of Chicago Medicine physicians and scientists alone have published more than 200 journal articles related to COVID-19 and SARS-CoV-2 since the pandemic began. This extraordinary productivity is not unique to our institution, as clinicians and scientists throughout the country work tirelessly to better understand the novel coronavirus, control the spread, improve treatment and, ultimately, develop a vaccine.

"We have a moral obligation to do this work," said Sarah Cobey, PhD, Associate Professor in the Department of Ecology and Evolution. She is one of six Biological Sciences Division faculty members profiled in this issue's cover story who played key roles in aspects of our COVID-19 response in such areas as clinical trials, contact tracing and epidemiology.

Tragically, COVID-19 has taken a disproportionate toll in Black and brown communities. In the summer of 2020, UChicago Medicine joined with 35 other Chicago health organizations in issuing a public health call to action to end systemic racism, which threatens the health of our patients and communities. Monica Peek, MD, MPH, Associate Director of the Chicago Center for Diabetes Translational Research, and Brenda Battle, MBA, BSN, RN, Vice President of the University of Chicago Medicine's Urban Health Initiative, discuss racism as a public health crisis in a Q&A that begins on Page 12.

William McDade, PhD'88, MD'90, Chief Diversity, Equity and Inclusion Officer for the Accreditation Council for Graduate Medical Education (ACGME), and Courtney Amegashie, a third-year Pritzker School of Medicine student, sat down for a deep and thought-provoking conversation — via Zoom, of course — on advancing diversity, equity and inclusion in medical education. The story is on Page 8. (You may visit mbsaa.uchicago.edu/WilliamMcDade to watch the full conversation online.)

As we cope with the ways the pandemic has upended our personal and professional lives, spending time in nature can be restorative and provide solace. University of Chicago faculty member Alison Anastasio, SM'05, PhD'09, is an urban ecologist and expert on the flora and fauna of the Calumet Region. In a story that begins on Page 26, she takes us on a lakefront tour of the South Side to see the natural beauty and abundant plant life that exists on land that formerly housed a steel mill.

Pandemic fatigue is real, and there is no question that we are likely facing a difficult winter. As clinicians, scientists and trainees, your contributions to patient care, research and medical education are vital. I hope the important contributions that you are making to the health of your patients and their families sustain you in this challenging time. I wish you and your families good health, and all the best in the year ahead.

Fall 2020 Volume 73, No. 2

A publication of the University of Chicago Medicine and Biological Sciences Division. *Medicine on the Midway* is published for friends, alumni and faculty of the University of Chicago Medicine, Biological Sciences Division and the Pritzker School of Medicine.

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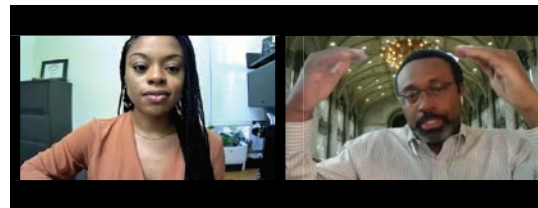
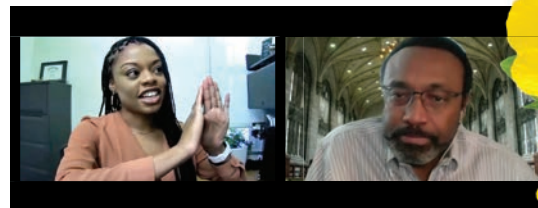
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The University of Chicago Medicine's multidisciplinary response to the pandemic spans clinical care, research and community outreach. The cover story profiles six physicians and scientists — in fields such as epidemiology, surgery and public health — and how they stepped up during this extraordinary time.



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A. Murat Eren, PhD



Courtney Amegashie, MS3, and William McDade, PhD'88, MD'90

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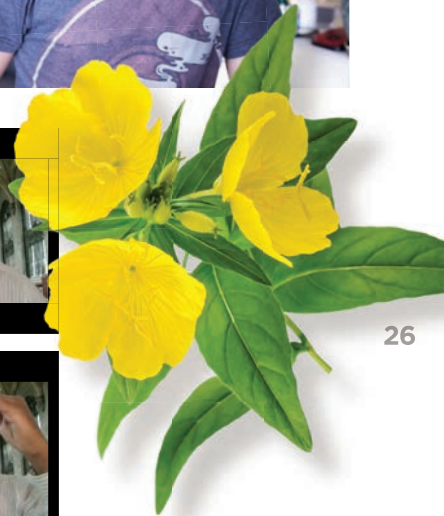
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Tom Jackiewicz named UChicago Medicine President and COO

PHOTO COURTESY OF KECK MEDICINE



Tom Jackiewicz

Tom Jackiewicz joined the University of Chicago Medicine in August as the President of the University of Chicago Medical Center and Chief Operating Officer of the UChicago Medicine health system. Previously, he served as chief executive officer for Keck Medicine of the University of Southern California and a senior vice president for USC.

He succeeds Sharon O’Keefe, who retired in July.

His career has focused on executing ambitious and broad transformations in academic medicine and engaging physician leaders in organizational

change. During his almost nine-year tenure at Keck Medicine, he grew USC’s medical enterprise from two for-profit hospitals to a \$2.1 billion regional academic health system with internationally renowned physicians, care quality in the top quartile in the country and strong scientific research capabilities. Under his leadership, Keck Medical Center of USC was ranked No. 16 on the *U.S. News & World Report* 2019-20 Best Hospitals Honor Roll, and Keck Hospital of USC achieved Magnet recognition in 2018, the highest national honor for excellence in nursing and patient care.

Jackiewicz previously served in leadership roles in both medical schools and academic health systems at the University of California, San Diego, the University of Pennsylvania, Stanford University School of Medicine and Columbia University Medical Center.

He is the former president of Global Health Data @ Work, which uses data, medical evidence, and professional insights from the world’s best healthcare systems to promote more timely, equitable and effective patient care globally. He is a former board member of the California Hospital Association, the University HealthSystem Consortium (now Vizient), and a former member of the Association of American Medical Colleges (AAMC) Advisory Panel on Health Care and national chair of the AAMC Group on Business Affairs.

He emerged as the top candidate in a competitive national search because of his deep knowledge of academic medicine and experience with the tripartite mission of research, clinical care and medical education.

“Tom is the right leader to succeed Sharon and help us continue the University of Chicago’s legacy of advancing the forefront of medicine through outstanding patient-centered clinical care, scientific discovery and innovation, and continued growth as an academic health system,” said Kenneth S. Polonsky, MD, Dean and Executive Vice President for Biology and Medicine at the University of Chicago and President of the UChicago Medicine health system.

“I’ve admired UChicago Medicine and its pioneering approach to advancing clinical care through scientific research, and for educating the next generation of physicians and scientists.”

Tom Jackiewicz

Sharon O’Keefe leaves ‘rich and meaningful legacy’

Sharon O’Keefe retired in July as President of the University of Chicago Medical Center, after a distinguished 46-year career in academic medicine. O’Keefe also served as Chief Operating Officer of the University of Chicago Medicine health system.

During her 9 1/2-year tenure at UChicago Medicine, O’Keefe’s focus on improving the quality, safety and experience of clinical services resulted in 17 consecutive “A” grades for hospital safety from the industry watchdog Leapfrog Group. And in 2018, the medical center received the prestigious Magnet Recognition from the American Nurses Credentialing Center for excellence in nursing and patient care.

Under her leadership, UChicago Medicine opened the 1.2 million-square-foot Center for Care and Discovery; acquired and integrated the Ingalls Memorial community health system; expanded outside of Hyde Park with the opening of ambulatory centers in Orland Park, the South Loop and River East; and opened a larger adult emergency department with a Level 1 Adult Trauma Center.

“Sharon has had a profound impact on UChicago Medicine and is leaving a rich and meaningful legacy,” said Kenneth S. Polonsky, MD, Dean and Executive Vice President for Biology and Medicine at the University of Chicago and President of the UChicago Medicine health system. “She has been a superb clinical and organizational leader, driven by a passion to provide superior patient care and an ability to work effectively with physicians, nurses, other healthcare professionals and other members of our staff.”



Sharon O’Keefe

Faculty elected to National Academy of Medicine

University of Chicago faculty members Melody Swartz, PhD, and Holly J. Humphrey, MD’83, have been elected members of the National Academy of Medicine — one of the highest honors in the field.



Melody Swartz, PhD

Swartz, William B. Ogden Professor of Molecular Engineering at the Pritzker School of Molecular Engineering, was honored for “pioneering contributions” to the fields of lymphatic physiology, cancer research and immunotherapy. She holds a joint appointment in the Ben May Department for Cancer Research and is co-founder of the Chicago Immunoengineering Innovation Center.

Humphrey, Ralph W. Gerard Emeritus Professor in Medicine and President of the Josiah Macy Jr. Foundation, was recognized for “transforming medical education learning environments by creating cultures of equity, diversity and belonging that prepare future health professionals to care for diverse populations and address social determinants of health.” She was Dean for Medical Education for the University of Chicago Pritzker School of Medicine from 2003 to 2018.



Holly J. Humphrey, MD’83

Microbial 'omics for the masses

How an engaging young scientist's 'little course online' wound up captivating even beginners from around the globe



**BY ELISE
WACHSPRESS**

So what would an Alexander Hamilton-type dropped into the computer age look like?

Maybe something like A. Murat Eren, PhD, better known as Meren.

From a boyhood in the Barhal Valley of mountainous northeastern Turkey to the University of Chicago, this young scientist has become a leading proselytizer about the immense impact of microbes on our bodies and the environments we share. He is engaging people around the globe in ideas that stand to turn the world of microbiology upside down.

His journey — as unlikely as A-dot-Ham's and fueled by the same kind of restless intelligence, enthusiasm and energy — is inspiring a new generation of scientists.

Meren moved away from his family at 15 for high

school in Ankara. After seeing his first computer game, he decided a career as a computer engineer would allow him to play games his entire life. His undergraduate education at a poor university provided no access to cutting-edge tools, so he taught himself the open-source Linux operating system and serendipitously stumbled upon cryptography, learning English from the few textbooks he could find on the subject.

Cryptography landed him at the Turkish National Research Institute, developing a new Linux-based operating system. On a whim, he followed a friend to the U.S. with the plan of becoming a photographer, but his poor English made that impossible. To pay the bills, he started a PhD in computer science, but was fired from his PI's lab during his third year for

TEAM MICROBIAL 'OMICS

his rebellious attitude. A chance meeting with a microbiologist who needed a programmer landed him a new placement.

It was there that Meren fell in love with the tiny creatures that preceded us on Earth by billions of years and populate every known environment on the planet — including our bodies. In the trillions of microbes with which we share the world, Meren had found an estimable target for his computational lens.

Through many more unlikely travels and adventures, that love has stuck. One crystalizing event was a somewhat chance meeting with the legendary microbial pioneer Mitch Sogin, PhD. Impressed by the confidence and chutzpah demonstrated by Meren's peripatetic youth, Sogin offered him a job at the Marine Biological Laboratory in Woods Hole, Massachusetts, and the past became just the prologue.

Today, Meren is an assistant professor in the Department of Medicine and Committee on Microbiology at the University of Chicago, a Marine Biological Laboratory Fellow and recipient of the 2021 American Society for Microbiology Award for Early Career Environmental Research.

And he is spreading his passion for microbes to the farthest corners of the earth.

"I thought it would be nice to offer a little course online about microbes and the computational ways to study them," Meren said. He envisioned free classes, delivered over the Internet, that explained microbial 'omics — genomics, metagenomics, phylogenomics, etc. — for beginners. The course would be an interactive and breezy introduction to the "key concepts and strategies that enable us to study the ecology, evolution and functioning of naturally occurring microbial populations."

But when someone with 46,000 Twitter followers offers "a little course online," it soon becomes a gigantic project. Within 24 hours, over 2,000 had registered for the six-week course, from every continent but Antarctica — people from Saudi Arabia, Ghana, Macedonia, even tiny Réunion Island, east of Madagascar in the Indian Ocean. There were registrants from time zones around the clock, for whom English was likely a third or even fourth language. The complications seemed to be snowballing out of control.

Luckily, Meren had an army of colleagues and students also captivated by the idea and ready to help. The first order of business was just to find someone who could send several thousand emails at



Iva Veseli

Third-year graduate student in the Graduate Program in Biophysical Sciences; her interdisciplinary research spans the labs of Meren and Bana Jabri, MD, PhD.

"Knowledge is power. We at the University of Chicago and other prestigious institutions are privileged to have many opportunities and structures for our research. It's easy to forget that science doesn't always go so smoothly elsewhere. By making this series open and accessible, we are helping to reduce that gap. The most inspiring part was seeing how many people from all over tuned in. In the midst of the global pandemic and other worldwide issues, scientists and nonscientists from all backgrounds and stages of their careers and education joined us every week to listen, learn, ask questions and help each other."



Emily Fogarty

Fourth-year graduate student in the Committee on Microbiology; her research focuses on mobile genetic elements in the human gut.

"People were excited to learn more about 'omics approaches and seemed grateful for the course. In graduate school, we learn so much by osmosis from the people around us. It was thrilling to see how quickly people with little or no background in microbial 'omics were able to grasp complicated techniques. I was particularly impressed by the questions I received from undergraduate students in the course, demonstrating how much they had learned over the six weeks."



Andrea Watson

Fifth-year graduate student in the Committee on Microbiology; her research focuses on bacterial colonization of the human gut.

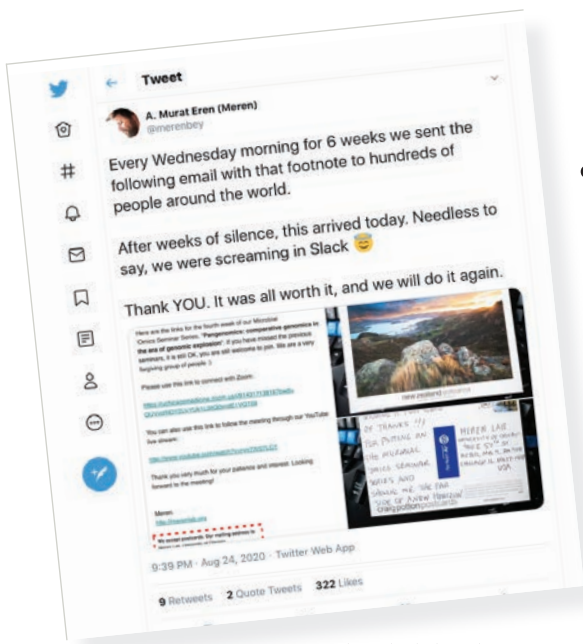
"Working in the Meren Lab has been an amazing opportunity to combine computational and statistical methods with my background in more traditional microbiology. It has been particularly exciting to use these approaches to try to unwind what it takes for microbes to colonize the human gut and to see how subtle genetic variations can have such a large effect on colonization outcomes. It has been so rewarding to pass on some of what I've learned to others."



Jessica Pan

Rising first-year student at the Massachusetts Institute of Technology, whom Andrea describes as "the most impressive high school student I've ever met."

"This was incredible outreach, the sort of project that exemplifies what UChicago can do for science education. The methods in this course have the potential to revolutionize our understanding of environmental ecology, the human microbiome and phylogeny — nothing like what I was taught in high school biology. Honestly, I might recommend them to the professor of my biology classes."



once without landing them in everyone’s spam — that alone took several days and three companies.

Then there was the problem with Zoom. Though the pandemic now had everyone familiar with the technology, Meren’s account was limited to 500 participants. The team was determined to make the sessions interactive; in fact, they

decided the classes would be structured with an hour presentation followed by 45 minutes of Q&A. And the first hour must allow for both live chat and the ability to unmute for questions in real time, to make sure no one was left behind during the presentations. How would they manage this with more than

500 people? Hosting the class in parallel on YouTube meant they could accommodate more people and make the lectures public for posterity.

The dual enterprise took a village. Graduate student Iva Veseli (see Page 5) stepped up to moderate the chat on Zoom. She would watch carefully for questions that called for clarifi-

cation in order to understand the next concepts and then break in at opportune moments for Meren or others to answer. Emily Fogarty, another graduate student, would do the same on YouTube. Andrea Watson became the interface between the two: She volleyed questions back and forth using Slack and compiled them into the YouTube comments, which, to the easily distracted, seems like a job from hell. “There were a lot of windows open,” Watson admitted, “but we wanted to integrate and document the questions so people could review things they did not understand at first.”

Even more tedious was the job Jessica Pan, a rising freshman at MIT who worked in the Meren Lab this

past summer, adopted. She volunteered to transcribe every word of the classes into subtitles, to help participants for whom English was a struggle — and there were many.

Others facilitated in multiple ways. Some provided short presentations on specific subjects: Jessica Mark Welch, PhD, from the Marine Biological Laboratory, on microbial interactions; Roland Hatzenpichler, PhD, at Montana State University, on the limitations of genetic sequencing alone; and Mike Lee, PhD, of NASA’s Ames Research Center, on phylogenomics. Others assisted by weighing in on questions posed on the chat (often by participants who were well past the “beginner” stage) and citing the papers that could help the questioner.

When it became clear that undergraduates might be intimidated by the expertise reflected in the chats, Watson, Fogarty and Veseli volunteered to run an hour-long session before each class to help the college students get their “sea legs” on the subject, so to speak.

This writer listened to every word of all six classes and found them amazingly understandable — charming, actually — for a lay audience. In fact, I would put a 12-year-old in front of class No. 1. If you didn’t find microbes fascinating after that first hour, you might want to check your imagination-o-meter.

But the microbial ’omics team believes in data, not anecdotal responses. They wasted no time in surveying participants and analyzing feedback. Over 99 percent found the class useful. Many cited the clever, hand-drawn diagrams and illustrations, which really clarified the content. Others noted the “lucidity of the creative analogies.” Nearly all articulated appreciation for the opportunity to get questions answered in real time and the incredible responsiveness of the chat moderators. Participants noted “the consideration put into making the seminars accessible to different backgrounds, levels, language backgrounds, etc.” that “helped a beginner understand what is going on behind all the fancy words in ’omics papers.”

