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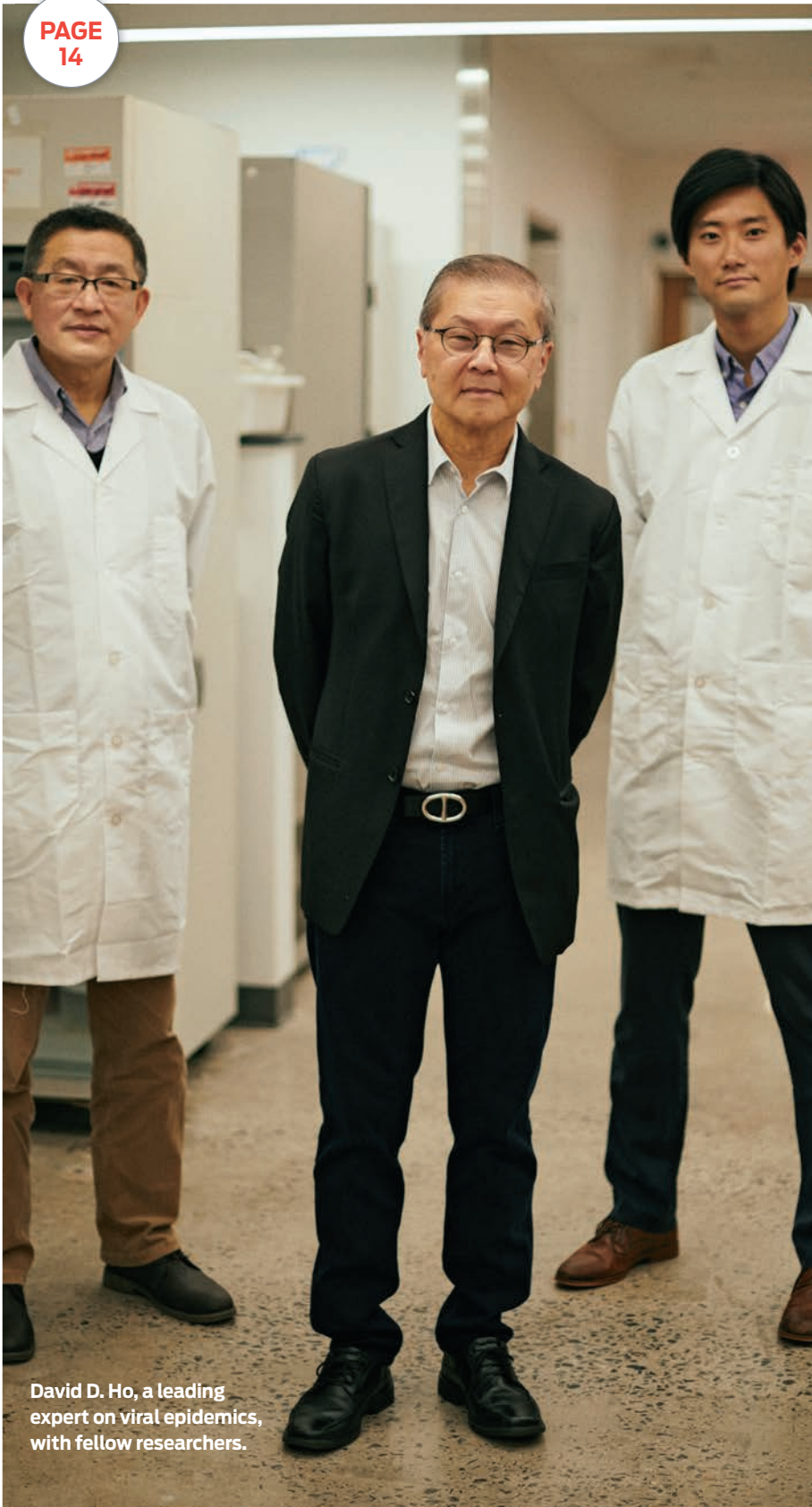
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Jacqueline Rosay '64GSAS
1754 Society Member

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Jackie served as a professor for 31 years and though retired will continue to influence future generations through her planned gift. She designated a portion of her most significant asset, her retirement account, for the general purposes of Columbia's Graduate School of Arts and Sciences and its Institute for Israel and Jewish Studies. The GSAS Dean and the Institute Director will use her generous gift for their greatest needs, including scholarships, similar to the ones she received while earning multiple graduate degrees from Columbia.

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COVER TO COVER

Thank you for the best alumni magazine I know. I receive several, but none compares to yours in the highly interesting, informative articles it publishes. Most are just boring brag rags. I glance at them, say “That’s nice,” then recycle them. I actually read *Columbia Magazine*.

Judith V. Lechner ’69LS
Chapel Hill, NC

I have been reading *Columbia Magazine* a long time, and the quality of recent issues is impressive. I read the past four issues basically from cover to cover because there were so many fascinating, well-written items. The letters and editorial responses are also first-class.

Benjamin Tua ’63CC
McLean, VA

BECOMING AMERICAN

Many of us graduates of Columbia are the grandchildren and great-grandchildren of those deplorable immigrants about whom

the white Protestant elites were so worried at the turn of the twentieth century (“In Defense of Humankind,” Winter 2019–20). But with all due respect to cultural anthropologist Franz Boas, our assimilation had nothing to do with the changing dimensions of skulls and noses.

It had everything to do with three cultural factors. First, the Immigration Act of 1924 sharply cut the number of immigrants from Southern and Eastern Europe, which meant that by the 1950s, a large proportion of those dreadful Italians, Jews, and Slavs had been brought up in the United States, had attended English-language grammar schools, and had found jobs in the American workforce. Second, those schools, whether public or parochial, taught the students to be patriotic Americans, living, as they were told, in the best country on earth. And finally there was World War II. The Nazis gave racism a bad name, and men from all ethnic groups

in America bonded as they fought together in the war.
Carol Crystle ’64GSAS, ’71TC
Chicago, IL

STIGLITZ ON CHINA

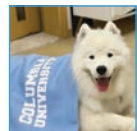
Of Joseph E. Stiglitz’s many notable insights on economics, his views on China’s weak intellectual-property regime have not withstood the test of time (“Rethinking Globalization,” Winter 2019–20).

China now produces more patents than the rest of the world combined. It has been the largest registry of trademarks for well over a decade. It dominates in even more obscure rights, such as registrations for plant-variety protection. For at least the last ten years, the vast majority of patents have been held by China, and the vast majority of patent litigation has been brought by Chinese people against Chinese entities. In certain fields, such as software patents and genetic inventions, China has been granting more robust rights than the United States, in part due to the work of Stiglitz and others who have

FEEDBACK



3 INSTAGRAM ACCOUNTS TO FOLLOW



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FEEDBACK

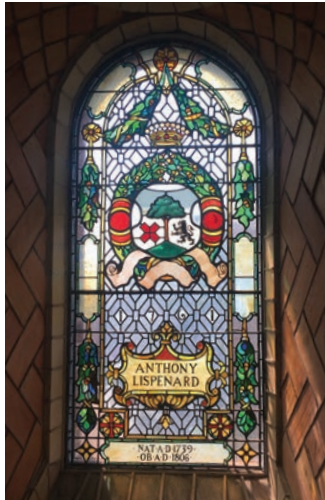
thought the US regime overprotective. China is now leveraging its IP regime, judicial efficiency, talent program, technology-transfer regime, and science policies to dominate many fields — such as semiconductors, materials science, clean energy, and telecommunications — where the US has traditionally had a competitive edge.

Stiglitz should recognize that what distinguishes China’s IP environment is no longer the “gap in knowledge” that he identifies between it and more advanced economies but China’s unique planned corporate economy, which has long deprived foreign creative companies and individuals the full value of their rights through its market barriers and its intrusive planned economy for technology and IP. By perpetuating myths about a less advanced country with a weak IP regime in need of foreign technology, Stiglitz denies China the recognition it is owed for its many accomplishments. His advocacy is not only outdated but also potentially dangerous to Americans.

Mark Cohen ’84LAW
Emeryville, CA

The writer was the US Patent and Trademark Office’s first representative to China at the US Embassy in Beijing (2004–2008) and a former senior adviser on China policy to the USPTO’s director.

Stiglitz says that the US–China trade war is unwise and unwinnable but offers little support for that position. He says that it “will not



restore manufacturing jobs or coal-mining jobs,” but it was never meant to. The tariffs are meant to punish China for its unfair trade practices, for its limits on US imports, for its industrial espionage, and for its policy of demanding proprietary-knowledge transfers in exchange for doing business in China.

Stiglitz acknowledges that the tariffs will force corporations to “simply move their factories to other developing countries.” Exactly! The US consumer will pay less for the goods from these countries than those from China, and China will be forced to consider revising their trade practices. Today our trade deficit is



the lowest it’s been since 2016, thanks to the Trump tariffs.

James L. Mullin ’77CC
Dover, NJ

Claiming that forced sharing of intellectual property constitutes “good developmental policy, because it helps a country like China close the gap” ignores China’s rapacious theft of American technology that has as its main goal the supplanting of American military and economic power.

Konrad Motyka ’85CC
Hoboken, NJ

LOCAL LUMINARIES

Many thanks for your great article on the restoration of St. Paul’s Chapel (“The Con-

version of St. Paul’s,” College Walk, Winter 2019–20).

After I read it, I was immediately curious if close-up photos existed of the sixteen stained-glass windows around the dome that have been cleaned and repaired. I’ve found only two so far on the Columbia website (Pell and Cheesman). Can you please help?

Francis Sypher ’63CC,
’68GSAS
New York, NY

We’ve found two more for you (at left), and readers can view other renovation photos at bit.ly/StPaulsChapel. — Ed.

I enjoyed reading about the preservation efforts that have so greatly improved St. Paul’s Chapel. You mentioned that John La Farge designed the three stained-glass windows in the apse. But you neglected to mention that the sixteen stained-glass windows in the dome were designed by La Farge’s friend — and my great-grandfather — David Maitland Armstrong, himself a luminary of the art world in the late nineteenth and early twentieth century.

Peter Stuyvesant Brooks
’87GSAS
Highland, NY

KEY TO ABBREVIATIONS

CODE	SCHOOL	CODE	SCHOOL
BC	Barnard College	NRS	School of Nursing
BUS	Graduate School of Business	OPT	School of Optometry
CC	Columbia College	PH	Mailman School of Public Health
DM	College of Dental Medicine	PHRM	School of Pharmaceutical Sciences
GS	School of General Studies	PS	Vagelos College of Physicians and Surgeons
GSAPP	Graduate School of Architecture, Planning, and Preservation	SEAS	Fu Foundation School of Engineering and Applied Science
GSAS	Graduate School of Arts and Sciences	SIPA	School of International and Public Affairs
HON	(Honorary degree)	SOA	School of the Arts
JRN	Graduate School of Journalism	SPS	School of Professional Studies
JTS	Jewish Theological Seminary	SW	School of Social Work
KC	King’s College	TC	Teachers College
LAW	School of Law	UTS	Union Theological Seminary
LS	School of Library Service		

LISTEN, DOCTOR

Kudos to the professionals and institutions championing narrative medicine through Columbia's master's program, its recent workshop, and its requirement that medical students take a narrative-medicine course ("Patient Storytellers," College Walk, Winter 2019–20). As your article establishes, training health-care professionals in narrative tools is valuable for improving care.

I highly recommend the book *A Fortunate Man: The Story of a Country Doctor*, written by John Berger, with photographs by Jean Mohr, which through both language and images illustrates the power of narrative medicine in the work of a physician named John Sassall in an impoverished rural community. I gave this book to my brother upon his acceptance to medical school, and I have given it as a thank-you to the "country doctors" I have been fortunate enough to find. I have also left doctors who lack the ability to communicate, empathize, "radically listen," and "bear witness." I think these skills enable a doctor to collect crucial information, cultivate a trusting relationship, and reduce a patient's anxiety, and are thus necessary for the best possible medical care.

Wendy J. Eisner '79GSAS
Great Neck, NY

As someone who comes from a family of doctors (my father, my husband) and who has been a brain-cancer patient for sixteen years now, I was quite disturbed by the "Patient Storytellers" article.

Listening is not an "art." It is surely not "radical." It is not "narrative medicine." It is simply listening. It is humanity. It is empathy. Yet somehow it seems from this article that what used to be basic human nature is anything but.

So to present and future caregivers: Your patient is a person. Treat them like one. Look them in the eyes. Engaging with a patient on a personal level should not require you to stray "from medical routine." It should be routine. A three-day workshop won't make that happen. Experience will. So here's a radical idea. Get off your phone. Look at your patient. Engage. Listen. Empathize. Repeat.

Sandra (Schwartzberg) Lerman '97BC
Englewood, NJ

It is a major step forward to recognize the importance of narrative medicine in addressing critical emotional as well as physical needs to benefit the whole patient. However, this concept is not new. Client-centered care based on the individual patient's story, its impact, and how the patient interprets and makes meaning of it in the context of their lives is central to the profession of occupational therapy.

As a graduate of Columbia's master's program in occupational therapy, I can tell you that this model was the foundation of all our coursework and fieldwork. It is the basis of "therapeutic use of self," a concept that all occupational therapists must master. Rather than providing

occupational therapy *to* the patient, we use our specialized knowledge and skills to facilitate collaborative work *with* the patient. The earliest classic textbooks for occupational therapy clearly delineate this philosophy as a guide for professional practice.

Narrative medicine is a long overdue and important addition to the skill set of physicians. It is equally important to recognize that occupational therapists have been incorporating it into their practice since the profession was founded in 1917.

Deborah Yarett Slater '73PS
Waban, MA

PEACE PROCESS

Your review of Columbia professor Lis Harris's book *In Jerusalem* (Winter 2019–20) states, "At twenty-one, Rasmia Odeh was accused of terrorism, illegally tortured, and served ten years at the Ramla prison before being released in a prisoner-exchange program." You note that Odeh's story is "shocking."

What is truly shocking is your failure to mention that Odeh was in fact convicted of taking part in bombings that killed two Israelis in 1969. Does this not meet your definition of terrorism? Or do you feel that because the acts were committed in the name of the Palestinian cause that this excuses them?

Peace between these two peoples will only come about when both sides — and their supporters — are willing to confront uncomfortable realities that do not align with their own received truths. Statements like those

made in your review make that day seem further off.

Alan Goldman '91CC
University Heights, OH

NEWS FLASH

I congratulate Jordana Kier on her organic feminine-care product line, Lola, and I commend her for her work with the advocacy organization Period Equity ("Time to Talk about Tampons," Network, Winter 2019–20). But I have to take exception to one thing she says, namely, "We really want to be with our customers from their first period through their first hot flash."

News flash: Most women do not stop menstruating when they get their first hot flash. Everybody is different, but it is not uncommon to continue to menstruate (albeit perhaps irregularly) for years after starting to have hot flashes or other symptoms of perimenopause. Also, not all women get hot flashes. In any case, it's good news for Lola that women will most likely need their products for a bit longer than anticipated.

Susan Marples '88CC,
'89GSAS
New York, NY

**QUESTIONS?
COMMENTS?**

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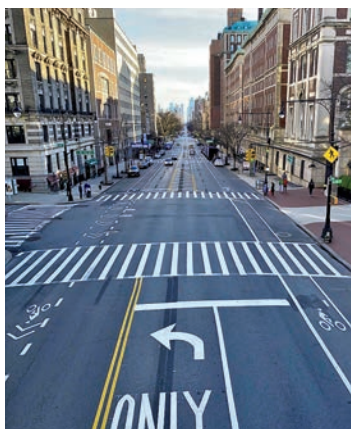
Letters may be edited for brevity and clarity.

COLLEGE WALK

NOTES FROM 116TH STREET AND BEYOND



BILL DRUMANN



Quiet Contemplation

This spring, as the coronavirus pandemic surged in New York City, the Morningside and Manhattanville campuses were a study in silence. With classes moved online and faculty and non-essential staff following work-at-home protocols, the campus had “an eerie and uncharacteristic stillness about it,” as President Lee C. Bollinger observed in a letter to the Columbia community. He noted the sharp contrast with the medical campus uptown, where Columbia physicians, nurses, technicians, administrators, medical and public-health researchers, maintenance personnel, and security guards — some of whom moved into the vacated Morningside residence halls to ease their commutes — faced a deluge of patients stricken with COVID-19.

In that same letter, Bollinger offered his deepest thanks for the sacrifice and commitment of those frontline workers while lamenting the “heartbreaking” decision to cancel the May 20 University-wide Commencement ceremonies. Not since King’s College was closed during the American Revolutionary War had the ritual failed to proceed. Instead, plans were made to record the ceremony and share it virtually.

Though no light-blue caps would be tossed in Low Plaza, Bollinger hoped to find a way to honor 2020 graduates in person, when the time was right. “There is no academic ceremony I love more,” he wrote, “and I expect to love this one the most.”



THE SHORT LIST

LISTEN Tune in to **Columbia Bizcast**, a podcast from Columbia Business School, for career insights, B-school news, and interviews with alumni innovators and faculty experts. gsb.columbia.edu/articles/columbia-bizcast

READ **Columbia Global Reports**, a nonfiction publisher dedicated to timely, underreported topics, is offering a free bonus book from its backlist to new and existing subscribers. Sign up to receive seven releases, including 2020’s *The Call: Inside the Global Saudi Religious Project*, by Krithika Varagur. globalreports.columbia.edu/subscribe

WATCH Columbia’s 2020 **Kit Film Noir Festival** was canceled due to COVID-19, but you can still get your fix of fedoras and femmes fatales. Visit the School of the Arts’ website to listen to past discussions with filmmakers and film scholars. arts.columbia.edu/create-your-own-film-noir-festival

NETWORK Who says you have to leave the house to make meaningful personal connections? Alumni job seekers and those simply looking to reach out to fellow professionals can sign up for a virtual **Networking Hour** (professional attire optional). alumni.columbia.edu/career-resources

BINGE **Self Made**, a limited series inspired by the story of pioneering African-American beauty entrepreneur Madam C. J. Walker, premiered this spring on Netflix. Based on the biography by A’Lelia Bundles ’76JRN, Walker’s great-granddaughter and a University Trustee, it stars Octavia Spencer. netflix.com

Shakespeare with a Twist

Local students attend a School of the Arts performance of *Twelfth Night*



For the past fifteen years, legions of New York City schoolchildren have descended upon the ninety-nine-seat black-box theater in the basement of Schapiro Hall on West 115th Street to meet with William Shakespeare. Through a program called the Young Company, which was started by Brian Kulick, the chair of Columbia's School of the Arts graduate theater department, third-year Columbia theater students visit local middle and high schools to conduct workshops and then, over two weeks, give ninety-minute performances of a Shakespeare play each weekday morning.

In 2018, the Young Company enlisted the Classical Theatre of Harlem (CTH), a nonprofit dedicated to theater production and education, to collaborate in a production of *Romeo and Juliet*. This year, CTH and the Young Company presented *Twelfth Night*, a raucous but melancholic comedy whose ingredients of gender switching, love triangles, bullying, and gleeful dissipation struck a present-day chord.

Sprinkled with scampering entrances and capering antics, *Twelfth Night* follows the maiden Viola (played by Yeena Sung), who is shipwrecked on the shores of Illyria, with her twin brother having gone missing in the wreck. Viola disguises herself as a man and finds work in the court of Duke Orsino (Clayton McInerney). Now called Cesario, she becomes Orsino's favorite manservant — and secretly falls in love with him. But Orsino pines for Countess Olivia (Owala Maima), whose riotous household includes her boisterous, incurably pickled uncle, Sir Toby Belch (Titus VanHook) and her prudish steward, Malvolio (Jon Robin). When Orsino sends Cesario to convey his affections to the countess, Olivia falls for the messenger instead.

The director, Logan Reed, conceived Illyria as a coastal party town, with Sir Toby and his merry band of revelers sporting sunglasses, shorts, and tank tops. The high spirits of Olivia's retinue proved catching to the audience — twelfth-graders on this morning —

eliciting laughter, hoots, and peanut-gallery interjections. "It's fantastic, because that's how it was in Shakespeare's day," says Reed. "People threw fruit when they didn't like a character. Offstage, characters talked to audience members. There was a back-and-forth, and that's what we're trying to do: make theater less stuffy and elitist. We're saying, 'Hey, we know you're there, we know this is a play, and we're inviting you in. You can scream, holler, check out, or whatever.'"

Though Shakespeare's English can be baffling to uninitiated ears, Reed and his classmates managed to impart meaning. "There are physical jokes and verbal jokes," Reed says. "Younger kids respond more to physicality, and that helps them access the language. If we match the physical and the verbal together successfully, some of the older kids will understand what Shakespeare is actually saying. Students also pick up on what's relatable to their lives, like having an unrequited crush or not being able to reveal who you truly are."

CTH associate artistic director Carl Cofield '14SOA says that serving the community through theater has personal meaning for him as an actor and director of color. "The partnership lets Columbia students spread the gospel of theater in less affluent schools where the arts have been cut," Cofield says. "I grew up with dreams of being an actor, but it was only when I saw someone who looked like me doing classical texts that I understood that there was a seat for me at the table."

The benefits also extend to the Columbia students: the actors, directors, and stagehands, by working with CTH, receive Actors' Equity Association contracts. "That makes them union members and opens professional doors," says CTH general manager Ryan Patrick Ervin '18SOA. For Ervin, who studied dramaturgy at Columbia, the biggest perk is the look on the kids' faces. "To

see young people connecting to Shakespeare for the first time is really powerful.”

After a flurry of frolics, pranks, blustery speeches, lovelorn odes, and songs sung by Olivia’s jester, Feste (Othello Pratt Jr.), *Twelfth Night* culminates with the appearance of Viola/Cesario’s missing twin, Sebastian (Jae Woo). With everyone unmasked and reconciled, most of the characters find a measure of fulfillment — and so did the kids, who clapped and cheered and then made an orderly exit to the school buses outside.



This year’s performances ran for one week instead of two due to the coronavirus outbreak, and the ensuing social isolation only underscored the power of the art form.

“The ritual of theater,” says Cofield, “requires you to be surrounded by other people and to experience something together with them in real time. That’s what makes it magical. And I think the times we’re in now will make us yearn for that again.”

— Paul Hond

Future Nurses on Call

Columbia nursing students and faculty nurse practitioners confront a new reality

The School of Nursing faced an unprecedented dilemma. Normally, as part of its curriculum, nursing students are posted to New York City hospitals, where they work one-on-one with practicing nurses to make the transition from student to nurse. But in March, with COVID-19 spreading throughout the city, hospitals with burgeoning caseloads suspended the student practicums. This was followed by an edict from Columbia University Irving Medical Center (CUIMC) that, for safety’s sake, no student should take care of someone diagnosed with COVID-19.

At first, students were allowed to work in hospitals that had yet to be overrun by the pandemic as long as they weren’t caring for COVID-19 patients. But as more COVID-19 cases were admitted to the hospitals — and as more institutions came to prioritize the health of their employees — the students were turned away.

And so the School of Nursing got creative: anticipating that hospital staff would soon be under stress — they were getting sick, their families were getting sick, they were self-isolating, they were tired — the school offered to send students to hospitals as paid nurse technicians, where they could draw blood, take vital signs, and perform EKGs for non-COVID-19 patients. “It’s less than what a professional nurse does but similar to what students would do under the supervision of a staff person,” says Judy Honig ’77TC, ’05NRS, the School of Nursing’s vice dean of academics and dean of students.

