

# UNIVERSITY OF PENNSYLVANIA *Almanac*

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## Penn Global Research and Engagement Program Awards \$1.2 Million to Penn Faculty for Research Initiatives

Penn Global has announced that it will support 21 new faculty-led research and engagement projects at a total funding level of \$1.2 million. The Penn Global Research and Engagement Grant Program prioritizes projects that bring together leading scholars and practitioners across the University community and beyond to develop new insight on significant global issues in key countries and regions around the world, a core pillar of Penn's global strategic framework. Launching these projects this year is also integral to Penn's commitment to re-engage a post-pandemic world.

Of the 21 projects, 11 will receive support from the new Holman Africa Research and Engagement Fund (HAREF). The fund was created in 2021 as part of the Holman Africa Initiative following a \$5 million gift from Wendy Holman, W'97 and Wayne Holman to expand financial aid for students and advance actionable research and partnership opportunities in Africa. These 11 projects will support a broad range of activities across the region, including a new fellowship for international development scholars from sub-Saharan Africa; a book that explores West African communities' perception of India and its cultures; and a research project that addresses the health and environmental benefits of clean cookstoves in East Africa.

"The range and reach of this first cohort of HAREF projects are impressive," said Ezekiel

Emanuel, vice provost for global initiatives. "Penn faculty have long been doing critical work in and on Africa. The Holmans' gift enables Penn to consolidate and advance these efforts under a single University-wide initiative. This is an important first step toward making Penn the leading university in the United States for impactful engagement with Africa."

Projects will also engage India, China, Latin America, the Caribbean, and beyond, with several projects simultaneously engaging multiple parts of the world. Projects' disciplinary foci span the humanities, social sciences, and natural and applied sciences, and over a third examine dimensions of climate change or climate justice in a global context. Additional topics explored include sustainable agriculture models, livestock health and well-being, labor market participation and behavior, vaccine attitudes, school leadership and capacity building, and artificial intelligence.

"These awards represent Penn's commitment to global engagement as a critical part of the University's research, teaching, and service missions," said Penn Global's director of strategic initiatives Scott Moore, who oversees the grant program. "We are especially excited to support several multi-region projects, which will help Penn enhance its contributions to understanding and addressing critical global issues, including

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## CHOP and Penn Medicine to Lead Philadelphia Regional Center for Children's Environmental Health

Children in the Greater Philadelphia area face a number of environmental threats to their health, including lead poisoning, asthma from air pollution, and exposure to endocrine-disrupting chemicals. Now, with funding from the National Institute of Environmental Health Sciences, researchers from the Children's Hospital of Philadelphia (CHOP) and Penn Medicine have come together to address these hazards and protect children who live in the region's most vulnerable communities.

The Philadelphia Regional Center for Children's Environmental Health (PRCCEH) is a new children's center that will provide the infrastructure to integrate expertise from the two institutions, along with colleagues from Drexel University, Temple University, Thomas Jefferson University, Lehigh University, Franklin & Marshall College, Villanova University, and the University of Delaware. This is the first time that the region has been awarded funding for a center for children's environmental health.

"The center is an outgrowth of research from Penn's Center of Excellence in Environmental Toxicology (CEET), its long-term collaborators, and its community partners," said CEET director Trevor Penning. "It has long been a vision to bring such a center to the region."

The mission of the center is threefold: to

disseminate children's environmental health knowledge to health care providers, community members, and policy makers; to develop, test, and implement new programs; and to engage researchers and community partners to make policy, practice, and behavioral changes to reduce environmental exposures in early life. It will be led by directors Rebecca Simmons, a professor of pediatrics in the Perelman School of Medicine at the University of Pennsylvania and a neonatologist at CHOP, and Aimin Chen, a professor of epidemiology at Penn, along with deputy director Marilyn Howarth, director of the Community Engagement Core in CEET.

"This center will build on years of extensive research in environmental toxicology and pediatric health at both Penn and CHOP to make real, positive change in the lives of children throughout the region," said Dr. Simmons. "We already have many established connections within communities throughout Philadelphia, Delaware, and other counties, and this grant will allow us to strengthen and expand on those partnerships."

The center will focus on four primary research and translation areas: asthma prevention, lead exposure and harm reduction, air pollution, and reduction of exposure to endocrine-disrupting chemicals.

## Piyali Bhattacharya: Abrams Artist-In-Residence, Center for Programs in Contemporary Writing

Piyali Bhattacharya has been named Abrams Artist-In-Residence at the Center for Programs in Contemporary Writing. Artists-in-residence are outstanding visual artists, musicians, writers, and other creative practitioners who work with students and faculty.

Ms. Bhattacharya is a fiction and non-fiction writer whose short stories and essays have appeared in *Ploughshares*, *The New York Times*, *The Wall Street Journal*, and *National Geographic*, among other publications.

She is the editor of the anthology *Good Girls Marry Doctors: South Asian American Daughters on Obedience and Rebellion*, which received an Independent Publisher Book Award.

Her work has been supported by numerous grants and fellowships, including the National Endowment for the Arts, Hedgebrook, the Virginia Center for the Creative Arts, and ARG5.

Ms. Bhattacharya holds a BA from Bryn Mawr College, an MA from SOAS University of London, and an MFA from the University of Wisconsin-Madison, where she was the winner of the Peter Straub Award for Fiction. From the Kelly Writers House at Penn, she has also been awarded the 2022-2023 Beltran Family Award for Innovative Teaching and Mentoring. She is currently working on her first novel.

David C. Abrams, C'83, PAR'12, PAR'15, and Amy L. Abrams, PAR'12, PAR'15, established the Abrams Artists-in-Residence Fund at Penn Arts & Sciences in 2018. Mr. Abrams is a managing partner of Abrams Capital, LLC, an investment firm.

He served as a member of the Penn Arts & Sciences Board of Advisors from 2010 to 2019. Mr. and Ms. Abrams have generously supported Penn Arts & Sciences priorities over the years.