For Meren, the “polymath, pain-in-the-ass” iconoclast, the entire enterprise was immensely gratifying. No Hamiltonian duels, not even verbal duels. Just a revolutionary exercise in how a team that works together can bring people from around the world together and into the most complex science.

PHOTO BY JESSIKA FUESSEL



The professor confers with Kiki FÜbel, official “mood regulator” for the Meren Lab.

Revisit the entire course on YouTube: merenlab.org/momics-2020

Next-generation paleobiologist

Lauren Sallan, SM'09, PhD'12, explains what paleontology can teach us about our world today

BY KATE DOHNER

Growing up in Chicago, Lauren Sallan was a self-described “dinosaur-obsessed kid” who regularly visited the Field Museum and Shedd Aquarium.

At age 8, she attended a talk by University of Chicago paleontologist Paul Sereno, PhD.

Many kids go through a dinosaur phase. But Sallan, SM'09, PhD'12, would go on to pursue graduate studies in paleontology at the University. There, she found a deeply intellectual, supportive environment.

“The faculty not only provide you with a broad knowledge base, they encourage you to take ownership of your work and become a leading expert,” Sallan said. “I think that is why paleontology graduates from UChicago are working around the world.”

Today, as the Martin Meyerson Assistant Professor in Interdisciplinary Studies at the University of Pennsylvania, Sallan pushes her students to identify gaps in knowledge and develop questions that will drive them for the rest of their careers.

“Scientific research is meant to be a social endeavor, which requires constructive feedback and differing viewpoints.”

Lauren Sallan, SM'09, PhD'12

“I think of myself as a facilitator in the same way that my advisor, Michael Coates, PhD, was for me,” Sallan said. “I try to ask the most cogent questions to help my students rise above the bar.”

In her lab, Sallan seeks to emulate the welcoming environment she found at UChicago and support a healthy work-life balance.

PHOTO BY JOE STERBENC



Lauren Sallan, SM'09, PhD'12, received the Distinguished Service Award for Early Achievement in 2018 from the UChicago Medical & Biological Sciences Alumni Association.

“I think that balance helps improve your work,” Sallan said. “In my experience, you need downtime — time spent with family, traveling or doing hobbies — to come up with ideas and connections that may not have been apparent otherwise.”

According to Sallan, paleontology can teach us a lot about our world today.

“We often think of biodiversity as static,” Sallan said. “But species go extinct all the time, and it’s not always caused by humans. Species might end up in a habitat that’s not sustainable or get infected by a random virus.”

Sallan’s work can help us predict which species are most threatened, understand their significance and learn how to direct our efforts based on that information.

“We can ask questions, such as: Does this kind of animal evolve repeatedly?

Will something like it come back if it is eliminated?” Sallan explained.

For example, she notes that “polar bears” probably evolved from other bears multiple times over various ice ages and are likely to appear again, even if current polar bears go extinct. By contrast, lungfishes, which have had low diversity for hundreds of millions of years and are only distantly related to other fishes, are unlikely to come back.

With her experience as a TED Senior Fellow, Sallan is a master of communicating her work to the general public. Her TED Talks on surviving mass extinction, paleontology and fish form have received over three million views.

“Going through that high-pressure experience is amazing because it teaches you how to deliver your ideas in their most distilled form,” Sallan said.

Sallan’s advice for other scientists who seek to communicate their work in a more accessible way?

“Remember what drew you to the field in the first place, and then try out different approaches of explaining concepts to nonacademics,” she said. “Until your audience understands the basics, they cannot understand the nuance.”

Watch the full interview with Lauren Sallan mbsaa.uchicago.edu/LaurenSallan



See Lauren Sallan’s 2019 TED talk at ted.com/talks.

Breaking down barriers in medical education: A conversation

BY KATE DOHNER



Courtney Amegashie, MS3, is the 2019 Valerie Bowman Jarrett Scholar in Medical Education at the University of Chicago Pritzker School of Medicine. She serves as class representative for the Identity and Inclusion committee (i2i) and leads Stop the Bleed workshops to train community members on the South Side in the bystander management of life-threatening bleeding wounds. Amegashie majored in philosophy, neuroscience and psychology at Washington University in St. Louis, where she worked as an emergency medical technician and was a peer mentor with TRIO, a program supporting first-generation and low-income college students.

William McDade, PhD'88, MD'90, Chief Diversity, Equity and Inclusion Officer for the Accreditation Council for Graduate Medical Education (ACGME), and Courtney Amegashie, a third-year student at the University of Chicago Pritzker School of Medicine, reflect on their experiences and share their perspectives on advancing diversity, equity and inclusion in medical education.

Courtney Amegashie: How did you first become interested in studying medicine at the University of Chicago?

William McDade: I grew up on Chicago's South Side. During the summer before my third year at DePaul University, I talked with Don Steiner, SM'56, MD'56, a biochemist at the University of Chicago who discovered proinsulin. Dr. Steiner arranged a meeting for me with Joseph Ceithaml, SB'37, PhD'41, the dean of students, who recommended I pursue the Medical Scientist Training Program (MSTP) and take graduate courses during my senior year to help prepare for medical school.

On a Saturday morning in April, I remember getting a call from Dean Ceithaml telling me I'd been admitted to the MSTP. To be told I would have the opportunity to pursue my education at UChicago was really quite a thrill.

Amegashie: Once you got to Pritzker, what was your experience like?

McDade: During the summer, we studied anatomy, and I took a course with Albert Dorfman, MD, PhD, which was amazing because he was one of the pillars of pediatric endocrinology.

James Bowman, MD, who was the only African American faculty member at that time, recommended I study sickle cell disease. He said there were very few African Americans with my background in chemistry and physics who could do the structural work to understand the disease at the molecular level. So I took his advice and had a wonderful experience in the lab working with Robert Josephs, PhD.

Years after I completed my training, I reflected on the fact that I was the only African American student

in my entering class and did some research to see if there were other Black students who had completed the program. Although I was the first Black student to graduate from the MSTP, there were other Black MD-PhDs who graduated from the University in the 1940s. Discovering that gave me some degree of comfort because it meant I wasn't the very first.

Amegashie: In my class at Pritzker today, there are 14 Black students. When I walk into the classroom, I feel fortunate because I am never the only Black student.

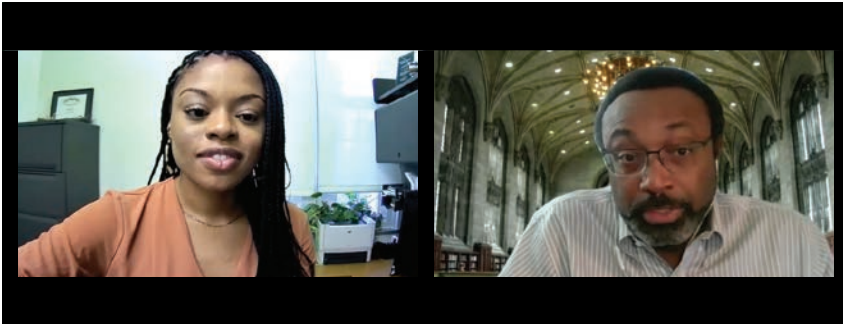
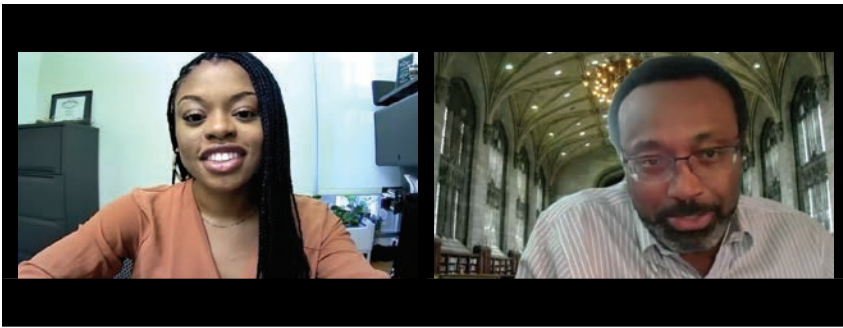
I also relate to your experience realizing that there were other Black students who came before you. One day, when I was walking through Mitchell Hospital, I wondered when the first Black women graduated from Pritzker. I found their pictures in the class composites, and now I think about them whenever I walk through the hospital corridor. It's so encouraging to think, "They did it, and I'm going to do it too."

McDade: The University of Chicago is a special place. Very few African Americans had the opportunity to pursue education at the PhD or MD level early on. Pritzker matriculated its first class of students in 1927, and by 1932, the first African American graduated — Dr. William Moses Jones.

The period when I started medical school coincided with a backlash against affirmative action, which motivated me to become involved in recruiting and admitting more minority students. Although there were other Black medical students in the classes ahead of me, including Doriane Miller,

“In anesthesia, if you're a Black resident, you are 10 times more likely to be dismissed from your program compared to a white resident. In internal medicine, the risk is 12-fold, and in orthopaedic surgery, it's 31-fold.”

William McDade, PhD'88, MD'90



William McDade, PhD'88, MD'90, is Chief Diversity, Equity and Inclusion Officer for the Accreditation Council for Graduate Medical Education (ACGME). Prior to his role at ACGME, McDade served as Executive Vice President and Chief Academic Officer for the Ochsner Health System in New Orleans. He was previously a professor of anesthesia and critical care at the University of Chicago Medicine, where he also served as Deputy Provost for Research and Minority Issues, and Associate Dean for Multicultural Affairs for the Pritzker School of Medicine. While at UChicago, McDade founded the Bowman Society, a lecture series honoring the legacy of Dr. James E. Bowman, which brings together the University community to focus attention on celebrating excellence in research and discovery, eliminating health disparities and increasing diversity in medicine.

MD'83, Catherine Harth, MD'83, and John Ellis, MD'82 — there were only a handful of us.

I helped to recruit people like Otis Brawley, SB'81, MD'85, who recently received the Distinguished Service Award from the American Medical Association, served as Chief Medical and Scientific Officer for the American Cancer Society and is now a distinguished faculty member at Johns Hopkins. When I returned to join the University of Chicago faculty, I joined the Pritzker admissions committee, which I served on for 17 years.

When I first joined the committee, we admitted 12 underrepresented minority students. By my last year, we admitted 21. It was exciting to see the progress. The best part was recruiting minority students like you who were exceptional. The work being done by the committee today is incredible. It's a delight to see that the efforts I was so invested in are not only continuing, but are improving.

Amegashie: That's wonderful. I understand that you previously served as deputy provost for research and minority issues and associate dean for multicultural affairs for Pritzker. Can you share more about your experience in those roles?

McDade: When I came on as associate dean, I learned that many of our minority students didn't understand what health disparities were — even though they may have been victims of a system that allowed such disparities to persist. So we started teaching students about health disparities.

While it's important to train everyone on the elimination of health disparities and culturally competent

care, it's especially important to train those who are going to practice in underserved areas, and the data shows that underrepresented minorities are more likely to do so. The AAMC's matriculation survey found that 60 percent of first-year African American medical students said they plan to work in underserved areas, compared to much lower percentages among white and Asian students. So it's important we develop a workforce that has a greater tendency to practice in underrepresented communities facing the greatest burden of disparities.

Amegashie: That makes sense. I imagine trust also plays a role when it comes to patients in underserved communities accessing care.

McDade: Yes, walls of mistrust have built up over centuries between African Americans and the medical establishment as a result of historical abuses, including the controversial experiments Marion Sims did on enslaved women, the Tuskegee experiment and the "Mississippi appendectomy."

Trust is tied to better outcomes. Owen Garrick, MD, and Marcella Alsan, MD, PhD, published a paper in 2018 in which they found that, when a Black male patient was randomly assigned to a Black physician, the patient talked more to the physician, and the physician wrote longer notes compared to non-Black physicians. Black physicians were also more successful in getting patients to agree to invasive testing. Patients in racially concordant pairings were also more likely to return for follow-up visits. Their work also suggested that racially concordant patient-provider relationships could reduce the



Watch the full conversation
mbsaa.uchicago.edu/WilliamMcDade

McDade: We are working to ensure that residency programs have inclusive environments that support underrepresented students and that we remove barriers that may have caused minority residents not to be as successful.

I'm applying my understanding of Kaplan-Meier survival curves to resident success, comparing the loss of minority residents during the course of their training to non-minority residents. When you look at the data, it breaks your heart because you see that minority residents could be lost at any stage. In anesthesia, if you're a Black resident, you are 10 times more likely to be dismissed from your program compared to a white resident. In internal medicine, the risk is 12-fold, and in orthopaedic surgery, it's 31-fold.

Amegashie: As a Black woman in medicine and a first-generation college student, I am so grateful for the work you're doing. As it pertains to diversity in medical education, where would you say we are now, and where do you think we're headed?

McDade: We're at the very beginning in graduate medical education; we're still identifying the problems. At the ACGME, we're engaging in reverse ideation — instead of thinking about deficits that the learner brings to medical education, we're examining how we, as a *system*, contribute to a learning environment that adversely impacts minority residents. Once we understand that, we can find ways to improve the environment to allow underrepresented residents to flourish.

We're also developing resources that graduate medical education programs can use and are building learning committees across the country, where people can apply these ideas at their institutions and identify ways to remove barriers.

I'm also advocating for the creation of associate or vice deans for diversity in graduate medical education. Most institutions don't have a physician-leader focused on increasing diversity and working to establish inclusive learning environments for their graduate medical education programs.

At UChicago, you are fortunate because Anita Blanchard, MD'90, is the ACGME's designated institutional official and works with us to set the academic policy for programs as a member of the Review Committee for Obstetrics and Gynecology. She is one of only about 15 African American

gap between Blacks and whites in cardiovascular morbidity by nearly 20 percent and mortality by nearly 10 percent.

Research also shows that minority physicians care for a disproportionate number of people in minority communities. African American physicians have a 23-fold greater chance of caring for African American patients than white physicians. Within primary care, the odds increase to 40-fold. So concordant racial patterns exist in practice in healthcare already, even though we don't tell patients which doctor to see or physicians where to practice.

“When I walk into the classroom, I feel fortunate because I am never the only Black student.”

Courtney Amegashie, MS3

Most recently, a paper in the *Proceedings of the National Academy of Sciences* showed that Black newborns, who die at three times the rate of white newborns when cared for by white physicians, are more than twice as likely to survive when cared for by Black doctors.

Putting all of this together, it becomes apparent that racially concordant relationships can save Black lives.

Amegashie: How has this translated to the work you're doing at the ACGME?

Minorities have higher attrition rates in all phases of medical education.

Attrition rates for underrepresented minority students



Attrition rates for non-underrepresented minority students



Source: ACGME

designated institutional officials in the country out of the 800 institutions ACGME accredits.

Amegashie: Why do you think minority residents may not be as successful compared to their peers?

McDade: There are a number of studies that have investigated this. Dowin Boatright, MD, and colleagues at Yale examined the microaggressions that minority residents are subjected to in their programs

Lotte Dyrbye, MD, MHPE, at Mayo Clinic found that victims of discrimination have an accelerated path to depression and burnout, leading to feelings of apathy and hopelessness, difficulty concentrating, and poorer job performance. This can cause minority residents to receive poorer evaluations compared to their peers. That is why it is important that we recognize the biases in our learning environments and take down barriers.

Amegashie: That is huge. Dr. McDade, what do you think most people misunderstand when it comes to diversity and equity?

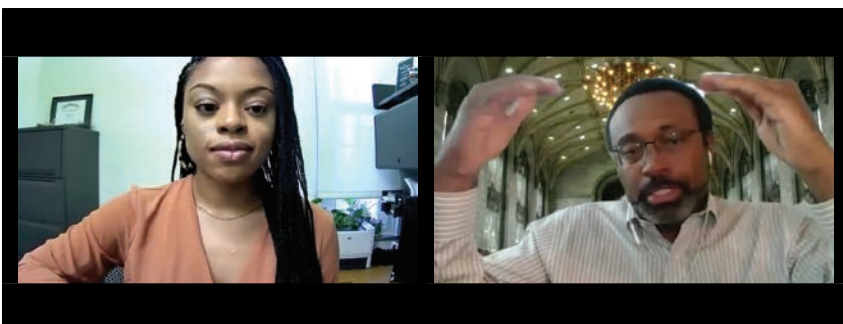
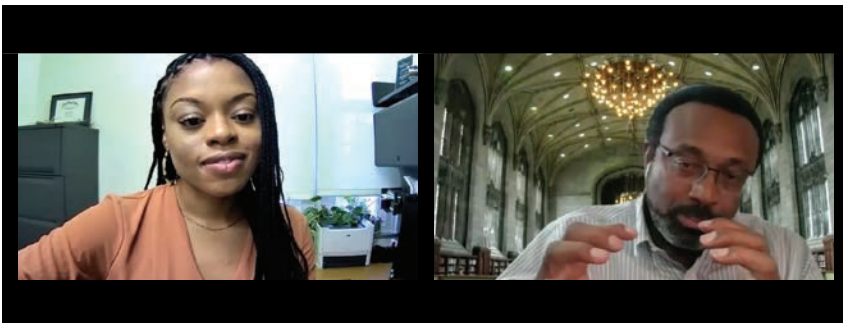
McDade: I think the word *diversity* is problematic because people want to argue about what it means. I've adopted the Association of American Medical Colleges' definition, which includes all aspects of human differences — from socioeconomic status to race and ethnicity to ability, gender identity, age and more. Diversity is however you wish to define it in your environment. However, what is critical to me is that, by increasing whichever aspect of diversity you set your goals upon, you positively impact health disparities in your community.

The second misunderstanding is related to equity. Some people assume it means the same thing as equality. Equity is when you give people what they need in order to be successful. People who've been privileged with advantages in the past probably don't need as much help as people who have suffered continued disadvantages. It differs from equality, which implies that everyone should be treated the same way.