But no sooner had the arrangement been negotiated than the hospitals filled up almost entirely with people infected with COVID-19. Now the school had to make another on-the-fly

adjustment: students were advised that they would, in fact, be working with COVID-19 patients. The school informed the students of the risks and emphasized that there was no shame in turning down the assignment: it would be up to them and their families to decide. Out of the 180 students in Columbia’s MS program in nursing, eighty-five signed up to work. They started in April.

Though the arrangement is not part of the academic curriculum, the students are invited to attend weekly online seminars run by faculty and led by Jennifer Dohrn ’05NRS, an associate professor of nursing, to share their experiences. “Working in any capacity in any hospital is a frightening thing right now,” says Honig, and the idea is to give students a chance to relieve anxiety and, ideally, forestall any potential posttraumatic stress. Says Honig, “People rally during a time of crisis, and afterward it hits them.”

In lieu of traditional clinical experience, the nursing school is seeking other ways to keep students engaged. Seventy-six students are participating in CUIMC’s coronavirus hotlines, fielding questions from the public and hospital staff about symptoms, testing, and treatment and allowing hospital personnel to be diverted from the phones to units where their skills are needed. And with city hospitals also desperate for help, the school has deployed eighty students to answer similar questions for the NYC Health and Hospitals COVID-19 hotline. “Call centers are substituting for some of the advance practice that students are missing out on,” says Honig. “It’s an unusual clinical, but it’s keeping them part of the crisis response, which is important. We’re putting technology in place so a lot of our

COLLEGE WALK

students can do telemedicine — interviewing and assessing patients electronically.”

Telemedicine has become essential for students and faculty alike. At the Nurse Practitioner Group (NPG), the nursing school’s faculty-run clinic, technology is helping professionals manage a crisis unlike any in living memory. “I’ve been a nurse practitioner for twenty years, and I’ve never seen anything like this,” says Stephen Ferrara, the associate dean of clinical affairs at the nursing school and the director of NPG. “In the infectiousness, the severity, the widespread rates, and the measures that we are taking to try to stem the further spread, this pandemic is unlike anything I could have expected.”

The clinic, which consists of ten nurse practitioners, has

disease, who are at high risk of fatal exposure to coronavirus infection simply by leaving their homes — are being “seen” via computer or telephone.

“It’s hard to examine a patient without being there,” says Ferrara, “but we’re teaching patients how to check their own pulse and take their own temperature and report the results during the visit.” NPG has also taken on the crucial role of electronically following up with the non-COVID-19 patients that CUIMC has released in order to free up beds for those critically stricken with the virus.

The situation has tested both faculty and students, and there is no longer such a thing as business as usual. “We don’t know what the future is going to bring, and it’s hitting everybody,” Honig says.

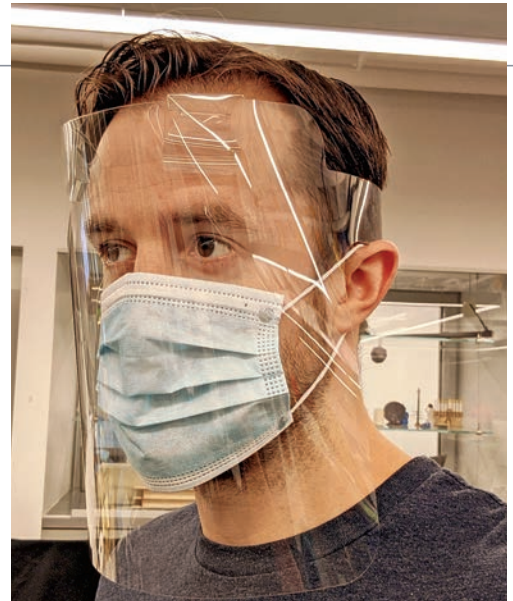
“I’ve been a nurse practitioner for twenty years, and I’ve never seen anything like this.”

two locations: one in Midtown and one at CUIMC on 168th Street. NPG serves the local community, typically conducting annual physicals and treating both garden-variety maladies and chronic conditions like high blood pressure and diabetes. In late February the uptown location was converted into a “cough, cold, and fever” clinic, set up to provide onsite assessments of patients with potential coronavirus symptoms and determine if they should be tested. Other patients — including the elderly and those with diabetes, chronic lung disease, and cardiovascular

Even before the pandemic, the courage and resilience of nurses could hardly be overstated. Still, in the face of such uncertainty, you might expect that many who had planned to pursue what is often called the world’s most honorable profession might change direction. Yet of the 244 students slated for this year’s incoming class — courses start this summer — 231 are still planning to attend.

“This was the commitment they made, and they’re looking forward to joining us,” Honig says. “That’s the kind of applicants we have — they just wade right in.”

— Paul Hond



A face shield produced by Columbia Engineering.

Rapid Response

AS MEDICAL WORKERS IN NEW YORK faced a harrowing shortage of personal protective equipment in their fight against the new coronavirus, Columbia engineers — and librarians — met the emergency head-on.

In March, Madiha Choksi ’19GSAS, a research and learning technologies librarian at Columbia University Libraries, began producing protective face shields using the libraries’ 3D printer and a model by Budmen Industries, a 3D-printer company in upstate New York. Within days, Choksi and Alexander Gil Fuentes, a librarian of digital scholarship, formed a consortium of local 3D-printing companies and volunteers to crank out and deliver thousands of shields per day.

At the same time, at Columbia Engineering, students, faculty, and technical staff designed their own face shields with an emphasis on production speed and affordability, then manufactured them in the Columbia Makerspace. Teaming up with CUIMC, which tested and approved the prototypes, the school stepped up production to turn out fifty thousand shields daily for New York hospitals.

“If back in early March anyone had suggested that we would be designing and mass-producing a product in just a week — or even at all — we would have said a clear no,” said engineering dean Mary Boyce. “But desperate times call for extraordinary measures.”

The Morningside Candidate

A hundred years ago, Nicholas Murray Butler ran for president of the United States. It didn't go well.

These days, national political conventions are predetermined: a candidate prevails in the primaries and is formally chosen by delegates to be a party's nominee for the presidency. But delegates weren't always bound to primary results. The 1920 Republican National Convention in Chicago saw eight aspirants, including Columbia president Nicholas Murray Butler 1882CC, 1884GSAS, vying to be picked. With many delegates undecided, the contest was up for grabs; and if anyone was confident of victory, it was the Sage of Morningside Heights.

One of the nation's most honored public intellectuals, Butler also saw himself as its savior, and his lofty sense of destiny convinced him that voters would concur. Campaigning during the First Red Scare, Butler warned of those who "frankly proclaim their preference for the political philosophy of Lenin and Trotsky to that of Washington, Hamilton, Webster, and Lincoln." In an acquired patrician elocution that turned "America" into "A-mad-ica," Butler called for a revival of patriotic ideals, lest the nation succumb to a "social democracy" that would take over "each individual's life and business."

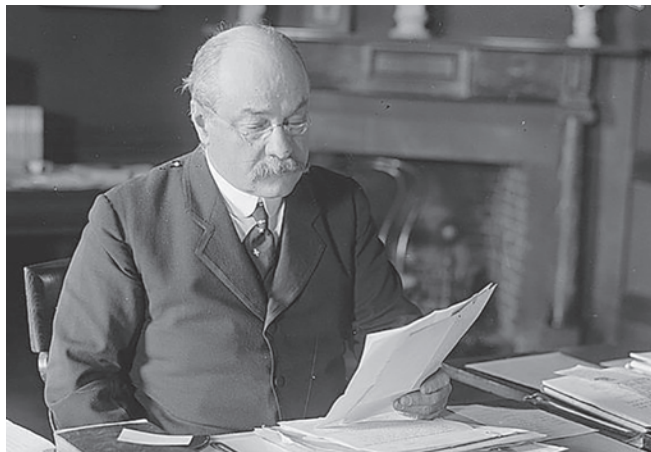
While Butler sought to reinstate mercantile values in a world slouching toward Bolshevism, dignity required him to stay above the polit-

ical scrum. So he conducted what his biographer, Michael Rosenthal '67GSAS, calls a "stealth campaign."

"Butler was clearly running for president, but he didn't want to draw attention to it," says Rosenthal, a professor emeritus of English and the author of *Nicholas Miraculous: The Amazing Career of the Redoubtable Dr. Nicholas Murray Butler*. "He didn't run in the primaries; he didn't want to raise money, which he found demeaning; and he didn't want to be attacked by other candidates."

Born in 1862 in Elizabeth, New Jersey, to a middle-class family, Butler earned a doctorate in philosophy, became a professor, and in 1902 succeeded Seth Low as University president. A wooer of the wealthy and powerful, he expanded Columbia from a small, local school to the largest university in the country. President Theodore Roosevelt 1899HON dubbed him "Nicholas Miraculous," and 1920 campaign circulars noted that Butler had "rubbed shoulders with presidents, governors, diplomats, statesmen and the big men of the nation."

But after eight years of Democrat Woodrow Wilson, the former president of Princeton, voters weren't clamoring for another academic, so Butler sought to shed his own pedagogical image. His leaflets mocked Wilson as "the schoolmaster type of college president" while casting Butler as "the executive head



Nicholas Murray Butler in 1916.

and chairman of the Board of Trustees of a tremendous educational and financial institution conducted along the lines of a business enterprise." Columbia was no "scholar factory"; it was a "citizen factory."

"To claim that Butler was the president of a university that did not produce scholars was ludicrous," Rosenthal says. "But that was the trap Butler was in."

He was trapped, too, says Rosenthal, by a "totally narcissistic personality": electoral failure was so repugnant to him that he made self-defeating choices — not raising money, not hiring savvy political operators — in order to claim, if he *did* lose, that he had never fully tried to win.

Still, Butler trusted that delegates in Chicago would choose him to run against Ohio governor James M. Cox, who had replaced an ailing Wilson. After four nights, with no candidate capturing a 471-delegate majority, a

cabal of Republican senators shifted their votes to Ohio senator Warren G. Harding.

"Butler was hoping till the end that things would go his way," Rosenthal says. After the final ballot, Butler had two delegates. "It was the greatest loss of his career, but he maintained the idea that he didn't really lose for the rest of his life."

Butler retained his Columbia presidency and became president of the Carnegie Endowment for International Peace in 1925. In 1931, he won the Nobel Peace Prize for strengthening the International Court at The Hague.

Butler retired from Columbia in 1945 and died two years later. His memorial in St. Paul's Chapel drew hundreds of mourners. Among them was the next Columbia president, Dwight D. Eisenhower, who would win the Republican nomination in 1952 and become, as Butler had not, president of the United States. — Paul Hond

WHAT WE HAVE LEARNED FROM THE PANDEMIC (SO FAR)

Columbia University experts on the front lines of the crisis explain what we know, what we need to know, and why there's still so much to discover about the true impact of COVID-19

BY THE EDITORS OF *COLUMBIA MAGAZINE*





Simon Anthony inspects a vampire bat in the Brazilian rainforest.

WE LEARNED THAT OUR PLANET HAS BECOME A BREEDING GROUND FOR EMERGING DISEASES

THERE WAS A TIME, from around the end of World War II through the 1960s, when public-health officials in the US and Europe thought they had conquered most infectious diseases. Many of history's worst communicable illnesses — smallpox, tuberculosis, malaria, measles, syphilis, typhoid, influenza, leprosy, and the plague — were being brought to heel by vaccines, antibiotics, and antiviral drugs. And because new infections were rarely observed, mankind's triumph over the microbial world was seen as virtually complete. US Secretary of State George Marshall spoke for many when he declared in 1948 that human civilization was on the cusp of eradicating infectious diseases forever.

But in the late twentieth century something unexpected happened. Strange new infections began to emerge. First there was AIDS, caused by a virus that jumped from chimpanzees into humans.

There were fatal hemorrhagic fevers like Ebola, which likely came from bats; Lassa fever, from rodents; and Marburg fever, also from bats. There were infections that cause serious neurological problems, like Lyme disease, which originated in mice and which is transported by ticks, and West Nile and Zika, both of which are transmitted by mosquitoes. And then, in this century, came bird flu, swine flu, and a trio of extraordinarily dangerous new respiratory ailments caused by bat viruses: SARS, MERS, and now COVID-19. In the war between man and microbes, it seems, the germs are making a comeback.

The numbers tell a sobering story: between 1960 and 2004 alone, 335 new infectious diseases emerged, the vast majority caused by viruses or bacteria that spread from animals to people, according to one Columbia study published in *Nature*. Such "spillover" events have been occurring more frequently, the

study found, primarily as a result of rapid population growth and the resulting human encroachment into wilderness. "As people move into previously undeveloped habitats, wild animals are being crowded into smaller areas and are mixing with people more," says coauthor Marc Levy, a geospatial-data expert at Columbia's Earth Institute.

Simon Anthony, a Columbia epidemiologist who studies how viruses move between species, says that humans pick up these infections in myriad ways: by eating the flesh of wild animals, also called bushmeat; by eating fruits or vegetables that have been nibbled on by infected rodents, bats, or birds; by drinking water contaminated by infected animals' urine or feces. Raising livestock close to forests is also a major risk, he says, since domestic animals can catch infections from wild ones and later infect their owners.

And yet efforts to clear wild animals away from new human habitats are prone to backfiring. Anthony notes that bats are frequently the targets of extermination campaigns but only become more dangerous when forced out of their caves. He and colleagues are now working with agricultural communities throughout the developing world to teach people how to minimize their chances of contracting novel infections while living peacefully beside bats and other disease carriers in their vicinity.

"Our message is: protect bats but keep your distance," Anthony says. "We know that bats carry viruses that can be transmitted to humans, but it's also important to remember that they serve vital ecosystem roles, pollinating plants and controlling insect populations. Without them many of the foods we enjoy would disappear and insect-borne diseases would increase."

According to W. Ian Lipkin, the John Snow Professor of Epidemiology and the director of the Center for Infection and Immunity at Columbia's Mailman School of Public Health, the rural poor in tropical regions are at the greatest risk of contracting novel diseases, in part because they often depend on bushmeat as a source of cheap protein and may have little choice but to farm patches of freshly cleared forest. But he says that a demand for exotic

animals among wealthy consumers — for pets, food, or use in traditional medicine — is a growing public-health threat. In fact, the wild-animal and seafood market in Wuhan, China, that was at the center of the COVID-19 outbreak catered to an upper-class clientele. A leading theory about the disease's emergence is that one or more pangolins — small endangered mammals whose meat is coveted as a delicacy in some parts of Southeast Asia — became infected and passed the virus from bats to food handlers and customers. Alternatively, some scientists have theorized that the coronavirus might have been carried into the market by poachers or others involved in the illicit animal trade.

Many other factors are now contributing to the emergence of novel diseases, Lipkin says. He points to climate change, which is shifting the natural habitats of many wild animals and causing them to migrate to more populated areas; commercial demand for natural resources, which is driving timber and mining companies deeper into native woodlands; and the growth of megacities in the developing world, where poor sanitary conditions put people at heightened risk for insect-borne diseases.

“In recent years, all of these elements have been in play,” he says. “It’s a perfect storm.”

WE LEARNED THAT THE WORLD IS ILL-PREPARED TO DEAL WITH GLOBAL PANDEMICS

IN LATE JANUARY, when most Americans were hearing about the novel coronavirus for the first time, the Columbia epidemiologist W. Ian Lipkin was in Beijing, advising the Chinese government on its response. One of the world's leading virus hunters, Lipkin has nearly four decades of experience in identifying, tracking, and developing diagnostics for emerging infectious diseases. He frequently travels to other countries to help them fight epidemics, as he did for China with SARS in 2003 and for Saudi Arabia with MERS in 2012. This past winter, he booked a flight to Beijing immediately upon learning from Chinese colleagues that the virus was spreading quickly.

“At that point, it’s a race against time,” he says, “because until you have a vaccine or treatment, containment is your only hope.”

After meeting with health and science ministers, fellow epidemiologists, and physicians working on the front lines, Lipkin delivered a series of recommendations to senior Chinese leaders. He endorsed their efforts to lock down Wuhan, urged them to close hundreds of live-animal markets like the one at the center of the outbreak, and advised them to reveal everything they knew about the virus to the international community. “Not only will this benefit global health, I told them, but it will demonstrate to the world that you’re a reliable and transparent partner,” Lipkin says.

Meanwhile, back in New York City, Lipkin's team at the Mailman School's Center for Infection and Immunity was already working on an ultrasensitive test for COVID-19, one capable of detecting small amounts of virus that conventional types of diagnostic tools might miss. (Some team members flew with Lipkin to China to study a sample of live virus as a reference.) Such a technology would be invaluable, Lipkin knew, if people carrying light viral loads, and possibly exhibiting no symptoms, were nevertheless contagious.

By March it was apparent that Lipkin's instinct had been right: large numbers of people unaware they were infected

with COVID-19 had contributed to the spread of the disease. In fact, one of the first comprehensive analyses of transmission patterns — published by Columbia data scientists Jeffrey Shaman '03GSAS and Wan Yang in the journal *Science* that month — found that asymptomatic people were driving two-thirds of the disease's spread.

As this magazine went to press, Lipkin was himself recovering from COVID-19, which he contracted through routine social exposure in New York City. The illness barely slowed him down, though: by April, he and his colleagues had completed work on their diagnostic system, which also identifies people who have recovered from COVID-19 and whose blood plasma or antibodies might be useful in producing new medications. They hope to soon roll out what they call their C3 test, which has been approved by the FDA, as part of



W. Ian Lipkin

JOSHUA BRIGHT / THE NEW YORK TIMES / REDUX

community screening programs in the US and abroad.

But Lipkin is also looking further out on the horizon, with an eye toward averting future pandemics. The only way to contain a highly contagious new disease in our globalized world, he says, is to spot it quickly and immediately bring the full power of the international scientific community to bear in identifying the guilty pathogen and determining how it is being transmitted. To ensure that this happens in a timely manner, Lipkin says, wealthy nations must devote more resources to disease-detection systems both within their borders and in developing countries.

Lipkin, in conjunction with epidemiologists in more than a dozen countries, is developing plans for such a surveillance system. Called the Global Infectious Disease Epidemiology Network, or GIDEoN, it would equip scientists in parts of Africa, Southeast Asia, and South America with advanced biomolecular tools that Lipkin and his Columbia colleagues have designed for rapidly identifying novel pathogens. Participating researchers would be able to share their observations automatically with other GIDEoN scientists around the world in real time.

“So the moment anybody in the network sees something suspicious, everybody sees it,” says Lipkin, who is currently trying to raise private funding for the effort. “You could think of it as an international immune system.”

He says that GIDEoN would complement existing surveillance networks, such as one run by the World Health Organization. That system, he says, is hampered both by a lack of on-the-ground diagnostics in many countries and by a dependence on national governments to voluntarily report outbreaks. Many countries have been suspected of delaying reports of past outbreaks, Lipkin notes, for fear of having limitations placed on their agricultural exports, travel, or tourism.

“Our network, because it would be run by scientists and public-health practitioners, would take a lot of the politics out of the equation,” Lipkin says.

WE LEARNED THAT OUR AGING POPULATION HAS DEEP VULNERABILITIES

THE COVID-19 PANDEMIC has shut down society in an unprecedented way, but for the elderly, the consequences of both the disease and the social distancing required to curb its spread are sizable.

Gerontologist Linda P. Fried, dean of the Mailman School of Public Health, explains that adults sixty-five and older are at higher risk for severe illness and death from the virus because of their “decreased reserves.”

“There are changes in our physiology as we get older that make it harder for us to bounce back from any kind of illness. We call that frailty,” Fried says. “Older people are also more likely to have other long-term medical conditions. Because of that, the body is less able to handle a major stressor or infection.”

Such physiological vulnerability is exacerbated by the fact that nursing homes, assisted-living facilities, and hospitals have been breeding grounds for COVID-19. But Fried is also concerned about the well-being of seniors who live independently.

Fried, whose research focuses on healthy aging, says that older adults benefit tremendously by staying both mentally and physically active. Now, as people are encouraged — and in many states legally required — to stay at home, Fried worries about further isolating this population.

“As people get older, their life circumstances change. They lose their spouses to death or divorce, friends die, children move far away,” she says. “Obviously that now has bigger ramifications. There are deep mental tolls, and one of the most devastating is loneliness.”

Fried says that older adults are prone to three specific kinds of loneliness. The first is brought on by a lack of inter-generational contact. “We need all age groups to interact to create meaningful



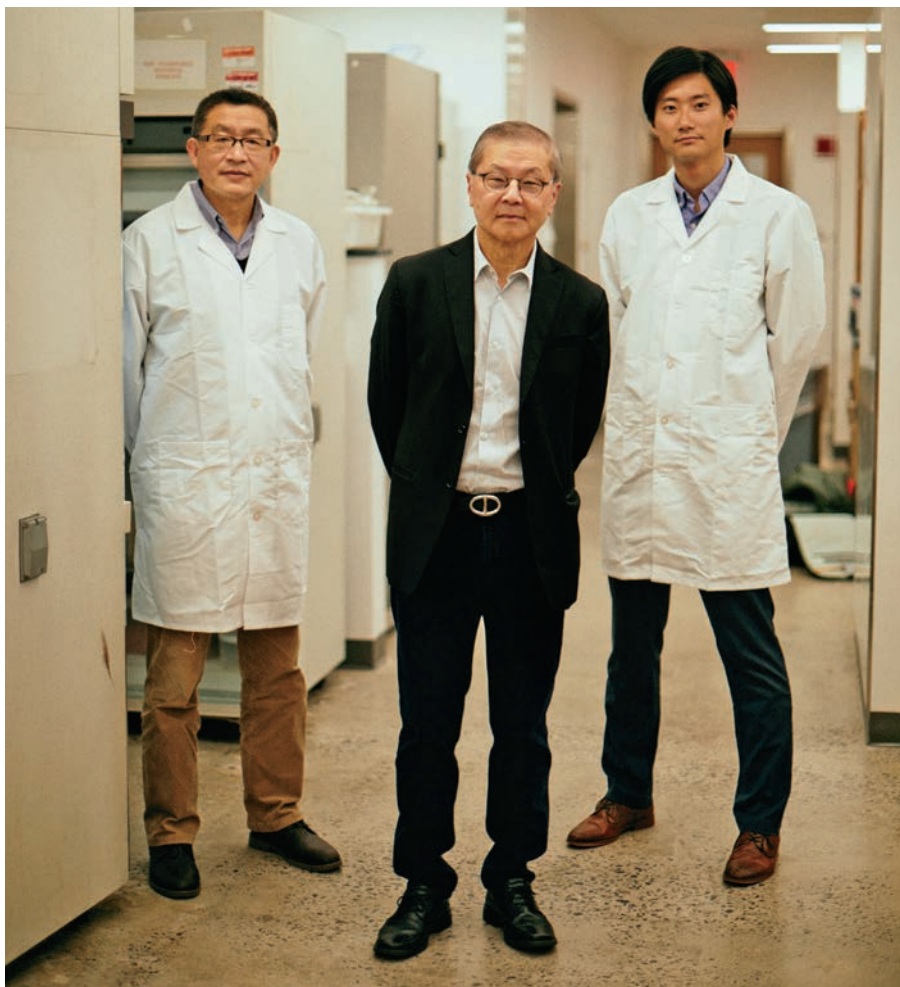
Linda P. Fried

lives,” Fried says. Second, aging adults feel lonely when they aren’t able to contribute to society. While others might bond with colleagues or schoolmates as they work or attend class online, the elderly are not likely to have such outlets. And finally, aging adults are prone to what Fried calls an existential loneliness.