Piyali Bhattacharya

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## From the Senate Office

### Faculty Senate Executive Committee Agenda Wednesday, April 20, 2022 3–5 p.m. EST

1. Finalize the Minutes of March 23, 2022
2. Tri-Chairs' Report
3. Penn Faculty Climate Pledge
4. Resolution on Formalizing and Making Accessible School and Departmental Faculty Bylaws or Standing Rules
5. Resolution for Election Day
6. Moderated Internal Discussion
7. Discussion with Scott Bok, Chair of the Trustees of the University of Pennsylvania
8. New Business

## From Penn Leads the Vote

### A Message to the Penn Community Regarding the Spring Primary Election

April 8, 2022

Dear Penn Community,

This spring, our campus community will join the rest of Pennsylvania in voting for candidates for a wide range of political offices including Governor, United States Senator, member of the House of Representatives, and in the State Legislature.

While the election is not until *May 17*, you can make a plan today to ensure your vote is counted. Live in New Jersey? [Click here for information pertaining to your primary election.](#)

Since this is a closed primary election, you must be registered with a party to vote for candidates in the primary. Take two minutes to [register to vote](#) or [confirm your party affiliation](#). If you do not select a party affiliation, you will be allowed to vote on ballot measures.

*Right now:* Find your [polling location](#), [make a plan](#) to go on election day, and block out time on your calendar to vote.

- If you prefer to vote by mail, [request your mail-in ballot online](#) and make a plan to return it when received. Your ballot request must be received by May 10, and your completed ballot returned by May 17. However we suggest you complete the mail-in voting process as soon as possible.
- If you live in Philadelphia and prefer to [vote early in-person at City Hall](#), block out time during business hours in your calendar to visit the County Board of Elections Office between April 18 and May 10.

*April 9:* Visit Penn Leads the Vote's table at the day-time Spring Fling festival from noon to 2 p.m. at Penn Park.

- Stop by for free swag!
- We will be on hand to answer any questions voting-related questions and help you make a plan to vote.

If you want help registering to vote or have questions about anything else voting related, PLTV can help:

- Visit Penn Leads the Vote's website built for the Penn community at [vote.upenn.edu](#)
- Email PLTV at [pennvotes@upenn.edu](mailto:pennvotes@upenn.edu)
- Join [PLTV's mailing list](#) (from which they will only send you a few key reminders)

—Penn Leads the Vote

## Admission of the Class of 2026

On Thursday, March 31 at 7 p.m. ET, the University of Pennsylvania announced admission decisions for regular decision applicants to the Class of 2026, the institution's 270th class, to build a class of 2,400 outstanding students across Penn's four undergraduate schools: the College of Arts & Sciences, Penn Engineering, the Wharton School, and the School of Nursing.

There were nearly 55,000 applicants this year—almost 15,000 more applications than just two years ago for the Class of 2024—and students were admitted through Questbridge Match, early decision, and regular decision rounds. We are proud to report that they collectively represent the most diverse group of admitted students in Penn's history in terms of racial and ethnic background, socioeconomic diversity (including those who are eligible for Pell grants), and those who are the first generation in their family to attend a four-year college or university. This group also includes the highest proportion of students from Philadelphia that we've admitted in any year.

We know that people are curious about Penn's enrollment and that potential applicants want data when considering Penn. After the class settles into place in May, we'll post the details about who is enrolling and some of the academic and demographic characteristics that represent students in our incoming class. While our admit rate, testing, and demographic data will be available in various public data sources, we wish to celebrate the students we have invited to the Penn community as individuals and in the ways that we got to know them, through their unique combinations of identity, accomplishment, and talent. In this spirit, we are sharing with you some of the amazing accomplishments we admired while reading their applications.

To start, intellectual discovery and innovation at the highest level drives the Penn community forward every single day. Students admitted to the Class of 2026 have already demonstrated their curiosity, fortitude, and unparalleled excellence in their academic work, which is especially impressive given how much disruption students have experienced over these past two years.

Nearly one-third of the admitted students engaged in academic research during their time in high school, many earning national and international accolades for research that is already pushing the boundaries of academic discovery. Admitted students worked alongside leading faculty and researchers in their fields of interest, co-authored publications included in leading journals, and displayed their ingenuity in making connections across complex and varied disciplines. Our faculty and fellow students across Penn's schools and research centers are ready to welcome this lat-

est generation of dynamic scholars who will continue to create new knowledge to benefit the world.

Further, one of the central tenets of a Penn education is translating knowledge into social-minded action. Over 80% of the admitted students are living out this tradition by engaging in community service activities that have already made a significant impact locally, nationally, and globally. We admire those students who gave their time to help others on an individual level and those who facilitated large-scale initiatives and undertakings that made a wide and lasting impact in their communities. In the midst of the pandemic, many students displayed flexibility and creativity in translating their desire to give back to the virtual realm, pivoting from established practices to new and innovative means of making a difference.

We saw an uptick in interest in sustainability and environmental studies among applicants this year, who channeled their passion into tangible action. We read about students who organized efforts to adopt more sustainable practices and policies, both at a local and national level. Students worked at the cutting-edge of sustainability and energy research and pursued and advocated for environmental equity to address one of the most challenging issues of our time. We look forward to the contributions these young scholars will make to Penn's ongoing efforts to prioritize sustainability efforts and to promote environmentally conscious policies.

Finally, almost 40% of students worked during their time in high school, earning money to support themselves and their families. Our admitted students showed up for shifts as essential and front-line workers, members of service industries, helped parents to reimagine or pivot family businesses in the face of grave economic uncertainty, and gained wide-ranging professional experiences in fields of their current interests. Additionally, many students took on significant responsibility at home with younger siblings, caring for grandparents or elderly neighbors, and taking on household responsibilities. While they gained insights and skills that will serve them in adulthood, we were touched by the number of students who described these contributions simply and with great empathy.