Amegashie: I imagine we are thinking of the same image, where a group of people are watching a baseball game and trying to see over the fence. When everyone is given the same size box to stand on, that is equality, but still not everyone can see the game. By contrast, when each person is given a different number of boxes to stand on, in accordance to their height, then they can all see the game — that is equity.

McDade: Exactly. And you might recall that in the last picture, the fence is gone. You've removed the systemic barrier. That's where we need to be when looking at our institutions, which are often the sources of the problems.

Amegashie: I agree. Removing those structural barriers represents the future.



and published this in *JAMA Internal Medicine* this year. He found that African American women are the victims of more microaggressions and discrimination than any other group, which may be the result of the intersectionality of race and gender.

Q&A: Racism as a public health crisis

BY ANGELA WELLS O'CONNOR

The COVID-19 pandemic highlighted the poor health outcomes and chronic disease that disproportionately affect African American and Latinx communities.

To tackle issues of racial and health inequities surrounding COVID-19 in Chicago, Mayor Lori Lightfoot convened the Racial Equity Rapid Response Team. The team includes Brenda Battle, MBA, BSN, RN, Vice President of the University of Chicago Medicine's Urban Health Initiative and Chief Diversity, Inclusion and Equity Officer, and Monica Peek, MD, MPH, Associate Professor of Medicine and Associate Director, Chicago Center for Diabetes Translational Research.

Through this response team, a group of 45 healthcare organizations declared racism a public health crisis in an open letter to the community published in June, and pledged to adopt several measures to address inequities in healthcare.

Brenda Battle, MBA, BSN, RN, with participants of the I Grow Chicago youth program, based in the city's South Side Englewood neighborhood, in November 2019. Through community development, workforce training and personal empowerment, I Grow Chicago works to address the root causes and traumatic effects of violence and poverty. The group has received grant funding for violence prevention and trauma resiliency through UChicago Medicine's Urban Health Initiative, which Battle leads.

You were both key to the effort that recently declared racism a public health crisis. What is the link between racism and health?

Brenda Battle: The healthcare industry has played a significant part in how communities have experienced health disparities, whether from the lack of access, bias in decisions that affect the lives of patients or uncoordinated and fragmented care delivery.

When you consider what health disparities refer to — differences in health between population groups — these reflect differences in access and quality of care. Our institutions have contributed to these disparities, which has led to increased burden of illness, injury or mortality in our communities. These are public health issues.

What we know is that groups of people have systematically experienced greater obstacles to health on the basis of their

race, color, national origin and ethnic group. This experience is historically linked to discrimination or exclusion of groups that are vulnerable to health and healthcare disparities.

Monica Peek: Racism is a public health crisis because it is the underlying driver for the vast majority of health disparities in the U.S. Structural racism — differential access to goods and services based on race — is made possible because of policies, laws, norms and systems that we have in place. Access to safe housing, clean water, violence-free neighborhoods, strong educational systems, employment opportunities and, yes, healthcare, all differ by race, with African Americans historically and contemporarily having less access. And all of these factors impact the health and well-being of people and the communities in which they live.

Take diabetes. I've spent much of my time studying diabetes and diabetes-related health disparities. People ask me: "Diabetes disparities, are they really caused by racism?" You have to think



PHOTO BY JOHN ZICH

In her role as one of two inaugural Faculty Fellows in the Bucksbaum Institute for Clinical Excellence at the University of Chicago Medicine, Monica Peek, MD, MPH, explores how racial and cultural barriers impact physician-patient relations and shared decision-making.

about the differences in environments in which people live that can promote or hinder health. Are there grocery stores, pharmacies, recreational spaces, peaceful places for reflection, green space? Are there walking groups, diabetes education classes and a strong sense of social cohesion among neighbors? Is there a health system nearby where the healthcare team sees the humanity in all its patients, empowers them with tools to manage their diabetes, and gives equitable, high-quality care? If these things aren't equally available for African Americans like they are for whites — and I will tell you that they are not — then disparities in diabetes outcomes will result. And so here we are.

Battle: That's right. Race in and of itself is a social construct that is associated with power and privilege, and it's not biological. So racism is the social reality that people live in. It gets linked to how groups get access to care, jobs, where they live in communities and the resources within these communities.

To Monica's point, the diseases that members of our communities live with are not diseases that just affect these communities. The question is, why do some communities experience these conditions at a rate that is disparate to other communities? What are the root causes of these social realities? The root causes are often linked to years of structural and interpersonal racism. Realities such as years of marginalization, lack of access to care, not being provided the same options for care as others, lack of knowledge, etc.

Peek: The thing about structural racism is that it also affects health by getting under the skin and changing people's physiology and genes. So while race is a social construct, racism can affect an individual's biology. For example, there are these little caps at the end of our chromosomes called telomeres, and they're protective. And chronic stressors, like living with the effects of structural racism, reduce



the length of the telomeres and increase the risk of diseases like cancer.

Again, using the chronic stress model, racism can also cause pathophysiological changes in the body. The chronic microstressors and microaggressions of discrimination and interpersonal racism — like being followed around in retail stores while shopping, being treated by colleagues with disrespect and being pulled over by the police with no stated violation — affect the ways in which our bodies function over time. They cause dysregulation in what we call the hypopituitary adrenal axis, which regulates stress hormones, among other things, immune systems and autonomic nervous systems. People exposed to chronic racism are more commonly in that “fight or flight state” that our body has evolutionarily reserved for true emergencies — like being chased by a lion in the Serengeti. So this is clearly not normal. Racism is altering people's bodies and putting us at risk for chronic disease.

How does interpersonal racism contribute to the public health crisis?

Battle: In healthcare, there is often a lack of in-depth understanding of the individuals we serve and take care of. What are the social realities that these

individuals face? Beyond genetics, what other factors impact their ability to receive and access care? Do they have everything they need in their communities, homes and social systems to better manage their care? What do we do as healthcare providers to understand our patients' needs so that they are equipped to have optimal care and well-being?

Without this understanding, we make assumptions, which can highlight implicit bias. We don't spend enough time asking the right questions that will lead to the right care for all of the communities we serve.

Peek: I think that for physicians, because we have taken a Hippocratic Oath, we find it harder to believe that we have implicit biases that negatively impact our patients. But ironically, the clinical encounter is ripe for implicit bias taking place.

We are most likely to rely on our implicit biases in circumstances when there is time pressure, uncertainty, and when there is a high cognitive demand. All of these circumstances occur in clinical medicine. As a result, as we have to be more aware that our subconscious biases might be in play and step back and say, “Here's the patient in front of me, am I seeing them in all of their humanity as they are, or am I being affected by my perceptions of who I think they are?”

AN EXERCISE IN IMPLICIT BIAS

Through UChicago Medicine's Urban Health Initiative and its Office of Diversity, Inclusion and Equity, more than 500 staff and faculty have participated in implicit bias training as part of an 18-hour cultural competence course.

In one implicit bias exercise, the facilitator asks participants to visualize an individual, based on a short description. The facilitator then assigns additional characteristics to the imagined subject; participants are asked to note any changes in the image they see.

FOR EXAMPLE, participants are asked to imagine an African American woman. What does she look like? What is she wearing? Where does she live? How does she get around?

THE FACILITATOR THEN ADDS: Imagine she is an African American woman who is a single mother. What does she look like? What is she wearing? Where does she live? How does she get around?

NEXT: Imagine that she is an African American woman, who is a single mother, and is extremely wealthy. What does she look like? What is she wearing? Where does she live? How does she get around?

What were the differences between your initial images and your final images? Which descriptions were more challenging to imagine and why? What did you learn about yourself? How might bias affect our work and interactions with others?

We have to look in the mirror and ask, “Am I doing the best that I can for people who look like me and also for people who don’t look like me, especially those who are socially marginalized based on race, gender, class, ability or other factors?”

Battle: We need to train our providers in implicit bias. As part of an 18-hour course for cultural competence, UChicago Medicine has provided training in implicit bias to hundreds of staff members. That’s just a start.

We need to continue to create an awareness that bias is an impediment to health outcomes and care delivery. And we need to design our systems so that implicit bias doesn’t impact how care gets delivered. This is critical.

Also, we need a more diverse workforce that better represents the communities we serve. When someone is from a certain community, they have an inherent understanding of the needs and perspectives of people from that shared community. Diverse representation of healthcare providers, leadership and staff can inform the care delivery process in such a way that helps all providers understand the needs of communities. Without diversity within our workforce, we lose not only the knowledge, but the diversity of thought and innovation that can enable us to be better providers of care and services to our communities.

How can healthcare providers address disparities in our communities?

Battle: We need to invest in healthcare in our communities. This is especially important on the South Side of Chicago, where we’ve got hospitals closing and a loss of critical services, like maternity care. We also need to advocate for federal and state funding to enable better access to care.

At the medical center, we are making these investments. This includes standing up the Level 1 Adult Trauma Center in 2018 to address the trauma care desert on the South Side. And, most recently with COVID-19, we’ve been able to expand

testing and start doing contact tracing across South Side communities.

Also, we just went through a process to develop a new equity plan that incorporates what we’re talking about today, including improving workforce diversity and investing in disease management programs in our community. The plan represents a different but needed approach and involves all levels of the organization — the Biological Sciences Division, hospital and medical school.

It’s important to look at all policies through an equity lens and identify where there are barriers to equity. Then we’ve got to change by dismantling the systems that create inequity — in access, in care delivery and in how we look at outcomes.

Peek: Healthcare providers can advocate for the patients who are not getting equal care in the health systems where they work. That is happening every day in this institution, in this city and around the country. It is an uncomfortable truth, but one we have to confront if we want to affect real change.

We must also think beyond the walls of healthcare institutions if we want to improve the health of marginalized populations affected by racism. Right now, I’m really interested in finding out what interventions are effective in improving the health of people who have complex medical and social needs. There’s increasing recognition of the contribution of structural determinants and individual social risks on health. Recently, the hospital began including in electronic medical records information about housing instability, domestic violence, food insecurity and other factors that science has shown to be correlated with chronic diseases.

And as healthcare systems, we must do more to address the upstream factors that affect health outcomes. We have to begin looking at investments in communities to bolster food and housing security, quality education, safe neighborhoods and employment opportunities. That is where health policy is headed and that is where our patients have long needed us to be.



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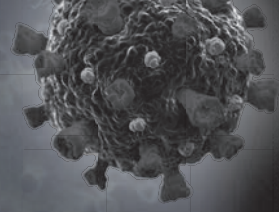


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Pivoting in a pandemic



As COVID-19 reached Chicago, these six physicians and scientists stepped up to fight the virus on different fronts, leading innovative efforts to understand, treat and slow transmission of the infectious disease.

CLINICAL TRIALS



Soon after thoracic surgeon

Maria Lucia Madariaga, MD, arrived at the University of Chicago Medicine, elective surgery came to an abrupt halt.

Madariaga, who had recently completed her fellowship training in Boston, had joined UChicago Medicine to focus on patients with lung, esophageal and airway disease and to direct the organ perfusion laboratory.

With all inpatient clinical activity on hold, she turned her attention to launching a convalescent plasma clinical trial for COVID-19 patients at the medical center.

Hospitals around the world, including a handful in China and the U.S., had begun testing the potential treatment for the rapidly spreading disease.

“There was a big barrier to widespread study in this country because convalescent plasma treatment requires broad cross-discipline collaboration,” she said. “At UChicago Medicine, we had the necessary teams – Biological Sciences Division, Blood Donation Center, Department of Medicine, Transplant Institute and Department of Surgery – under one roof.”

She aligned all the stakeholders to create the “operational machine” needed to start the trial. “Policy had to be made at the same time as things were getting done,” said Madariaga, who was granted “lightning fast” approval from the Institutional Review Board.

This initial trial looked at the feasibility and safety of procedures for identifying donors, collecting plasma donations and administering transfusions. Madariaga shared clinical data with Mayo Clinic, which had opened a large multicenter study.

“We learned that convalescent plasma is a safe treatment for COVID-19 patients,” she said. “And we have anecdotal evidence that it works.”

UChicago Medicine has joined a national randomized controlled study to determine if convalescent plasma decreases mortality and improves outcomes. One of Madariaga’s colleagues has taken over the lead. And she is back in the operating room.

— Gretchen Rubin

“COVID-19 has changed the way we do science.”

Maria Lucia Madariaga, MD
Assistant Professor, Department of Surgery



Watch Emily Landon, MD, discuss how we can build a defense against future outbreaks during the next five years at news.uchicago.edu/videos/covid-2025-facing-threat-future-pandemics-emily-landon.

“This virus is unforgiving.”

Emily Landon, MD
Associate Professor, Department of Medicine

In early January, Emily Landon, MD, was on high alert. The infectious diseases specialist at the University of Chicago Medicine was talking with colleagues around the world about a mysterious illness.

By the end of the month, her tone was dire.

“A new virus, which everyone is susceptible to, can be very, very deadly, and it can spread very, very quickly,” she said on January 24, the same day Chicago’s first case was reported. “We absolutely need to be prepared.”

Landon and her team spent the early months of the COVID-19 pandemic working around the clock, leading personal protective equipment trainings, developing treatment plans, recording

educational videos and speaking at town halls to prepare healthcare workers for what was ahead.

One morning, while her son watched a nature show, she spotted half-face respirators worn by researchers in a jungle. Realizing they’d be both comfortable and protective, Landon grabbed a screen shot for the UChicago Medicine supply chain team. The masks were ordered in bulk.

In March, she appeared with Gov. J. B. Pritzker when he announced Illinois’ stay-at-home order.

“This virus is unforgiving,” Landon said during the press conference. “Without drastic measures, the healthy and optimistic among us will doom the vulnerable.”

Her remarks went viral, cementing her role as the state’s most prominent infectious disease voice.

Today, she consults with everyone from governors to symphony conductors, often from the safety of her living room as she works remotely. She continuously reminds people to wear masks, wash their hands and practice social distancing.

As the pandemic persists, Landon hopes lessons learned during the early months will help us safely navigate to the end.

“I hope the summer of 2021 looks more like the summer of 2019 and less like the summer of 2020,” she said. “But to do that, it’s going to require us all to work hard, follow rules and change our behavior.”

— Ashley Heher

“We can move and shake
when we have to.”

Rajlakshmi Krishnamurthy, MD
Associate Professor, Department of Medicine



TESTING

Rajlakshmi Krishnamurthy, MD, doesn't like to sit on the sidelines. As chief clinical transformation officer for the University of Chicago Medicine, her role is to break down silos within the organization to improve care delivery.

“My goal is to get people to the goal line by implementing and executing to get things done,” she said. Her focus is on improving pathways to medical care for high-risk populations.

So, when UChicago Medicine needed to quickly stand up COVID-19 testing for employees and symptomatic high-risk patients at the beginning of the pandemic, Krishnamurthy volunteered to lead the way.

She led a cross-disciplinary team from the early days of limited testing in Hyde Park, ramping up capacity to offer testing to community hospitals and ambulatory sites, which included Federally Qualified

Health Centers and nursing homes.

“Our pathology lab acquired PCR early on,” she said. “We needed to operationalize and support the testing by creating protocols, setting up orders, designing our testing site and acquiring the PPE.”

From March until July, Krishnamurthy facilitated a daily COVID testing status meeting on Zoom. Representatives from infection control, infectious diseases, pathology, nursing, administration, information systems and phone triage worked together to prioritize and pivot as guidance from health authorities fluctuated and testing supplies ebbed and flowed.

“We had to move fast and effectively,” Krishnamurthy said. “COVID-19 forced all of us to think about why we allow barriers to get in the way of getting stuff done. Now our expectations have changed.”

— Gretchen Rubin

“By the time a patient's COVID-19 test result comes back, transmissions may already have happened. We don't wait for that test result; if it's a high-prevalence area, we get contact tracing going.”

John Schneider, MD, MPH
Professor, Departments of Medicine and Public Health Sciences

CONTACT TRACING





PREDICTIVE MODELING

Epidemiologist Sarah Cobey, PhD, spends her days awash in data related to the number of people in Illinois whose health has been impacted by COVID-19.

She is one of several University of Chicago scientists, including researchers from Argonne National Laboratory, supplying projections to the Illinois and Chicago public health departments on how the coronavirus epidemic is evolving.

As a mathematical ecologist and evolutionary biologist, Cobey provides this insight through predictive models that help officials better understand complex aspects of the pandemic: how quickly COVID-19 is spreading, how many people are seeking diagnostic tests, and how early surveillance of the disease could be improved.

To do this work, she assembled a team of graduate students and post-doctoral and assistant researchers, all working remotely on the data from their home offices. “Early on, members of my team were staying

up most of the night working on these models,” she said.

Before the coronavirus pandemic, Cobey’s primary research focus was on the flu. Usually, she and her colleagues look at how our immune response shapes the evolution and epidemiology of the seasonal illness.

Cobey hopes that drilling into the epidemiology of COVID-19 will reveal or confirm more about how respiratory viruses in general are transmitted. Take, for instance, how the coronavirus has spread so efficiently among people who work or live in crowded conditions.

“Crowdedness is one of the major correlates of spread with respiratory pathogens, and I think that’s really coming home with COVID-19,” she said. “I suspect that what we learn about COVID-19 will help us manage a lot of different viruses – and that will be fabulous.”

— Sarah Richards

“We have a moral obligation to do this work.”

Sarah Cobey, PhD

Associate Professor, Department of Ecology and Evolution

As an expert in how infectious diseases spread in vulnerable populations, John Schneider, MD, MPH, does work akin to a forest ranger perched in a watchtower, scanning for fires.

A network epidemiologist and the medical director of the Howard Brown Health 55th Street community clinic in Hyde Park, Schneider has spent years working with communities to reduce the spread of sexually transmitted infections (STIs).

In March, however, he witnessed a different spark igniting in the clinic’s neighborhood: SARS-CoV-2.