“People are wondering if their lives are going to end shortly for reasons out of their control. They’re wondering if they’ll be able to get the care they need,” she says. “And most profoundly, they’re wondering if they are going to be cast out of society. If their lives have value.”

The COVID-19 pandemic has brought that last question into startling reality as society has grappled with impossible dilemmas. In Italy, doctors working with limited resources were forced to prioritize the care of younger adults with a better chance of recovery. As the pandemic rages across the globe, other hospitals may be faced with the same impossible choices. In addition, decisions on how and when to relax social-distancing recommendations must factor in the value of society’s most vulnerable citizens.

“The ferocity of this particular virus has caught a lot of us by surprise,” Fried says. “We have a lot more questions than answers for the future.”



David D. Ho, center, with fellow ADARC researchers Yaoxing Huang and Sho Iketani.

WE LEARNED THAT **VACCINE RESEARCH** IS UNDERFUNDED

DAVID D. HO '00HON, the world-renowned AIDS researcher, had just started to settle into his laboratory at Columbia University Irving Medical Center when news broke of a novel coronavirus spreading across China. He and his team of twenty-five scientists at the Aaron Diamond AIDS Research Center (ADARC) — an organization that Ho has led since 1991 and that became a part of Columbia's medical school in late 2019 — quickly shifted gears. The center's ongoing efforts to improve HIV treatments and find a cure for AIDS, Ho decided, would temporarily be scaled back so that he and his colleagues could

devote most of their energies to developing drugs to treat COVID-19.

"In the past we've stepped in to help fight other viruses, such as SARS, bird flu, and Ebola, but we knew that our involvement here was going to be on another level," says Ho, who in addition to directing ADARC is the Clyde and Helen Wu Professor of Medicine at Columbia. "This was going to be all hands on deck."

ADARC, which occupies two floors of laboratory space in the medical campus's Hammer Health Sciences Center, is at the center of an ambitious multipronged effort to study COVID-19 and related coronavi-

ruses. The program, which is supported by more than \$10 million in private donations, involves not only ADARC scientists but members of several other Columbia research teams that have experience in developing antiviral therapies against either HIV or hepatitis.

"Viruses tend to share some basic characteristics, so an approach that works against one virus is often a good starting point for fighting another," says Ho, a pioneer of combination antiretroviral therapy for AIDS, a treatment approach that has dramatically extended patients' lives through the simultaneous administration of multiple drugs at the first sign of infection.

In many ways, the research is similar to other COVID-19 drug-discovery programs now underway at laboratories around the world. Ho and his collaborators are genetically analyzing the new coronavirus for clues about how it might be susceptible to drugs and then screening chemical compounds that they think might be able to incapacitate it. The Columbia scientists, like others, are proceeding at a breakneck pace, employing an array of experimental new technologies that are designed to reduce the amount of time this work takes.

"We're trying to condense the initial stages of drug discovery, which would ordinarily take several years, into just a few months," says Ho. He expects to bring a number of vaccine and drug candidates to clinical trials within a year.

But the Columbia initiative is different from others in one important respect: it is aiming to develop therapies that will work not only against the coronavirus that causes COVID-19 but against the wide variety of coronaviruses that could infect people in the future. A diverse group of microbes most frequently found in bats, pigs, birds, and other animal hosts, coronaviruses have in several cases jumped into humans and caused outbreaks of serious disease (four other human coronaviruses cause milder, cold-like illness). These outbreaks have happened three times so far this century — with severe acute respiratory syndrome, or SARS, in 2003; Middle East

respiratory syndrome, or MERS, in 2012; and now COVID-19 — and Ho believes that additional coronavirus “spillover” events are destined to occur.

“So while we’re undertaking this effort with a great sense of urgency because of the nature of the current outbreak, we’re also thinking ahead to what we may confront in the future and trying to come up with more permanent solutions,” he says.

To do this work, Ho and his collaborators — who include Columbia faculty members Alejandro Chavez, an assistant professor of pathology and cell biology; Stephen P. Goff, the Higgins Professor of Biochemistry and Molecular Biophysics and a professor of microbiology and immunology; Jingyue Ju, the Samuel Ruben–Peter G. Viele Professor of Engineering; and Yosef Sabo, an assistant professor of clinical medical sciences — are making lists of essential features of the COVID-19 coronavirus that could be targeted with drugs and then looking to see which of those features are also present in other coronaviruses. The scientists will use a new drug-screening technology developed by Chavez to test promising compounds against dozens of strains at once. The technology represents a radical improvement over traditional drug-screening tools, which limit scientists to observing the effects of drug candidates on a single virus at a time.

If Ho and his colleagues are able to create a therapy that one day proves effective against a never-before-seen illness, it will be a first. Nobody has ever developed a treatment for a viral disease that didn’t exist yet. But Ho says that if recent history is any guide, emerging diseases will continue to crop up with regularity, forcing health officials to scramble to contain outbreaks while scientists

frantically search for vaccines and treatments — which may come months or years later, if at all. A more forward-looking drug-development strategy could ultimately save lives and money, says Ho.

“What’s happened in the past when new infectious diseases have emerged is there is an initial surge of financial support for creating drugs, but then, once the outbreaks are brought under control, support for the research begins to dry up,” he says.

Ho notes that in 2003, at the height of the SARS epidemic, his laboratory and several others were close to developing treatments. Once the epidemic was contained, though, grant support disappeared and critical work was left unfinished. Ho now regards that venture

HO SAYS THAT IF RECENT HISTORY IS ANY GUIDE, EMERGING DISEASES WILL CONTINUE TO CROP UP WITH REGULARITY.

as a lost opportunity, because the strain of coronavirus that caused SARS is extremely similar to the one that causes COVID-19 — so similar, in fact, that he thinks the treatments his team had started to develop for SARS may very well have protected people against the new disease.

“At the very least, I think we’d be closer to having a treatment for COVID-19 now if we’d have been able to continue the work,” he says.

Given the magnitude of the current pandemic, Ho says that he is cautiously optimistic that governments and private donors will continue to support research on other strains of coronavirus once the outbreak subsides.

“Now it’s the third time we’ve been through this,” he says. “I doubt that the world’s going to drop the ball on this one.”

WE LEARNED THAT MOST OF US DON’T KNOW HOW TO WASH OUR HANDS

WHEN ELAINE LARSON WROTE HER DISSERTATION

on handwashing in 1980, she never expected that, forty years later, she would still be preaching the gospel of soap and water. Larson, a professor emerita at Columbia’s School of Nursing, is an infection-control expert and one of the world’s top authorities on hand hygiene. She has published four books and more than four hundred articles on the subjects of infection prevention and control, disease epidemiology, and related issues; she has studied the effectiveness of hand sanitizers and the perils of antibiotic resistance; she is intimately acquainted with the types of microbial flora that lurk on the hands of health-care personnel; and she is a tireless booster of the message that clean hands save lives. “Handwashing is one of the most basic and effective public-health practices,” she says.

Larson thinks that COVID-19 will have a lasting impact on hand-hygiene practices, which, quite frankly, needed some improvement. “The American Society for Microbiology conducted studies some years ago and found that around 50 to 60 percent of people don’t wash their hands after using the bathroom,” she says. A significant percentage also skipped handwashing before food preparation, after touching pets, or when they’ve been in crowded spaces. Gender is a factor in health hygiene, with women 50 percent more likely to wash their hands than men. “Women are the ones who are generally responsible for food preparation and raising kids, tasks that are more associated with handwashing,” Larson explains. She hopes that as men come to take on more of these roles, their hand hygiene and health will improve.

As new viruses continue to emerge — and they will emerge — handwashing remains one of the most cost-effective ways to prevent their transmission, reducing the spread of respiratory infections by around 25 percent. Yes, scientists are busy trying to develop effective vaccines, but until they do, Larson says, we all have a role to play. We should stock up on soap and spend more time at the sink. Singing the “Happy Birthday” song is optional. Washing for at least twenty seconds is not.

WE LEARNED THAT WE EXPRESS ANXIETY IN UNUSUAL WAYS

SURVIVAL SHOPPING, GROCERY-STORE scuffles, and a run on toilet paper. In March, consumer behavior took an unusual turn as COVID-19 cases began to surge. Panic-buying is driven by anxiety, and “what makes people anxious is feeling a lack of control over how the pandemic will affect them, their family, and their community,” explains Anne Marie Albano, a clinical psychologist and the director of Columbia’s Clinic for Anxiety and Related Disorders.

While the hunting of Charmin bears might help satisfy that need to control and also a Neanderthal impulse to provide, Albano says it’s important “to recognize the realistic things we should be doing, like paying attention to reliable information.”

We can also keep ourselves grounded by staying connected with family and friends. Although the pandemic is teaching us how to be better long-distance companions and colleagues, Albano cautions that we need to look out for people who are vulnerable to loneliness: “Those who live alone and those who have limiting illnesses or disabilities might spiral into anxiety.”

Albano recommends that parents guard against transferring their fears to their kids. “When children see adults in tense moods, they feel it,” she says. Still, it’s important to be honest with them. To keep kids stimulated, Albano recommends healthy routines. “Children, like adults, need to stay on a schedule, stay physically active, and spend time outside,” she says.

The long-term impacts of COVID-19 on mental health are yet to be seen. “Lives will be permanently changed,” says Albano. Ultimately, she adds, how government officials deal with and talk about the crisis will influence our state of mind. “The public needs trustworthy information if they are to regain a sense of confidence and control.”



Wafaa El-Sadr

WE LEARNED THAT DEVELOPING NATIONS NEED SPECIAL STRATEGIES

IN APRIL, WHILE MEDIA ATTENTION was focused on Asia, Europe, and the US, Wafaa El-Sadr ’91PH was watching Africa. Confirmed cases of COVID-19 in sub-Saharan Africa were rising, portending a major humanitarian disaster.

El-Sadr, a University Professor and a professor of epidemiology and medicine, is the director of ICAP at Columbia University, a global health center at the Mailman School of Public Health that has been fighting HIV and Ebola in Africa since 2003. She fears that hard-won public-health gains of many African countries could be “set back decades” by COVID-19.

ICAP, whose affiliates include 1,800 staff members around the world, is mobilizing in Kenya, Mozambique, Côte d’Ivoire, and other countries, setting up triage tents to evaluate patients, helping laboratories get tests and equipment, and strategizing with health ministries. One of the biggest hurdles is securing adequate funding for these basic interventions. And with wealthy countries buying up supplies — masks, gowns, tests, ventilators — poorer nations are left empty-handed. “If this disease takes off in Africa,” says El-Sadr, “there is no way they’ll have what’s needed.”

Still, ICAP has identified lessons from HIV and Ebola that could streamline governments’ response to COVID-19.

“First,” says El-Sadr, “governments must gain the trust of their populations. They must be transparent and communicate frequently in order to prevent rumors and conspiracy theories.” Misinformation plagued the response to HIV and Ebola, leading many people to dismiss the threats or see them as government plots. And fears of being stigmatized prevented the sick from getting help. “You must mobilize opinion leaders to assuage these anxieties. We learned how to do that effectively for HIV, and we will now have to apply those lessons to a much more transmissible virus.”

Another lesson, says El-Sadr, is that in many places, lockdowns simply won’t work. “If you’re a vendor who sells pancakes for a few pennies a day, you cannot self-isolate. You have to be in the market. You have to interact with people. Otherwise, you will starve.” In countries where ICAP works, many people live five or six to a room, often without running water or soap. “It’s just not feasible to have people do what we’d want them to do to protect themselves,” says El-Sadr.

Then there are the challenges of ramping up the medical system: situating testing sites, building laboratory capacity, and transporting health-care workers to remote places to collect specimens. ICAP has used motorbikes and the mail system to convey diagnostic samples for HIV, and a large coronavirus outbreak will place even greater demands on these assets.

To deliver information, ICAP relies on radio broadcasts. “Radio reaches far and wide,” El-Sadr says. “For HIV, we found famous people — a soccer player or a musician — to record the messages, and we’ll do the same for COVID-19. Radio is the best way to tell people what to do if they feel sick.”

If Africa has one advantage, it’s that leaders have learned from the crises in Europe and the US. “They know that you have to act fast,” says El-Sadr. “Even with the limitations of social distancing and lockdowns, they have acted decisively and quickly. The people on the ground in Africa are working very hard, and we’re supporting them.”

WE LEARNED THAT HEALTH INEQUITIES EXACT A BRUTAL COST

WHEN THE NEW CORONAVIRUS first emerged in the United States, some observers called it the great equalizer, a pathogen that attacked widely and indiscriminately, paying no heed to income, race, or class. But statistics now tell a different story.

People of color in the United States, particularly African-Americans, have been dying from COVID-19 in disproportionately high numbers in every region of the country. In Michigan, for example, Black people have accounted for roughly a third of all deaths in a state where they are just 14 percent of the population. In Louisiana, which is 33 percent Black, some 70 percent of deaths have occurred among African-Americans. Similar discrepancies can be found from New York to the Midwest to California.

Those numbers are staggering, but they should not be surprising, according to Ashwin Vasana, assistant professor of clinical population and family health and medicine at the Mailman School of Public Health and the Vagelos College of Physicians and Surgeons. “This disease is exposing the structural fissures in our society,” says Vasana. “You don’t need to be a scholar of health equity to know that folks are less healthy if they don’t have access to all the building blocks of a healthier life. This isn’t just some random phenomenon: it’s a product of decades and centuries of racist policy and politics that make it harder for people of color to gain access to capital, good schools, and good housing, let alone health care itself.”

With African-Americans and Latinos being uninsured at high rates — and being hit hard by COVID-19 — Vasana is calling for direct intervention. “We need to deploy critical tools — testing, tracing, education, awareness campaigns — into the communities that are most affected,” he says. “We need to go not only to communities that have high rates of infection and death but also to places at risk for future outbreaks.

And that means meeting people where they live to combat the mistrust that’s been rightfully earned by the health system over decades. We need to go with humility and a real strategy and say, ‘This is what we need to do and why we need to do it, and we’ll make this easier for you.’ If we don’t go to where the problems are the worst and reach out to communities of

“We have a huge responsibility to essential workers,” Vasana says. “We must ensure that they and their families have access to care, because they’re the ones sustaining whatever semblance of an economy we have. Many are falling through the cracks. In the case of workers who don’t have benefits or protections for when they do fall sick, where do they go? How do they get care? How do they know that going to the hospital won’t mean financial ruin? People have to know that they can go to a health-care facility without fear of financial calamity or immigration enforcement. And they need to know that now more than ever, because it’s not just a moral



A city bus driver in Detroit.

color with equitable strategies, we’ll have lingering outbreaks that will throw sparks and create bigger outbreaks. If you want to shorten the epidemic, then that must be part of the plan. It’s nonnegotiable.”

The disparities are all the more unjust given that African-Americans and Latinos make up a large part of the essential workforce — bus drivers, grocery clerks, maintenance and sanitation crews, delivery people — that has risked exposure to the virus to keep American society on life support. In New York, thousands of transit workers have been infected and dozens have died. Similarly shocking tolls have been recorded around the country among supermarket employees.

issue — it’s a public-health issue.

“These underlying inequities threaten all of us,” Vasana warns. “If people are forced to delay care due to lack of coverage, it increases the likelihood that they’ll spread the disease in the community or become severely ill or both, which puts additional stress on the health-care system. Our society is entirely interconnected.

“We’ve been having a debate in our democracy about incrementalism versus big structural change,” he says. “Now is the time to talk about how we want to reshape our society and our economy, because we’re not going to be the same coming out of this. If ever there was a chance to make big change, it’s now.”



JEANNE STELLMAN



FERDINAND OFODILE



MARGARET JO SHEPHERD



AN EPIC ADVENTURE

An organization of emeritus professors and administrators taps the intellectual wealth of Columbia elders

BY PAUL HOND

Stepping out of the prewar buildings of Riverside Drive, Broadway, and Claremont Avenue, the scholars strolled across busy intersections and sidewalks, negotiated the brick courtyard in front of Wien Hall, and arrived, just before noon, at Faculty House. There, Jeanne Stelman, a retired health-policy professor and the president of Emeritus Professors in Columbia (EPIC), welcomed colleagues who had arrived for the organization's most anticipated talk of the year.

The speaker was Madeleine Kunin '57JRN, the former Vermont governor, ambassador to Switzerland, and deputy secretary of education under President Clinton. Kunin's latest book, *Coming of Age: My Journey to the Eighties*, held particular interest for the EPIC faithful. They listened as Kunin, eighty-six, her stately bearing accented by the swirl of blue in her white hair, recounted her extraordinary life: her family's exodus from Switzerland when she was seven; her first job, as a newspaper reporter in Burlington, Vermont; her election in 1984 as America's first Jewish woman governor (she served three two-year terms); her ambassadorship, marked by a hard-won fight to recover Jewish assets deposited in Swiss banks during World War II; her fierce commitment to feminism; and her ongoing efforts to recruit women to run for office.

She also talked about aging: finding late love, suffering late loss, downsizing to a smaller living space, discovering a passion for poetry, and feeling "liberated" in her seventies after withdrawing from public life. "I didn't have to dress a certain way. I didn't have to speak a certain way," she said. "It's as if I opened a new door."

The professors emeriti could relate. They'd gone through doors, too, some of them reluctantly, not knowing what could possibly follow careers that so perfectly assimilated their most avid interests. How, exactly, do you retire from a life of the mind? How do you leave the classroom when there is no mandatory retirement age?

ILLUSTRATIONS BY KYLE T. WEBSTER

EPIC, which is run out of the Office of the Provost, understands such questions and works to smooth what many acknowledge is a difficult transition. With 150 dues-paying members and a thousand-person mailing list, EPIC offers retired Columbia faculty and administrators the opportunity to join a family of wide-ranging thinkers and practitioners who pool their knowledge and learn from one another as they navigate life outside the classroom. “It’s the kind of place where you’ll have a neuroscientist talking to a Russian scholar about the Big Bang,” says EPIC vice president Lou Cleveland ’67GS, who taught in the microbiology department at Columbia University Irving Medical Center (CUIMC). According to Cleveland, that sort of interaction is a “spectacular benefit,” since he believes that the biggest source of anxiety for older academics isn’t decreased mobility or hearing loss or any other trick of aging. Rather, it’s the prospect of loneliness. “Intellectual companionship in retirement,” he says, “is very hard to find.”

The word “emeritus” first appeared as an honorific for retired academics and clergy in the eighteenth century. It comes from the Latin verb *emereri*, meaning “earn one’s discharge by service,” a reference to Roman soldiers who had completed their term. On a Thursday morning, a cadre of Columbia emeriti — or EPICureans, as they call themselves — gather at the new EPIC headquarters in room 202 of Philosophy Hall. It’s a modest, tidy spot with exposed brick, a sofa and chairs, and a desk behind which Diana Dumitru, assistant director of faculty retirement and EPIC’s lone employee, is securing spaces for EPIC’s well-attended talks. With square footage at a premium at Columbia, the new office is a strong show of support from the University. “It’s easier to get this much gold than to get this much space,” says Frances Pritchett, professor emerita of modern Indic languages in the Department of Middle Eastern, South Asian, and African Studies. A scholar of the Urdu and Persian poet Ghalib, Pritchett calls herself “part of the radical humanist minority” in EPIC,

which brims with physicians and researchers from the medical campus uptown.

For Stelman, the “downtown” campus, with its landscaped quads and marbled libraries, holds an exotic allure. “The faculty and the discussions are so different than at the medical campus, where we’re very applied and the pace is much faster,” she says. “It’s fascinating for us to experience a part of Columbia totally unlike where we spent our careers.”

Stelman was born in a relocation camp in Germany and raised in Far Rockaway, Queens. She holds a doctorate in physical chemistry and is known for her long-term studies on herbicide exposure and combat PTSD in Vietnam veterans. With those veterans now in their seventies, Stelman has become more attuned to the

“You’ll have a neuroscientist talking to a Russian scholar about the Big Bang.”

public-health aspects of aging, including retirement. It’s an interest that informs her work at EPIC: what happens to people when they are separated from the careers that seemed to define them?

Years ago, when Stelman was doing a health study of shipyard workers in Chester, Pennsylvania, she witnessed a scene that stamped itself on her mind. “There was a man in his sixties who was retiring. On his last day at the job, he left in a state of shock. After forty years at a shipyard there should be bells and whistles, but there was nothing: he just walked out with his stuff.”

Stelman wants to avoid such tableaux in academia: the retiring professor who, after the desk is cleared and the photos taken down and the books and tchotchkes emptied from the shelves, becomes disconnected from the institution. EPIC ensures that retirees remain in step with the rhythms of University life. “Once you no longer have the structure of work, you have to figure out what to do with your

time,” Stelman says. “EPIC is a way of continuing intellectual involvement and socializing here at Columbia.”

The benefits of intellectual fellowship, wherever it’s found, aren’t just social. They are also medical. Columbia neuropsychologist Yaakov Stern studies “cognitive reserve” — the idea that some people can cope with age-related changes in the brain better than others. Using behavioral studies and functional MRI, Stern has found that the brain, in undertaking stimulating activities (school, a challenging job, a hobby), accrues a fund of resiliency against age-related decay. Brain imaging indicates that some people have more reserve in old age than others, and use it more efficiently. “Factors associated with more reserve are higher educational and professional attainment, leisure activities, and strong social networks,” Stern says. “These experiences develop more robust cognitive networks that allow older people to function better.”

EPIC also recognizes the link between cognitive function and physical exercise. Ginny Papaioannou, emerita professor of genetics and development, took up yoga in her sixties, got her certification as an instructor, and now leads two EPIC yoga classes per week. “Many older people become very inactive physically,” Papaioannou says. “That’s partly because the exercise culture — running, aerobics — is designed for young people. As you age you have to make accommodations. Yoga was a way for me to do that. And I felt it was something I could offer to EPIC.”

In classes held in Faculty House, Papaioannou emphasizes poses that improve strength, balance, and flexibility. A weekday morning can find ten EPIC members in leggings and T-shirts stretched out on mats while the teacher’s laptop emits a pan-flute rendition of “Sukiyaki,” accompanied by Papaioannou’s soothing voice: *Relax your shoulders ... Notice your breath ...* At the yogi’s command, the retirees roll over and curl up. *Be grateful for one another’s company.*

Be grateful, too, that you are also nourishing your brain. Last year, Ottavio Arancio, professor of pathology and cell biology at Columbia, published a paper with colleagues on the hormone irisin,



GINNY PAPAIOANNOU

which is released into the bloodstream with physical exercise. The study found that irisin, which is depleted in the brains of Alzheimer's patients, may play a role in protecting the brain from the effects of the disease. In experiments, mice that swam every day — producing more irisin — could withstand infusions of beta-amyloid, the sticky protein thought to be the cause of Alzheimer's. And this year, Yian Gu, assistant professor of neurological sciences, coauthored a study suggesting that brain shrinkage, a common occurrence in adults over sixty, may be prevented with physical activity. Using MRI, the study examined the brains of 1,500 people with an average age of seventy-five and found that subjects who engaged in activities ranging from light (walking, gardening) to vigorous (jogging, handball) retained more brain volume than those who were inactive.