These anecdotes represent just a small snapshot of the incredible individuals that have been admitted to the Class of 2026. We celebrate their intellect, character, integrity, and persistence to achieve their goals amidst the very many challenges of our world right now. We're looking forward to welcoming these students to the Penn community as they enrich our campus with their unique voices. Congratulations to the Class of 2026; we can't wait to see what you do next!

—E. Whitney Soule, Vice Provost and Dean of Admissions

## Penn Global Research and Engagement Program Awards \$1.2 Million to Penn Faculty for Research Initiatives

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climate change, public health, and emerging technologies.”

Faculty awardees are primarily affiliated with eight of Penn’s 12 schools, with over half based in the School of Arts and Sciences. The remaining Penn schools represented include Dental, Design, Education, Engineering, Medicine, Veterinary Medicine, and Wharton.

Penn Global relaunched its competitive research and engagement grant program in fall 2021 after a two-year hiatus due to the COVID-19 pandemic. Penn Global welcomed proposals from Penn faculty across all disciplines and fields of study, with an optional special focus on climate change and climate justice in a global context. The grant program consists of the Global Engagement Fund, the China and India Research and Engagement Funds, and the new Holman Africa Research and Engagement Fund.

The following projects were selected for support from a Penn Global Research and Engagement Grant in 2022:

### Multi-Regional Projects

- *Enchanted Geography: India in the West African Popular Imagination*—David Amponsah, School of Arts & Sciences
- *Global Lives of Medicines: Materials, Markets, and Healing Practices across Asia*—Hsiao-Wen Cheng, School of Arts & Sciences
- *Sighting Black Girlhood in Philadelphia, Jamaica, and South Africa*—Deborah Thomas, School of Arts & Sciences
- *Migrant Associations in Sicily: Growing Capacity for Co-Development*—Domenic Vitiello, Weitzman School of Design
- *Mega-Eco: Best Practice for Implementing Large-scale Nature-based Solutions*—Richard Weller, Weitzman School of Design

### Projects Engaging Africa

- *PENNI/UNILAG Collaboration on Racial Disparities in Ameloblastoma Recurrence*—Sunday Akintoye, School of Dental Medicine
- *Local Histories of Climate Change in the Horn of Africa*—Lee Casanelli, School of Arts and Sciences
- *Penn Development Research Institute (PDRI) Fellowship for African scholar*—Guy Grossman, School of Arts & Sciences
- *Gambia Goat Dairy: A One-Health Teaching and Research Initiative*—Tom Parsons / Brianna Parsons, School of Veterinary Medicine
- *African Dark Earths: Climate Mitigation and Sustainable Agriculture*—Alain Plante, School of Arts & Sciences
- *Health and Environmental Benefits of Improved Cookstoves*—Susanna Berkouwer, The Wharton School
- *Leveraging Early Adolescence for Development (LEAD) in Ghana*—Sharon Wolf, Graduate School of Education

### Projects Engaging India & China

- *Computational Social Listening of Vaccine Attitudes in India to Increase Provider Efficacy*—Sharath Chandra Guntuku, School of Engineering and Applied Science
- *Using Computer Vision to Improve Sustainability of Chinese Pig Farmers*—Tom Parsons, School of Veterinary Medicine
- *Building the Habit of Regular Labor Supply in the Informal Market*—Heather Schofield, The Wharton School/Perelman School of Medicine
- *Kerala Maritime Communities Project*—Thomas Tartaron, School of Arts & Sciences
- *Understanding India’s Urban Future*—Tariq Thachil, School of Arts & Sciences / Center for the Advanced Study of India
- *Climate, Schooling and Learning in Rural India: A Mixed Method Study*—Amrit Thapa, School of Arts & Sciences / Graduate School of Education

### Projects Engaging the Americas

- *Pivoting a Profession: School Leadership Formation Across the Americas*—Michael Johaneck, Graduate School of Education
- *Water Rights at the interface of New Constitutionalism, Climate Change, and Extractivism in Latin America*—Kristina Lyons, School of Arts & Sciences
- *Galapagos Climate Change Adaptation Americas*—Michael Weisberg, School of Arts & Sciences/Perry World House

Learn more about the [2022 cohort of projects](#) supported by the Penn Global Research and Engagement Grant Program.

On *Wednesday, April 27, 2022* at Perry World House, join Penn Global for its annual symposium to learn about the projects supported by the Penn Global Research and Engagement Grant Program. The program will run from 1-5 p.m., followed by a reception. All members of the University community are welcome to attend. [Advance registration is strongly encouraged.](#)

## Deaths

### Horace MacVaugh III, Surgery

Horace MacVaugh III, M’55, a former associate professor of surgery in Penn’s School of Medicine and a former chair of surgery at Lankenau Hospital, passed away on January 24 from complications of Parkinson’s Disease. He was 91.

Dr. MacVaugh was born in Philadelphia. He graduated from Cheltenham High School in 1948, then from Yale University in 1952. In 1955, he received a medical degree from Penn, then did his internship at Abington Memorial Hospital and his residency at the Hospital of the University of Pennsylvania (the latter funded by a fellowship in surgery research). In 1960, Dr. MacVaugh joined Penn’s faculty as an assistant instructor in surgery, then became an associate instructor, assistant professor, and in 1974, an associate professor in the same department. He taught at Penn until 1978.

Concurrent with his rise through the ranks at Penn’s School of Medicine, Dr. MacVaugh joined the U.S. Naval Reserve Medical Corps and rose from lieutenant junior grade in 1955 to retired two-star rear admiral in 1989. He served two years as a flight surgeon for a transport squadron in Hawaii, and also traveled to Japan, Thailand, India, Pakistan, and the Philippines.

During the 1980s, Dr. MacVaugh was a professor of surgery at Jefferson Medical College and chief of Lankenau Hospital’s (now Lankenau Medical Center’s) open-heart surgery team, performing 700 to 800 surgeries a year. He completed one of the first coronary artery bypass operations at the University of Pennsylvania Hospital, served as chief of cardiothoracic surgery at Graduate Hospital (which was part of the University of Pennsylvania Health System until its 2006 closure), and set the foundation for the present success of the Lankenau Heart Institute.