“We swabbed a patient who had shortness of breath and a cough, and they were positive for COVID-19,” said Schneider. “We realized then that this was going to be a big deal.”

A big deal that would need an agile response. When more of his clients tested positive for COVID-19, Schneider temporarily

reassigned the clinic’s STI contact tracers to investigate coronavirus exposures. They were the first to perform COVID-19 contact tracing in Chicago.

Since then, Schneider has tweaked the program to best tackle the virus’ challenges. When COVID-19 testing delays occur or positivity rates are high, the team begins contact tracing right away. The team also worked to educate people on how COVID-19 spreads

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and to connect them with primary care and social services.

Recently, Schneider and his colleagues at the Chicago Center for HIV Elimination were awarded \$5 million over two years from the National Institutes of Health to support a COVID-19 testing project across eight rural and

urban sites in the central U.S. They'll engage two disenfranchised populations: low-income Latinx individuals and people who have been involved previously with the criminal justice system, but are not currently incarcerated.

The goal of the project is to better understand COVID-19

testing patterns among underserved and vulnerable populations; strengthen the data on disparities in infection rates, disease progression and outcomes; and develop strategies to reduce the disparities in COVID-19 testing.

— Sarah Richards

“It’s time to shine a spotlight on what’s happening in nursing homes. It has to be a focal point of this COVID crisis.”

Tamara Konezka, PhD
Professor, Departments of Public Health Sciences and Medicine

COVID-19 hit nursing homes

hard. That didn’t surprise Tamara Konezka, PhD, who has studied long-term care facilities for 25 years. In May, she was called on to bring her expertise to the halls of Congress.

A University of Chicago health economist and health services researcher, Konezka testified before the U.S. Senate Special Committee on Aging on the high rates of COVID-19 cases and deaths in nursing homes.

She told the senators about the research she and her team did on 5,527 nursing homes in 12 states, examining if nursing home COVID-19 cases and deaths were related to quality of care. While no meaningful relationship was seen between quality and COVID-19 cases or deaths, the analysis showed a strong and consistent correlation with race.

Nursing homes with the lowest percent of white residents were twice as likely to have COVID-19 cases or deaths than those with a high percentage of white residents, Konezka said.

Making matters worse is a flawed system that underfunds nursing homes that rely heavily on Medicaid reimbursement.

“Facilities that rely on federal aid the most — usually in minority neighborhoods — actually lose money each year, leading to poor staffing and no extra funds for things like a pandemic response,” she said.

People shouldn’t be quick to blame the nursing homes, she said. When PPE and testing kits were in short supply, hospitals received the supplies first.

Konezka outlined short- and long-term measures to reduce the risks of COVID-19 in these facilities. While calling for an immediate influx of resources to minimize transmission of the virus and better infection control in the facilities, she also recommended an overhaul of the funding system for long-term facilities.

“Medicaid rates need to be substantially higher to address our chronic underfunding of this critical healthcare sector,” she said in her concluding remarks.

— Jamie Bartosch

NURSING HOMES



Pritzker student challenges jailing practices, healthcare economics amid COVID-19

BY GRETCHEN RUBIN AND LOUISE LERNER

Throughout the COVID-19 pandemic, coronavirus has spread quickly through American jails and prisons — including in Chicago’s Cook County Jail, which early on became a hotspot. Though advocates argued for changes in release policy to mitigate the spread, research from Pritzker School of Medicine student Eric Reinhart, MS4, indicated such interventions were not sufficient to address the problem in the context of high numbers of ongoing daily arrests for alleged petty crimes.

Using data from the Cook County Jail, Reinhart and fellow researcher, Daniel Chen, JD, PhD, analyzed the relationship between jailing practices and community infections. They found that cycling individuals through the jail — typically for only a period of days between arrest and release — was associated with 15.9% of all documented COVID-19 cases in Chicago and 15.7% in Illinois.

In the study published in June in *Health Affairs*, Reinhart and Chen, of the Toulouse School of Economics, reported that jail cycling far exceeds race, poverty, public transit use and population density as a predictor of community spread of the virus. From February 1 to April 19, each person cycled through Cook County Jail translated to, on average, 2.2 new cases of COVID-19 in their ZIP code of residence.

Because Black neighborhoods in the U.S. are disproportionately policed and incarcerated, the authors pointed out, those practices may bear partial responsibility for the striking racial disparities in COVID-19 cases. Their results showed that more than 60% of the additional cases linked to jail cycling appeared in Black-majority ZIP codes.

“This was the first empirical study showing that American policing practices pose an enormous public health risk during the pandemic,” Reinhart said. “As arrested individuals were processed, the criminal justice system was multiplying COVID-19 cases and turning detainees into potential disease vectors for their families, neighbors, and, ultimately, the general public.”

In the study and an op-ed he published in *The New York Times*, Reinhart called for immediate action by shifting criminal justice strategies from arrests and incarceration toward options like citations, summonses, mental health services, and food and housing support.

Looking at COVID-19 from a different angle, Reinhart proposed another way the pandemic could bring about lasting change. In an essay, published in July in *The British Medical Journal (BMJ)*, he and co-author Daniel Brauner, MD, examined the history and consequences of the Current Procedural Terminology (CPT) billing system in American healthcare, which is under new scrutiny during disruptions to routine clinic visits and elective procedures as a result of COVID-19.

Reinhart and Brauner argued for using these disruptions to implement changes in the structures that determine “value” in healthcare in order to bring about more effective, equitable care.

“Genuine healthcare reform needs to confront not only *who* pays (e.g. a single payer or private insurers) but also *for what* we pay and *who* holds the power to decide the ‘value’ of care,” Reinhart said. “We need a system in which our work as healthcare providers is guided by the interests of patient care, not billing incentives designed to protect fee for service and maximize revenue.”

Eric Reinhart, MS4, is an MD candidate at the University of Chicago, PhD candidate in anthropology at Harvard University and a candidate in adult psychoanalysis at The Chicago Center for Psychoanalysis. He has conducted more than five years of ethnographic research on Chicago’s South Side.



University of Chicago hosts COVID-19 medical imaging resource center

BY ALISON CALDWELL, PHD

A new center hosted at the University of Chicago — co-led by the largest medical imaging professional organizations in the country — will help tackle the ongoing COVID-19 pandemic by curating a massive database of medical images to help better understand and treat the disease. The center also will develop means to expedite the translation of artificial intelligence (AI) to help solve the pandemic.

The Medical Imaging and Data Resource Center (MIDRC) is an open source database with medical images from thousands of COVID-19 patients. It's led by Maryellen Giger, PhD'85, the A.N. Pritzker

Professor in the Department of Radiology, along with leaders from the American College of Radiology (ACR), Radiological Society of North America (RSNA) and American Association of Physicists in Medicine (AAPM).

The funding is from the National Institute of Biomedical Imaging and Bioengineering at the National Institutes of Health (NIH).

The MIDRC is responding to an unmet need of the medical imaging community as doctors and scientists seek to better understand SARS-CoV-2, the virus that causes coronavirus disease 2019, or COVID-19, and its effects on the human body. By collecting

and integrating images and their data via a dynamic, secure networked system, the MIDRC will provide a large-scale, open, common framework to enable technological advancements, guide researchers' validation and use of AI, and translate clinical systems for the best patient management decisions.

"We have not sufficiently explored imaging for its role in helping us fight COVID-19, especially in terms of developing machine intelligence tools and systems," Giger said. "Having these top imaging organizations involved will make a difference — almost every scientist or clinician in medical imaging belongs to at

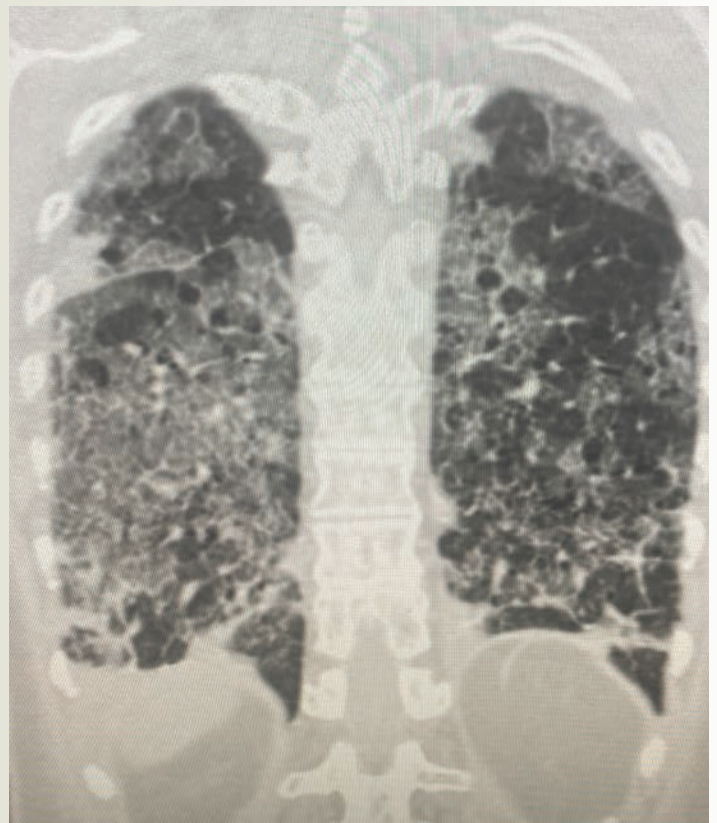
Medical Imaging Data and Resource Center (MIDRC)

The MIDRC involves five infrastructure development projects:

- Creation of a platform for COVID-19 imaging and associated data.
- Development of a real-world testing and implementation platform with direct, real-time connections to healthcare delivery organizations.
- Implementation of quality assurance and evaluation procedures across the MIDRC.
- Launch of a data commons portal for data intake, access and distribution.
- Linking of the MIDRC to other clinical and research data registries.

The MIDRC executive advisory committee also oversees 12 research projects in support of solutions to the COVID-19 pandemic, overall providing funding and other resources to investigators at the American College of Radiology, Radiological Society of North America and American Association of Physicists in Medicine, as well as across 20 universities and the Food and Drug Administration.

Ground-glass opacities are sometimes seen in CT scans of COVID-19 patients' lungs





Maryellen Giger, PhD '85, leads the Medical Imaging and Data Resource Center, which was awarded a \$20 million, two-year federal contract to establish an open source database of medical images from COVID-19 patients.

least one of these organizations.”

Medical images provide important windows into the detection, diagnosis and monitoring of COVID-19; for example, X-rays or CT scans of the lungs have the potential to help doctors determine the severity of the disease and decide on an optimal treatment course for a patient. But examining individual images is time consuming and difficult for physicians, and automated systems can improve accuracy and speed. For AI to accurately analyze any given scan, many thousands of images first must be collected and annotated to train machine-learning algorithms.

Funded under the NIH's special emergency COVID-19 process, MIDRC is an open access platform to collect, annotate, store and share COVID-related medical images to enable effective and efficient clinical task-based distribution, analyses and validations.

“Through the MIDRC Data Commons Portal, investigators will be able to access images and data to expedite research that will provide solutions to the COVID-19 pandemic,” Giger said. “This will speed up the sharing of new research on COVID-19, answering questions about COVID-19 presentation in the lungs, the efficacy of therapies, associations between COVID-19 and other co-morbidities, and monitoring for potential resurgence of the virus.”

The MIDRC is uploading up to 10,000 COVID-19 thoracic radiographs and CT scan images via the existing input portals of the RSNA repository and the ACR registry,

allowing researchers worldwide to access the images and accompanying clinical data to answer new questions about the disease.

“The University of Chicago is well prepared to host the MIDRC, as members of our faculty have led the development of data commons repositories in the past, including the National Cancer Institute's Genomic Data Commons,” said Kenneth S. Polonsky, MD, Dean of the Division of the Biological Sciences and Pritzker School of Medicine. “Under the leadership of Dr. Giger and representatives from the top professional organizations in medical imaging, the MIDRC will provide a resource that will accelerate the transfer of knowledge and innovation around SARS-CoV-2 and give us the tools needed to fight the pandemic.”

While COVID-19 is the initial focus of the \$20 million, two-year federal contract, the team hopes to expand the MIDRC to become a resource that would span diseases and disciplines, creating focused medical imaging data commons and machine intelligence pipelines for chronic and other infectious diseases. The federal contract is renewable to \$50 million over five years.

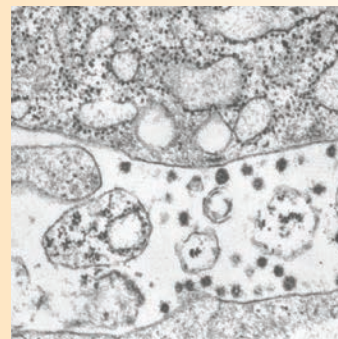
“This effort will enable the rapid open distribution of curated COVID-19 imaging and associated data to empower a broad community of data scientists in academia, government and industry to answer, quickly and rigorously, critical questions about patient care,” Giger said. “Ultimately, it will be expanded to incorporate additional data from multiple registries and repositories to support the NIH's data collection efforts, allowing researchers to address topics no single archive could inform independently.”

First human coronavirus isolated at UChicago more than 50 years ago

The first description of a human coronavirus

(HCoV) occurred more than half a century ago at the University of Chicago.

In 1962, University researchers isolated a previously unidentified RNA virus during a study of upper respiratory infections among medical students. The researchers characterized this new virus and named it 229E (later HCoV-229E). The initial work, published in 1966 in *Experimental Biology and Medicine*, and the 1967 follow-up study in the *Journal of Virology* were able to give initial information on the growth times, virus size and images of the virus particle infection within human cells cultured in a dish. Researchers showed that this new virus did not react to antisera for any major known viruses, such as influenza strains, measles or mumps.



AMERICAN SOCIETY FOR MICROBIOLOGY

Electron micrograph from 1967 showing the first isolate human coronavirus particles (solid black dots) outside the cell after infection.

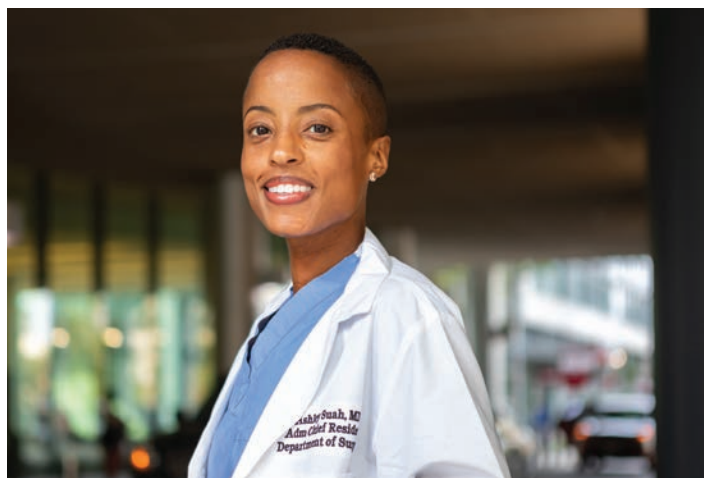
A similar study from the National Institutes of Health (NIH) in 1967 then confirmed multiple other strains of this new group of viruses shortly thereafter. This combination of work from UChicago and NIH defined a new group of viruses: human coronaviruses.

Until the 2003 outbreak of severe acute respiratory syndrome (SARS), human coronaviruses were associated with the mild symptoms of the common cold. Yet scientists continued to study them, and this work would prove valuable to the research needed to combat SARS. The genomes of two cold viruses — HCoV-229E and HCoV-OC43 — aided the development of early coronavirus tests used for respiratory infections. These tests were able to be used and refined as a beginning point for testing when SARS emerged as a novel virus, and now have been adapted for SARS-CoV-2, the virus that causes COVID-19.

— Meghan O'Connell

Residents step up, reach out

BY KATE DOHNER



Chief Surgery Resident Ashley Suah, MD, and fellow residents answered community members' questions about COVID-19 in a series of discussions on Facebook Live.

Anita Blanchard, MD'90, Associate Dean for Graduate Medical Education, second row, center, and members of the House Staff Diversity Committee in summer 2019.

Residents across disciplines at the University of Chicago Medicine — from emergency medicine and surgery to psychiatry and pediatrics — have stepped up to care for COVID-19 patients, while also offering valuable insights and support to the local community.

“Residents are contributing to this effort, while also completing their training,” said Anita Blanchard, MD'90, Associate Dean for Graduate Medical Education at the University of Chicago. “Many sacrificed other educational opportunities to help cover the COVID units.”

Early in the pandemic, residents met with other physicians and hospital leaders

to discuss how to most safely care for patients, including those with COVID-19, as well as those with other conditions who came into the hospital. Using guidelines developed by Vivek Prachand, MD, Chief Quality Officer in the Department of Surgery, to prioritize medically

necessary, time-sensitive procedures, residents — including Ava Ferguson Bryan, AM'10, MD'18, in collaboration with Kevin Roggin, MD, Program Director of the General Surgery Residency Program — developed a new consent form to ensure patients have the information they need to make informed decisions about their care. Their work was published in *Annals of Surgery*.

Residents also identified new opportunities for reaching local community members, especially Black and Latinx individuals who have been disproportionately affected by the pandemic. To help address these needs, Ashley Suah, MD, chief surgery resident, and Alanna Burnett, MD, a resident in pediatrics and internal medicine, joined fellow residents in UChicago Medicine's House Staff Diversity Committee to offer a series of discussions on Facebook Live. During these

forums, moderated by trauma surgeon Brian Williams, MD, residents shared their experiences caring for patients during the pandemic, offered recommendations, and fielded questions from community members.

“We wanted to not only bring these conversations to the community,” Suah said, “but to have them come from physicians of color who have shared cultural experiences.”

Blanchard has been impressed by the residents' response.

“They're going beyond the walls of the hospital to reach patients and people in the community,” Blanchard said. “Sharing information via Facebook and other online platforms allows us to reach a much broader group of people.”