EPIC likes to mix learning with lunch, and a menu of recent EPIC events suggests a smorgasbord of Michelin-grade nibbles for the hungry mind. At one of the Tuesday Talks held every other week during the school year, you might hear Michael Rosenthal '67GSAS, emeritus professor of English, discuss his book on Grove publisher Barney Rosset; or emeritus law professor Peter Strauss speak on presidential authority and the Constitution; or Kenneth Prager '64CC, chair of the medical-ethics committee at

CUIMC, explore end-of-life ethics for clinicians. In EPIC Conversations, organized by emeritus history professor Volker Berghahn and, like most EPIC talks, streamed live on EPIC's YouTube channel, you could listen to emeritus urban-planning professor Elliott Sclar examine the politics of mass transportation or emerita history professor Alice Kessler-Harris dissect the politics of Lillian Hellman '76HON.

Once a month, a PhD candidate or post-doc delivers a lecture to EPIC members on a specialized topic in history, medicine, music, or literature. In addition to informing those in attendance, these talks allow graduate students to shape their material for an erudite general audience.

Joshua Navon '19GSAS, a thirty-one-year-old musicologist and lecturer at Columbia who studies German classical-music pedagogy, gave a talk on the educational and scientific contexts that led to the idea of musicality as a universal human capacity. For Navon, presenting his work to people outside his field forced him to write less technically and helped him clarify his arguments.

"The questions from the EPIC audience were some of the most thoughtful I've ever received," he says. "It's an important reminder that academia isn't all about playing the game and trying to get a tenure-track job — there are people who are genuinely interested in intellectual work for its own sake."

It's a reminder, too, that many EPIC members can still command a classroom. That they have chosen to step down speaks to EPIC's role in the Columbia ecosystem: with no mandatory retirement age, voluntary departure is a critical driver of faculty regeneration.

"Scholarship needs to be cutting-edge, and I think it is best left in the hands of younger people," says Frank Wolf '71GSAS, dean emeritus of the School of Professional Studies. Says Pritchett, "It's Columbia's nightmare that we'll stay on till we're ninety, repeating the same old things and not making room for new people. So the administration wants us to be happy and wants to provide a psychological home for future retirees."

When Samuel Devons founded EPIC in 1999, he already embodied the ideal of the active, engaged emeritus. Born in 1914 in Wales, the son of the village rabbi, Devons trained at Cambridge, became a celebrated nuclear physicist, and in the 1960s served as chair of Columbia's physics department. After retiring in 1984, he kept both thumbs in the pie of academic life, organizing seminars on science education and giving historical talks on Isaac Newton and Benjamin Franklin. He envisaged EPIC as a way for retired professors to remain rooted in the University.

“Sam was one of few people in the natural sciences I knew of who had very broad interests beyond his own discipline,” says Wolf. “His notion was to bring people together from the arts and humanities and the sciences. It started out as club of mandarins. It wasn’t an organization you joined, it was an organization you were *invited* to join — if you were eminent enough.”

“Most of the lectures at that time were from a small group of emeritus professors giving talks on esoteric topics,” says Carolyn Greenberg, professor emerita of anesthesiology and head of EPIC’s music initiative. “Now there is a much broader range and greater participation.” In 2004, Seymour Topping, professor emeritus of journalism and former managing editor of the *New York Times*, became EPIC president. Under Topping, who served as administrator of the Pulitzer Prizes at Columbia for ten years, EPIC opened itself to retired Columbia administrators as well as faculty, widening its scope and boosting its membership. Wolf got involved in 2013, when Robert Belknap ’57SIPA, ’59GSAS, a renowned professor of Russian literature who succeeded Topping as president,

asked Wolf to give a presentation for EPIC’s Tuesday Talks. “But Bob,” Wolf said, “those talks are by scholars, and I’m an administrator.” When Belknap asked him what he was doing in retirement, Wolf told him he was running a small charity called the Child Welfare Fund. “Why not talk about that?” Belknap said. So Wolf did.

After Belknap’s death in 2014, Doug Chalmers, a professor emeritus of political science who joined EPIC in 2005, asked Wolf to organize the Tuesday Talks. He and Wolf were old friends, and he knew that Wolf’s charisma would bring new energy to the group.

Chalmers is special assistant to the provost for faculty retirement. His job is to visit older professors and advise them of their rights as retirees. He talks about health insurance and housing; access to courses, buildings, and e-mail; computer and gym discounts; and negotiating for benefits like workspace availability, teaching opportunities, access to labs, and support for grant applications.

When he first started in the role, Chalmers was struck by the way many professors described their feelings about retiring. They compared it, he says, to

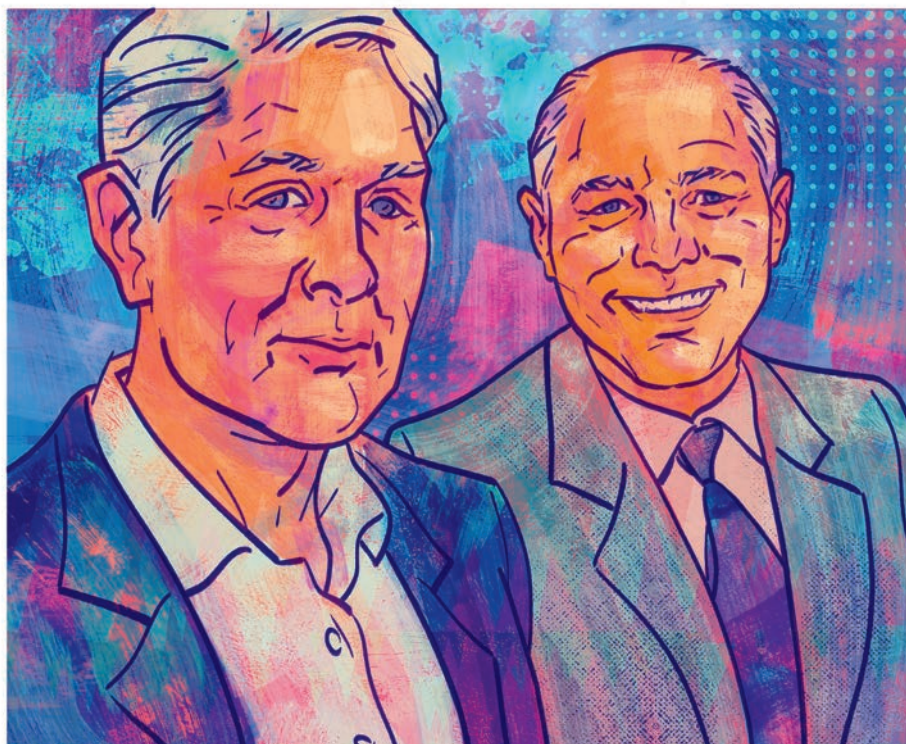
“falling off a cliff.” They had no plans, no road map, no conception of life outside their fortresses of books.

“Even today,” says Chalmers, “many people don’t think of retirement as a time to *do* things.”

“We never designed a society for longer life,” says gerontologist Linda Fried, dean of the Mailman School and a leading theorist on aging. “Over the past century, life expectancy has risen by thirty years. The modern professoriate was established when life expectancy was forty-seven; no one was thinking about the immense asset of mature scholars. People are now healthier and have longer lives, and we have an opportunity to enable new kinds of roles that contribute to the greater good. Our society just can’t afford to lose all that knowledge and capability.”

Chalmers agrees. When he became EPIC president in 2015, he was determined to deploy older academics into the neighborhood beyond Columbia’s gates. Needing help, he called Margaret Jo Shepherd, emerita professor at Teachers College. In 2016, Shepherd and Stelman, the new EPIC president, met with George Calderaro, director for outreach programs at the School of Professional Studies (SPS), and Ron Bruno, social-service director at Morningside Gardens, a thousand-unit cooperative near La Salle Street and Amsterdam Avenue. The meeting resulted in a lecture series called EPIC/SPS Community Programs.

Each spring, about five talks, free and open to all, are held at Morningside Gardens and consistently draw around forty people. Recently you might have heard Ferdinand Ofofodile, emeritus professor of surgery, discuss his experience working with African diaspora groups to provide medical aid in Africa and the Caribbean; or listened to Columbia musicology professor Walter Frisch unravel the song “Over the Rainbow.” Frisch recounted the trouble that lyricist Yip Harburg had in finding the opener for composer Harold Arlen’s tune: “Harburg says, ‘He gave me a tune with those first two notes,’” said



DOUG CHALMERS AND FRANK WOLF

Frisch, adding that the octave leap is not easy to sing. “Harburg says, ‘I tried *I’ll go over the rainbow, Someday over the rainbow, or The other side of the rainbow ...* For a while I just thought I would leave those first two notes out.’” A good job he didn’t, Frisch said. Finally, thankfully, Harburg landed on *Somewhere*.

Mental stimulation and exercise may be important to healthy aging, but more fundamental still, according to Fried, is having a sense of purpose. The impulse to positively affect the future persists after retirement, Fried says, and that drive is part of what she means when she speaks of harnessing “the social capital of older adults.” Her signature project is Experience Corps, a volunteer program administered by the AARP Foundation in which retirees become mentors for at-risk schoolkids.

Mentoring, of course, is baked into a professor’s DNA, and under Stelman, EPIC is building its own program. In partnership with Columbia’s Justice-in-Education Initiative, which is supported by the Andrew W. Mellon Foundation, EPIC pairs emeriti with formerly incarcerated Columbia students. Ginny Papaioannou was among the first to sign up. She has worked with two students: a woman who spent eighteen years in prison and was working as a law-firm intern while taking classes, and a man who was trying to set up a credit union in Harlem for what advocates call “returning citizens.”

The mentoring is informal and agenda-free; mentors are encouraged to take mentees to lunch at Faculty House to foster a sense of belonging to the Columbia community. Some go further: Daniel Thys, emeritus professor of anesthesiology and organizer of the graduate-student talks, took his mentee to the opera.

Fried often speaks of the need in mature age for “a reason to get up in the morning.” Columbians tend to meet this need through a mix of altruism and personal development. Madeleine Kunin took up poetry. Thys is studying music theory. Some are writing books, painting pictures, volunteering, working part-

time, and making use of the Dodge gym and Butler Library.

Still others, like Carolyn Greenberg, who taught and practiced anesthesiology at Columbia for thirty-two years, are reviving old passions.

Greenberg took her first piano lesson at age seven and continued until college. But the demands of medical school — and then a career and three kids — pushed music to the background. Only when she left medicine entirely in 2007 did she take it up again.

“Our society just can’t afford to lose all that knowledge and capability.”

“I was very rusty,” Greenberg recalls. “I found a Juilliard-trained teacher, and he said it would be about a year before I would get good enough to audition.”

A year later, Greenberg tried out for the chamber-music group at the 92nd Street Y. She got the gig. “It was a real adjustment,” she says. “Chamber music is very different from solo piano. It requires a lot of sight-reading, and luckily I’m pretty good at it.”

Two years ago, Greenberg, who showed up sporadically at EPIC events, approached Stelman with an idea. Knowing that many retirees played instruments, Greenberg wondered: could EPIC bring people together to make music?

Stelman was all for it. The first “play-in” was held at Greenberg’s apartment. Turnout was small — a vocalist, a flutist, a clarinetist, and Greenberg. The group had dinner and then played for two hours. Months later, Wolf, a clarinetist, hosted a play-in at his Claremont Avenue home. This time, a dozen people came. “It was delightful,” says Greenberg, “but then we ran into difficulty finding a venue for a subsequent event.”

Finally, Diana Dumitru located the perfect spot: Earl Hall.

“There’s a grand piano upstairs, and it’s an absolutely beautiful place with wonderful acoustics,” Greenberg says.

With little foot traffic on Saturdays, the musicians — pianists, oboists, violinists, flutists — can play unhindered. At the last gathering, fifteen people showed up. There was a Beethoven septet, a Schubert quartet, and a Bach trio. “The quality of the musicians in the EPIC group is very high,” Greenberg says. “Everyone has had experience with chamber music, and some play regularly — it’s not a beginner’s group by any stretch. I believe we could hold our own with music majors.”

One of Greenberg’s dreams is to join forces with Columbia’s music department for a play-in with students. “It would be an all-Columbia, intergenerational event,” Greenberg says. “That would be great fun.”

Ambassador Kunin had woven some poems, intimate and elegiac, into *Coming of Age*, and moderator Wolf asked her to read one. The audience in Faculty House listened as Kunin read “No Longer.” “No longer will we make love / before breakfast. / No longer will I dream / of seeing New Zealand / or the Cape of Good Hope,” the poem began. Later in the talk, when Wolf delicately begged Kunin to read another poem, Kunin eagerly reopened the book. “You don’t know how the ego is gratified,” she said, and the audience laughed. They knew.

Afterward, Kunin signed books, and then everyone proceeded to the white-linen-covered tables for lunch. Familiar faces were all around: Chalmers and Shepherd, Cleveland and Pritchett, Greenberg and Thys, Stelman and Papaioannou, whose yoga-class mantra echoed beneath the din: *Be grateful for one another’s company*.

Friends sipped wine and shared stories; and when the plates were cleared and the glasses drained, the Columbia emeriti got up, said their goodbyes, and filed out through the doors of Faculty House, into the arms of the afternoon. ❧

EPIC suspended activities in March due to COVID-19. Live events will resume as soon as possible, while online programming will continue for less mobile members. — Ed.



 PRIDE 2020

THE LAWS OF LOVE

They say everyone has a New York story.
This is mine.

By Ankur Paliwal '15JRN

It was a cold morning in the fall of 2015, and I was running in Central Park. As I passed by people, trees, and benches, all a blur of colors, something leaped out to me in sharp focus: two men holding hands.

I had seen men holding hands before, but there was an intimate quality about that couple, or about that moment, that slowed me down. I remember walking back to my apartment on the Upper West Side knowing that something inside me had shifted.

Men holding men. Women holding women. The way they looked at each other. Smiled at each other. It was all around me, and it was all I saw for several days. On the streets and in the subway, in parks, cafés, museums, restaurants, and takeout joints, as well as on campus, they blended effortlessly into the New York City landscape. But I noticed them.

I was thirty years old. I had recently graduated from Columbia Journalism School, and I was working as a writing fellow at *Nautilus*, a hip science magazine, which had just won two National Magazine Awards. While the fellowship made me a better journalist, coming to Columbia and the city of New York altered the course of my personal life. Completely.

I WAS RAISED HINDU and grew up in the city of Aligarh, located southeast of New Delhi in one of India's poorest states, Uttar Pradesh. Aligarh is famous for both its padlock-manufacturing industry and its scholars. Aligarh Muslim University is considered one of India's highest seats of learning. The university was born out of the Aligarh movement, a late-nineteenth-century reform initiative that helped establish a modern educational system for Muslims in India, where they are a minority. Although Aligarh has seen its share of clashes between Hindus and Muslims, religious differences didn't have an impact on my everyday life. My best friends were and are Muslims, as were most of my teachers.

I lived with my homemaker mother, accountant father, and studious younger sister in a rented room that barely accommodated a twin bed, two chairs, a table, and three storage boxes — one big and two small. Every night my parents would set the table over the big box to make space for them to sleep on the floor. My sister and I shared the bed. By the

time I was fifteen, my father, who worked two jobs, had saved enough to buy a one-bedroom apartment built by the government for low-income families.

At first I didn't feel different from other kids until people around me implied I was different. I was in seventh grade when a male teacher asked me why I chatted with the girls instead of playing cricket with the boys during sports class. "It doesn't look good," the teacher told me. So I forced myself to play with boys and hated it. In ninth grade I auditioned for a fashion show at my school and was laughed at for the way I walked — "like a girl," students teased. "Don't move your hands so much while talking" friends advised. I was already called *beech ka* (somebody who is in the middle) or *hijra* (the name for intersex or transgender people).

Once on the school bus, a tall guy whom I secretly liked stood in the aisle and began flirting with the girl I was sitting with. Gesturing toward me, he asked, "Is he a boy or girl or both? There is only one way to check," he said, pointing at my crotch. They laughed. I stared at my feet.

I hated the way I was. I might have been fifteen or sixteen then. There was nobody like me and no one I could talk to about how I felt. When no amount of praying to God to make me the same as other boys helped, I decided to take charge. I would wake up at 5:00 a.m., go to the terrace, and practice walking like a man. Back straight. Chest out. Hands by your side. Make sure your waist doesn't sway. It felt wooden. To remind myself, I started keeping slips of paper that read, *Walk like a man*. I would look at them throughout the day. It didn't work. I just couldn't change. So I decided to try to excel in high school and then in my undergraduate studies in zoology, hoping I would be noticed more for my grades and that the bullying would stop. It worked for a time. Then one night the college seniors threw a party. They played a game in which they showed movie titles on a screen and we had to guess which title matched which student. After a couple of matches, *Mrs. Doubtfire* flashed on the screen. All heads turned to me. Almost everyone laughed. In



Ankur Paliwal

that moment, I realized that none of my attempts to conceal my true self had worked.

IN COLLEGE I HAD A STRANGE FRIENDSHIP with a guy. We would hang out long after class, and I would make excuses at home to sleep over in his room. The cuddles in bed soon became exploration of each other's bodies in the dark of the night. We never spoke a word. In the morning, we would pretend that nothing had happened. Pretense was an easy escape.

I knew there were words like "gay," "lesbian," "bisexual," and "homosexual," but I never let myself ask if I was one of them — as if just saying those words would make me one. It was 2007, and anyone in India who had intercourse with a person of the same sex was a criminal and could be imprisoned for life. But I didn't care what the law said, because the culture around me had reminded me enough that LGBTQ people were *other* people. I wanted to be mainstream.

After college I left Aligarh and began my career as a journalist at a newspaper in Jaipur, in western

India. A year later I moved to New Delhi to work at an environmental magazine. My colleagues at both places were progressive and kind. They noticed my mannerisms but never called me names, which was a relief. But I still didn't feel safe enough to share my turmoil about my sexuality with them. I assumed they were all heterosexual. They didn't talk about gender or sexuality. I now realize why it is crucial to have diverse schools and workplaces and to have discussions about diversity, sexuality, gender, and harassment. You have to see people like you being treated equally in order to feel that you are normal.

In 2009, the Delhi High Court decriminalized gay sex. Some LGBTQ people celebrated. I didn't. In my mind, I wasn't one of them.

I THOUGHT IF I COULD LOVE A WOMAN, everything would be fine. I met some wonderful women through friends, but nothing lasted until I saw Swara (not her real name) in my office. I felt drawn to her, so I asked her out and we started dating. A part of me genuinely wanted to succeed in loving her, but she would often tell me that she felt like there was a wall between us that she couldn't climb. That made me sad. We went on a vacation, and I told myself I would do everything I could to make her feel loved. I don't know if I was doing it for her or for myself. When a voice inside me said I should kiss her, I did. When that voice said I should hold her, I did. Swara probably sensed the half-realness of it. She was deeply perceptive. She was also the only person who confronted me. "Do you like men?" she asked me a couple of weeks later over dinner. I covered my fear with a fake smile and said, "No, what are you saying?" I lied to her. And to myself.

In 2013, I applied to Columbia Journalism School. I felt that a more global perspective and new skills could help me tell better stories about health and the environment in India. That year, the Indian Supreme Court overturned the Delhi High Court order and re-criminalized gay sex. Although I rarely came across reports of gay people being arrested, I knew that they lived in constant fear. It was a lot safer to live a lie.

I was accepted to Columbia. Although I got partial funding, securing the remaining money was stressful. I had no savings. To help, my father decided to take out a massive loan by remortgaging his house. I told my parents about Swara and that I planned to marry her. Two days before flying to New York, I went to meet Swara's parents. I sat across from her father and told him that I would marry his daughter after I finished my course at Columbia.

When I left their house, I asked myself — why did I do that?

IN THE FALL OF 2014, I landed in New York City. I moved into Columbia housing on Riverside Drive. The pace of the city was fast. People had tremendous energy. Everyone in my international cohort of science journalists was brilliant and accomplished. I had chosen to study science journalism because I felt my stories lacked scientific rigor, and I didn't know how to write about science in a way that my readers could connect with on a personal level.

At Columbia I fell in love with the beauty and darkness of science.

I didn't think much about Swara. She wrote me e-mails saying that she felt she was losing me. I assured her that we would be together soon. In my mind I held on to the idea that I would marry her.

After school I got two fellowships that allowed me to stay in New York for another year. That's when I decided to explore the city. I think when I saw those two men holding hands in Central Park I was *ready* to see them. Over the next days and weeks, as I continued to notice the free expressions of gender and sexuality around me, I slowly began to permit myself to face my feelings. I decided to go to a gay bar in Hell's Kitchen. I stood across the street and took out my phone, pretending to be on a call while watching beautiful men go in and out of the bar. I couldn't muster the courage to enter. I took the train back uptown.

I did this once more before telling myself that I had to honor my feelings. As I stood outside the bar, I could hear my heart pounding. But when I went inside, a smile stretched across my face. The music was loud, but I was at peace.

I went there every other weekend. I started telling my New York friends, "I think I like men." And every one of them responded with a version of "That's great, Ankur. I'm happy for you." Some

of them even came with me to the bar. But I still wasn't comfortable identifying with a particular type of sexuality. In late 2015 I flew to India to attend my sister's wedding. In Delhi I met Swara and instantly felt like an impostor. That night I lay awake next to her in her apartment, thinking, *I don't want to be a fraud*. The next day, I told her that I thought I liked men. She looked strangely composed and asked, "Are you sure?" I told her I wanted to figure it out for myself. I invited her to my sister's wedding, but she didn't come. I texted her, saying that I was very, very sorry for lying.

Many days later, she texted me back, wanting to know why I'd done this to her. I couldn't say anything more than repeating that I was sorry.

When I returned to New York, my body felt lighter. I wanted to learn more about sexuality, so I started working on a feature story for *Nautilus*. I had several questions, such as, if I feel naturally attracted to men, why do I watch heterosexual porn? Why do I still like

to flirt with women? Over several conversations with developmental psychologists, sociologists, and sexual-rights experts, I found a label that I felt comfortable with: "mostly gay." I wrote a feature about sexual fluidity (when your sexual orientation changes over time), but I didn't identify as sexually fluid myself. I started coming out to more friends, professors, and editors. And every time I did, I felt more confident and happier.

I went on dating apps and met interesting men who identified in many different ways. I was amazed at the range of their experiences and the openness with which they talked about their lives. I had conversations about gender, sex, architecture, education, food, and family. Before, the people around me made me suppress my sexual identity. In New York the people around me eased my coming-out process. I learned how cultures shape so much of what a person can and does become.



Ankur with Karan in Brooklyn; Karan at a café in New Delhi.

IN MID-2016 I RETURNED TO NEW DELHI.

By then, Swara was happily married to another man. I started coming out to my friends. Although my sexuality was a crime then, I had this urge to tell, to speak my truth. Coming out is not a one-time thing. It's a process that people need to do over and over again, probably to solidify something — a new identity, perhaps — or to tell the world that they exist. Most people immediately accepted me. Some took time. I started meeting Indian men through dating apps. Most were not out. Some were married, some had kids, and some said they would marry a woman but were meeting men to fill a void inside them.