Dr. MacVaugh was a member of many social clubs and professional societies and traveled widely. He frequently appeared for emergency surgeries still dressed in a tuxedo or in his admiral’s uniform, that he had been wearing for the night’s events.

He is survived by his wife Carol Burns, his children Leslie and Horace VI, seven grandchildren, four great-grandchildren, a sister, and other relatives. Services were private, but donations in his name may be made to the Michael J. Fox Foundation for Parkinson’s Research, Donation Processing, P.O. Box 5014, Hagerstown, MD 21741, and the Church of the Holy Trinity, 1904 Walnut St., Philadelphia, PA 19103.



Horace MacVaugh III

### Barbara Penney, Penn Vet

Barbara Eugenia Penney, V’68, a former faculty member in Penn’s School of Veterinary Medicine, passed away on December 25, 2021. She was 87.

Born in Washington, D.C., Dr. Penney graduated from Tufts University, then received a doctorate in veterinary medicine from Penn in 1968. She completed her residency at Penn Vet and joined the faculty there in 1973 as a resident in anesthesia. She rose through the ranks at Penn Vet, becoming an assistant instructor, then a lecturer and an associate. She left Penn in 1983 to join the faculty of the Virginia-Maryland Regional College of Veterinary Medicine at the University of Maryland. She also was involved in the professional sphere, working in the animal research division of NIH for many years, and she was a practicing veterinarian until the late 2010s.

Outside of her professional obligations, Dr. Penney held an assistant handler’s license and traveled on dog show circuits with breeders and handlers. She also had passions for local history and community involvement, sitting on the advisory board of the National Museum of the American Indian in Washington, D.C. and several other conservation organizations. She was also a founding member of Taneytown (Maryland) Baptist Church.

Dr. Penney is survived by her sister Susan Penney (Timothy) Allport; nieces and nephews Linda Allport McDermott, Alicia Penney Corson, Nolan Penney, and Andrew Allport and their spouses; and ten great nieces and nephews. She was predeceased by her brother Richard Penney. A memorial service will be held at a later date.



Barbara Penney

# Honors & Other Things

## Ritesh Agarwal: Heilmeier Award

Ritesh Agarwal, a professor in the department of materials science and engineering in Penn Engineering, has received the 2021-22 George H. Heilmeier Faculty Award for Excellence in Research for his “groundbreaking contributions to materials for applications in integrated photonics and electronics.”

The Heilmeier Award honors a Penn Engineering faculty member whose work is scientifically meritorious and has high technological impact and visibility. It is named for the late George H. Heilmeier, a Penn Engineering alumnus and member of the school’s Board of Advisors, whose technological contributions include the development of liquid crystal displays and whose honors include the National Medal of Science and the Kyoto Prize.

Dr. Agarwal’s current research interests include exploring structural, chemical, optical, and electronic properties of low-dimensional systems and development of new probes to study complex phases of natural and engineered materials. Recently, his group has focused on studying the role of topology in electronic and optical systems and is working to engineer light-matter interactions in such systems to fabricate on-chip chiral photonic devices that can generate, transmit and detect more information than conventional systems by using the spin and orbital angular momentum modes of light.



Ritesh Agarwal

## Inaugural Class of Dr. Sadie Tanner Mossell Alexander Scholars

The University of Pennsylvania Carey Law School is proud to honor the trailblazing legacy of Sadie Tanner Mossell Alexander, Ed’ 1918, G’ 1921, L’ 1927, Hon’ 1974, the first Black woman to graduate from the school, with the introduction of the inaugural class of Sadie Scholars. In addition to being the first Black woman to earn a JD from the law school, Dr. Alexander was also the first Black woman in America to earn a PhD in economics, also from Penn.

From a broad pool of impressive applicants, the scholarship committee selected Kanyinsola Ajayi, L’ 24; Rheem Brooks, L’ 24; and Angel Reed, L’ 24; for their embodiment of Dr. Alexander’s resilient and pioneering spirit.

This full-tuition scholarship in honor of Alexander was initially suggested by members of the school’s Black Law Student Association (BLSA). Next year, the school plans to expand the program, selecting a total of five new Sadie Scholars for the 2022-2023 academic year.

“I am endlessly grateful for the tireless work and advocacy of the members of BLSA, who made the Dr. Sadie T.M. Alexander Scholarship possible,” said Ms. Reed. “It is an honor to carry on Dr. Alexander’s legacy, and the opportunity to do so is evident of [the efforts of] the BLSA students who go above and beyond to make Penn Law an equitable and inclusive environment for the entire community. I hope to make them proud and continue to

break down barriers for those who come after me, as they did for me, and as Dr. Alexander did for so many generations of Black women.”

Throughout her education and career, Dr. Alexander faced harsh discrimination with profound strength and determination. While she was completing her undergraduate studies, librarians refused to allow her to check out books, and restaurants and drugstores near campus refused to serve her. In law school, Dean William E. Mikell attempted to prevent her from joining the *Law Review*, despite her high grades having earned her a position. However, with the advocacy and support of her classmates and professors, Dr. Alexander became the first Black woman to serve on the *Law Review*’s editorial board.

“I am eternally grateful to BLSA for advocating for this scholarship honoring the life and legacy of Dr. Sadie T.M. Alexander,” Ms. Brooks said. “This scholarship acknowledges that, in spite of pervasive anti-Black racism and gender discrimination, Dr. Alexander excelled in multiple disciplines and paved the way for others to follow. Dr. Alexander embodied resilience, excellence, and a deep commitment to racial and economic justice and public service. It is an honor to be part of the inaugural class of Dr. Sadie T.M. Alexander Scholars.”