Suah and Blanchard emphasized that the University's commitment to the local community is part of an ongoing effort.

“Many faculty members, residents and medical students have served the community, and will continue to serve it, for many years,” Suah said. “Physicians like Doriane Miller, MD'83, and Monica Vela, MD'93, have dedicated their careers to supporting under-resourced communities.”

Despite the personal and professional sacrifices they are making, UChicago Medicine's residents remain grateful for the opportunity to learn and grow.

“I've always felt supported and nurtured as a resident at UChicago Medicine,” Suah said. “I'm proud of how we've cared for our patients during this crisis. Our leadership recognizes that we're a team — we are all working together to provide the best care.”



A surgeon's COVID-19 experience

Spine surgeon Rey Bosita, MD'96, MBA, reflects on the events of 2020 and how his Pritzker School of Medicine education shaped his life and career

Rey Bosita and his son Dylan on a family camping trip to Jackson Hole, Wyoming.

The pandemic hits: COVID-19 shut down my surgical practice in March and April. This constituted the longest time I had not set foot inside a hospital to see a patient since 1995, the beginning of my third year of medical school! As life slowed down, I enjoyed the opportunity to love my wife and four sons more and to learn new skills in the kitchen.

Contracting the virus: I got COVID-19 in late May and was admitted to the hospital for five days. The experience taught me much about how uncertain and powerless patients feel when they get sick.

The personal loss of freedom necessary to maintain a safe working environment for my nurses and doctors is my starkest recollection. I was confined to a converted ICU room that didn't have a shower.

Then, I started to "compete" with unseen COVID patients on my floor. I'd gather HIPAA-compliant information from my nurses in regard to where I stood with oxygen saturation, medications, and even

"I'm amazed that in 2020 – 24 years after medical school and 18 years after starting my career as an attending surgeon – I am still growing as a person and a doctor."

Rey Bosita, MD'96, MBA

volume inhaled on an incentive spirometer. For me, COVID-19 hospitalization became a race to survive and to leave the hospital. Those who lose go to the ICU, some get intubated and a few get ECMO. I was not going to let myself lose this race.

Fortunately, my wife and sons did not contract the virus. Upon discharge, I used the mandatory two-week home quarantine to re-evaluate my life. I realized that



nothing could make me happier than being a husband, father and surgeon.

Doctor as patient: Just as my practice was getting back on track, both of my hands started falling asleep. Now I needed carpal tunnel surgery. Just great.

In the three weeks between booking the surgery and walking into the surgery center, I had many thoughts: successive waves of enthusiasm about feeling better; uncertainty about complications and lost work time; rationalization that my symptoms were getting better; intellectualization upon considering my classic disease presentation and electrodiagnostic workup; and finally, acceptance that surgery was the best choice. While my experience was unique to me, now I can relate to my patients even more closely on another level.

A strong foundation: My four years at the Pritzker School of Medicine were the basis for building my career in medicine. Pritzker taught me that the foundation of everything we do as doctors is the doctor-patient relationship. The sanctity of this

relationship has been and will always be my highest priority.

I walked into the Biological Sciences Division an immature 20-year-old who thought he knew everything. I left Hyde Park with a degree and the knowledge that I knew only a fraction of what I needed to know. But I was equipped with the tools needed to succeed in life and in medicine. The University did not teach me what I wanted to know; it taught me what I needed to know.

I humbly give thanks to the attendings, residents, administrators and my fellow students who contributed significantly to my medical education. Thank you to the entire University of Chicago community for helping me develop into the person who I am today.

Rey Bosita, MD'96, MBA, an orthopaedic surgeon at Texas Back Institute, has seen more than 10,000 patients, performed over 3,000 surgeries and helped train more than 50 spine fellows. He also loves extra virgin olive oil and making pizzas from scratch.

Defining nature



Urban ecologist Alison Anastasio, SM'05, PhD'09, with the undeveloped Chicago Park No. 566 behind her and the Chicago skyline in the far distance.

STORY BY STEPHAN BENZKOFER

PHOTOS BY NANCY WONG

To urban ecologist Alison Anastasio, the city is a laboratory for the study of environmental issues. And beauty abounds in slag heaps — if you know where to look.

On a soft summer evening, the kind that reminds Chicago residents why they live here and makes tourists vow they'll return, an urban ecologist leads a lakefront field trip

A breeze off the water plays in the cottonwood leaves and turns up a heady, sweet aroma that could only be called fresh air. Pink clouds reflect the sunset, and swallows dance and dive for their dinner.

It's glorious.

"One of my favorite activities is to lead people on nature walks," said Alison Anastasio, SM'05, PhD'09, an assistant instructional professor in the Environmental and Urban Studies program at the University of Chicago. Her enthusiasm is irrepressible. She keeps up a lively commentary, intermingled with excited identifications of plants, about the complex interaction in an urban environment between humans and nature — or, as she prefers to frame it, the interplay of all living things, because humans are nature too, despite our best efforts.

In the first minute of the tour, not 40 yards from South Lake Shore Drive she points out sweet clover ("this is a non-native species"), mugwort ("also non-native"), evening primrose ("this pretty one is native") and Queen Anne's lace ("non-native but really naturalized in this area").

None of these plants was our goal that evening. We were there for the slag.

"The thing that really gets me excited is slag," Anastasio said, explaining that the waste byproduct of steel production was dumped all over the Calumet Region, from the Southeast Side into Northwest Indiana.

Indeed, on that beautiful summer evening, it is all around.



As an urban ecologist, Anastasio finds herself considering such sweeping issues as the COVID-19 pandemic, racial injustice and climate change, but also asking basic questions like "What is a weed?"

For example, as the pandemic forced millions of residents to limit travel and stay home, access to green space became a precious commodity. For many, neighborhood walks raised awareness and appreciation of the overlooked maple down the block or the gnarled oak around the corner. But not everybody's neighborhood is conducive to a peaceful stroll; not every neighborhood has trees.

After the City of Chicago closed the popular lakefront to enforce social distancing rules, residents' options for their daily walk or to find restorative time outside became even more limited.

"That really highlights how important these spaces are," Anastasio said.

A common theme in her classes is how even to define nature. "Is it only nature if it is far from humans?" she said. "Is a tree in a sidewalk box nature or does it have to be in a forest?"

Now consider what it means when green space isn't equitably distributed. In a blink, an urban ecologist looking for answers about the lack of a tree canopy must consider how redlining by governments, real estate agents and banks segregated Black and brown homeowners in select neighborhoods. How zoning laws allowed for acres of pavement but few parks across vast swaths of the city. Or, more recently, how a manufacturer that has racked up numerous neighbor complaints and government citations for pollution violations may be allowed to move from its Lincoln Park site to the Southeast Side.

Which, conveniently, brings us back to the slag.



False pennyroyal pushes up through a mix of gravel and hard-packed soil atop the slag.



In the late 1800s, the North Chicago Rolling Mill Co. relocated from the North Side to the Southeast Side. Almost immediately, the steelmaker began dumping slag and waste into the lake, according to a 2018 study of the region. By 1922, the company, which was now U.S. Steel, had created 573 acres of lakefront land.

This transformation of the shoreline would not

Black-eyed Susans bloom in dredged soil brought in to cover the slag.

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Take a tour of the Calumet Region's hidden nature

The public is free to visit and explore these six sites, although some are small preserves with sensitive habitats and limited parking. Stay on paths, take only photographs and leave only footprints.



1 Marian R. Byrnes Park

2200 E. 103rd St., Chicago. Clear park signage on north side of 103rd Street. Limited parking outside the gate, but if unlocked, lots of parking inside. The trail begins right at the gate.

Marian Byrnes was a fierce Southeast Side environmentalist. The park named after her hosts a slag wetland, with some of the same plants you'd find on the rare Illinois dolomite prairie, and an accessible walking trail through a beautiful woodland.

2 Indian Ridge Marsh Park

11740 S. Torrence Ave., Chicago. Clear park signage and small parking lot on west side of Torrence Avenue. Trail begins from parking lot.

Once a dump site surrounded by the second largest Ford plant in the country, two truck routes, two rail lines, an active industrial river that is larger than the Chicago River — the Calumet — and an abandoned steel mill, Indian Ridge Marsh has undergone an incredible transformation to one of the richest examples of regional flora and fauna, right in the City of Chicago.

3 Eggers Grove

E. 112th St. & S. Avenue E, Chicago. Drive into the park and all the way due south past picnic areas. Trailhead is at furthest south point of parking lot.

Early spring ephemerals abound in the restored woodland at Eggers Grove, but go further south in the summer to see the lush slag prairie and cottonwood savanna at Wolf Lake Overlook.



Although it is a non-native species, the naturalized and familiar Queen Anne's Lace adds beauty to the surroundings.



Plants and flowers share a home with stones, pebbles and random pieces of metal on the lakefront slag.

Share your observations and photos at [inaturalist.org](https://www.inaturalist.org)

iNaturalist is a joint initiative of the California Academy of Sciences and the National Geographic Society.

4

Clark & Pine Nature Preserve Pine Station Nature Preserve

North Clark Road, Gary, Indiana. Turn north on North Clark from Airport Road and drive less than 1 mile. Park on the side of the road near park signs. If you cross a second set of railroad tracks, you've gone too far.

Clark & Pine and Pine Station Nature Preserves are remnant dune and swale habitats with rare plants and plenty of wetland birds, bordered by an industrial facility, three rail lines, and the road to a steel mill. Late summer is a great time to visit.



Anastasio examines a common evening primrose, still blooming while developing seed pods.

5

Ivanhoe South Nature Preserve

Colfax St., Gary, Indiana. Drive south on Colfax Street from 5th Avenue and park in the small lot on the west side between 7th Avenue and King Street.

The remnant black oak savanna at Ivanhoe South doesn't pretend to be untouched by humans. Monuments to its industrial surroundings can still be found among the lupines that paint shades of purple with their blooms in late spring.

6

Cowles Bog Trail

Indiana Dunes National Park, 1618 N. Mineral Springs Road, Dune Acres, Indiana. Turn right into parking lot directly before security station. Trailhead begins directly west of Mineral Springs Road. Additional parking at the south end of the marsh at 1050 N. Mineral Springs Road.

Stop by Cowles Bog in February or March to find the thermogenic skunk cabbage busting through the snow and attracting flies, the earliest pollinators, with its carrion scent. Look to your left once you've crossed the boardwalk. This area is named after the father of American ecology and University of Chicago botany PhD graduate and professor, Henry Chandler Cowles.

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have been peaceful. Molten slag is thousands of degrees Fahrenheit when it is dumped from thimble-shaped, ladle rail cars. Hitting the lake water, it would have exploded violently, sending red-brown clouds roiling into the air. At night, the red, orange and white-hot slag flow would have lit up the sky.

Cooled slag is a glassy material resembling volcanic rock. Neither it nor the decades of steel-making that followed was conducive to life.

U.S. Steel closed its South Works site in 1992, fenced it off, and moved on. In the intervening decades, as redevelopment plans germinated and died, nature moved back in. Somehow, life did return.

And for Anastasio, it became a living laboratory.

Cities can be hostile environments. Miles of concrete and asphalt, elevated air pollution and the accompanying urban heat island all contribute to challenging growing conditions.

Yet with more than half of all people now living in cities and pristine wilderness a thing of the past, it becomes vitally important to figure out how to transform urban areas into functional ecosystems, Anastasio said. "There's human impact on every square millimeter on Earth's surface."

So learning how plants, animals and insects live in the extremes might just show us the way.

When she first discovered the South Works site a few years ago, she was amazed by the abundance and variety of life.

"Oh my gosh," she said. "So many plants had managed to colonize the space. And they had been basically undisturbed since the mill was shut down."

She wasn't surprised to find non-native, opportunistic plants — those that are "native to cities" — but excited also to spot species that have been native to the Chicago region for a long time. Fighting for soil and nutrients were staghorn sumac and whorled milkweed and cottonwoods.

But life on the slag is hard.

"You would expect decades-old cottonwoods to be big," she said. "These were stunted, maybe four inches in diameter. That's common. Many native plants can live on slag, but they're of much smaller stature."

The South Works discovery sent Anastasio on quests for slag sites all around the Calumet Region.

"I started finding rare plants, ladies' tresses orchids, some endangered sedges and plants characteristic of healthy tallgrass prairie," Anastasio said.

Listening to her, it's easy to see how her undergraduate students find Anastasio's curiosity, energy and insights engaging. Growing up with the constant threat of climate change, students from a wide range

of fields come to the Environmental and Urban Studies classes to better understand the issues — and for answers.

What they often hear from Anastasio, though, is: “It’s complicated.”



The area between about 79th and 92nd Streets, east of South Lake Shore Drive, is the former home of U.S. Steel South Works. A northern sliver is now Park No. 566, undeveloped land owned by the Chicago Park District. The bulk of it, from about 82nd Street south to the mouth of the Calumet River, remains a post-industrial brownfield — except for Steelworkers Park, a narrow 16.5-acre strip along the lake.



Whorled milkweed is one of three milkweeds found in the area. “Whorled milkweed loves slag,” Anastasio tells her students.

Viewed one way, it is an eyesore, littered with rusted rebar, fragments of metal in tortured shapes, and covered in weeds. But through the lens offered by our tour guide, it was transformed into another garden in the city. Not pristine, but nature nonetheless.

We stand in a gap in the chain-link fence separating Park No. 566 from the old South Works site.

“There are so many complexities,” Anastasio said. “There are so many stakeholders.”

Just one example: Some three decades ago, the Army Corps of Engineers agreed to dredge the Calumet River to make it more passable and to remove toxic sludge.

“That’s a good thing, right?” Anastasio said.

After 30 years, the plan was to cap the dump and turn it into a new park. Now, though, the Corps says it needs to continue using the site to dump for 20 more years. Understandably, community residents rebelled.

“Where everyone always gets stuck is, well, then where are you going to put it?” Anastasio said of the toxic sludge. “Do we truck it off to dump it in the

middle of nowhere? But our nowhere is another community’s somewhere.”

Anastasio lets that settle in.

“Maybe what we need to do is create a less toxic legacy.”

That is complicated.

When students are frustrated there isn’t a single correct answer, she tells them: “Welcome to the rest of your life.” But that’s also what’s so exciting about being in an interdisciplinary field, she said, and “getting students to think about all the perspectives of the different stakeholders.” For example, industry means jobs. There are benefits and there are costs.

“I can’t be an ecologist who says, ‘I just want to study this plant in this place because it is an interesting research question,’” she explained. “Urban ecology really brings into relief that humans are integral to this ecosystem.”

Sam Joyce, AB’20, who received his degree in Environmental and Urban Studies, is now studying law at Stanford University, where he hopes to focus on environmental and natural resource law. He said he appreciated Anastasio’s real-world focus.

“There is a tendency for people to be very theoretical,” he said. “Dr. Anastasio has a big focus on knowing the place and getting outside and meeting with the people. That’s pretty unique.”



Anastasio grew up in Northern California, where “nature is big and in your face,” she said. “There are rivers and tide pools, mountains and meadows, so much variety.” She remembers a junior ranger program run by the local park district that got her outside hiking and rock climbing. Her high school course choices included not just a field biology class but also marine biology. And because she lived in a suburb on the eastern edge of the San Francisco metro area, Yosemite National Park was just over two hours away.



Late boneset is native to the area and often found near sources of water.

When she came to the University of Chicago as a graduate student in 2002, friends warned her the big city would be foreign, devoid of nature.

But Anastasio found Chicago's nature to be subtle, but sublime.

Anastasio completed her master's degree and PhD in the Department of Ecology and Evolution. In 2011, she was working as the graduate program administrator for that department as well as Organismal Biology and Anatomy when she persuaded her bosses to let her teach an ecology class on the side.

The Calumet Quarter focuses on the ecology, history, policy and planning of the Calumet Region. Teaching the biennial, experiential course — “study abroad in your backyard,” as she describes it — gave Anastasio the chance to combine her growing interest in the region, her expertise and passion for ecology, and the challenge of teaching.

“Most students didn't know about the Indiana Dunes, much less a pile of industrial waste on the Far South Side,” she said. “We had a field trip every Friday.”

When she became associate dean of students and executive director of the Medical Scientist Training Program (MSTP) in 2015, Anastasio still managed to make time for Calumet Quarter.

In 2018, despite enjoying her role in the MSTP, she jumped at the chance to teach full time.

“Alison brought us something very unique, which was the ecological studies perspective on urban environments,” said Sabina Shaikh, PhD, Director of the interdisciplinary Program on the Global Environment, which houses the Environmental and Urban Studies undergraduate program. “She's also extremely knowledgeable about the city of Chicago and its urban ecosystems.”

Shaikh said she appreciated Anastasio's commitment to undergraduate education and her interactive, experiential curriculum. A growing number of students are interested in urban issues, from design to planning, and even as the program keeps adding sections, they fill up.

“How do we develop critical inquiry around complex issues in cities?” Shaikh said. “Chicago can be a microcosm for that.”

Anastasio agreed.

“This intersection of environment and urban, of ecology in cities, is so fascinating,” she said, “I try to show the students that there is nature in the city, that it might look different than Yosemite, but it is just as beautiful.”

And in at least one way, she argues, it might be more important.

“If nature is always far away, someplace else, then you don't have the same impetus to pay it much mind,” she said.



Railroad spikes and other metal scraps remind visitors that the area once held a massive steel mill.

Under the wary eye of a coyote, the tour is making its way across Park No. 566, which was recently mowed. It's like walking across a furrowed field.

Anastasio calls attention to catnip, wild strawberries and Black-eyed Susans. This section got an upper layer of topsoil, courtesy of another dredging program called Mud to Parks that transplanted tons of lake sediment from Illinois waterways to the shores of Lake Michigan.

“Great idea, right?” she said. “Well, it turns out it is super nutrient rich and full of seeds of non-native plants. It's a challenge.”