My parents were desperate for me to get married, because by Indian standards their thirty-one-year-old son had already crossed the marriageable age. I decided to come out to my sister first. I knew she'd accept me. Her response was, "You do what makes you happy. Be with a man or not. But don't ruin any woman's life." So one night in Aligarh I sat down with my parents, and with much hesitation I said,

Indian Penal Code criminalized the very existence of LGBTQ people by criminalizing their sexuality — an attribute that is as intrinsic to people as their race and gender. The Supreme Court ruling emphasized that LGBTQ people are constitutionally equal. Of course, Karan and I are happy that the law is on our side. But cultures change slowly. My father knows about the ruling, but he still doesn't approve of my sexuality.

Karan and I live in New Delhi. We have a group of friends around whom we feel loved and safe. Still, there are very few places here where we can comfortably hold hands. When I travel around India, I almost always pretend to be heterosexual. Same-sex marriage is not recognized under Indian law, and we wonder what kind of future lies ahead for us in Delhi. Can we raise a child who wouldn't have to constantly explain why she has two fathers? Under the government of Narendra Modi, Indian society is getting more polarized along lines of class, gender, and religion. My Muslim friends in Aligarh don't

Coming out is not a one-time thing. It's a process that people need to do over and over again.

"I don't like girls." They looked confused. Then in a roundabout way I said, "What's wrong if I spend my life with a man?" My mom said, "Men are friends, not life partners." But my father saw what I was getting at. He told me that he didn't approve of same-sex relationships, that it was shameful and embarrassing. "If you want to go on this path, do it after we die," he said. They had given their verdict.

Meanwhile, after many frustrating dates, I met Karan. He is a Sikh. Because of him I know what love feels like. He believes in the power of honest conversation to sustain relationships. He made a rule: if we have an argument, we can't go to bed until we talk it through. Karan was with me every minute in the fall of 2018, when my mother lost her long battle against cancer.

That was also the year the Indian Supreme Court struck down section 377. I was in New York, and my phone started buzzing with texts from friends congratulating me. I remember smiling, sitting in my bed, and replying, "Thank you." This ruling was the result of a determined fight over several years by lawyers including Arundhati Katju '17LAW and her partner, Columbia Law lecturer Menaka Guruswamy, who argued that section 377 of the

feel safe. Muslims and people from marginalized castes get publicly lynched. Most mainstream media institutions no longer hold the government accountable. Hindu majoritarianism is rising.

In New Delhi I work as a freelance journalist. I also cofounded a journalism project called Land Conflict Watch, in which I work with a team of journalists and researchers who collect data about ongoing land disputes in India. I am out to my colleagues and talk to them about Karan. I do this consciously to send a message to those who are struggling to come out. I want them to know that this workspace is safe and equal.

In the fall of 2018, I was in New York on a fellowship. Karan visited me there. One weekend I took him to the Columbia campus and showed him the journalism school. We sat on the Low Library steps by the statue of Alma Mater and ate five-dollar falafel with rice from a food truck on Broadway — my go-to meal when I was on a tight budget. Later, we walked to Central Park. The sun was setting behind the apartment towers on Central Park West, and the trees had taken on the yellows and oranges of fall. We stood still for a moment. Then I reached out and took Karan's hand. 🍷

A

TASTE

OF



HONEY

Eli Lichter-Marck '08CC
went searching for
purpose and truth.
He also found
sweetness and light.



By Paul Hond





If there's a bee heaven,

it might look like Rustic Canyon, a wooded, blossomy ravine carved into the Santa Monica Mountains a short distance from the Pacific Ocean. Flourishing with California pepper trees, red-fruited sumac, frilly lilac, purple sage, and creamy jasmine, this pocket of Los Angeles is home to rambling cedar-shingled houses and luscious gardens. Nature hums sweetly here. The daytime temperature is a dependable 72°F. Dogs bark. Birds dart among the trees. And near one of the houses, under a canopy of sycamores, stands a cluster of wooden boxes painted green, yellow, pink, and blue. The boxes are stacked three high and set a few feet apart. Each stack — there are ten in all — is a beehive, and each hive contains some sixty thousand honeybees.

Eli Lichter-Marck '08CC grew up in Rustic Canyon, and his father and business partner, Nick Marck '71CC, still lives here. Their company, Eli's Bees, which they formed in 2010, sells honey and candles derived from the efforts of bees plump with the nectar of Santa Monica Canyon, Topanga Canyon (where Eli lives), and Malibu. The delicate honeys, imbued with the perfume and sunshine of this temperate landscape, are sold to juice bars, natural-food stores, and private customers. For Eli, honey is not the heart of the business but the glaze on a cake made of biology, botany, and climate science. Nurturing bees poses daily riddles that Eli thrives on untangling, and which bring him ever closer to the buzzing intelligence of another world.

"Bees are remarkable creatures and remarkable teachers," Eli says as he crosses a small footbridge over a creek and approaches the hives. "If you're patient and pay attention, the bees will tell you what they need."

At thirty-four, Eli possesses the earthy wisdom of someone intimately acquainted with the life vibrations of a different species. You might call him the bard of bees, the Homer of honey — an example of what can happen when the Core Curriculum cross-pollinates with the natural world. Eli majored in architecture at Columbia, but it was a Shakespeare professor whose advice led him, years later, to the bees. And though he could not have imagined in college that he'd someday become a full-time beekeeper, he now glows with love for these fragile creatures — and he has hitched his fortune to theirs.

"With beekeeping you basically get to connect with a wild animal," Eli says with a certain awed reverence. "No mammal is as weird to us as a bee. Cows are like gentle humans. Sheep are like dummy humans. But bees are super smart — they really know what they're doing, and they will not let you make mistakes, because if you make a mistake they'll sting you, and it hurts."

Parked in the dirt next to the hives is Eli's 1992 Dodge pickup. From the truck's bed Eli grabs a protective veil, a smoker (a device that blows smoke into the hive to pacify the bees), a flat, metal all-purpose implement called a hive tool, and a brush to remove clingy bees from the rectangular frames on which they build their honeycombs.

Flitting outside the hives are guard bees, whose job is to defend the colony from invaders like hornets, yellow jackets, and humans. These worker bees may live just five to six weeks, and their duties change as they age: they start as nurse bees, graduate to being housekeepers and guards, and finally become foragers who gather nectar for the colony.



Eli Lichter-Marck holds a hive frame at one of his apiaries in the Santa Monica Mountains.

Eli fills the smoker with some burlap, lights it, and squeezes a little smoke into the hive. The bees become visibly fuddled. "It's sort of a 'Whoa, what the hell is that?'" says Eli. "Bees give off an alarm pheromone when there's an intruder, and the smoke masks that response. If we opened this hive without smoke, we'd be running."

Using the hive tool, he pries open one of the boxes and pulls out a frame, which is covered with hundreds of slightly addled bees, some of which crawl onto Eli's fingers. "I have enough experience to know what I can and cannot do," he says. Eli loosens the bees from the frame with the brush, revealing the wondrous design of the honeycomb, which serves as both an incubation chamber and a winter food bank. "The architecture is really interesting," he says, noting the wax structure's finely wrought hexagonal compartments, or cells. "With the

PHOTOS COURTESY OF ELI LICHTER-MARCK; BEE: DANIEL PRUDEK / SHUTTERSTOCK

hexagonal shape, every wall of each cell is shared by another cell wall, so it's incredibly efficient. Bees make wax from glands in their abdomen, which takes a lot of energy, but they don't need very much wax to make a lot of space. Each frame in the hive can hold four pounds of honey — that's an enormous amount of volume inside the surface area."

He points to the bottom box, called the brood box, which holds the queen. "Inside, it's pitch-black," says Eli. "The queen, who lives around three or four years and mates early in her adult life with about a dozen drones, will walk around, and the other bees will smell her and form a ring around her and say, 'Lay an egg here, lay an egg here.' She'll stick her backside into the cell and lay an egg, which is fertilized with sperm that she has stored in a pouch called a spermatheca. At her peak she'll lay 1,200 to 1,600 eggs a day."

Fertilized eggs will become female worker bees; new queens are selected by colony consensus, with nurse bees feeding the chosen larvae a diet of royal jelly, a white substance that nurse bees secrete in order to nurture a queen. "The reason she becomes a queen instead of a worker is because of the special mix of proteins in the royal jelly, which determines her development," Eli says. The small fraction of eggs that the queen decides not to fertilize will become males, called drones, whose sole purpose is to mate with a new queen. After mating, the queen, with the drone's endophallus still inside her, will separate from him, ripping his genitals from his abdomen and sending him to the Great Bee-yond. It's the females who build and maintain the hive and feed the colony.

"Bees can fly as far as five miles for food and find their way back to the hive," says Eli. "They have an insanely acute visual memory. For example, if I take this beehive and move it five feet away, the bees will still come to this exact location looking for the hive. That's because they fly out in concentric circles and memorize the landscape around the hive. They know exactly the spot they're looking for."

When a scout bee returns to the hive after locating fresh flowers, Eli explains, she will communicate where the food is by crawling over her sisters and performing what's known as the "waggle dance," a figure-eight movement punctuated after each circuit with a twitching motion. The angle of the bee's path in relation to the sun indicates the direction of the food source (bees have an internal clock that tells them where the sun is in the sky while they're in the hive),



Eli with his father, Nick Marck.

and the duration of the waggle determines the distance. The foragers then fly to the locale, where some draw nectar and others collect pollen, some of which sticks to their hairs and is spread from flower to flower. With the nectar stored in a sac called a honey stomach, they return to the hive and share the goods with the housekeepers, who deposit it into the cells of the honeycomb. "When the comb is filled up with nectar, the bees will fan their wings in order to dry it out," says Eli. "And that's what turns it into honey."

Honey is a means for Eli, not an end; it is the ambrosial byproduct of a profound process uniting plants, insects, and people. Honeybees are one of twenty thousand bee species in the world that pollinate many of the fruit, nut, and vegetable plants that humans rely on. "In agriculture, 80 percent of our food — everything but grains, which are wind-pollinated — depends on pollinators like bees," Eli says.

*So work the honeybees,
Creatures that by a rule in nature teach
The act of order to a peopled kingdom.*
— William Shakespeare, *Henry V*

In college, Eli took Lit Hum with Edward Tayler, the esteemed Shakespeare scholar and the professor who Eli says had the greatest influence on him. "I will never have another educational experience like that," he says. "Tayler challenged us to find our own way of seeing things, without bullshit. He did not tolerate bullshit. He wanted you to see the thing for what it was. And that gave me an attitude for the rest of my life: I don't want to deal with bullshit."

It was in that spirit that Eli, after college, took off to South America. A young idealist in search of meaning, he wanted to explore landscape ecology, ancient architecture, and sustainable

agriculture. He rented a car and drove through Chile, Brazil, and Venezuela, pausing to study traditional mud-brick building. He also surfed — back home, the waves off Malibu were as integral to him as the mountains — and on the Chilean coast he met a man who lived on the surf break. The man was a beekeeper, and Eli, who would have done anything to stay on his property, offered to work in exchange for lodging. That was his first brush with bees.

Meanwhile, back in Rustic Canyon, Eli's dad was having a bee problem.

Nick Marck had studied history at Columbia, but it was a class with the film critic

Andrew Sarris '51CC, '98GSAS that had helped light his way. "Before college I had been into doing magic," Nick says. "This was the time of the draft, the Vietnam War, and I was trying to figure out what to do with my life. When Sarris described the role of the director as an illusionist, it really resonated with me." After college, Nick moved to LA, worked his way up in the industry, and eventually became an in-demand director for shows like *The Wonder Years*, *Northern Exposure*, *The X-Files*, and *Buffy the Vampire Slayer*.

One day in 2010, Nick discovered that a colony of bees had taken up residence beneath the siding of his house. "All the honeybees we have here were originally introduced by farmers," says Nick. These commercial honeybees were brought in to pollinate the orange groves that once filled LA County (just as California's almond groves rely on honeybees shipped in from all over the country). Along the way, some bees escaped their managed hives and became naturalized in the mountains, canyons, and cities. When colonies get too big, half the bees split off — a phenomenon known as swarming. When that happens, a ball of migrating bees will settle in whatever adequate space is available. Nick's house provided such a nook.

Nick called a bee-removal specialist named David Saraf. Eli had just returned from South America dusty with the pollen of a budding obsession, and in a twist worthy of one of Nick's TV shows, Saraf hired Eli and became his mentor, teaching him how to remove bees from odd places (sprinkler boxes, attics) without killing them. Along the way, Eli siphoned off some bees — rescue bees, he calls them — and began stowing them in hive boxes, trying to build a healthy colony.

"So here's the thing," Eli says. "Keeping bees alive is not easy. For three years I tried and failed with the bees. They would make honey, but then they would disappear or die." By then, Eli was working as a landscape architect and taking premed classes. He was almost thirty and had no definite career track. But a bug had bitten him. And he knew he must answer the fundamental question: *to bee or not to bee?*

Bees weren't BS. And keeping them alive was, for Eli, a tantalizing puzzle to be solved. "My inclination," he says, "was to go deeper and deeper."

Americans have labored to keep their honeybees buzzing ever since European settlers brought *Apis mellifera* to the Virginia Colony in 1622. More recently, in the winter of 2006–07, a spate of honeybee colony failures made national headlines. Worker bees were abandoning their hives in droves — going out to gather nectar and never returning. Called colony collapse disorder, the syndrome would destroy nearly a third of honeybee colonies each year over the next several years.

At the time, Kathleen Pike, a professor of psychology at Columbia, knew nothing about bees, but she was alarmed by what she read about the widespread demise of these crucial

pollinators. Scientists named a host of potential causes: pesticides, habitat loss, pathogens, parasitic mites. As Pike read more, her curiosity grew. She visited some hives, which she found "mesmerizing," and three years ago she decided to try beekeeping in her yard in eastern Long Island. She started with three hives, in what proved to be one of the hardest, most gratifying undertakings of her life. "Bees are incredibly interesting intellectually," she says, "but there's also something emotionally captivating about them." In three years she has yet to get her bees through the winter: though they generate body heat to protect the brood, they may succumb to viruses, strong storms, or temperature swings that bring them out of the hive too early. But her enthusiasm and determination have only grown.

"There are so many ways that bees can teach us and enrich our thinking," Pike says. "For bees, the team is as important as the queen. Every bee matters, but no single bee can make it alone. They're all in it together. During the summer, bees will make honey and store it in the honeycomb for a generation not yet born. They will not be there when the next generation consumes that honey. That's an extraordinary message."

Pike's academic training makes her particularly perceptive about how humans react to bees. "Most people are afraid of bees," she says. "When we have guests over, they'll come out to the hives with enormous apprehension. I explain that honeybees don't want to sting you, because after they sting you they die. I give visitors protective covering and talk about how to approach the hives and where to stand. They start out tentative, and then, within minutes, universally, they are freed from their anxiety and ready to just engage in this other world in a way that fills them with excitement and joy and curiosity.

"As a psychologist, I know that careful exposure to phobias and fears — and education — can help address issues of anxiety. I have all these converts who are now in love with the bees. It makes me think about how wrong our ideas can be without



Kathleen Pike with her hives on Long Island.

firsthand experience. There are parallels to the stigma around mental illness: connecting with someone who has had some mental-health condition, who can talk about it and make it not scary, is critical in reducing people's prejudice."

Since 2012, Jonathan Snow, an assistant professor of biology at Barnard College, has kept what may be, by virtue of their address — the roof of Barnard Hall — the smartest bees in town. Six hives, holding as many as 360,000 bees, provide both honey and specimens for experiments in the Snow Lab.

The Barnard bees dine amid the foliage of Riverside and Morningside Parks, upon sidewalk clover, and in the white-flowering spikes of cherry laurel and pink bracts of dogwood on Columbia's campus. On a table in Snow's office rest some jars containing a thick, sticky treasure the color of orange opal — 100 percent New York City honey.

Snow studies the role of infectious diseases caused by a parasite in the cells of honeybees. While the parasite is not as lethal as the Varroa destructor mite (a prime culprit in recent upticks in bee mortality), it can amount to a death knell for a stressed or diseased colony. "Stress in honeybees is likely to be felt at multiple levels: the colony level, the individual-organism level, and the cellular level," Snow says. "Climate change, which involves things like heat stress, can trigger the same pathways that we're studying. Pesticides result in cell stress. Nutritional stress due to habitat loss affects these pathways as well."

For Snow, this tenuous state raises broader questions: "If honeybees are struggling, what about the other bee species — bumblebees, carpenter bees, leafcutter bees — that people don't care about as much, but which are critical to our agricultural and natural ecosystems? And what about all the other invertebrates that are going to be facing similar issues?"

Out west, the effects of climate change have already turned tens of thousands of acres of bee paradise into hell. In the spring of 2018, Eli had 160 hives spread out in nearby mountains. But that fall, wildfires rampaged through the region, carpeting the hills and pouring into the canyons. Eli lost half his bees, along with "a ton of equipment." His hives are still recovering — slowly — but Eli considers himself lucky: he knows people who lost every beehive they had. Two years later, he finds a silver lining in all that lost gold. "Where the fires burned," he says, "a whole new world of flowers came up."

Beekeepers refer to times of heavy bloom and nectar-gathering as the "honey flow," the bread and butter of beekeeping. In Southern California, Eli's bees start making honey in April. Eli does an April harvest, another in early summer, and another in September. "Every plant species makes a different kind of nectar," he says. "Honeybees prefer to harvest from one type of plant at a time. They're opportunists and generalists when it comes to flowers. Certain bees and wasps are specialists and only go for one certain flower. Honeybees will go for anything."

Eli is a "sideline" beekeeper, someone who has between ten and two hundred hives. Fewer than ten and you're a hobbyist; more than two hundred and you're an industrial-scale enterprise. Eli is an indie guy, a surfer in a bee suit, ruggedly farming exquisite honeys, each from its own type of flower and each with its own color and texture and subtle flavors.

He takes off his veil and drops it in the back of his truck. On the edge of the tailgate, a half dozen jars of honey are lined up, their hues of amber and orange and red catching sunbeams and glowing from within, a distillation of nature's harmonies. Eli offers an impromptu tasting. The light, distinct notes in each sample are as far from characterless commercial squeeze-bear

honey as just-picked wildflowers are from a supermarket bouquet. This honey is, no joke, the nectar of the gods, brokered by a truth-seeker, a few million bees, and, in no small way, a professor of Shakespeare.

"I've always been a do-my-own-thing kind of guy," says Eli, "and in college, Professor Tayler tried to rein me in and keep me focused on the work. One time I met with him and said, 'I don't know what to do, Dr. Tayler. What should I do with my life?' The way an undergrad will. And Tayler looked at me and said, 'Wait as long as you can before you decide.'

"So I stopped worrying about it and went with the flow. I'd been so worried, not knowing what to major in or what to do, and Tayler just put me at ease. And it changed my life. I thought: I'll just figure it out. And then I waited a really long time, until the bees found me." 🐝



Jonathan Snow with a lab member on the roof at Barnard.

Raising Strong Sexual Citizens

Two social scientists discuss their groundbreaking research on consent, power, and assault on Columbia's campus

In their book *Sexual Citizens*, Jennifer S. Hirsch, a professor of sociomedical sciences at Columbia's Mailman School of Public Health, and Shamus Khan, the chair of Columbia's sociology department, take a probing yet empathetic look at the intimate lives of Columbia undergraduates and the pervasive problem of sexual assault on campus.



Your book is the result of years of research on Columbia's campus. How did you design a study on such a sprawling, controversial subject, and what sets your work apart?

JSH: What distinguishes *Sexual Citizens* from much of the other research that's done on campus sexual assault is the method: the book draws primarily on ethnographic research, which included more than six hundred hours of a technique called "participant observation," in which our team of researchers spent time with undergraduates in dining halls,

dorms, sorority and fraternity houses, locker rooms, bars, coffee shops, and other spaces where students congregate, observing what went on and reporting on what they saw (of course, they always identified themselves as researchers). That was combined with 151 in-depth interviews with undergraduates averaging about two hours each, as well as seventeen focus groups. Our team spent three semesters deeply embedded in campus life, and we hope readers feel that reflected in the book.

The ethnographic research for *Sexual Citizens* was part of a much bigger project, the Sexual Health Initiative to Foster Transformation, or SHIFT, which I codirected with a Mailman School colleague and friend, clinical psychologist Claude Ann Mellins. SHIFT also conducted a survey of sexual practices and attitudes e-mailed to 2,500 undergraduates (which had an astonishing response rate of 67 percent) and a quantitative daily diary study that lasted sixty days and included 427

students. Our research was guided by two advisory boards — one made up of faculty and administrators and one of undergraduate students.

How do you define the term "sexual citizen," and how does it relate to sexual assault?

JSH: Sexual citizenship refers to people's right to say yes to the sex they want and no to the sex they don't want, as well as their understanding that other people have an equivalent right. Upholding those rights is highly relevant to sexual-assault prevention. In many instances we saw heterosexual men who were acutely aware of their own sexual needs but less attuned to their partners' rights to sexual self-determination. Clearly we have failed to educate young people on how to have sex without hurting someone else. We won't achieve effective sexual-assault prevention unless we talk to young people about sex in ways that acknowledge their sexual citizenship.



Along with sexual citizenship, your taxonomy of undergraduates' sexual lives includes two other key concepts — “sexual projects” and “sexual geographies.” Can you explain?

SK: One interesting discovery we made was that often (though not always), people committing assaults thought they were having consensual sex. So we realized we needed a better grasp on the reasons young people seek out sex. Basically, the term “sexual project” is the answer to the question “What is sex for?” And the young people we studied turned out to have many different sexual projects. Sometimes sex was for pleasure, sometimes to increase their status within groups, sometimes for a new experience or to comfort a partner. We want young people who read this book to ask themselves, “What is my sexual project going to be?” And for us, understanding the variety of young people’s sexual projects and how they might lead to sexual assaults was essential.

JSH: The third concept, “sexual geographies,” relates to the way space produces opportunities for sex and vulnerability to sexual assault. Consider campus dorm rooms, where sex and assaults often happen. There are four pieces of furniture: a bed, a dresser, a desk, and a desk chair. If students go back to a dorm room, they can’t both sit in the desk chair, and if both sit on the bed, there can be a sexual connotation. One response might be, “Don’t go back to someone’s room unless you want to have sex.” But we look at sexual assault as a public-health issue; our focus is on changing the environment. So our takeaway is, let’s come up with safe spaces where students can go, say, at two in the morning, that will enable them to have the kinds of interactions that they want to have.

Is it fair to say that neither of you puts much faith in the policy of “affirmative consent” — i.e., requiring a definitive yes from each partner to continue sexual activity?

SK: Encouraging affirmative consent is important, but it’s insufficient.

JSH: That sort of simple educational intervention, whether affirmative consent or something else, is not really A-game public-health work. A lot of students come to campus with such an astonishing level of sexual ignorance that a session on consent is like starting with calculus when you can’t even count to ten. It’s a vast oversimplification of the complexity that is sex.

What else, besides your public-health perspective, makes your approach different?

SK: Most of the attention in sexual assault has been on what to do *after* a sexual assault occurs — how to adjudicate assaults, how to punish a perpetrator. Our focus is on prevention, on reducing the likelihood that assaults happen in the first place.