“As a student and a professional, Dr. Alexander faced cruel and unnecessary discrimination based on her intersectional identity as a Black woman,” said Dean and Bernard G. Segal Professor of Law Ted Ruger. “It is essential that we continue to work toward dismantling systems of oppression and instead cultivating a more just and inclusive environment, both within and beyond our institutional walls.”

## Tonya Bennett: EDUCAUSE Rising Star Award

Tonya Bennett, LPS’ 11, ML’ 23 at Penn Carey Law and director of educational technology at Penn Vet, has been selected to receive the 2021 EDUCAUSE Rising Star Award for her commitment to engaging young professionals from diverse backgrounds in information technology careers.

Presented to talented, early-to-mid-stage career IT professionals in higher education, the Rising Star Award recognizes an emerging leader who has contributed to the field through increased leadership, responsibility, and sphere of impact. Ms. Bennett received the award in October 2021 after being nominated by a colleague. She also regularly contributes to the EDUCAUSE newsletter.

While researching topics like gender and national ethnic conflict in 20th-century genocides for her master’s degree, Ms. Bennett worked as a coordinator for academic and student affairs. After serving as director of academic services and student life for two years at Penn Dental, Ms. Bennett began a position as director of educational technology at Penn Vet in 2018. There,



Tonya Bennett

she has been able to hone her skills in IT and share her knowledge to help others in higher education. At Penn Vet, Ms. Bennett supports faculty, staff, and students with educational technology products and online exams by acting as the primary administrator for programs like Canvas, Zoom, Panopto, E\*Value, and Qualtrics.

Ms. Bennett recently received a Models of Excellence Award from the University of Pennsylvania for “Supporting Penn Through COVID-19 and Return to Campus Work-Team.”

## Martha Curley: Society of Critical Care Medicine Award

Martha A. Q. Curley, the Ruth M. Colket Endowed Chair in Pediatric Nursing and professor of nursing at the University of Pennsylvania School of Nursing, will receive the 2022 Asmund S. Laerdal Memorial Lecture Award from the Society of Critical Care Medicine (SCCM) during its annual congress, which will be held from April 18-21, 2022.

This award was established in 1991 to commemorate Asmund S. Laerdal, the creator of the Resusci Anne manikins used in CPR training procedures. The recipient is chosen from SCCM Critical Care Congress faculty and honored for extensive involvement in critical care research and publishing. Since 1983, the SCCM awards and grants program has promoted excellence in teaching and research with the goal of improved care of critically ill and injured patients.

“I’m extremely honored to receive this recognition for my contributions to the field of pediatric critical care,” said Dr. Curley. “That noted, clinical research in critical care requires interprofessional collaboration and the generosity of patients and families during such a difficult time in their lives.”

## Penn Medicine: LGBTQ+ Health Care Equality Leader

Penn Medicine’s hospitals have been honored by the Human Rights Campaign (HRC) Foundation, the educational arm of the nation’s largest lesbian, gay, bisexual, transgender, and queer (LGBTQ+) civil rights organization, for its dedication and commitment to LGBTQ+ inclusion.

The designations for Penn Medicine’s six acute care hospitals were awarded in the 15th edition of the Human Rights Campaign’s Healthcare Equality Index (HEI), released in March 2022. Evaluating more than 900 healthcare facilities nationwide, the index is the national benchmarking tool that evaluates healthcare facilities on policies and practices dedicated to the equitable treatment and inclusion of their LGBTQ+ patients, visitors, and employees.

Based on the index’s criteria, Chester County Hospital, Lancaster General Health, the Hospital of the University of Pennsylvania, Penn Presby-



Martha Curley

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rian Medical Center, and Pennsylvania Hospital received a score of 100 out of a possible 100 points and are each named “Leaders in Healthcare Equality.” Princeton Health received a score of 90 and is listed as a “Top Performer.”

Penn Medicine is dedicated to ensuring that all patients have access to respectful, compassionate, and equitable healthcare at all times—and the HRC designation is an important part of efforts to ensure health equity for all. The Penn Medicine Program for LGBT Health was launched in 2013 to improve the health of LGBTQ+ individuals. Since then, the program has promoted an LGBTQ-inclusive climate, provided professional development for LGBTQ+ employees, increased LGBTQ+ participation in Penn research initiatives, and improved patient- and family-centered care for LGBTQ+ patients.

### Jhohanna Perez: Frederick Douglass Global Fellowship

School of Arts and Sciences junior Jhohanna Perez has been awarded the CIEE Frederick Douglass Global Fellowship—a fully funded, four-week leadership program for students of color that is set in Ireland and focused on peace, social justice, and conflict resolution. Ms. Perez was selected as one of the 16 fellows from more than 700 applicants who were chosen based on their demonstrated leadership and communication skills and their commitment to agitating for positive social change.



Jhohanna Perez

Ms. Perez was born in the Dominican Republic and now resides in New Jersey. A neuroscience major, she is currently enrolled in a Penn Global Seminar, for which she will travel to Mongolia to explore nomadic traditions as they relate to modern society. Her international focus and commitment to positive social change has been a significant part of her work and engagement at Penn and beyond. Ms. Perez has become an active member of the global community through her co-presidency of Penn’s Global Brigades chapter and her participation in Paper Airplanes. As a recipient of the Hassenfeld Foundation Social Impact Grant, she founded a human rights summer program for high school students. Through these projects, Ms. Perez has served communities outside of Penn by providing care packages to Uyghur refugees in Kazakhstan and establishing vocational training for orphanages in Yemen.

As Ms. Perez looks forward to becoming more involved in the social impact sphere as a Frederick Douglass Global Fellow, she is eager to learn more about injustice and conflict resolution as she converses with leaders in the field. More than anything, she hopes to apply what she learns in this fellowship to her current social endeavors.

### Julia Ticona: CASBS Fellow

Annenberg School for Communication assistant professor Julia Ticona has been named a 2022-2023 fellow of the Center for Advanced Study in the Behavioral Sciences (CASBS) at Stanford University.