Anastasio points out a clump of greenery — “a beautiful native grass called side-oats grama” — that is bouncing back quickly from the mowing and is somehow even still flowering.

Standing at the edge of Lake Michigan, the breeze is stronger. The shoreline is a jumble of black slag boulders, crumbling concrete blocks and even more rusted remnants of metal and rebar.

Anastasio stands atop one gnarled castoff of Chicago's industrial history and talks about how the challenges raised by pandemics, climate change and social justice come together in urban ecology, and how the answers will come from the efforts of a multitude: urban planners, architects, government officials, economists, engineers, community organizers and scientists.

“That's why we're using the entire city of Chicago basically as an educational lab for students to better understand all the environmental issues,” she said.

At her feet, improbably, a plant managed to find a foothold in the slag boulder and push its pale-green leaves up toward the sky.

The ecologist leans over and brushes a velvety leaf. “This is a mullein,” she said. “You can see these in vacant lots all over the city. And it is somehow growing here too.”

“But,” she continued, pointing at a weedy-looking plant that did nothing to call attention to itself, “that is native boneset, and I don't think I've ever seen that in a vacant lot. But here it is too. Out on slag. And that, that's just so exciting.”

“I try to show the students that there is nature in the city, that it might look different than Yosemite, but it is just as beautiful.”

Alison Anastasio,
SM'05, PhD'09



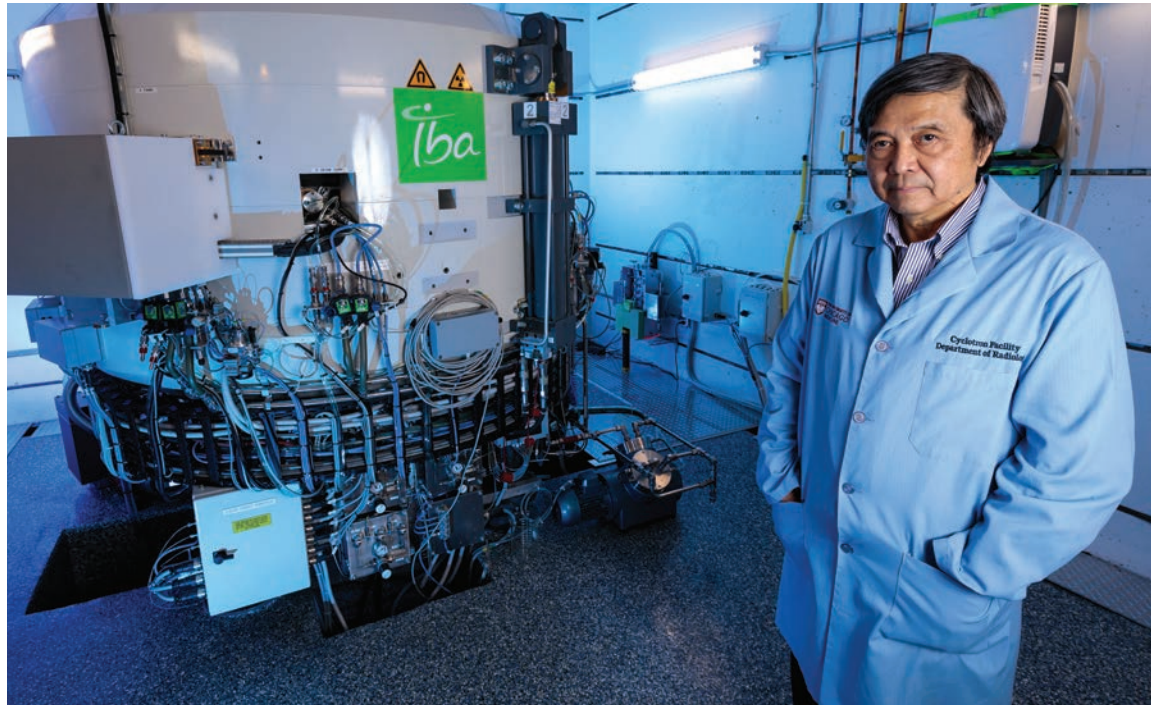
The velvety rosette of a great mullein grows out of a slag boulder.

From Stagg Field to the IBA Cyclone 18 cyclotron

A look at the history of nuclear medicine at the University of Chicago

BY TIHA M. LONG, PHD

PHOTO BY JOHN ZICH



Chin-Tu Chen, PhD'86, led efforts for the installation of the IBA Cyclone 18 at the University of Chicago.

The nuclear era began in 1942 when the world's first controlled, self-sustaining nuclear chain reaction took place at Stagg Field on the University of Chicago campus. In the decades that followed, University scientists made historic advances in harnessing this technology in the diagnosis and treatment of disease.

Early nuclear medicine's A-Team

In 1954, the Argonne Cancer Research Hospital — the largest facility ever built for the purpose of cancer research and treatment using nuclear medicine — opened its doors. The facility attracted four scientists whose work would launch the field of modern nuclear medicine.

Katherine Austin Lathrop, Professor Emerita in the Department of Radiology, brought her biochemistry background to the University in 1945 as a member of the Manhattan Project, the secret research program to develop the atomic bomb. She became a pioneer in the development and testing of

radiopharmaceuticals — radioisotopes used for the diagnosis and treatment of diseases.

Paul Harper, MD, completed his residency at the University and joined the Departments of Surgery and Radiology in 1953. Harper worked closely with Lathrop to investigate medical applications of radioisotopes.

Mathematician Robert Beck, a longtime faculty member in the Department of Radiology, joined the team in 1957 and began working on imaging instruments that could detect the signals from radioisotopes. Beck served as the assistant director of Argonne Cancer Research Hospital from 1963 to 1967 and became director of the Franklin McLean Memorial Research Institute, the center that evolved from the Argonne Cancer Research Hospital.

Alex Gottschalk, MD, completed his residency at the University of Chicago, then returned in 1964 to join the Radiology faculty and became director of the Argonne Cancer Research Hospital in 1967.

These scientists developed an imaging technique using a radiotracer labeled with technetium-99m

Recent publications

Chang et al. *Angew Chem Int Ed.* 2020.
Persky et al. *J Clin Oncol.* 2020.
Solanki et al. *Pract Radiat Oncol.* 2020.

(^{99m}Tc), the most commonly used medical radioisotope today. Clinical ^{99m}Tc imaging is used millions of times worldwide every year to detect cancer and other diseases.

After numerous advances in nuclear medicine in just two decades, the installation of new equipment and the development of powerful technologies allowed for rapid and expansive growth of the field.

The state's first and only academic medical cyclotron

The first cyclotron at the University of Chicago, installed in 1968, opened the door to creating numerous types of radioactive compounds for research, diagnosis and therapy.

A cyclotron is a stout, cylindrical-shaped particle accelerator. It speeds up charged particles from the center outwards along a spiral path. It operates by maintaining a static magnetic field that keeps particles within a perpendicular central circular plane. At the same time, electrical charges oscillate between the two semicircles that make up the central circular disk, causing the acceleration of the particles in a spiral motion. When particles reach the limits of the circumference, they are deflected to an exit point through a beam tube that can be aimed at a target. The beam of charged particles colliding with a material creates positron-emitting isotopes, types of atoms that are unstable and emit radiation. These radioisotopes have diagnostic and therapeutic utility, for example, as radiotracers for medical imaging.

The original cyclotron was decommissioned about 30 years after it was installed, in 1997. Interest in the program dimmed for almost two decades but would re-emerge.

PET: Precise and sensitive imaging

Beck, with Chin-Tu Chen, PhD'86, Associate Professor of Radiology, and his colleague, Malcolm Cooper, MBChB, had been key figures in the installation of a positron emission tomography (PET) facility in 1981 – an early nonclinical brain PET scanner and the first system in the state of Illinois. In 2004, the University of Chicago became one of the first local institutions to install a clinical PET scanner for the routine care of patients.

PET imaging uses radioactive materials that can detect events in the body at the molecular level, including the presence of biomarkers, and metabolic and enzymatic processes. A radioactive solution called a radiotracer is injected into the circulation

system. The radiotracer interacts with molecules within specific tissues or cells of the body. The emission of positron particles produces gamma rays from precise locations in the body, and these rays can be detected and processed by a scanning machine recording images.

The far-reaching idea to combine PET with magnetic resonance imaging (MRI) and computerized tomography (CT) marked another jump forward. Chin-Tu Chen, with Charles Pelizzari, PhD, and George Chen, PhD, then faculty members in the Department of Radiation and Cellular Oncology, teamed up to figure out how to correlate PET with CT and MRI imaging to produce 3D information in a clinically relevant time frame. Progress through the late 1980s led to the PET/CT scanner becoming a 2000 *Time* magazine “Medical Science Invention of the Year.”

“MRI provides a picture of the anatomy, and PET tells you the functional information,” Chen said. “By lining up these two types of images, we can understand exactly where the activity is happening.”

A new era of research and medicine

After two decades without a cyclotron at the University, Chin-Tu Chen led efforts for the installation of a modern facility in 2017. The IBA Cyclone 18, a massive 27-ton instrument, sits in a secure vault below the ground enclosed by thick slabs of concrete. It is surrounded by sterile rooms for production of radiotracers, drug dispensing and quality control.

The University of Chicago Cyclotron Facility, directed by Richard Freifelder, PhD, currently produces a new FDA-approved investigational drug, fluorothymidine, a PET radiotracer used to monitor response to cancer therapy, and numerous other experimental compounds for research and medicine.

Richard Freifelder, PhD, director of the cyclotron facility, works in the control room.

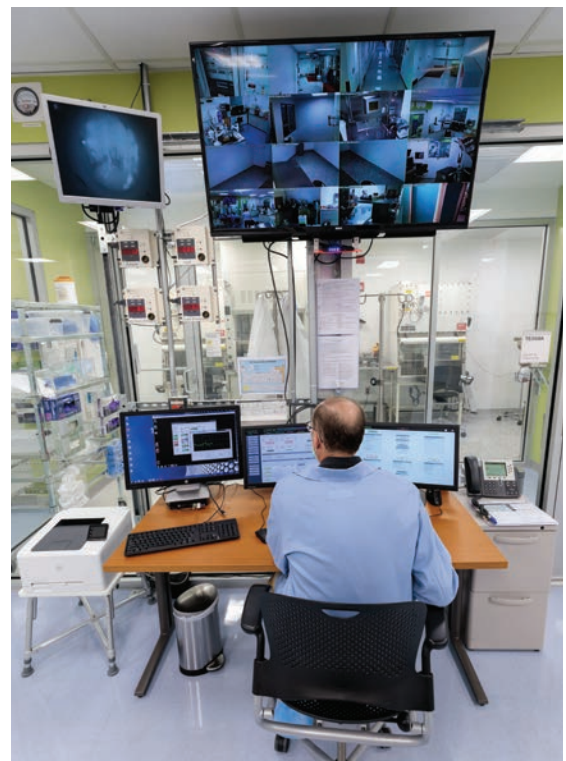


PHOTO BY JOHN ZICH

Few institutions can offer full access to radiopharmaceuticals and PET scanning. Due to the short half-life of most types of radiotracers, a cyclotron must be close by or on site with the PET imaging facility. UChicago has these advanced capabilities, which are invaluable tools for cancer diagnosis and treatment.

PET is used to image primary and metastatic tumors and to monitor responses to therapy. It can supply information to physicians to assist with the characterization of tumors and treatment decisions. PET is an exquisitely sensitive tool that is able to detect biochemical events that may appear ahead of any detectable tumor.

Recent advances include the creation and testing of a first-in-class, activity-based PET radiotracer. This accomplishment required the combined

expertise of a medical physicist, a biological chemist and a team of researchers with the Cyclotron Facility.

Raymond Moellering, PhD, Associate Professor in the Department of Chemistry, and Chen created a novel radiotracer that can specifically label aggressive cancer cells in breast cancer tumors in whole body imaging.

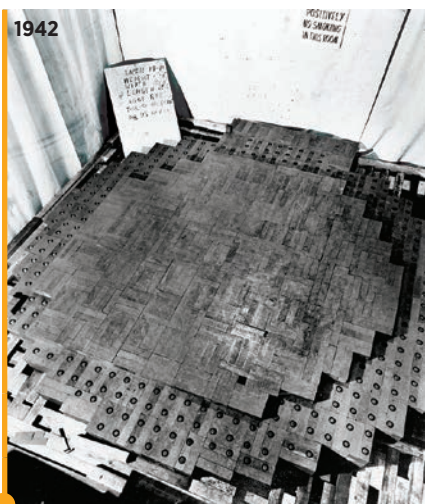
The common approach to tumor detection involves the glucose analog ^{18}F -FDG, a nonspecific glucose molecule that can enter any fast-growing tissue. It detects cancer cells simply because they metabolize increased glucose to produce energy enabling them to grow faster than noncancerous cells. Elevated concentrations of ^{18}F -FDG in tumor cells allows them to be detected anywhere throughout the body.

This new, more precise approach combines the technology of PET imaging with the creation of a novel chemical probe with covalent activity. The recently developed radiotracer detects activity of the enzyme neutral cholesterol ester hydrolase (NCEH1), allowing for the direct visualization of active NCEH1, which is present in aggressive triple negative breast cancer.

In addition to the capability to image aggressive tumors, the researchers were able to make new discoveries using the NCEH1-activity radiotracer. They found that the levels of NCEH1 were higher in the leading edge of the tumors where growth and metastasis occur. Similar results were seen in a prostate cancer model.

“This imaging technology could help clinical teams determine whether a cancer is aggressive and inform treatment decisions,” Moellering said. “NCEH1 is elevated in many different types of

First nuclear reactor under construction beneath Stagg Field.



Nuclear medicine at the University of Chicago

1942

World's first nuclear reactor creates a controlled, self-sustaining nuclear chain reaction

1945

Research on radiotracers begins

1954

Argonne Cancer Research Hospital opens

1959

Scientists demonstrate the use of localized radiation to treat cancer

1963

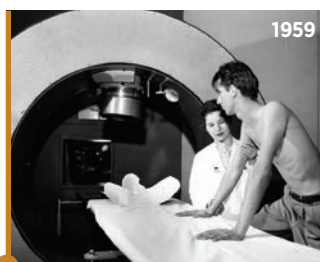
First technetium-99m ($^{99\text{m}}\text{Tc}$) brain scan

1968

UChicago installs first cyclotron (decommissioned in 1997)

1981

Positron emission tomography (PET) research facility opens



Paul Harper, MD, and colleagues investigated the medical application of radioisotopes.

PHOTOS FROM THE UNIVERSITY OF CHICAGO PHOTOGRAPHIC ARCHIVE, SPECIAL COLLECTIONS RESEARCH CENTER, UNIVERSITY OF CHICAGO LIBRARY

aggressive cancer, so if it works to track aggressive breast cancer, it may have utility in tracking many other types of aggressive cancer.”

Managing treatment decisions

For types and stages of cancer that are difficult to detect, PET imaging may provide an option to see what other imaging techniques miss.

Sonali Smith, MD, Elwood V. Jensen Professor of Medicine, is an expert in the treatment of lymphoma.

She has led recent clinical studies at UChicago, in collaboration with other academic groups, to elucidate the role of PET-directed therapy in the management of lymphoma.

In a recently published study, patients with early stage diffuse large B-cell lymphoma (DLBCL) were scheduled for PET scans following their initial cycles of standard chemotherapy to determine how to proceed with treatment. Patients who had a negative PET scan proceeded with only one cycle of chemotherapy, whereas a positive result by PET scanning, indicating

that cancer was still present, required radiation plus directed radioimmunotherapy.

Both patient groups from the study had positive outcomes. These results showed that PET-directed therapy was helpful for guiding treatment decisions.

“Overtreatment has been an issue in limited-stage diffuse large B-cell lymphoma,” Smith said. “The use of PET-directed therapy may allow for a reduction

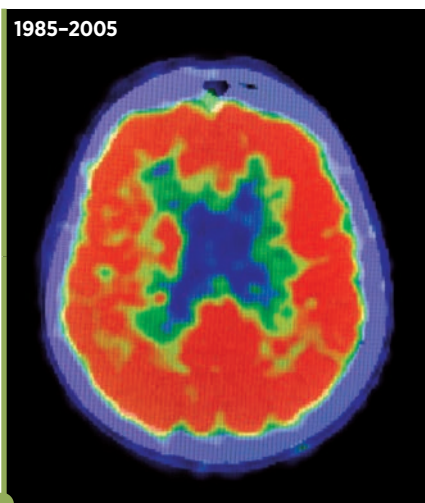
of the numbers of cycles of toxic drugs and reduce negative side effects, which will be welcomed by patients.”

PET imaging may benefit patients with advanced prostate cancer as well. Stanley Liauw, MD, Professor of Radiation and Cellular Oncology, and colleagues evaluated how PET contributed toward treatment decisions for patients with recurrent advanced prostate cancer referred for radiation therapy.

Prostate cancer recurrence after prostatectomy is difficult to localize by conventional methods. Liauw and colleagues investigated the use of PET imaging to guide treatment decisions after prostate cancer recurrence.

In almost half of the men who underwent the test, the study found that PET imaging located tumors in the prostate bed, lymph nodes, pelvis and nearby sites. The results of the PET scan helped clinicians to make better-informed treatment decisions for these patients and led to management changes in a significant number of patients.

Extraordinary achievements in the use of nuclear medicine to diagnose and treat cancer and other diseases take their place in the history of the University of Chicago. The recently installed modern cyclotron and PET imaging facilities have ushered in a new era of discovery and research among clinicians and investigators. Novel radiopharmaceuticals and new uses for PET imaging have the potential to evolve the field toward personalized approaches that increase precision and improve results and quality of life for patients.