JSH: There’s so much fear in the conversation around campus sexual assault, and obviously the risks are real [in the

SHIFT survey, 28 percent of women, 12 percent of men, and 39 percent of gender-nonconforming students reported being sexually assaulted after entering college]. The book includes stories of great suffering. But another way our work is different is that we come at the issue with hope and compassion. We engage in a way that doesn't simply try to scare people. If all we do is say "He's a horrible person" when we hear about a senior man in a fraternity who rapes a freshman woman after she has clearly said no, we don't get anywhere. What if we back up and ask, "Who taught him to ignore women? What kind of family raised him, and what kind of school system failed to educate him to hear women's voices, to be so unaware of the power he deployed in that situation?" Only sitting in judgment doesn't lead to solutions.

You argue that unwanted sexual contact is fundamentally about inequalities of power, not just in relation to gender but also class, race, social status, and sexual orientation, often in ways that intersect. Can you speak to that?

JSH: We make two points broadly about the need to think differently about power. We look at power that is situational, where one student is older than another or drunker than another or considered "hotter" than another. And then there is power that reflects social advantage. Gender is clearly a form of that; most sexual assaults are committed by men and experienced by women. But gender is insufficient to understand the entirety of this issue. Race is big too. Every single one of the Black women that we spoke to had experienced unwanted, nonconsensual sexual touching. *Every single one.* That statistic cannot be understood only from a framework of gender. It illustrates the need to center race in any discussion of sexual-assault prevention. I like to think that the book is a jumping-off point for considering all kinds of inequalities.

SK: The lack of respect for Black women's bodies was notable. And this was among



Jennifer S. Hirsch and Shamus Khan



Columbia students. That's not to suggest that they're exempt from racism, but they are an incredibly progressive group. Yet still we see this American context of race and power playing out in a willingness to violate the bodily autonomy of others.

The book also includes the experiences of African-American men who are afraid of being falsely accused of sexual assault. There was, for instance, an affecting story about a Black student who had a consensual sexual experience yet nonetheless felt the need to secretly record his partner afterward to have proof of that consent.

JSH: Black men who shared their stories described acute racialized fears of false accusation that didn't just reflect their experience as Columbia students but what it's like to be a Black man in America. The way students navigate sex and consent is inseparable from the relative privilege or disadvantage that they face in the world.

SK: Yes, the Black men we spoke to were concerned not just about false accusations but about what it means to be accused in an American justice system that they feel is systematically biased against them.

How were you able to get students to open up to you about such intimate topics?

SK: The way that we engaged students — as the experts on their own lives — was certainly critical to the project. For example, SHIFT's undergraduate advisory board helped us figure out how to ask questions and how to reach students in ways they would actually relate to. They helped us decode student language — what does it mean when people say "hook up," for example? — and they served as ambassadors for the project, testifying to its legitimacy. We had all kinds of students on the advisory board, from people involved in Greek life to the head of No Red Tape, the anti-administration protest group. Bringing them in was essential. And through that work, our team built relationships with many students; they spent time with them in dorms, on the bus to athletic events, in fraternity basements, and in spaces of worship. We recruited students for interviews and focus groups through student interest groups, articles in the student paper, flyers and other on-campus presence, personal referrals, and targeted e-mails.

JSH: But more generally, what we saw was that our research tapped into a

need: students wanted to tell their stories, as a way of helping create solutions and also to feel that their experiences of suffering were recognized. It's notable how many students approached us asking to be interviewed. For example, when SHIFT sent out an e-mail about the survey to the entire undergraduate student bodies of both Columbia and Barnard, we were somewhat taken aback to receive responses from many individual students saying that they wanted to participate in a confidential interview because they had a story to tell.

Some of the students' stories are excruciating to read — and must have been even more so to hear firsthand. You note that every member of your research team experienced some form of “vicarious traumatization.” What was that like?

SK: No question, it was a lot. Jennifer and I tried to make sure our team felt supported and to acknowledge that feelings are part of research. All our weekly meetings began with a mental-health check-in where we'd spend time talking about how everyone was doing. But as painful as it was to hear and hold those stories, we are mindful of how much harder it was for the students who lived them. The broader point here is that engaging with the emotional lives of our subjects is a fundamental part of the ethnographer's job, which is to try to understand people's points of view and why they're acting as they're acting. That's also important from a public-health perspective. It's not helpful to say, for example, “Why don't these people just stop smoking?” or “Can't these obese people just eat less?” As Jennifer mentioned, we aim for empathetic understanding of how people get into the situations they're in.

You say in the book that a young woman who is not in college is probably at greater risk of assault than a college student. What are the implications of your work beyond the academic setting?

“Most of the attention in sexual assault has been on what to do *after* a sexual assault occurs ... Our focus is on prevention.”

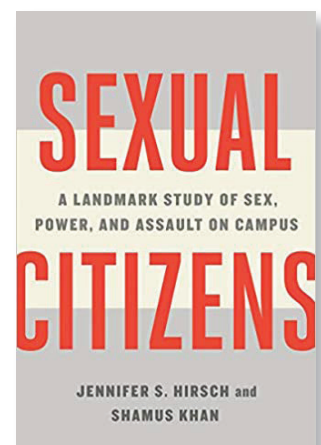
JSH: One of our fundamental policy recommendations is comprehensive age-appropriate sex education. Not every worker in America goes to college, so employers and policymakers need to think of sex ed as workforce development. A basic skill workers need is the ability to have respectful interpersonal interactions. Instead of thinking that clicking through a PowerPoint presentation will teach a new employee not to harass others, let's use the twelve years of education we have before that person gets the job. And sex education should be a fundamental element of the #MeToo policy agenda.

SK: This is not just a school problem: it's an everybody problem. And for parents wondering what they can do for their own kids, I think our book provides them with a neutral narrative terrain in which they can have those otherwise awkward conversations. It's easy to imagine parents and kids reading many of the stories together. So rather than telling a child what to do, a parent can say, “Let's talk about Luci and the way she was treated by that fraternity guy. What's your take on the situation with Adam and his boyfriend? What might a good plan B look like for Charisma when she's stuck out in Brooklyn, far from campus?” Just creating that bit of distance can make communication easier.

You must have had enormous support from the Columbia administration to conduct this study and make the findings public. How did that come about?

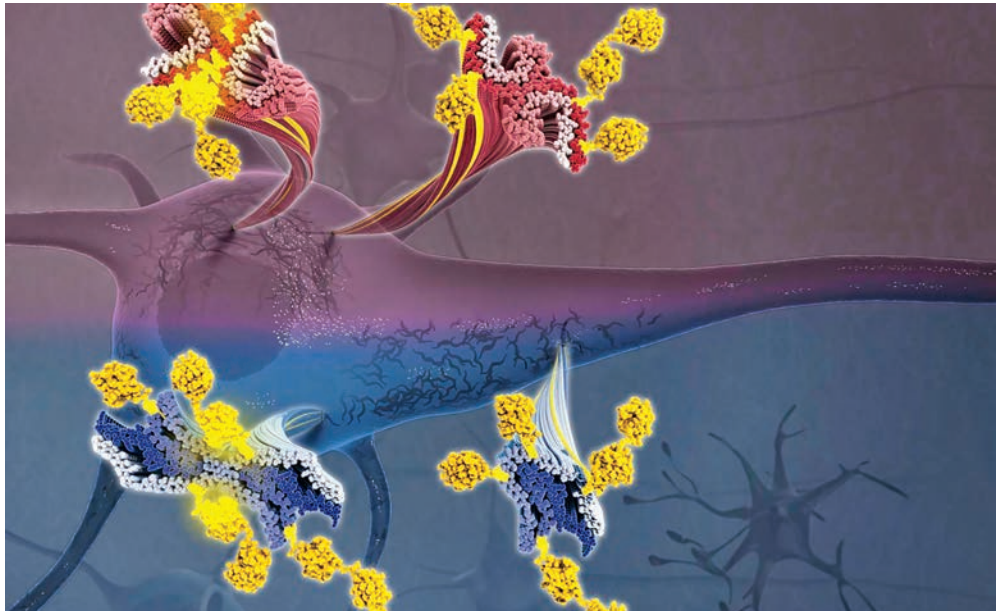
JSH: I initially brought the idea for the research project to Suzanne Goldberg, the executive vice president for university life, and after that conversation, Claude Ann Mellins and I began to develop it. Suzanne is the person responsible for managing the campuses' sexual-assault response overall, both in terms of prevention and adjudication. She understood right away that this was a great opportunity for both the University and the field. And it demonstrates the power of having high-level feminist leadership. Shamus and I have been on a massive campus book tour, and I feel proud of Columbia, because not many universities have made such a substantial commitment. I mean, every campus is doing something about prevention, but it's different to lay down resources and say, “Let's figure this problem out, and let's generate a new kind of solution.”

— Lorraine Glennon



EXPLORATIONS

FRONTIERS OF
RESEARCH AND
DISCOVERY



An artist's rendering of protein accumulations inside a brain cell.

Toxic Alzheimer's proteins exposed in new detail

One of the hallmarks of Alzheimer's disease is that brain cells become clogged with "tau tangles" — long, rope-like bands of tau proteins that obstruct the movement of nutrients within the cells and ultimately cause them to die.

Until now, scientists had never observed the individual proteins up close because they are ten thousand times thinner than a human hair, making them extraordinarily difficult to view, even under powerful microscopes. But a team of neuroscientists at Columbia's Zuckerman Mind Brain Behavior Institute recently combined two ultra-high-resolution imaging technologies — mass spectrometry and cryo-electron microscopy, the latter a Nobel Prize-winning technology developed in part by Columbia researchers — to examine tau proteins in unprecedented detail and reveal new clues about how and why they accumulate in destructive tangles.

Led by principal investigator Anthony Fitzpatrick, the researchers discovered that tiny

molecules located on the proteins' outer surfaces seem to influence their shape, whether or not they aggregate, and, when they do conjoin, what types of neurocognitive problems result.

The appearance of tau tangles in brain cells is associated not only with Alzheimer's but also with several other forms of dementia and with chronic traumatic encephalopathy (CTE), a neurodegenerative disease that afflicts many former football players, soldiers, and others who have experienced repeated head injuries. Fitzpatrick says that his team's research, by identifying key differences between these disorders at the molecular level, could one day enable physicians to anticipate the onset of the conditions before symptoms arise and intervene with novel drug treatments that slow their progress or prevent them altogether.

"Neurodegenerative diseases are among the most complex and distressing class of illnesses," he says. "But we are building a road map toward successful diagnostics and therapeutics."

COURTESY OF VERONICA FALCONIERI HAYS AND ANTHONY FITZPATRICK / ZUCKERMAN INSTITUTE



Montreal pact saves ozone, slows warming

The international treaty that saved the earth's ozone layer is now having the unintended benefit of slowing global warming, according to a new study.

The 1987 Montreal Protocol, ratified by two hundred countries after scientists discovered a gaping hole in the ozone layer above Antarctica, phased out the use of industrial chemicals called chlorofluorocarbons, or CFCs, which were once commonly used as refrigerants and vapor propellants in aerosol cans. Although CFCs are best known for damaging the ozone, they are also greenhouse gases, which contribute to global warming, and a team of Columbia researchers recently set out to quantify the impact they had on global temperatures. Using computer climate models, they determined that CFCs and similar substances caused about one-third of all global warming between 1955 and 2005 and half of Arctic warming and ice loss during that period.

"In the coming decades, as these chemicals stop being used altogether, and as those that have already accumulated in the atmosphere dissolve, they will contribute less and less to global warming," says lead author Lorenzo M. Polvani, the Maurice Ewing and J. Lamar Worzel Professor of Geophysics at Columbia Engineering. "It's a good-news story."



How butterflies beat the heat

Butterflies are in a bit of a bind. Being cold-blooded, they must absorb thermal energy from the sun in order to boost their metabolism and have the strength to flutter from flower to flower. And yet their paper-thin wings are delicate. How can they withstand the heat of the sun's rays?

A team of researchers led by Nanfang Yu, a Columbia applied physicist who studies the optical properties of biological materials, recently set out to find answers. In collaboration with Naomi Pierce, a biologist who oversees the butterfly collection at Harvard's Museum of Comparative Zoology, Yu's team examined the physiology and behaviors of dozens of butterfly species, including the painted lady, pictured above, to determine how they regulate the temperature of their wings.

First, the scientists used a novel imaging technique developed in Yu's lab to analyze the colorful iridescent scales that cover butterfly wings. They found that some scales — specifically those atop wing sections that contain veins, nerves, and sensors for monitoring airflow — are shaped to deflect sunlight. Although they appear smooth, when viewed

under the electron microscope the scales actually contain lots of cavities, crevices, and tunnels.

"This is a perfect design if you want a material to emit most of the thermal energy it receives from the sun rather than retain it," says Yu, who is an associate professor at Columbia Engineering.

The researchers then conducted a series of experiments on live butterflies, using heat lamps to mimic the effects of direct sunlight. They found that most butterfly species exhibit avoidance behaviors when subjected to intense heat, closing their wings and holding them parallel to the light source in order to minimize the impact.

Finally, Yu and his colleagues observed the neuronal activity happening inside butterfly wings. In doing so, they identified a network of heat-sensing cells that biologists had never noticed before.

"Butterfly wings are often thought of as rather lifeless objects, but they are actually dynamic systems," says Yu. "Among other things, they are highly sensitive light-detecting panels that enable the insects to swiftly determine the intensity and direction of sunlight without using their eyes or antennae."



Thermal images created by Nanfang Yu.



Scott Warren before his trial in 2019.

A new twist on religious liberty

In many parts of the United States, Christian-owned businesses can refuse to hire gay or transgender workers, withhold contraceptive coverage from female employees, and deny services to people of other faiths. This is the result of a wave of so-called religious-freedom acts — passed by Congress and more than twenty states since the 1990s — that permit believers to sidestep anti-discrimination and health-care-access laws.

But since social conservatives have no monopoly on faith, you might wonder: can people with more liberal values cite their spiritual beliefs as justification for ignoring certain laws?

A new report, *Whose Faith Matters? The Fight for Religious Liberty Beyond the Christian Right*, sheds light on the subject. Published by Columbia Law School's Law, Rights, and Religion Project, it collects the stories of individuals from across the political spectrum who have in recent years sought legal exemptions to engage in otherwise unlawful activities that they consider expressions of faith. They include humanitarian workers who feed and clothe migrants in the American Southwest; physicians who wish to be able to discuss abortion with women at federally funded health clinics in Baltimore; social workers who want to

open a supervised injection site for drug users in Philadelphia; and parishioners at a Texas church trying to stop the Trump administration from building its border wall on their grounds.

None of these exemptions have yet been granted, the authors say, in part because legislators, judges, and other government officials tend to look askance at such claims when they come from the left.

"Liberals are often suspected of being guided by political or philosophical aims rather than their religious convictions, especially if they don't belong to a large denomination," says Katherine Franke '81BC, the faculty director of the Law, Rights, and Religion Project and a coauthor of the report.

There are signs that courts are starting to take the religious left seriously, though. Last fall, Scott Warren, an Arizona teacher facing federal charges and a lengthy prison sentence for having provided temporary shelter to two migrants in the Sonoran Desert, was acquitted by a jury after mounting a religious-freedom defense. He admitted to knowingly breaking the law but argued that his spiritual convictions demanded that he help anyone in need.

"This was one of the first times that a federal judge in a criminal case has even

allowed a social activist to introduce a religious-freedom argument as part of his or her defense," says Franke.

According to the new report, the US has a long tradition of granting legal exemptions to people of faith, dating back to the Colonial era, when Quakers and other pacifists were given conscientious-objector status and excused from military service. But until the late twentieth century, such faith-based exemptions were granted only in rare circumstances and typically to ensure the fair treatment of religious minorities. (Permitting Amish parents to homeschool their children, for example.) Franke and her colleagues say that the past quarter century has seen a proliferation of religious-freedom laws that have broken from legal precedent, in that they grant protections to mainstream Christians and force other people to bear significant costs in order to accommodate the Christians' beliefs.

Of course, liberals' growing interest in claiming religious-based legal exemptions raises tricky questions, too. For example, if a humanitarian worker is guided by a strictly secular sense of ethics, does he or she have less of a right to help migrants than a believer does? And at what point does the granting of faith-based legal exemptions threaten the foundation of our democracy, creating, in the ominous words of Supreme Court Justice Antonin Scalia, a system in which "each conscience is a law unto itself"?

The new report wrestles with these and similar questions, offering tips to help public figures evaluate the potential impact of future religious-freedom bills and lawsuits. But it ultimately arrives at a simple conclusion: what's fair for one is fair for all.

"The main takeaway is that we shouldn't see religious liberty as a conservative value," says coauthor Elizabeth Reiner Platt. "We must chart a path toward protecting the religious beliefs and practices of all faith practitioners, with the respect and neutrality that the Constitution demands."

The hidden costs of corporate tax breaks

When New York state and city officials announced in 2018 that they were prepared to give Amazon nearly \$3 billion in tax subsidies to build a new headquarters in Queens, proponents of the deal predicted an economic windfall for the region. They argued that the company's arrival would bring not only the twenty-five thousand jobs that Amazon vowed to create but billions of dollars in revenue for local construction firms, restaurants, retail shops, and other businesses. Critics countered that the \$3 billion would be better spent shoring up the city's public schools, physical infrastructure, and social services.

A new paper by economists Cailin R. Slattery of Columbia Business School and Owen M. Zidar of Princeton University suggests that the critics, who ultimately helped to derail Amazon's plans, may have been right. In a review of hundreds of tax-incentive packages awarded to US corporations in recent years, the researchers found that such deals rarely deliver the broad economic benefits they promise.

"It's not as if they *never* have spillover benefits, but on average we don't see any," says Slattery. "Some projects will provide a bit of a boost to the surrounding economy, but that's not the energetic result you expect to see, considering how these deals are being promoted by the companies and governments that make them."

According to Slattery, elected officials in the US have been relying heavily on tax abatements to lure employers to their districts since the 1990s. States and municipalities currently sacrifice at least \$30 billion annually — or 40 percent of their potential corporate tax revenue — through such subsidies, her research shows. And while these tax breaks have proved to be a reliable, if costly, means of locking down jobs in particular locations, Slattery says that they may be having a detrimental impact on the US economy as a whole, since they siphon money away from public education and infrastructure projects that support long-term economic growth.

There are potential solutions, though. Slattery points out that the EU has prohibited local and regional governments from granting tax subsidies to large companies; instead, such incentives are awarded only at the national level, with the tax relief going to employers that open facilities in economically depressed areas.

"The Europeans are using these kinds of tax incentives very strategically, to help generate economic growth in places that really need it," she says. "But in the US, we have a situation where cities and states are all competing against one another and driving up the size of the incentive packages, which is very advantageous for firms but not necessarily for the public."

STUDY HALL RESEARCH BRIEFS

Delegate like a boss Women in the workplace are less likely than men to delegate tasks to subordinates, which leaves less time for long-term strategic thinking and could hold them back in their careers, according to new research by Modupe Akinola, an associate professor of management at Columbia Business School.

Wine shortage predicted If the planet continues warming at its current pace, the world's wine-growing regions could shrink by as much as 56 percent by the end of the century, finds a study coauthored by Benjamin Cook of Columbia's Lamont-Doherty Earth Observatory.

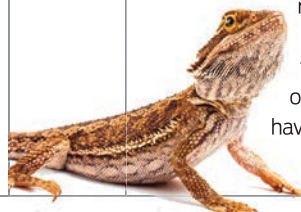
Rotten news about the Big Apple About 20 percent of New York City residents are living below the poverty line at any given time, but a longitudinal study by researchers at Columbia's Center on Poverty and Social Policy provides a more nuanced view of the situation: it shows that nearly half of all New Yorkers spent at least one year impoverished between 2015 and 2018.

Touchy-feely technology Columbia engineers Matei Ciocarlie '10SEAS and John Kymissis, along with graduate students Pedro Piacenza and Keith Behrman, have developed a new type of robotic finger whose tactile sensitivity rivals a human's. The researchers say that it will enable the creation of highly dexterous prosthetics and robotics for use in industry.

C-sections linked to depression Women who have general anesthesia during C-sections are twice as likely to experience severe postpartum depression, according to a study by Jean Guglielminotti, an assistant professor of anesthesiology at Columbia University Irving Medical Center.

Little thrill-seekers Columbia psychologist Nim Tottenham has found that young children are driven to seek out novel experiences, but only in a parent's presence. She says that her study, which is based on laboratory experiments she conducted with preschoolers and their parents, suggests that learning to take risks is a vital aspect of children's psychological growth.

Good night, dragon By analyzing the neuronal activity of the Australian bearded dragon (pictured here), Columbia biologist Maria Tosches and colleagues from the Max Planck Institute for Brain Research have discovered that a tiny, poorly understood brain region called the claustrum is responsible for "slow wave" sleep — the deeply restful stage when neurons reset their connections and consolidate memories. The scientists say their work could have implications for treating sleep disorders.



NETWORK

YOUR ALUMNI
CONNECTION



A rendering of MARSHA, the Mars habitat.

Life on Mars

Jeffrey Montes '15GSAPP and Christopher Botham '16GSAPP
are designing your home — in outer space

Imagine your house — on Mars. It's a multi-level egg-shaped structure built by robots with almost no human assistance. It can withstand the Red Planet's low atmospheric pressure and temperature swings of up to 100°C but is also designed with your well-being in mind. It blocks out harmful radiation but lets in natural light. There's a rec room and even a garden, with exotic houseplants and fresh vegetables.

Sound like the stuff of an Andy Weir novel? Space architect Jeffrey Montes '15GSAPP and technologist Christopher Botham '16GSAPP think it can be real. The two are employed by AI SpaceFactory, a design firm that builds for both Earth and space, and they were part of the team that created MARSHA (from "Mars habitat"), which recently won the \$500,000 grand prize in phase three of NASA's multi-year 3D-Printed Habitat Challenge.

Montes, who was introduced to space architecture in an advanced studio class at Columbia's Graduate School of Architecture, Planning, and Preservation, was born in Puerto Rico and grew up in Boston and

Miami. He says he was drawn to architecture because it is a unique hybrid of fields, including math, science, and art. "There's so much about the concept of space that satisfies my inner philosopher," Montes says. "That studio was the first opportunity I had to think about what it would mean to live in space. I was convinced it could be my career."

After graduation, Montes took an architectural-engineering job but began moonlighting as a space architect, working on freelance projects for NASA and private companies. In 2015, together with a group of colleagues interested in the field, he entered phase one of the NASA challenge, which asked participants to produce an architectural concept for a 3D-printed Mars residence. The group's Mars Ice House, a frozen habitat that takes advantage of the abundance of water and low temperatures in Mars's northern latitudes, beat out more than 165 entries to win the contest.

Botham had already been working at AI SpaceFactory for a few months when Montes brought his space projects to the company in 2017. Botham had earned his undergraduate

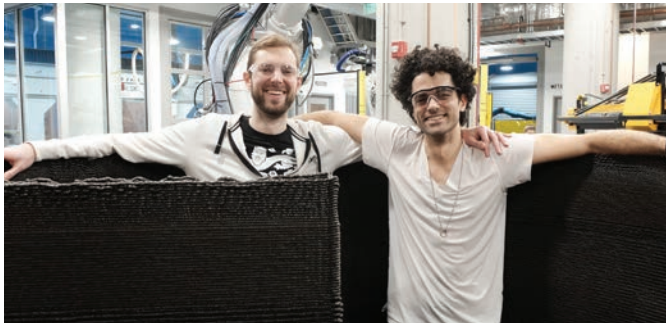
degree at the University of Wisconsin–Milwaukee and then spent five years working for various firms in Chicago on large-scale office towers. After graduate school at Columbia, he continued to work on skyscrapers. But he was always interested in the technical side of architecture, and moving to AI SpaceFactory allowed him to explore bigger scientific challenges.