Julia Ticona

This year’s cohort of 34 scholars represent 16 U.S. institutions and a diverse range of fields, including anthropology, communication, economics, education, geography, history, law, medicine, philosophy, political science, psychology, public affairs, public policy and urban studies, public health and nutrition, science and technology studies, and sociology.

The program has been bringing scholars from across the country and around the world to learn from each other and conduct research together at Stanford since 1954.

During her fellowship, Dr. Ticona will continue developing a book project that emerged from a series of publications over the last several years related to labor platforms and domestic carework. Over the past two decades, online platforms like Sittercity and Care.com have connected childcare workers such as nannies and babysitters with prospective clients, with millions of profiles created and operations in countries around the world. Yet, as Dr. Ticona has observed, these sites have received little attention in scholarship or broader public discourse on technology and the future of work.

Dr. Ticona’s research on online domestic labor platforms began with a 2018 article in *New Media & Society*, “Trusted Strangers: Carework platforms’ cultural entrepreneurship in the on-demand economy.” The article, co-authored with Alexandra Mateescu, drew from extensive ethnographic interviews with “gig” workers in three states, and was the first peer-reviewed study of carework platforms. The study argues that such platforms are “cultural entrepreneurs” in largely informal markets, which create and maintain distinctions between trustworthy and untrustworthy workers and institutionalize these distinctions into platform features.

Beyond excellence in research and accomplishments, CASBS emphasizes collaborative and cross-disciplinary interactions among its fellows. The program encourages applications from scholars and thinkers who are minorities, women, and representatives of a wide range of institutions and countries.

### Mark Wolff: Nationalities Service Center Award

Penn Dental Medicine’s Morton Amsterdam Dean, Mark S. Wolff, was recognized by Philadelphia-based Nationalities Service Center (NSC) for the school’s service to refugees and other vulnerable populations as one of the honorees at NSC’s annual benefit.

In 2019, Penn Dental Medicine started its Dental Care Center for Vulnerable Populations

to provide dental care to refugees and survivors of psychological and physical violence in partnership with NSC, a refugee services organization, which refers its clients there for dental care. Dean Wolff had helped to establish a similar center while at New York University College of Dentistry before coming to Penn Dental Medicine and wanted to expand Penn Dental Medicine’s community outreach to include these vulnerable populations.



Mark Wolff

“The Dental Care Center for Vulnerable Populations epitomizes one of our goals as a school: To find the most vulnerable people in Philadelphia and to bring oral healthcare and dignity to them through their smile,” said Dean Wolff. “And for our students, working with these patients is an incredible learning experience demonstrating their care and empathy and gives them personal satisfaction that is incredible as well.”

With support from Dean Wolff and under the direction of Olivia Sheridan, professor of clinical restorative dentistry, the Dental Care Center for Vulnerable Populations has grown and evolved since its launch. Two days a week, fourth-year honors students now see patients in the center, including individuals referred from NSC as well as internal referrals from the school’s patient population who self-identify as intimate partner violence survivors and sex-trafficked adolescents from the Adolescent Protective Collaborative at Children’s Hospital of Philadelphia. In addition, as a result of the large recent influx of Afghani refugees to the Philadelphia area, an additional clinical care day was established starting in January, specifically to serve these newly resettled Afghani refugees, also referred by NSC. A cohort of 40 third-year students are now providing care to this population a full day every week. Over 150 patient visits have been completed since January 2022. In both areas, students volunteer their time in addition to their other responsibilities and provide a full range of restorative and preventive care, working with the school’s specialty programs for additional specialized procedures that may be needed. All care is provided free of charge.

“Dean Wolff has shown incredible leadership in creating this unique and amazing resource for vulnerable newcomers in our region,” said Margaret O’Sullivan, Executive Director of NSC. “The clinic provides more than dental care, it offers a return of dignity and healing for our clients.”

NSC, which marks its 100th anniversary this year, serves approximately 5,000 immigrants and refugees annually, providing health access, refugee resettlement, ESL classes, employment readiness, free and low-cost legal counsel, and holistic treatment for trauma.

## Morris Arboretum: Earth Month Events

Since its founding, the Morris Arboretum has been committed to sustaining our natural resources. Even though Earth Day is officially *Friday, April 22*, the arboretum is celebrating all month long with environmentally focused events, classes, and tours sure to enlighten and delight the entire family! Visit [morrisarboretum.org](http://morrisarboretum.org) for more information.

### Upcoming April Events

*"Ethel Day" Virtual Symposium: Unearthed History of Black Garden Clubs in America*  
Thursday, April 21, 11 a.m.–1 p.m., \$20

African American gardeners have contributed to the gardening paradigm, the beautification movement, and American history for centuries. This year marks the 90th anniversary of the Negro Garden Club of Virginia, which was a pivotal moment for African American gardeners and their efforts to organize. In this one-day, two-hour virtual symposium we celebrate and reflect on how that work impacts our communities today. Register [here](#).

*How Trees Speak to Us: The Human-Tree Connection*  
Friday, April 22, noon–1 p.m., free and virtual.

Where would we be without trees? The human experience has forever been intertwined with the persistent presence of trees. Join us during lunch for a lively moderated panel discussion that will offer unique perspectives on this fascinating topic from professionals in horticulture, environmental history, and Philadelphia urban forestry. Register [here](#).

*Going Native: Gardening with Native Plants and Wildflowers*  
Saturday, April 23, 10:30 a.m.–noon; on location

Because native plants are adapted to our region's growing conditions, they are great low-maintenance alternatives to non-native plants. Natives are important because wildlife and pollinators depend on them for survival. Learn how these ecologically friendly choices can beautify your landscape, save you time and money, attract birds and pollinators to your garden, and provide visual interest all year long. Register [here](#).

*Garden Highlights Tour: A Focus on the Environment*  
Weekends, 1 p.m.

On-location; included with general Morris Arboretum admission. Weather Permitting.