1985

Computational integration of PET+CT or MRI images

1986

UChicago, Argonne National Laboratory and Fermilab establish Center for Imaging Science

2003

Installation of clinical PET scanner

2005

Functional and Molecular Imaging Core — PET, SPECT, CT, Ultrasound, Optical — launches

2010

Integration of nanotechnology and radiotracer methodology

2017

Modern cyclotron arrives at UChicago

2020

Development and testing of first-in-class, activity-based PET radiotracer



McNerney recognized for teaching

Megan McNerney, PhD'05, MD'07, Associate Professor of Pathology, was one of five recipients of this year's Faculty Award for Excellence in Graduate Teaching and Mentoring.

McNerney says a quest for knowledge

underlies her work in cancer biology — and her teaching.

“My hope is always that by the end of class, students appreciate how little we understand the genome, but how exhilarating it is to study,” she said. “My

approach to teaching, in the classroom or outside, is to foster students' independent critical thinking skills. It is more Socratic than didactic.”

Students of all levels receive the same attention and encouragement to branch out, according to those who nominated McNerney for the award. They described an inclusive environment in which individual mistakes or failures were never penalized or judged, but calmly and thoroughly examined and worked through.

“She is incredibly skilled at directing the projects in her lab and... goes above and beyond to read and understand our field, and yet she is always willing to take even the most junior students' ideas into consideration,” one wrote.

Asked for teaching advice for a new professor, McNerney says simply: “Measure your success by the success of those around you.”

Megan McNerney, PhD'05, MD'07



PHOTO BY JEAN LACHAT

Kidwell honored with paleontology prize

Susan Kidwell, PhD, has been awarded the 2020 Paleontological Society Medal for her contributions to interpreting the older fossil record and advancing conservation paleobiology.

The medal — the most prestigious honor bestowed by the Geological Society of America (GSA) — is awarded to a person whose eminence is based on advancement of knowledge in paleontology. Kidwell was previously honored with GSA's early career Charles Schuchert Award in 1995.

Kidwell is the William Rainey Harper Professor in the Department of the Geophysical Sciences and a Committee of Evolutionary Biology faculty member.



Esterhazy named a Pew Scholar

Daria Esterhazy, PhD, who studies immunological balance in the digestive system, has been selected to join the 2020 class of Pew Scholars in the Biomedical Sciences by the Pew Charitable Trusts.

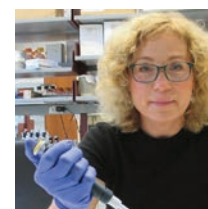
Esterhazy investigates how immune equilibrium is maintained in the digestive system and how imbalances can lead to such disorders as food allergies, inflammatory bowel diseases, autoimmune diseases and cancer.

Esterhazy is an assistant professor in the Department of Pathology. She and the 21 other early-career scientists in this year's class of Pew Scholars will receive four years of funding to pursue breakthroughs that advance human health.



Golovkina recognized for retrovirology research

Tatyana Golovkina, PhD, Professor in the Department of Microbiology, has been awarded the 2020 KT Jeang Retrovirology Prize for her outstanding



contributions to the field.

Golovkina's research focuses not only on how the innate immune system detects a

retroviral infection and initiates a neutralizing response, but also how retroviruses evolve new mechanisms to overcome those protective immune responses.

Some of her work laid the groundwork for a new understanding of how the gut microbiome plays a role in viral infections, while other research has identified genetic variants in humans that could potentially contribute to the control or persistence of hepatitis B and C viral infections.



Nels Elde, PhD'05

BSD alum awarded a MacArthur Fellowship

BY ALISON CALDWELL, PHD

For geneticist Nels Elde, PhD'05, it wasn't just the University of Chicago's reputation as a research powerhouse that helped launch his scientific career. In the lab of his graduate advisor, Aaron Turkewitz, PhD, Elde also found the space to have fun.

"Aaron is also a skilled artist and potter," said Elde, now an evolutionary biologist at the University of Utah, where he is an associate professor of human genetics. "He encouraged his students to follow our curiosity and have fun. It was a really inspirational, foundational lesson about mixing art and science that taught me how to center creativity in my work."

Fifteen years after graduation, Elde's innovative approach to research has landed him a MacArthur Fellowship, which provides a \$625,000, no-strings-attached award to individuals who have shown extraordinary originality and dedication in their creative pursuits.

As a PhD student in the Department of Molecular Genetics and Cell Biology, Elde focused his dissertation on understanding how distantly related species evolved unique solutions to solve similar cellular problems, looking far out on the branches of the evolutionary tree to combine cell biology with evolutionary genetics. Elde now studies host-pathogen interactions and ways in which organisms evolve to better attack others or

defend themselves. He is particularly interested in understanding how evolution drives rapid adaptations in hosts and pathogens.

Funding from the MacArthur Fellowship will challenge Elde to go "off-roading a little bit" in his scientific perspective — to try and answer "those 'out there' kinds of questions." One line of research he hopes to pursue involves the evolution of the immune system in aquatic species. Since some of

"The wildest ideas you sometimes just don't explore, because you think they're probably not going to work, but this is an opportunity to dust those ideas off, shake them up and see if there's something to them."

Nels Elde, PhD'05

our oldest ancestors looked more like fish than humans, discoveries in those species could help us better understand the origins of our own immune systems.

He still credits the "breathtaking" intellectual energy he found at the University for helping him first blossom as a scientist.

"The faculty and students there were more than just advisors," Elde said. "They're lifelong friends and now my colleagues. I wasn't just trained in research techniques while I was there; I was trained in how to pursue a scientific life."

GRADUATE
EDUCATION

**BSD
entering
Class
of 2020**

78

graduate students

60

undergraduate institutions

16

University of Chicago
Biosciences
doctoral programs

27%

from backgrounds
underrepresented
in science

19

international students

The incoming class participated in the first remote iteration of the National Science Foundation-funded Quantitative Approaches Boot Camp.



Pritzker students support Chinese community during COVID-19

Although the Bridgeport Free Clinic had to cease clinical activities during the spread of COVID-19, Pritzker School of Medicine students were eager to help patients stay safe during the pandemic.

In April 2020, Amanda Zhang, MS2; Anthony Hung, MSTP; Julia Ran, MS2; Zi-Yi Choo, MS2; David Cao, MS2; Allen Zhu, MSTP and Sarah Sun, MSTP, launched an online initiative to provide up-to-date information on COVID-19 to the Chinese and Chinese American communities they serve at the student-run free clinic.

“We were concerned that the lack of English proficiency could profoundly limit access to crucial information on self-protection and care,” Zhang said. “Social media allowed us to meet our community where they were.”

Through a website, YouTube channel

and chat group, patients in underserved Chinese-speaking communities could get answers to COVID-related medical questions from the University of Chicago Medicine medical and nursing staff. In its first four months, the initiative reached over 2,500 community members.

The clinic also partnered with the UChicago Medicine Emergency Department to create a virtual tour of the facility. The tour emphasized extensive efforts taken to ensure patient safety in the emergency department and stressed the importance of continuing to take care of all health needs during the pandemic.

“COVID-19 pushed us to reevaluate our assets as future doctors, and reimagine our engagement with our patients,” Hung said. “We are grateful to have had this opportunity to think outside the box.”

Learn more at bridgeportfreeclinic.wixsite.com/covid19

Two Pritzker students named Schweitzer Fellows

Suzette Guzman, MS2, and John Hawkins, MS2, have been selected for the distinguished Chicago Area Schweitzer Fellowship, a year-long service learning program.

Named in honor of famed humanitarian and Nobel laureate Dr. Albert Schweitzer, the Chicago Area Schweitzer Fellows program encourages students to become leaders in service by helping to address unmet health needs among vulnerable Chicagoland residents. In collaboration with existing community organizations, each Schweitzer Fellow launches a 200-hour community-based project.



John Hawkins, MS2, and Suzette Guzman, MS2

Guzman plans to address child obesity in a food-poor neighborhood and promote self-esteem by providing healthy eating, nutrition, and cooking classes along with body positivity and exercise workshops.

Hawkins will perform needs assessments and health education for currently and formerly incarcerated transgender, lesbian, gay, bisexual and queer people. The interventions will focus on empowerment and identifying community-vetted resources for mental health, gender affirming and HIV treatment and prevention care.

A take-home tool kit that can save lives

BY ANGELA WELLS O'CONNOR

PHOTO BY NANCY WONG

Sarah Follman, MS4, left a career in corporate finance when her volunteer work in hospitals and substance abuse programs inspired her to apply to medical school. The Pritzker School of Medicine student was instrumental in developing, piloting and implementing the O.P.I.A.T.E. initiative — Outpatient Principles in Addiction Training and Education — that launched in spring 2019 in UChicago Medicine’s Emergency Department.

The initiative provides a protocol for screening patients who may be at risk for opioid overdose and supplies them with life-saving naloxone to take home. Close contacts of patients with opioid use disorder are also eligible for the take-home kit. Having naloxone available outside of the healthcare setting allows anyone to potentially treat someone who has overdosed, including those witnessing an overdose who may be reluctant to call 911.

The Association of American Medical Colleges recognized the program with a 2019 Curricular Innovation Award.

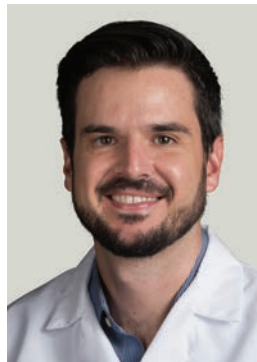
“Medical students spend a lot of time learning detailed biochemical pathways and memorizing a lot of rare diagnoses, but the topics of addiction and treatment of substance use disorders get relatively little coverage for what feels like a sizeable problem,” Follman said.

Through the program, first-year medical students enrolled in the Emergency Medicine elective receive a lecture on opioid use disorder, with special focus on the benefits of naloxone to treat opioid overdoses. During their ED shifts, the students use a survey to screen patients to identify those at risk for opioid overdose. If a patient screens positive, the student trains the patient on how to identify and respond to an overdose, including how to administer naloxone and the steps that should follow. After successful training, the student notifies the care team, who orders a naloxone kit to be dispensed to the patient.



Pritzker student Sarah Follman, MS4, helped develop the initiative to identify ED patients at risk for opioid overdose.

“On a busy ED shift, it can be challenging to identify patients at risk for overdose and have a conversation about naloxone, so we trained medical students to help with the screening and training process,” said emergency medicine physician P. Quincy Moore, MD, who developed, implemented



P. Quincy Moore, MD, oversees the O.P.I.A.T.E. program in the Emergency Department.

and administers the O.P.I.A.T.E. program. “This adds significant value to the ED team, while also providing a critical educational experience for the students.”

30

students have enrolled in the elective and conducted screenings in the ED since the program launched

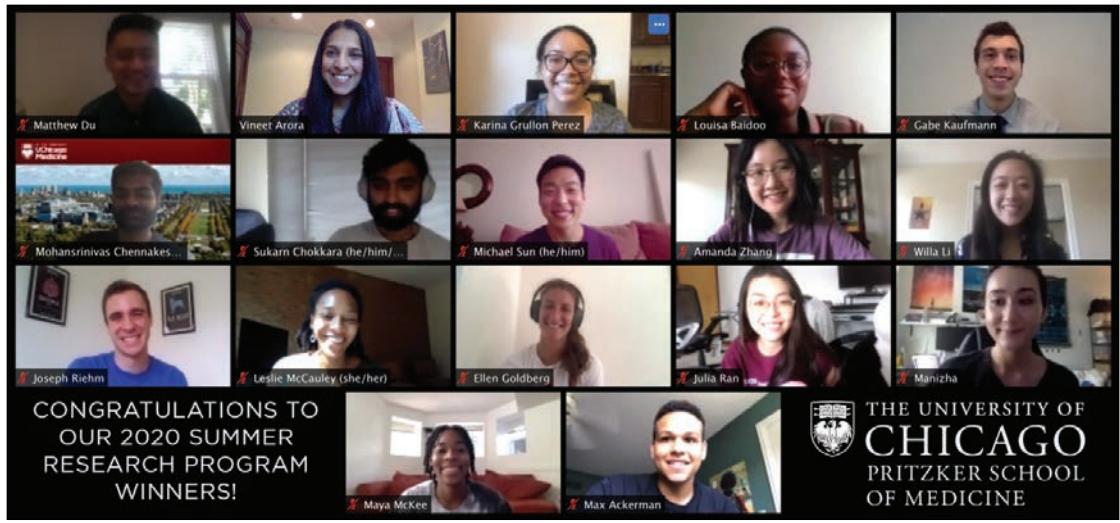
147

patients have been screened by the group

>40%

of these patients were found to be at risk of having or witnessing an overdose

Summer Research Program 2020



76
student participants

56
faculty mentors

35
judges

23
group leaders

The Pritzker Summer Research Program, an opportunity for students to conduct funded research between their M1 and M2 years, was conducted virtually in 2020 due to the COVID-19 pandemic.

Throughout the spring, participants and their faculty mentors worked diligently to salvage research proposals and transition to socially distanced projects that could be done remotely. With the support from Pritzker staff and faculty, students completed virtual basic and translational

research, clinical trial enrollments and projects in community and global health.

“We are exceptionally proud that everyone in the program not only persevered, but excelled in the face of extraordinary hardship,” said Vineet Arora, MD, AM’03, Herbert T. Abelson Professor of Medicine and Assistant Dean for Scholarship and Discovery. “I was overwhelmed by what our students accomplished given the backdrop of what was happening in our country and locally in Chicago.”

Pritzker’s Class of 2024

81
MD students

9
Medical Scientist Training Program (MSTP) students

28%
from backgrounds underrepresented in medicine

14
University of Chicago alumni

42
undergraduate colleges and universities

2/3
took one or more gap years



PHOTO BY ANNE RYAN

YOUR NEWS

2020-2021 ALUMNI COUNCIL

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Paul Rockey, MD'70
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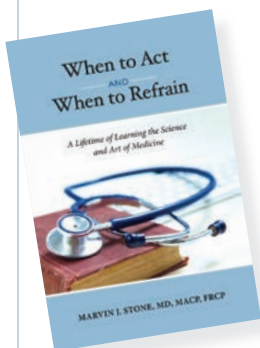
Sydney Yoon, MD'86

Russ Zajchuk, SB'60, MD'63 *

* LIFE MEMBER

✦ STUDENT OR RESIDENT REPRESENTATIVE

1960s



Marvin Stone, SM'62, MD'63 (with honors), wrote the book, *When to Act and When to Refrain: A Lifetime of Learning the Science and Art of Medicine*. Stone trained at Barnes-Jewish Hospital, the National Institutes of Health (NIH), Parkland Memorial Hospital and the University of Texas Southwestern Medical School. He was the first chief of oncology and director of the Baylor Sammons Cancer Center in Dallas, positions he held for 32 years. He has authored over 250 published articles and book chapters dealing with hematology-oncology and medical history. Stone is chief emeritus of hematology and oncology at Baylor University Medical Center at Dallas, a professor of internal medicine at Texas A&M College of Medicine and clinical professor of humanities at the University of Texas at Dallas.

Donald R. Hopkins, MD'66, was honored by the Harvard T. H. Chan School of Public Health in February 2020 when it announced a new program to increase diversity in doctoral programs would be named the Donald Hopkins Predoctoral Scholars Program. The new program provides opportunities for minority students to earn a two-year master of science degree — in biostatistics, epidemiology or global health and population — and qualify for admission to a doctoral program. Hopkins earned a master's degree from the Harvard School of Public Health in 1970 and was awarded an honorary doctorate from Harvard University in 2013. He currently works half time as special advisor for guinea worm eradication at the Carter Center and lives in Chicago with his wife of 53 years, Dr. Ernestine Mathis Hopkins.

Kenneth Bridbord, MD'69, MPH, began a three-year term on the Alumni Council of the University of Chicago Medical & Biological Sciences Alumni Association on July 1, 2020. He is one of four new members on the Alumni Council. Bridbord is the senior scientist emeritus at the Fogarty International Center (FIC). Previously, Bridbord worked as director of FIC's extramural programs and at the National Institute

for Occupational Safety and Health and the Environmental Protection Agency (EPA). He has received numerous awards, including a Silver Medal from the EPA, the National Institutes of Health World AIDS Day Award and the UChicago MBSAA Distinguished Service Award (recently renamed the Distinguished Alumni Award).

1980s

Mark E. Brecher, MD'82, was honored by the AABB with the 2020 Tibor Greenwalt Memorial Award and Lectureship. This award recognizes individuals who have made major contributions to hematology, transfusion medicine or cellular therapies. Brecher is an emeritus professor at the University of North Carolina at Chapel Hill, and retired chief medical officer of Laboratory Corporation of America. He has a history of diverse contributions to the field of transfusion and cellular therapies, including his work that helped prevent sepsis and reduce its mortality risk. The AABB is an international, not-for-profit association representing individuals and institutions involved in the fields of transfusion medicine and cellular therapies.

David Soybel, AB'78, MD'82, became the chief of surgery at the White River Junction VA Medical Center and professor at the Geisel School of Medicine at Dartmouth College after moving to Vermont in March 2020. His wife, Shannon, continues her research and teaching as professor of nutritional biochemistry at the University of Massachusetts Lowell.

Carter Van Waes, PhD'85, MD'87, received a 2020 Team Science Award from the American Association for Cancer Research during its June 2020 virtual annual meeting for contributions to The Cancer Genome Atlas (TCGA). This award recognized 130 scientists on the current TCGA project team who generated one of the largest-ever sets of tumor characterization data and used it to transform cancer research and care. Van Waes helped lead the research team that identified molecular characteristics that distinguish the genomic profiles of squamous cell carcinomas from the head, neck and other sites, which is critical for developing more effective diagnoses and targeted treatment strategies for squamous cell carcinomas and other specific cancer subtypes. Van Waes is Clinical Director and Chief of the Head and Neck Surgery Branch at the National Institute on Deafness and Other Communication Disorders.

David Gius, MD, PhD'89, joined the Mays Cancer Center, home to UT Health San Antonio MD Anderson, as professor of radiation oncology and

We
want to
hear from
you!