“The process of architecture is quite conceptual,” Botham says. “But I’ve always had a mind for the technical and computational aspects of it.”

When Montes joined AI SpaceFactory, he thought that Botham’s technical skills would be a good fit for his

“The more I get into robotics, the more I understand what machines can do if properly integrated into the construction industry,” Botham says. “When it comes to architecture, we’ve essentially been building the same way for thousands of years. The materials and the methods have gotten better, but we’re still basically building with sticks and stones. This feels like the next step.”

AI SpaceFactory has drawn on the lessons learned from MARSHA and recycled its materials to develop a new design called Tera, which they want to turn into a B & B here on Earth. Botham and his other MARSHA



Christopher Botham (left) and Jeffrey Montes at their lab at AI SpaceFactory.

team. Specifically, Montes was looking for Botham’s scientific expertise to help manipulate a robot that would 3D-print a prototype of MARSHA. Together with four colleagues, they were able to create the model, at a third of the house’s intended size. NASA found that the material they used in the prototype — a biopolymer-basalt composite — was at least 50 percent stronger and more durable than concrete, suggesting that this might not be just a space project but useful technology for building houses on Earth.

team members plan to print Tera in Garrison, New York, on a site near the Hudson River. Meanwhile, Montes is working on securing grant money for his next project — building a fully functional lunar city.

“There are plenty of people who dedicate their careers to the problems of the present,” Montes says. “I have found that I am most valuable and engaged as someone who thinks about the future. And it’s not the *far* future. I think this is what’s next.”

— Kelley Freund

Pet Projects

Four startups that help keep our four-legged friends safe and happy

Ollie

Gabby Slome '10GS, '15BUS, a former equestrian and lifelong animal lover, got into the dog-food business for the love of Pancho, her rescued Colombian street dog. Pancho suffered from itchy skin and digestive issues, and Slome claims that after she swapped her pup’s processed, preservative-filled kibble for healthy home cooking, she saw a real improvement in his condition. In 2015, inspired by that success, Slome cofounded Ollie, a subscription service that offers meals made from fresh, all-natural, “human-grade” ingredients and customized to the age, breed, weight, and dietary needs of customers’ dogs.



Pawlicy Advisor

This website from Woody Mawhinney '18BUS, a former risk consultant for the Department of Homeland Security and a father of two (dogs), compares, recommends, and sells pet-insurance plans based on customer needs and individual health risks. Targeted to dog and cat parents as well as veterinary offices, Pawlicy Advisor was launched in 2018 out of the Columbia Startup Lab.

Petnet

Cofounded in 2013 by engineer Carlos Herrera '09SEAS, this Los Angeles–based company has brought high technology to a basic item of pet paraphernalia — the food bowl. Petnet’s signature “smart feeder,” which can be controlled through a mobile app or Amazon Alexa, automatically dispenses meals at specified times and customizes portions according to a dog or cat’s age, weight, and activity level.



Diggs

Zel Crampton '13BUS worked as a management and supply-chain consultant for nearly a decade before he started his own company, Diggs, in 2018. The New York–based retailer, which manufactures and sells collapsible dog crates and accessories, says it prioritizes safety, sleek design, and easy setup.

STARTUP SPOTLIGHT

One Size That Fits You

In 2015, Carly Bigi '17BUS, then a young consultant at Deloitte, went shopping for clothes with a male friend. Bigi spent most of the day shuttling between stores and trying on different outfits, none of which really fit, but she watched in awe as her friend went to a single shop and quickly bought clothes tailored to his body.

“The difference was shocking,” she says. “Men’s clothes are all based on measurements — collar size, inseam length, etc. Whereas women often have to guess where they land on a mysterious and pretty arbitrary numerical sizing scale.”

Bigi has always considered herself a problem-solver. Growing up in Houston as the daughter of two NASA scientists, she was raised to think critically about the world around her and to come up with practical solutions when needed. So when it came to women’s clothing, she used the same skill set she’d relied on since she was a child — math, science, and a lot of research — to try to develop a better system.

The result is Bigi’s direct-to-consumer fashion line, Laws of Motion, which uses data science and a proprietary algorithm to provide customers with 144 “microsizes” that fall between the traditional sizes 00 and 24. Customers answer a short “fit quiz” that takes into account attributes like torso length, waist circumference, and bust size in addition to height, weight, age, and other factors.

“Women carry volume differently on their bodies,” Bigi says. “Almost no one is a perfect size two or twenty-two. Statistically, we found that traditional sizing only really fits 2 to 5 percent of the population.”

Bigi had already been accepted into Columbia Business School when she started thinking seriously about devel-

oping Laws of Motion. She had planned to return to Deloitte after graduation, but once she had immersed herself in Columbia’s entrepreneurship curriculum, she decided to pursue her idea full-time.

Bigi graduated in 2017, wearing Laws of Motion’s newly developed Alpha dress — a classic knee-length, short-sleeved shift — under her traditional blue robe, and claimed a spot at the Columbia Startup Lab. That summer, she focused on fundraising, bringing



Laws of Motion’s Alpha dress.

in over a million dollars in her first round. And over the next two years, she built her team strategically, taking the unusual step for a fashion company of bringing on two data scientists as her first two hires. And she conducted extensive customer research, trying to figure out how women shopped and what features were important to them.

Based on what she learned, Bigi tried to create a product that addressed all her customers’ concerns — down to the smallest details. For example, Laws of Motion’s garments are machine-washable. The dresses have zippers with extra-long pulls, to make it easy for women to reach them, and they have sturdy reinforced pockets.

It was also important to Bigi that Laws of Motion practice sustainable, zero-waste manufacturing. After a customer orders an item, the clothing is

custom-cut digitally, which takes about ten minutes. “Because we make everything to order, we don’t have a warehouse full of inventory sitting around,” Bigi says. “Our return rate is also significantly lower than that of companies that use traditional sizing, so we’ve been able to essentially eliminate fabric waste.”

Laws of Motion officially launched in May 2019, starting with a single basic dress, the Alpha. (“It’s honestly appropriate for every occasion, from work to a date,” Bigi says. “I would wear it every single day.”) The response was overwhelming — Laws of Motion has been featured on the *Today* show and *Good Morning America* and was named to *Time* magazine’s list of the best inventions of 2019. The company has now added a second dress as well as a blazer; all come in several colors, and they’re designed to work together.

“Fashion may sound frivolous to some, but research has found that having a garment that fits well can make an enormous difference in terms of confidence in the workplace,” Bigi says. “Women have made strides in asking for equal pay and equal opportunities. I see this as a small but vital piece in the puzzle.”

Since the COVID-19 outbreak began, Laws of Motion has taken on another role: it has temporarily pivoted all production at its New York factory to make masks and gowns for local hospitals. Additionally, it developed one new product — a silky bathrobe perfect for lounging at home while on lockdown. The profits from the robe will help fund its efforts to provide medical supplies to first responders.

“It’s a scary time, but morale on our team has never been higher,” Bigi says. “We are focused on doing what we can to help the world get through this.”

— Rebecca Shapiro

ASK AN ALUM: **TATTOO TRIVIA**

Want a tattoo? Need to get rid of one? **Norman Goldstein '55CC**, a former clinical professor of dermatology at Mount Sinai Hospital in Manhattan and an expert in the care and culture of body art, offers advice.

What would you say to someone who's considering getting a tattoo?

Think your ink through. A tattoo is permanent. Even if you get it removed, you'll always have some kind of scar. I advise against names, especially of partners. After all, you might break up with that Tom, Dick, or Harry. Spell-check everything. You'd be surprised at how often tattoo artists misspell simple words like "beautiful" and "angel" — and be especially vigilant if your tattoo is in a language you don't speak. Go to a licensed tattoo parlor, and if you have AIDS, sarcoma, or any severe medical problem, talk to your doctor first.

What does removal usually cost? Does it hurt?

Treatments aren't that complicated but can cost thousands of dollars depending on the tattoo's age and size. If the tattoo is older, the pigment will be deeper in your skin, so it will be harder to remove. Colored tattoos can also be more of a challenge. If you want to get rid of a five-year-old tattoo sleeve, for example, you'd need to get laser treatment about once a month for six months and that could cost \$2,000 to \$3,000. It doesn't hurt, though. With an anesthetic, you don't feel anything.

Why are tattoos so popular?

They are an art form: living ink on living skin. You can learn a lot about someone by the choice and placement of a design on their body. Tattoos tell people who we are. I am seeing trends toward bigger tattoos and tattoos on younger women. I also see more mothers and daughters getting matching tattoos. Tattooed patients often ask me, "Should I get more?" I tell them it's your skin. It's your canvas. Life is short, so do what you want.

What country has your favorite tattoo culture?

Tattoos have been around for at least ten thousand years, and they are popular across cultures, but Japanese tattoos have always fascinated me. They're slowly and carefully done. I think they're the most artistic body ink. Aside from their beauty, they carry complex social meanings. For example, Japanese gang members have intricate total-body tattoos that symbolize belonging and power.

You just retired after sixty years of clinical practice.

Any plans to get your first tattoo to mark the occasion?

Probably not. I know if I got a tattoo, I wouldn't stop. My body would be covered.

— *Rebecca Kelliher '13BC*

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Gratias tibi valde,
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Creative Space, Creative Mind



Donald M. Rattner '79CC, an architect and design consultant, believes that the way we organize and style our homes has a powerful effect on our happiness and productivity. Here Rattner shares tips adapted from his book *My Creative Space: How to Design Your Home to Stimulate Ideas and Spark Innovation*.

► **OPEN UP YOUR SPACE** Generally speaking, our minds oscillate between two cognitive styles. We sometimes refer to them as “right-brain” and “left-brain,” but more accurate terms are “creative” and “analytic.” We tend to use our creative side when our surroundings feel open and expansive. Studies have shown that working in **a room with a high ceiling**, for example, can make us more receptive to new ideas and new ways of doing things. A constricted space, on the other hand, activates our analytic side — we become more rational, focused, and detail-oriented as we feel the space closing in on us.

Color can significantly impact how we perceive space. Blue and other cool colors are optically recessive, so they appear to move away from us, while



warm colors look like they're advancing toward the eye. That's why painting a room blue will make it feel larger than the same room painted red. There's also evidence that color affects our

reasoning: one experiment found that people exposed to blue scored higher on creative-thinking exercises, while those primed with the color red did better on analytical exercises.



◄ **BRING NATURE INSIDE** Nature plays a huge role in how we think, feel, and act. This is unsurprising, given that human beings and their ancestors evolved in a natural environment. It's only in the last minute of the movie of our existence, so to speak, that we've pivoted to spending as much as 90 percent of our time indoors. When we're deprived of natural stimuli, we're less creative, happy, and healthy.

Integrating elements of nature can help us de-stress and increase our capacity for problem-solving. **Bring plants indoors**, use natural materials like wood or stone, let in daylight, or incorporate natural sounds like running water. Even hanging a landscape on the wall can be restorative.

TOP: ARNAUD MATHOURETT FOR REVELATEUR STUDIO; BOTTOM: STUDIO RELL

NEWSMAKERS

● Comedian and actress **Amanda Seales '05GSAS** joined *The Real*, a nationally syndicated daytime television talk show, as the fifth permanent cohost. Seales is also a star of the HBO series *Insecure*.

● **Ashley James '09CC** was named an associate curator of contemporary art at New York's Solomon R. Guggenheim Museum, making her the first full-time Black curator in the museum's sixty-year history. James previously worked as a curator at the Brooklyn Museum.

● **Robert A. Katzmann '73CC** won the Vilcek Prize for Excellence, an award that honors "champions of immigrant causes." Katzmann, the chief judge of the United States Court of Appeals for the Second Circuit, was recognized for his work broadening access to legal representation for immigrants in need.

● **Morgan Parker '10CC** won the National Book Critics Circle Award in poetry for her collection *Magical Negro*. Parker is the author of two other poetry collections and a young-adult novel.

● The *Financial Times* named **Roula Khalaf '89SIPA** as its editor in chief, making her the first woman to lead the 131-year-old newspaper. Khalaf has been with the paper for twenty-four years, most recently as its deputy editor.

● **Princess Francois '11CC** won the Milken Educator Award, a \$25,000 prize given to top mid-career education professionals. Francois is the assistant principal at Brooklyn's Math, Engineering, and Science Academy, a charter high school.

▶ **FACE OUTWARD** Facing your desk against a wall constricts your sense of space and perhaps your willingness to explore new ideas. It might even make you feel slightly anxious. The reason has to do with evolutionary psychology — early humans who chose habitats that allowed them to see what was in front of them while protecting their blind spots survived predators. Bottom line: to facilitate a positive mindset conducive to creativity, **face into the room**, with a wall or solid element behind you.



◀ **DECORATE WISELY** Despite the trend toward minimalism, less isn't necessarily more. According to research, rooms that have visually arresting architectural features and that are richly furnished with books, art, lamps, and **personal mementos** have a greater potential to inspire innovative thinking than pared-down, boxy spaces.



▲ **KICK BACK AND RELAX** A lot of creative people — especially writers — recline while working. They say their ideas flow better this way. Our brains function differently when we're **relaxed and lying down** — one study showed that people solve creative problems 10 percent faster in a recumbent rather than upright posi-

tion. It certainly worked for Mark Twain and Marcel Proust, both of whom worked in bed. While your own bed probably isn't an ideal place for creative problem-solving — you want to associate it with sleeping, not working — sofas and recliners are great additions to any creative space.

BULLETIN

UNIVERSITY
NEWS AND
VIEWS



Syrian refugee students get help with scholarship applications.

SCHOLARSHIPS ESTABLISHED FOR DISPLACED STUDENTS

Among the tens of millions of people around the world who have been forced from their homes in recent years by violence, persecution, or political instability are many young men and women who have had their education interrupted.

In response, Columbia University has launched a first-of-its-kind scholarship program for displaced students. Administered by Columbia Global Centers, the program will provide financial support for up to thirty students annually, covering full tuition, housing, and cost-of-living expenses at any of the Uni-

versity's eighteen schools. It is open to foreign nationals who are internally or externally displaced, with refugee status anywhere in the world, as well as people who have either received asylum or submitted an application for asylum in the United States.

"The program sends a powerful message about the role that colleges and universities should be playing to help young people whose educations have been disrupted because they have been forced to flee violence and persecution in their home countries," says President Lee C. Bollinger.

COLUMBIA TO CREATE CLIMATE SCHOOL

President Lee C. Bollinger, acting on the recommendation of a faculty task force set up to explore what Columbia can do to address global climate change, announced in January that the University plans to create a new school that will serve as its "central location for climate research and teaching."

While details of the new school's structure and operation are still being worked out, a 104-page report issued by the task force suggests that it will initially focus on creating climate-related courses for both undergraduate and graduate students. Most of its faculty will hold joint appointments with other Columbia schools and departments, and though it will not grant bachelor's degrees at first, the school will likely offer joint master's degrees in areas like climate and law, climate and journalism, or climate and the arts.

Bollinger also announced that Columbia is creating the new position of chief climate officer to guide the University's efforts to reduce its carbon footprint, with the goal of becoming carbon-neutral by 2050.





Tel Aviv University

GS LAUNCHES DUAL-DEGREE PROGRAM WITH TEL AVIV UNIVERSITY

The School of General Studies is offering a new dual-degree program with Tel Aviv University in Israel, beginning this fall.

Students in the program, which is focused in the humanities and social sciences, will spend two years at Tel Aviv University before coming to Columbia to complete the University's Core Curriculum and their major. They will receive a bachelor's degree from each institution.

"By giving students the opportunity to study full-time at a top-tier university in the Middle East before bringing them to study in the Ivy League, we are ensuring that students will not only benefit from being immersed in a wide range of cultures and experiences but also make an immense contribution to the Columbia undergraduate classroom," says School of General Studies dean Lisa Rosen-Metsch '90GS.

NEW PROFESSORSHIP HONORS HOWARD MCPARLIN DAVIS

With a gift from an anonymous donor, the University has established an endowed professorship in honor of the late Howard McParlin Davis, a longtime Columbia teacher of Renaissance art.

The Howard McP. Davis Professorship of Art History will support a Columbia art historian of European art and architecture in the period from 1300 to 1700.

Davis, who passed away in 1994, was a beloved professor to Columbia graduate and undergraduate students for more than four decades. He received several teaching awards, including Columbia's Mark Van Doren Award in 1968 and the Great Teacher Award of the Society of Older Graduates of Columbia in 1970. A 1984 *New York Times* article about his retirement that year called him "one of the finest teachers of art history in the country."

The donor, one of Davis's former students, seeks to honor his legacy of rigorous teaching.

Michael Cole, the chair of Columbia's art history and archaeology department and a specialist in Renaissance and Baroque European art, will be the first recipient of the Davis Professorship.

Cole, who joined Columbia in 2010, is widely considered the leading American scholar of his generation in Renaissance art history.

"I am honored to hold a chair named in memory of such an admired figure," he says.

THREE NEW MEMBERS APPOINTED TO BOARD OF TRUSTEES

Dean Dakolias '89SEAS, Jonathan Rosand '89CC, '94PS, and Fermi Wang '91SEAS have been appointed to the University's Board of Trustees.

Dakolias is the co-chief investment officer of the credit-funds group at Fortress, a New York-based firm that manages over \$40 billion in assets. While studying physics at Columbia, Dakolias was a member of the Lions' lightweight crew team; he now also serves on the engineering school's Board of Visitors and the University's athletic leadership committee. He is cofounder of the Hellenic Initiative, an organization that invests in the economic renewal of Greece and helps refugees in that country.

Rosand, a neurologist with expertise in the genetics of complex diseases, is a professor at Harvard and a member of the Broad Institute of MIT and Harvard. After studying Greek and Latin at Columbia College, Rosand earned his medical degree

from the Vagelos College of Physicians and Surgeons.

The son of the late Columbia art historian David Rosand '59CC, '65GSAS, '14HON, he serves on the advisory council of Columbia's Department of Art History and Archaeology. The Rosand family and their friends endowed the David Rosand Professorship of Italian Renaissance Art History, and they support Columbia's study-abroad programs at Casa Muraro in Venice.

Fermi Wang is the chief executive officer and cofounder of Ambarella, a company that develops semiconductors for use in the processing of digital images and video, including video-security systems, advanced driver-assistance technologies, and robotic applications. Wang earned his master's and doctoral degrees in electrical engineering at Columbia and received the engineering school's 2018 Thomas Egleston Medal for his distinguished professional achievements.



From top: Dean Dakolias, Jonathan Rosand, and Fermi Wang.

BULLETIN

COLUMBIA OFFERS NEW DUAL MASTER'S IN ISLAMIC STUDIES

Columbia University and Aga Khan University in London are launching a dual master's degree program in Islamic studies and Muslim cultures this fall.

Students in the program will begin their studies at Columbia, finish at Aga Khan, and earn master's degrees from both institutions. They will receive intensive foreign-language instruction in either Arabic or Farsi and design their own courses of study in areas like art and architecture in Muslim cultures, the Koran in Europe, and modern Muslim mobility.

The program will be administered by Columbia's Middle East Institute and Aga Khan's Institute for the Study of Muslim Civilizations. Its inaugural director is the political scientist and sociologist Kathryn Spellman Poots, an associate professor at Aga Khan and a visiting associate professor at Columbia.

"This partnership will foster the development of the theoretical and practical perspectives needed to understand how Muslim societies are responding to pressing global challenges," says Ira Katznelson '66CC, Columbia's interim provost and the Ruggles Professor of Political Science and History. "At this moment in history, such an endeavor is especially important."

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Is your estate plan in order?

It's not always a comfortable question to ask. However, it is a necessary one, especially now. Alumna Laura Lattman, CC'01, is pleased to offer her firm's estate planning and other services to the Columbia Community at a courtesy discount during these challenging times. Please get in touch and allow the firm's talented team to assist you.

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Jianfei Zhu '19LAW, Yuan Wang '08LAW, and Yimei Lu '14LAW prepare a shipment in Shanghai.

ALUMNI ASSOCIATIONS IN ASIA OFFER AID AND SUPPORT

This spring, as word spread that hospitals in the Northeast, including Columbia University Irving Medical Center and its affiliates, were experiencing a massive demand for personal protective equipment for doctors, nurses, and other personnel, members of Columbia's vast Chinese alumni network quickly stepped forward to help.

More than a dozen alumni associations across Greater China, including the Columbia Alumni Associations of Beijing, Shanghai, Shenzhen, Guangzhou, Hong Kong, and Chengdu, came together to donate millions of face masks and thousands of goggles, gloves, and protective suits. Members of the Columbia Alumni Association in Taiwan also joined the efforts, helping to source and ship cases of PDI Sani-Cloth AF3, a germicidal disposable wipe that is in short supply. The alumni associations report that the initiative has raised more than \$2 million in cash and



Thomas Lo '08PS

in-kind donations for hospitals in New York, New Jersey, and Massachusetts.

Amelia Alverson, executive vice president for University development and alumni relations, notes that there were so many offers of help that her Irving Medical Center colleagues were overwhelmed by the volume of e-mails. The response not only demonstrated altruism, she says, but underscored the fact that "Columbia alumni are always ready to help solve real-world challenges and engage on a global level."



Sonalee Rau

ARMED WITH OVERDOSE MEDS, STUDENTS SAVE LIVES

Sonalee Rau '14CC was on her way to meet friends for a day of apple-picking in upstate New York last fall when, upon approaching the Metro-North train station at 125th Street in East Harlem, she saw a group of people gathered around a man lying unconscious on the sidewalk.

"I heard a woman yell, 'I think it's an overdose,'" says Rau, a master's student in health policy and management at the Mailman School of Public Health.

Rau, removing a container of the overdose-reversal drug naloxone that she had clipped to the strap of her bag, bent down and administered a spray of the medication into one nostril while a bystander called 911.

"Almost instantly, his eyes flickered," says Rau. "I could see he was coming to, and I heard sirens, and FDNY was there."

Rau isn't the only Columbia student who may have prevented a stranger from dying of an opioid overdose. In the span of less than a year, four others

have intervened in the same way by using naloxone, which is also sold as Narcan. They learned to recognize the signs of opioid overdose and to administer naloxone in training sessions that Columbia has been offering free to students, faculty, staff, and local residents since January 2018.

The training program was launched by Kellie Bryant, an associate professor at the School of Nursing, who recognized that the opioid crisis required a community-wide response in New York City, which has some of the highest rates of fatal overdoses. To date, the University, which works closely with the city's health department on the program, has distributed naloxone kits and provided training to more than 2,500 people.

Michael McNeil, the chief of administration for Columbia Health, says that researchers are also studying the effectiveness of the program. He notes that while many overdose-prevention programs have been launched around the US in recent years, there isn't yet a body of research to back up specific intervention strategies.

"Our team hopes to establish the science that helps define best practices," says McNeil, who recently visited the White House with colleagues to present key findings from the program.