## Applications Being Accepted for Penn Global Convening Grants

As of April 1, Penn Global will be accepting proposals for convening grants of up to \$10,000 on a rolling basis year-round. Penn Global convening grants support conferences, symposia, workshops, and scholarly meetings that focus on topics related to areas outside of the United States that may be national, regional, trans-regional or global in nature. Convenings must also advance Penn's global engagement and align with our grant program priorities.

Grants are open to Penn faculty and senior administrators, as well as to Penn graduate students, post-doctoral researchers, and other affiliates with a limited-duration appointment provided that they a) obtain letters of support from a sponsoring, Penn standing faculty member and a Penn-based business administrator affiliated with the applicant's school or center who would assist with project financial management, and b) that any funds awarded are spent no later than six months before the expiration of the affiliate's appointment at Penn.

Grants will support convenings with clear end products and avenues for continued research, curricular or course development initiatives, and/or significant contributions to broader debates on global issues. Convenings should also provide enrichment opportunities to interested faculty, students, and staff and enhance existing research and scholarly programs, particularly in disciplines where external funding is difficult to obtain.

Convenings typically require matching funds to be contributed from an external or other Penn source. Exceptions may be made on a case-by-case basis.

Applicants are encouraged to submit an application at least six months in advance of the planned event. To learn more, visit [Penn Global's website](#) for details on minimum requirements, what we look for in applications, how

to apply, allowable and unallowable costs, and more.

In addition, Penn Global anticipates a call for proposals in fall 2022 for research grants to Penn faculty members and senior administrators. Research grants support larger and longer-term global research and engagement activities for a summer 2023 project launch. For more information, visit [Penn Global's website](#).

Convening and research grants are supported by the [Penn Global Research and Engagement Grant Program](#), inclusive of the Global Engagement Fund; Penn China Research and Engagement Fund; Penn India Research and Engagement Fund; and Holman Africa Research and Engagement Fund.

—Penn Global

## Applications Open for 13<sup>th</sup> Annual Milken-Penn GSE Education Business Plan Competition

Applications are now open for the 13<sup>th</sup> annual Milken-Penn GSE Education Business Plan Competition, a yearly contest that invites early-stage ventures from around the world using innovation to address systemic inequities in education. The competition offers tens of thousands of dollars in cash and prizes. Applications will be accepted through *April 29*, with finalists being announced on *September 1* and a virtual finals ceremony to be held on *October 12*.

The Education Business Plan Competition (EBPC), launched in 2010 as a collaboration between Penn GSE and the Michael and Lori Milken Family Foundation, is considered the most prestigious and well-funded competition of its kind—awarding more than \$1.5 million in cash prizes since its founding.

Thousands of applicants from more than 50 countries have participated over that 12-year stretch, each proposing their own solutions to promote educational innovation and make a global impact for educators and learners worldwide. Winners have gone on to earn more than \$150 million in funding.

Last year's winner, Readlee, is a platform that uses artificial intelligence to improve academic outcomes by listening to students read and providing real-time feedback. It captured the Michael & Lori Milken Family Foundation's Grand Prize of \$40,000.

Penn GSE is one of the nation's premier research education schools. No other education school enjoys a university environment as supportive of practical knowledge-building as the University of Pennsylvania. The GSE is notably entrepreneurial, launching innovative degree programs for practicing professionals and unique partnerships with local educators, as well as the first-ever business plan competition devoted exclusively to educational products and programs.

The EBPC is part of [Catalyst @ Penn GSE](#), a collection and facilitator of unique, innovative initiatives at Penn GSE aimed at addressing persistent and emerging problems in education. To learn more and apply to the 2022 EBPC, [click here](#).

## Creating Canopy Tree Giveaway

Creating Canopy is Penn's annual tree giveaway program for University and Health System employees. One of the goals of Penn's *Climate and Sustainability Action Plan 3.0* is education about the importance of trees and the creation of public open spaces. Since the start of Creating Canopy in 2011, we have added nearly 2,500 trees to the tree canopy in the greater Philadelphia area.

For 2022, we are continuing some pandemic protocols and limiting the size of our event on *Thursday, May 5*, from 3–6 p.m. We will be offering just 100 trees, only to residents of the City of Philadelphia. Staff members of the University or UPHS will need a valid Penn ID to pick up their tree. We are offering one tree per household.

Tree species available this year are: American Persimmon, Arkansas Black Apple, Black Gum, Cherokee Brave Dogwood, Chicago Hardy Fig, Liberty Apple, Moonglow Magnolia, Rising Sun Redbud, Sassafras, Swamp White Oak. Details about each tree are available on our website: <https://www.sustainability.upenn.edu/participate/staff-and-faculty/creating-canopy>.

Registration will open at 10 a.m. on *Monday, April 18* on our website. Trees are available on a first-come, first-served basis. Any reserved trees not picked up by 6 p.m. on May 5 will be available after the event, also on a first-come, first-served basis.

—Penn Sustainability

# Update

April AT PENN

## CONFERENCES

**16** *Innovation, Fabrication, Conservation: Responding to the Past(s) of East Asian Cultures*; will bring graduate students working in East Asian studies at Penn and institutions around the world together to showcase their research, exchange ideas, and engage in stimulating debate; 9 a.m.-6 p.m.; room 208, Houston Hall; register: <https://web.sas.upenn.edu/calgradcon/register/> (Wolf Humanities Center, East Asian Studies).

**18** *CRIM Day 2022*; displays the current projects of criminology masters students and gives undergraduate class a chance to learn more about criminology's master's program; features a keynote speaker discussing a relevant topic in criminology; 1:45 p.m.; room B6, Stiteler Hall; register: [breyanam@sas.upenn.edu](mailto:breyanam@sas.upenn.edu) (Criminology).

## EXHIBITS

### Penn Museum

Online and in-person events. Info: <https://www.penn.museum/calendar>.