Share news about your life
and accomplishments:
tinyurl.com/MBSAAUpdate

associate director for translational research. As a breast cancer and radiation researcher, he studies the cellular processes that govern aging, cellular metabolism, and cancer. Gius previously worked at the Robert H. Lurie Comprehensive Cancer Center at Northwestern University.

1990s

Leonard Covello, AB'86, MD'90, began a three-year term on the Alumni Council of the University of Chicago Medical & Biological Sciences Alumni Association on July 1, 2020. He is one of four new members on the Alumni Council. Covello has been an otolaryngologist in private practice in the same suburban community in northwest Indiana for the two decades. He is the first independent surgeon in the country to perform balloon dilation sinus procedures under local anesthesia in the office. His interest in minimally invasive sinus surgery led to a few method patents. Covello expanded his sinus work by establishing an endoscopic pituitary surgery program at Community Hospital in Munster, Indiana, and became the founder of its surgical sleep program.

Ian Smith, MD'97, became the solo host of the television show, *The Doctors*, for its 13th season in September 2020. Smith is the author of 18 books, including the *New York Times* #1 bestsellers *Shred*, *Super Shred* and *The 4 Day Diet*, as well as three novels, *The Blackbird Papers*, *The Ancient Nine* and *The Unspoken*. He is a longtime medical contributor to the *Rachael Ray Show* and the former medical correspondent for NBC's *TODAY Show* and *Nightly News*. He served two terms on President Obama's Council for Fitness, Sports and Nutrition.

Vincent Nelson, MD'98, began a three-year term on the Alumni Council of the University of Chicago Medical & Biological Sciences Alumni Association on July 1, 2020. He is one of four new members on the Alumni Council. Nelson is vice president of medical affairs in the Office of Clinical Affairs (OCA) for the Blue Cross Blue Shield Association (BCBSA). He ensures

that the OCA and BCBSA incorporate clinical guidance that aligns with market demand and positively impacts the quality of healthcare while maintaining BCBS System leadership with members, providers and stakeholders. Prior to joining BCBSA, Nelson was a senior medical director and market chief medical officer for the central and west U.S. region at United Healthcare.

2000s

Gerald Wyckoff, PhD'00, became the inaugural chair of the Division of Pharmacology and Pharmaceutical Sciences at the University of Missouri-Kansas City School of Pharmacy in June 2020. The new division is the merger of two previous basic science units, and provides instruction to PharmD and PhD students. Wyckoff was also named the director of research and graduate studies at the University of Missouri-Kansas City School of Pharmacy.

2010s

Karyl S. Kopaskie, AB'07, PhD'14, became the Division of the Biological Sciences representative on the UChicago Alumni Board in July 2020. Kopaskie is senior principal of Sg2's women's health and pediatrics team, where she develops future-focused healthcare strategy for hospitals and healthcare organizations across the country. Previously, she was a Chicago Innovation Mentor fellow with Inspirotec, developing an indoor allergen detector for patients with asthma and other respiratory diseases. Kopaskie earned her doctorate studying *Yersinia* species under the mentorship of Olaf Schneewind, PhD. She has been a member of the Alumni Council of the University of Chicago Medical & Biological Sciences Alumni Association since 2015.

Sapana Vora, PhD'14, began a three-year term on the Alumni Council of the University of Chicago Medical & Biological Sciences Alumni Association on July 1, 2020. She is one of four new members on the Alumni Council. In 2015, Vora joined the U.S. Department of State's Biosecurity Engagement Program (BEP) in the Office of Cooperative Threat Reduction (CTR) as an American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellow. As BEP's current deputy team chief, Vora oversees BEP's budget, helps shape CTR programmatic and policy strategies, and works closely with the White House and across U.S. agencies. Before joining BEP, she worked at the National Academy of Sciences.

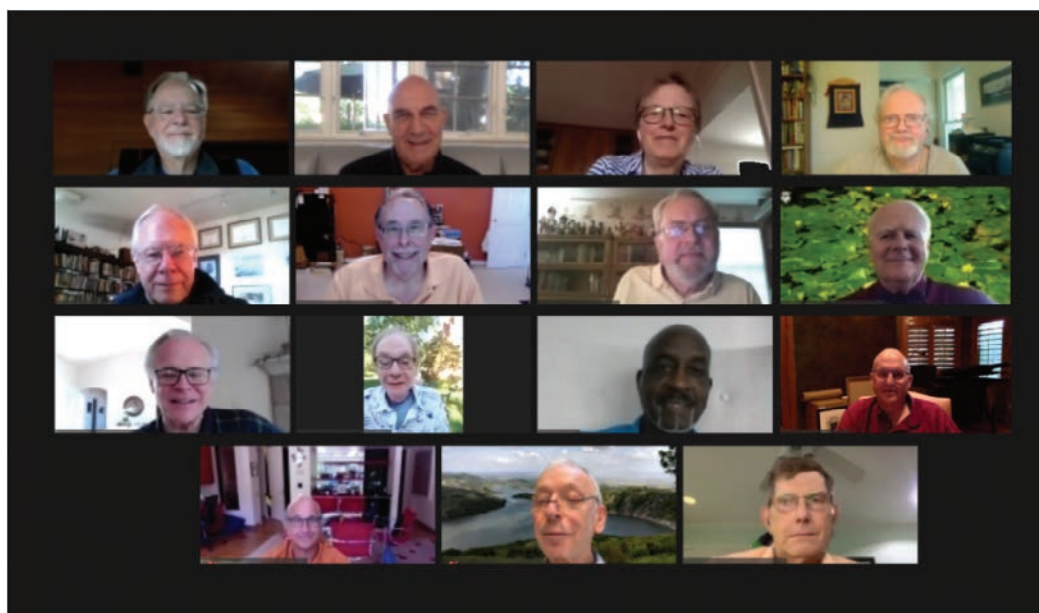
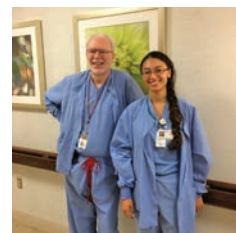
From cradle to colleague

Don M. Henry AB'76, MD'80, was close to retiring from a long career as an obstetrician/gynecologist, but still had one career goal to check off his list: seeing a baby he delivered graduate from medical school.

He got his wish in May 2020, when Mary Thomas, MD, MPH, graduated from Indiana University School of Medicine. Henry doesn't remember the birth 27 years ago — "which is good, since you only remember the ones where there are problems," he said — but he stayed in touch with the family, and when Mary was in high school, he invited her to shadow him. When she was in medical school, Henry served as her mentor and her attending for her junior year OB/GYN rotation at Community Hospital in Munster, Indiana. "Being her mentor was something I very much enjoyed," he said. "She was a very serious student."

He attended Mary's virtual graduation in May and retired to Colorado this past summer. Now he plans to spend his time as a gentleman scholar — "typical for a University of Chicago alum," he said — and hopes to continue mentoring in the future, as a volunteer or a tutor.

— Emily Ayshford



Whether in person or virtually — we can't wait to meet again.

2021 PRITZKER SCHOOL OF MEDICINE REUNION

Plans are moving ahead for the 2021 Pritzker Reunion. Members of the following classes will celebrate their milestone Reunion in 2021: **1961, 1966, 1970, 1971, 1975, 1976, 1980, 1981, 1985, 1986, 1990, 1991, 1995, 1996, 2000, 2001, 2005, 2006, 2010, 2011, 2015** and **2016**. Alumni will be informed via email and on the UChicago MBSAA Reunion page as details are finalized.

Learn more at mbsaa.uchicago.edu/reunion

The Class of 1975's Virtual Happy Hour during the June 5-6, 2020, weekend (when the 2020 Pritzker Reunion was originally scheduled).

More details on the 2020 Pritzker Reunion Classes virtual get-togethers: mbsaa.uchicago.edu/2020/06/pritzker-classes-reunite-virtually

IN MEMORIAM

1940s

Edyth H. Schoenrich, MD'47, died September 12, 2020, at the age of 101. After receiving a bachelor's degree in 1941 from Duke University and completing graduate work in psychology, she became one of three women in the University of Chicago's School of Medicine Class of 1947. Schoenrich completed her internal medicine internship and residency at The Johns Hopkins Hospital. She was a longtime faculty member of the Johns Hopkins Bloomberg School of Public Health and served as the school's Associate Dean for Medical Affairs. In 1971, she became the first female associate dean at Johns Hopkins University. She was an advocate for the comprehensive care of severely ill patients confined to lengthy hospital stays and served as director of Maryland's administration of the chronically ill and aging, where she led state programs for disease control and prevention, and oversaw three hospitals for chronic disease and rehabilitation and two tuberculosis hospitals. In 2005, she was named to

the Maryland Women's Hall of Fame. Schoenrich is survived by her children, grandchildren and great grandchildren. She was preceded in death by her husband, Carlos.

1950s

John L. Sommer, PhD'48, SB'50, MD'53, died on September 1, 2020. He was 93. Drafted by the Army in 1945, Sommer served as a noncombatant in various stateside posts. He met his wife, Donna M. Sommer, MD'54, at the University of Chicago. Sommer was a faculty member and practiced urology at the University until 1966, when the family moved to Fremont, California. He joined the Permanente Medical Group and began practicing medicine at Kaiser's Hayward facility. He also served as Physician-in-Charge of Kaiser's Fremont Medical Offices for several years. Sommer retired in 1990. He is survived by his son, Matthew; daughter-in-law, Ih-hae Chang; and two grandchildren. He was preceded in death by his older son, Andrew, and wife, Donna.

Arnold King Brenman, MD'55, died on April 16, 2020. Born in Germany, he came to the U.S. with his parents, brother and uncle in 1934. During his time in medical school, Brenman was elected to the Illinois Beta Chapter at University of Chicago of the Alpha Omega Alpha (ΑΩΑ) Honor Medical Society. From 1956 to 1968, he was stationed in Puerto Rico, serving as a physician in the U.S. Army. For almost 40 years, Brenman practiced otolaryngology and microsurgery of the ear in Philadelphia. He also made contributions to the field of medical photography. He is survived by his wife, Jeanne; his children, Caren, Paul and Steven; and his six grandchildren.

Former faculty

Hoon T. Kye, MD, died on December 30, 2019 at the age of 83. He was an assistant professor in anesthesiology at the University of Chicago starting in 1965. He is survived by his wife, Francesca; his three children, including Cecelia Kye, AB'89, JD'93, and

Joseph Kye, JD'97; daughter-in-law, Katelyn Kye, AB'94, JD'99; and five grandchildren, including Thomas Verheyden, LL.M'19.

Harold G. Sutton, Jr., MD, Professor Emeritus of Radiation Oncology, died April 30, 2020. He was 93. Sutton was a devoted and proud faculty member of the University of Chicago's Department of Radiation and Cellular Oncology since the early 1970s. He valued being a teacher of residents and cared deeply for his patients. Sutton's initial medical training was as a surgical resident. He used his surgical skills as well as his ability to work with colleagues to develop the intraoperative brachytherapy program at UChicago Medicine. Sutton was preceded in death by his wife, Marjorie, who spent 20 years as a nutritionist on the Wyler Children's Hospital pediatric gastroenterology team. He is survived by his children, Harold III, Paul, Sarah and Mary, and grandchildren, Sarah, Benjamin, Adam, Robert, Joseph and Alexander.

Former faculty

Nancy E. Warner, SB'44, MD'49



PHOTO BY TONY CHIAPPETTA

Nancy E. Warner, SB'44, MD'49 — physician, pathologist, teacher and pioneer for women in medicine and academia — died on August 17, 2020, at the age of 97. In 1944, Warner was one of only seven women admitted to the University of Chicago School of Medicine. She was inspired to pursue pathology by two UChicago faculty members, Edith Potter, MD, and Eleanor Humphreys, Rush MD'31. Warner completed her residency in pathology and served as chief surgical pathologist at the University of Chicago. She worked at Cedars of Lebanon Hospital in Los Angeles before joining the faculty of the University of Washington's School of Medicine in 1965. A year later, she was recruited by the University of Southern California School of Medicine (now Keck School of Medicine), where she remained until her retirement in 1993.

At USC, Warner distinguished herself as a surgical pathologist specializing in endocrine pathology. She developed a large collection of high-quality photographic images of gross and microscopic surgical pathology and autopsy specimens from all major organs. She used these images to teach anatomic pathology and diagnostic principles and to assist colleagues around the world with the diagnosis of rare conditions, before donating them to the USC Norris Medical Library.

In 1972, Warner was appointed Chair of the Department of Pathology and subsequently named

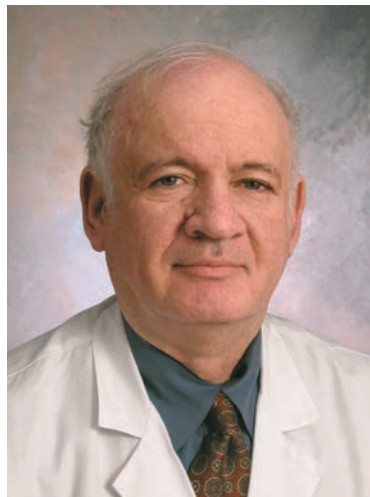
the Hastings Professor of Pathology, becoming the first female chair at the USC School of Medicine and also the first woman to chair a pathology department in a coeducational institution in the U.S. Warner was instrumental in the establishment of the Medical Faculty Women's Association (MFWA) and the associated MFWA Research Fund, which was used to provide small grants for women initiating research projects or in need of bridging funding gaps. She received the USC Distinguished Emeriti Award in 1996, and the USC Emeriti Center's inaugural Paul E. Hadley Faculty Award for Service to USC in 2009.

Warner was active in national initiatives that supported women in academia, including Women in Medicine (WIM) and the American Association of Medical Colleges (AAMC) Women Faculty Leadership Development programs, and was an avid advocate for gender equity in academia at all levels. She recently provided a gift to the University of Chicago to create three mechanisms to support research in gender and sexuality studies, professional development and research scholarships for women faculty in the humanities. She also donated a large volume of papers, lecture notes, photos and personal items to the University of Chicago Library. She is survived by her two nephews and niece, and her great nephews. She was preceded in death by her wife and partner of 60 years, Christine Reynolds; her parents; two sisters; and nephew.

Former faculty

Joseph M. Baron, SB'58, MD'62, SM'62

Joseph M. Baron, SB'58, MD'62, SM'62, a longtime, highly respected and distinguished faculty member, died on September 20, 2020 in Boston. He was 82 years old. He received his bachelor's degree in biochemistry, master's degree in pharmacology and medical degree at the University of Chicago. For over 50 years, he was a physician in the Section of Hematology/Oncology at the University of Chicago, where he received numerous honors. As a clinician, he was an expert in lymphoproliferative disorders — cutaneous lymphomas, in particular — and coagulation medicine, as well as classic hematologic disease, including myeloproliferative disorders, hemolytic anemias and thrombocytopenic states. He served as the director of the first clinical trial of human erythropoietin in patients in 1984 in collaboration with UChicago biochemist Eugene Goldwasser, PhD'50, and kidney specialist Adrian Katz, MD. He served in several leadership roles at the University of Chicago, including acting chief of the Section of Hematology/Oncology, director of the UChicago Medicine Hemophilia Center, and medical director of the Clinical Coagulation/Bone Marrow



Laboratory. He also previously served as chairman of the Hospital Transfusion Committee. He was recognized multiple times as a *Chicago* magazine Top Doctor and as a Best Doctor in America. He spoke regularly at regional and national meetings and served as a hematology/oncology consultant and book reviewer for the *Journal of the American Medical Association*.

An associate professor in the Department of Medicine, Baron was an outstanding educator and a remarkable role model for young physicians, training hundreds of medical students, residents, fellows and faculty. He received the Medical

Student Basic Science Award in 1981 and Senior Medical Resident Teaching Awards in 1995 and 1996. In 2016, he was named a Senior Faculty Scholar in UChicago's Bucksbaum Institute for Clinical Excellence and was the first recipient of the Department of Medicine's Outstanding Clinical Service Award. He retired in 2019, and that year he was honored with his department's Distinguished Service Award and the University of Chicago Medical and Biological Sciences Alumni Association's Gold Key Award.

Dr. Baron and his wife, Beverly Wirth Baron, MD, a retired faculty member in the Department of Pathology, were married for 56 years. The couple had an incredible partnership and made many joint contributions. They could often be found late at night and on weekends working in the hospital together in service of their colleagues and patients. Outside of work and family, Baron's greatest loves were waterfalls, traveling, classical music, sports and sharing a good joke. In addition to his wife, he is survived by daughters Rebecca Baron, Miriam Barshak and Elinor Baron; sister Rachel Zukerman; son-in-law Jason Barshak; daughter-in-law Sara K. de Bethune; and four grandchildren.

“Dr. Baron was a phenomenal clinician and inspirational teacher and an amazing and beloved human being and friend. One could not find a physician more devoted to his work and his patients than Joe. He will be deeply missed.”

Kenneth S. Polonsky, MD

Richard T. Crane Distinguished Service Professor

Dean of the Biological Sciences Division and the Pritzker School of Medicine



Joseph M. Baron, MD, talks with Dean Kenneth Polonsky, MD, in 2019.

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The mission of the University of Chicago Medical & Biological Sciences Alumni Association is to support the Division of the Biological Sciences and the Pritzker School of Medicine by providing activities that engage alumni in the life of the school.



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LAST LOOK

Career perspective



ILLUSTRATIONS BY NATALIE KOSCAL, MA, AND ALISON E. BURKE, MA



Anita Blanchard, MD'90, Associate Dean for Graduate Medical Education, reflects on her journey from medical student to mentor in a graphic story in *The New England Journal of Medicine*. In a "A Sense of Belonging," Blanchard credits her mentor, James E. Bowman, MD, for guiding her through the pitfalls and milestones of medical school.

See the full graphic story in the October 8, 2020 issue of NEJM, nejm.org.