— *Carla Cantor '82SIPA*



A naloxone treatment kit.

ANIL K. RUSTGI NAMED INTERIM HEAD OF MEDICAL FACULTY

Anil K. Rustgi, a prominent oncologist and cancer researcher who was recruited to Columbia last year to direct its Herbert Irving Comprehensive Cancer Center, has been chosen to lead the University's medical faculty on an interim basis, following Lee Goldman's announcement that he is stepping down after fourteen years in the position.

A search committee has been convened to find Goldman's successor.

THE NORDIC PATH TO SUSTAINABILITY

Sanna Marin, Finland's thirty-four-year-old prime minister, came to Columbia to participate in its World Leaders Forum on March 6. In discussing her country's aggressive efforts to become carbon-neutral by 2035, she argued that, with proper planning, economic prosperity and equality can be achieved in tandem with environmental sustainability.

"This is where the Nordic model comes to bear," she said. "I believe that open markets, robust social security, and a good-quality public health-care system are just as essential to change as our energy [policy], taxation, and carbon pricing. These elements, together with free education, help to ensure that during challenging times, one can focus on seeking new opportunities."

To watch video, visit worldleaders.columbia.edu.

Until the End of Time

By Brian Greene (Alfred A. Knopf)

What we call science the Western world once called philosophy. But when investigators of nature in the seventeenth century realized that their observations were jarringly at odds with the assumptions of the ancient philosophers, they began calling themselves “new philosophers.” Eventually, they switched to calling themselves natural philosophers and, later still, philosopher-scientists.

Even today’s plain old scientists, however, remain philosophers of a sort. “In the fullness of time all that lives will die.” So begins *Until the End of Time*, Brian Greene’s ambitious attempt to reclaim science’s philosophical subtext and raise it to the level of conversational, often personal, and — despite that portentous beginning — witty text.

Greene, a Columbia professor of mathematics and physics, the cofounder of the World Science Festival, and a regular television guest expert, has been heading in this direction throughout his writing career. His first book, *The Elegant Universe*, popularized string theory for a lay audience and established his ability to make sense of the seemingly incomprehensible. His next books, *The Fabric of the Cosmos* and *The Hidden Reality*, sampled the more amorphous subjects of space, time, and parallel universes.

In *Until the End of Time* he doesn’t quite abandon the confines of physics, but he does embrace pretty much every other science out there, and he does so in the service of exploring, as the subtitle says, “mind, matter, and our search for meaning in an evolving universe.” In the manner of the natural philosophers of the eighteenth and nineteenth centuries, Greene has become a generalist.

Or at least an interdisciplinarian. He explicitly acknowledges the influence of *What Is Life?*, the 1944 collection of Erwin Schrödinger’s lectures. Schrödinger, Greene writes, “encouraged thinkers to extend the reach of their expertise by exploring realms

outside their traditional intellectual stomping ground” — a call, Greene says, that “in the decades since, as knowledge has become increasingly specialized, a growing cohort of researchers has continued to sound.”

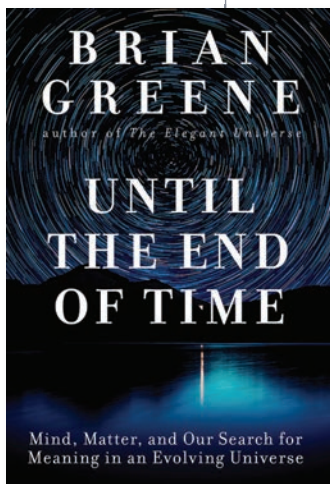
Greene’s new contribution to this movement surveys not only what we know of the history of the universe — the origin of its structures, elements, planets, and creatures — but *how* we think about those subjects, and how that tells us who we are. But who are we? At this point Greene, like so many interdisciplinarians, pauses. In his case, the pause reflects the limitations of physics, including quantum mechanics, in addressing the question — limitations Greene is happy to acknowledge, if only because recognizing them, *cogito, ergo sum*-style, is to be human.

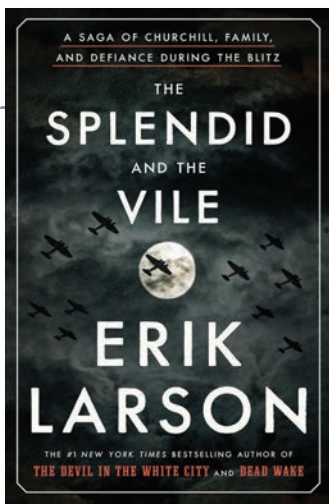
Whatever his philosophical inclinations, Greene remains a physicist at heart, so while his book leads us through myths and religions, it also brings us to the extremes of space and time: to a solitary particle at the lip of a black hole’s event horizon, the inscrutable balance in the cosmic equation. “Rerun the big bang but slightly shift this particle’s position or that field’s value, and for virtually any fiddling the new cosmic unfolding will not include you or me,” Greene writes. Yet here we are. “How spectacularly unlikely,” he concludes. “How thrillingly magnificent.”

Until the End of Time is a survey of the history and philosophy of science, not a radical rethinking of our relationship to the universe. And so readers’ reactions will depend on how they respond to their guide, who possesses an unconventional mind that’s capable of recasting an eternal question as “Does a Roomba possess the traditional quality of free will?”

When I asked myself what I thought of this mind, I recalled an anecdote in a magazine profile of Greene. His then girlfriend inadvertently abandons him at a party, leaving him listening to a boor for an hour, but when she returns, he dismisses her apologies. “I was solving equations,” he says.

I don’t know about you, but that’s my kind of mind. — *Richard Panek*





The Splendid and the Vile

By Erik Larson '78JRN (Crown)

Erik Larson '78JRN is known for looking at history through a novelistic lens — for recreating the intimate details behind pivotal moments. His 2015 bestseller *Dead Wake* detailed “the myriad forces, large and achingly small” that resulted in the sinking of the *Lusitania*. *The Devil in the White City* recounted the true tale of a serial killer at the 1893 World’s Fair.

In his latest book, *The Splendid and the Vile*, Larson turns his attention to Winston Churchill '46HON, examining his daily life during his first year as prime minister, when Hitler was leading a devastating blitzkrieg against the United Kingdom.

Inviting the reader into top-secret meetings within the cabinet war rooms, Larson shows us how the British Bulldog deftly emboldened a small nation to embrace its “finest hour,” while simultaneously betraying enough vulnerability to forge a crucial alliance with Franklin D. Roosevelt '08HON. We see the statesman climbing onto the roof of 10 Downing Street to watch the bombs fall and understand the Führer’s frustration with the symbolic and actual power of Churchill’s stubborn resistance.

This is the Churchill most familiar to us: a master orator, bellicose, belligerent, and bullying. A man with a tight grip on his cigar and his sense of destiny. But Larson’s whole oeuvre is built on subverting the familiar, and though Churchill’s life has already been dutifully recorded in multiple biographies and autobiographies, Larson can still surprise us with his tender insights.

He details Churchill’s marriage, capturing the quotidian squabbles with his wife, Clementine. One day “Churchill was unusually crabby,” writes Larson. “The proximate cause had nothing to do with the war or Roosevelt but, rather, with his discovery that Clementine had used his treasured honey, sent to him from Queensland, Australia, for the frivolous objective of sweetening rhubarb.”

We witness Churchill’s delight in his youngest daughter, Mary; his disappointment with his son, Randolph, an inveterate gambler; his passion for entertaining; and his sense of playfulness. We also understand that Churchill, for all his bluster, was an empathetic soul who cried easily and was fully cognizant of the burden of his position. Larson writes of the time Churchill visited the city of Bristol after a bombing: “Churchill waved at the crowd from the windows, and kept waving until the train was out of sight. Then, reaching for a newspaper, he sat back and raised the paper to mask his tears. ‘They have such confidence,’ he said. ‘It is a grave responsibility.’”

Relying on sources that include the diaries of Churchill’s personal secretary and those of his daughter Mary, along with a trove of letters and newly declassified government documents, Larson invites us to take another look at the statesman we thought we knew. He remains, as always, unerringly faithful to history, and still he manages to puncture the hagiography to create a fresh portrait of this courageous and complicated leader.

— Jeffrey Saks

Teen Beat!

In recent years, the popularity of young adult, or YA, books has exploded. These three new YA novels by Columbia alumni have everything that makes the genre great — escapism, fantasy, romance, and a hearty dose of nostalgia.

AGAIN AGAIN By E. Lockhart '98GSAS

E. Lockhart — a National Book Award finalist and the author of two YA bestsellers — has established herself as a master of the jaw-dropping plot twist. Her new novel follows Adelaide Buchwald through a summer of uncertainty after a family crisis throws her life into upheaval. It’s best to go into Lockhart’s books knowing as little as possible, but we can say that this one is full of love, possibility, and a lot of very good dogs.

THE MALL By Megan McCafferty '95CC

It’s 1991, those halcyon days when it seemed like everything happened at the mall. Cassie Worthy has it all figured out — an acceptance letter to Barnard, a cute boyfriend, and a job at the food court. But then a brutal case of mono ruins everything. Will Cassie be able to pick herself up and find new love between the Sam Goody and the Orange Julius? Megan McCafferty departs from her best-selling Jessica Darling series to conjure this charming throwback.

LOVEBOAT, TAIPEI By Abigail Hing Wen '04LAW

Every summer, teens from around the world travel to Taiwan for what their parents *think* is a strictly educational language-immersion program. In reality, adult supervision is rare, the sake flows like water, and things quickly get steamy. For the elite teens of the Chinese diaspora, it’s a rare taste of total freedom. Abigail Hing Wen’s first novel — already being called *Crazy Rich Asians* for the YA set — debuted at number nine on the *New York Times* bestseller list, and plans are in the works for a movie adaptation.

Sharks in the Time of Saviors

By Kawai Strong Washburn '08SIPA (Farrar, Straus, and Giroux)

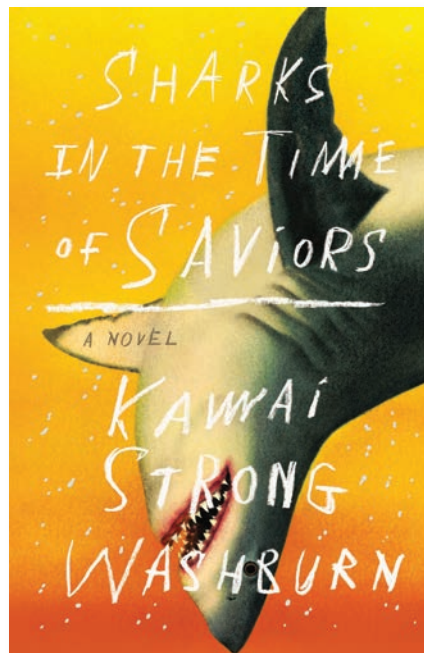
Noa (Noa) Flores is seven years old when his family takes a boat tour in their native Hawaii — a common activity for tourists, but a rare treat for working-class locals like them. Then something remarkable happens that will change the family forever: Noa falls overboard into shark-infested waters. But instead of mauling him, the sharks carry Noa gently in their mouths, returning him to the boat unharmed. “And this,” says Noa’s mother, Malia, “was when I started to believe.”

Malia — the matriarch of the family that Kawai Strong Washburn '08SIPA conjures in his standout debut novel, *Sharks in the Time of Saviors* — is desperate for something to put her faith in. She and her husband have recently moved the family from the Big Island, where they worked as laborers on a sugarcane plantation, to Oahu, and they are drowning in debt. Noa’s rescue is miraculous not only because his life is spared but because it echoes an ancient Hawaiian legend that Malia remembers from her childhood — one that suggests that Noa, now anointed, will be the savior of his family, perhaps even of his people. Initially that prophecy seems to come true when Noa’s touch appears to heal a friend’s wound after an accident. Soon the entire community is waiting to see the “miracle boy,” hoping that he’ll cure their ailments. For the Flores family, Noa’s blessing is the windfall they need: the people who come to see Noa will pay.

But it’s also clear that the miracle will exact a price. Noa’s siblings, despite significant talents of their own — his older brother, Dean, is an exceptional basketball player and his younger sister, Kauai, an accomplished student — grow up bitter in his shadow. Noa, who never asked for his

gift, begins to buckle under the burden of supporting his family’s finances and his community’s health. And when his gift wavers, he wonders if it was ever there at all or just a story the family told themselves.

Though the ancient legend provides the backbone of the book, Washburn expertly fits it into a very modern story,



full of its own kind of myths. For the Flores family, there is the myth of the mainland: the idea that opportunity is just an ocean away. “I’m going to take us all away from this,” Dean thinks. “I’m gonna make it so that can’t no one order us around for anything.” Amazingly, they do all make it to that promised land — Noa gets a scholarship to Stanford, Dean an offer to play college basketball in Spokane, and Kauai an opportunity to study science in San Diego — but of course their demons follow them off the plane. And with the family fractured, strewn across the West Coast, their struggles seem

to intensify. When tragedy strikes, in a beautifully drawn but utterly heart-wrenching sequence of events, they find themselves banding together again, drawn to their homeland as if by a magnet.

But perhaps the most central myth of the novel is that of Hawaii itself. In the American imagination, Hawaii is synonymous with vacation, a paradise put on earth specifically to serve as a respite from real life. Without seeming preachy, Washburn — a native of Hawaii’s Big Island who now lives on the mainland — firmly lays that idea to rest. The author makes it clear that Hawaii is full of the same real life that tourists (disparagingly called *haoles*, or foreigners) are trying to escape: unpaid bills, mental illness, addiction, hunger, homelessness, squandered opportunities. Native Hawaiians are caught in a painful paradox, now utterly dependent for survival on the tourism that stole their homeland. “The kingdom of Hawai’i had long been broken — the breathing rain forests and singing green reefs crushed under the haole fists of beach resorts and skyscrapers.”

Both the *New York Times* and Oprah have heralded Washburn as an exciting new literary voice, and with good reason. A passionate climate activist, Washburn imbues his writing with an ardent respect for his native land and a clear warning about the dangers of treating it, as mainland America has done for a century, like a theme park. His prose is as lush as the islands that he writes about, and he uses it to create an opus that is both deeply specific to Hawaii and full of universal themes — the tensions between magic and reality, expectation and disappointment, and, perhaps most importantly, exile and home.

— Rebecca Shapiro

READING LIST

New and noteworthy releases

DEACON KING KONG

By James McBride '80JRN Deacon Cuffy Lambkin — or Sportcoat, as he's known around his Brooklyn housing project — is a “walking genius, a human disaster, a sod, a medical miracle, and the greatest baseball umpire that the Cause Houses had ever seen.” But one evening in September of 1969, Sportcoat shoots the project's biggest drug dealer, setting in motion a convoluted (and often hilarious) chain of events. Sportcoat is one of James McBride's most memorable characters, and the world that he inhabits is richly, perfectly drawn.

AMNESTY *By Aravind Adiga '97CC* What happens when an undocumented immigrant must decide between his own fate and the common good? Danny (born Dhananjaya Rajaratnam) is a Sri Lankan refugee living a quiet life as a housecleaner in Sydney, Australia. Then he learns that one of his clients has been murdered, and Danny might have information that could lead police to her killer. But if he comes forward, he risks immediate deportation. With his latest book, Aravind Adiga — the Booker Prize-winning author of *The White Tiger* — creates a fascinating parable that exposes some of the unintended consequences of draconian immigration law.

AMERICAN HARVEST

By Marie Mutsuki Mockett '92CC Marie Mutsuki Mockett has spent most of her life on America's liberal coasts — she was raised in a hippie enclave in California and earned a degree in East Asian studies from Columbia — but her father grew up in the heartland, on a seven-thousand-acre wheat farm. When Mockett inherits the land, she decides that she needs to learn more about it — and more importantly, about the people who work the soil. Mockett accepts a harvest-season invitation to travel along the “wheat trail” (a loop from Idaho to Texas) with a group of evangelical Christian migrant workers. The divide between Mockett's America and this rural, conservative one is stark, but Mockett creates a nuanced, empathetic portrait of a vast region little understood by coast dwellers.

IF I HAD YOUR FACE

By Frances Cha '11SOA In South Korea, nearly a third of women between the ages of nineteen and twenty-nine have had some form of appearance-altering surgery or procedure. But what is it like for a young woman to live in a society with such crushingly unrealistic standards of beauty? Frances Cha explores that question in her complex debut novel, which follows four working-class women living in the same apartment building in Seoul. For all the women, financial stability hinges entirely on beauty, a disturbing but fascinating premise.



SOME ASSEMBLY REQUIRED

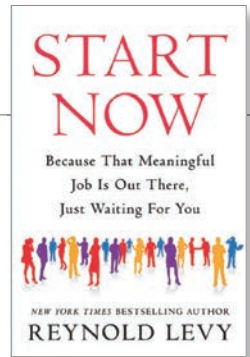
By Neil Shubin '82CC There are some aspects of evolution that, to the layperson, are difficult to parse. For example, how did certain traits necessary for survival (such as lungs for land-dwelling animals or feathers for birds) develop slowly over time? And how did ancient species survive without them? Enter Neil Shubin, a University of Chicago biology professor who is uniquely talented at explaining these challenging concepts to a general audience. His latest book takes readers through some of the big questions of evolution and reveals how DNA technology has completely changed the field over the last fifty years, providing answers to mysteries we once thought unknowable.

AND THEN THEY STOPPED TALKING TO ME

By Judith Warner '90GSAS When Judith Warner's daughter entered middle school, it seemed like mother and daughter were both struggling — her daughter with the social dynamics of this new world and Warner with finding the tools to help her. So the best-selling author decided to learn more, interviewing parents, educators, scientists, and other experts. She found that some adolescent struggles are biological — there is a second wave of brain development between ages eleven and fourteen — but that many are exacerbated by well-meaning but overbearing, often achievement-obsessed parenting. Her book offers practical advice on how parents can avoid this path and work to raise caring, moral teenagers.

How to Get That Dream Job

Reynold Levy '73LAW has led many influential nonprofits, including the Robin Hood Foundation, Lincoln Center, and the International Rescue Committee. In his new book, *Start Now*, he gives advice on building a career that offers both professional and personal satisfaction.



Columbia Magazine: We get the sense that matching people with meaningful work is something of a mission for you.

Reynold Levy: It's less of a mission and more of a calling — and I mean that literally. As someone who's been actively involved in several philanthropic enterprises, I'm often *called upon* to offer advice. What I've learned over the years is that people want to lead a life that matters, and that includes finding meaningful, soul-satisfying, productive, and lucrative work. With *Start Now* my objective was to capture the lessons I've learned and offer a thoughtful guide to finding not just a job but a job that fits you like a bespoke suit.

CM: What's the best way to find meaningful employment?

RL: The key is to take control of your career development. If you want to find a better job, make a career shift, or get a promotion you should be preparing for that transition well before you have to make it. The book is called *Start Now* because the worst time to look for a meaningful job is when you need one.

CM: So you should be building a network?

RL: Yes, and building a network of real relationships is time-consuming.

It requires frequent communication with current and former colleagues, classmates, friends, and acquaintances. In the quest for that dream job, hustle eats strategy for breakfast, and connecting with people on social media is not enough. My advice would be to look at your calendar every month and ask yourself, "Who am I talking to this month? Who am I meeting with? What am I reading?" Give me the answers to those three questions, and I will predict whether your career journey is going to be a productive one.

CM: Levels of job satisfaction are pretty low right now. Why is that?

RL: Managing people — attracting them, recruiting them, and then motivating them with recognition and professional development — is an art form. It's also hard work, and unfortunately many people aren't very good at it. Another factor is that in the last few decades, the working and middle classes have not seen significant wage increases. If they are working hard but not enjoying the financial benefits of doing so, they probably feel like they're running on a treadmill.

CM: But many people who come to you for advice are enjoying lucrative careers.

RL: Well, they could be in jobs that position them for success but not for social consequence. For example, a lawyer might have wanted to make senior partner, and now, fifteen years later, he or she might have reached that goal and be looking around thinking, "This can't be all there is." People often start to feel burnout, boredom, and stress because they know something is missing from their lives.

CM: Does that mean they need a new job?

RL: Perhaps, but for many that emptiness and drift is only tangentially connected to their vocation. I often advise people who feel as if they are in a professional rut to look outside of work. How can you reconfigure your life to leave more room for personal growth, social connection, and civic engagement? How can you contribute to your community?

Those who find their jobs less than fulfilling may well find that their participation in church, volunteer work, mentoring, or some other public service delivers a great deal of satisfaction.

CM: Any specific advice for fellow alumni?

RL: The alumni network is important, but I would encourage Columbians to reach outside it to more diverse groups. They should indulge their intellectual and social curiosity but also test themselves by volunteering and consulting. It's not enough to find out what you're good at: you also have to find out what gives you gratification. It's easy to get too comfortable and slip into professional ruts, so I encourage all types of exploration. But I'm also a realist. There are limits to the number of people we can meet, the organizations we can encounter, and the network we can nurture. That's why I also suggest purposeful reading. Reading gives us a better appreciation of the world and our place in it. Exposure to personalities, ideas, and institutions in books and periodicals will help you in your pursuit of a deeply informed and enriching life. Fortunately, I have no reservations about recommending reading to my fellow alumni. Columbians are gluttons for intellectual punishment. — *Sally Lee*

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RARE FINDS

WHAT IS IT?

Joseph Pulitzer's writing desk

WHEN WAS IT MADE?

Early 1880s

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Pulitzer Hall, seventh floor



A Prize of a Desk

The Wooton Desk Company of Indianapolis sprang up in 1870 at the dawn of the Gilded Age, resulting in expansive desks that seemed to express the limitlessness of America. Captains of industry like oil tycoon John D. Rockefeller and railroad magnate Jay Gould each owned one, and in 1883, Joseph Pulitzer, the new editor and publisher of the *New York World*, got a Wooton of his own. Pulitzer, who had come to America from Hungary at seventeen with little money or English, was now, at thirty-six, shopping like a proper plutocrat. His hand-carved Patent Cabinet Secretary, with ten drawers, ninety-nine compartments, and two mail slots, would sit in Pulitzer's office at the *World* for the next twenty-eight years.

Truth be told, Pulitzer never spent much time at the desk. Afflicted with multiple ailments, he was more likely to be found on his outsize yacht, the *Liberty*, in the care of doctors. Still, from his sickbed he shaped the *World* into a showcase of innovation (illustrations, sensationalism, comics, sports), honing the paper's populist-progressive

slant and attacking the robber barons who orchestrated plunder from behind their own wide-winged Wootons. Engaged in a circulation war with Hearst's *New York Journal*, the *World* trafficked in fake news: baseless reports that Spain had bombed the USS *Maine* in Havana harbor helped to drum up an actual war.

Chastened, Pulitzer retreated from yellow journalism and became a philanthropic promoter of the press's role as the backbone of a functioning democracy. He gave Columbia \$2 million to start the nation's first graduate journalism school, which opened in 1912, and also endow the Pulitzer Prizes, administered at Columbia since 1917.

Pulitzer died in 1911, and after the *World* folded in 1931, his family sold his desk to James Wright Brown, owner of *Editor & Publisher* magazine. Brown donated it to Columbia in 1941. Today the desk sits on the seventh floor of the building that bears Pulitzer's name. It is still in excellent condition — the desk of a man who was never cut out for a desk job. 🐛



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Columbia scientists work
in a genomics lab.

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