**15** *Virtual Global Guide Tour: Middle East Galleries*; 2:30 p.m.

**16** *Africa Galleries Tour*; 11 a.m.  
*Global Guide Tour: Mexico & Central America Gallery*; 2:30 p.m.

## FILMS

**14** *Loose Cannons*; the story of Tommaso, an Italian pasta heir who struggles to reveal to his family that he is gay; 6 p.m.; LGBT Center (LGBT Center, Cinema Studies).

**16** *Behemoth*; details the economic victories and ecological costs of mining in Asia, beginning with a mining explosion in Mongolia and ending in a ghost city west of Beijing; begins at noon; virtual screening; register: <https://tinyurl.com/behemoth-apr-16> (Center for Advanced Research in Global Communication; Center on Digital Culture and Society). *Through April 20.*

## FITNESS & LEARNING

**13** *Women in Media and Communication Wikipedia Edit-a-thon*; an afternoon of editing Wikipedia pages for women in communication and media, led by Katie Rawson and Isabelle Langrock; 1-3 p.m.; library, Annenberg School, and Zoom webinar; register: <https://libcal.library.upenn.edu/event/8991586> (Penn Libraries, Annenberg School).

**18** *Earth Week Data Jam*; week of sessions in which participants can create, analyze, visualize, and experiment with data related to environmental issues and the natural world; noon; hybrid events at various locations; full schedule: <https://www.library.upenn.edu/about/exhibits-events/earth-week-data-jam> (Penn Libraries). *Various times through April 22.*

### Center for Undergraduate Research and Fellowships (CURF)

Online events. Info: <https://www.curf.upenn.edu/curf-events>.

**15** *Fulbright Study/Research Brainstorming Workshop*; 3 p.m.

**19** *Fulbright U.S. Student Program Information Session*; 4 p.m.

## MUSIC

### Penn Live Arts

In-person events. Info: <https://pennlivearts.org/events/>.

**15** *The Pennchants: The Handsome Menace*; a cappella group the Pennchants' annual spring show, featuring solos from all 15 of their talented young singers; 6:30 p.m.; Harold Prince Theater. *Also April 16, 7:30 p.m.*

## ON STAGE

**16** *Penn Chinese Theater: Goodbye, Mr. Loser*; popular Chinese comedy with elements of music and twists of today's pop culture; 6 p.m.; Harold Prince Theater, Annenberg Center; tickets: <https://pennlivearts.org/event/penn-chinese-theater> (Penn Chinese Theater, Penn Live Arts).

## TALKS

**13** *The Declaration's Journey: Thinking About the 250th Exhibition at the Museum of the American Revolution*; Philip Mead, Museum of the American Revolution; noon; Zoom webinar; register: <https://libcal.library.upenn.edu/calendar/kislak/mead> (Penn Libraries).

*The End of the Affair: Reflecting on the Ruins of Soviet-Third-World Networks*; Rossen Djalalov, New York University; noon; room 330, Fisher-Bennett Hall (Cinema & Media Studies).

*First Results from the Muon g-2 Experiment at Fermilab's Muon Campus*; Chris Polly, Fermilab; 3:30 p.m.; room A4, DRL, and Zoom webinar; join: <https://tinyurl.com/polly-talk-apr-13> (Physics & Astronomy).

**14** *Converging Across Oceans: Approaches to Logistics, Environment, and Power*; panel of speakers; 9 a.m.; Zoom webinar; register: <https://tinyurl.com/cargc-talk-apri-14> (Center for Advanced Research in Global Communication, Center on Digital Culture and Society).

*Role of Solvation and Dynamics on Ion Transport in Polymer Electrolytes*; Shrayesh Patel, University of Chicago; 10:30 a.m.; Wu & Chen Auditorium, Levine Hall (Materials Science and Engineering).

*Exploiting Environmental Fields for Orienteering and Planning Problems*; Ariella Mansfield, mechanical engineering & applied mechanics; 1:30 p.m.; Zoom webinar; info: [petterlit@seas.upenn.edu](mailto:petterlit@seas.upenn.edu) (Mechanical Engineering & Applied Mechanics).

*Deterritorializing the Flesh: HIV/AIDS and Black Queer Aesthetics*; Jamal Batts, fine arts; 6 p.m.; Institute of Contemporary Art, and Zoom webinar; register: <https://tinyurl.com/batts-talk-apr-14> (Fine Arts, ICA).

**19** *The Vow from Hiroshima: Film, Advocacy, and Nuclear Disarmament*; panel of speakers; 4 p.m.; online webinar; register: <https://tinyurl.com/pwh-talk-apr-19> (Perry World House).

To submit an event for a future AT PENN calendar or update, email [almanac@upenn.edu](mailto:almanac@upenn.edu).

## The University of Pennsylvania Police Department Community Crime Report

**About the Crime Report:** Below are the Crimes Against Persons or Crimes Against Society from the campus report for **March 28-April 3, 2022**. Also reported were 15 crimes against property (6 thefts from building, 4 retail thefts, 2 automobile theft, 2 frauds, and 1 other theft) with 2 arrests. Full reports are available at: <https://almanac.upenn.edu/sections/crimes> Prior weeks' reports are also online. -Eds.

This summary is prepared by the Division of Public Safety and includes all criminal incidents reported and made known to the University Police Department between the dates of **March 28-April 3, 2022**. The University Police actively patrol from Market St to Baltimore Avenue and from the Schuylkill River to 43rd St in conjunction with the Philadelphia Police. In this effort to provide you with a thorough and accurate report on public safety concerns, we hope that your increased awareness will lessen the opportunity for crime. For any concerns or suggestions regarding this report, please call the Division of Public Safety at (215) 898-4482.

03/28/22	10:29 AM	3925 Walnut St	Merchandise taken by force/Arrest
03/31/22	1:38 AM	4233 Chestnut St	Complainant assaulted by known offender/Arrest
04/02/22	10:58 PM	4100 Baltimore Ave	Complainant received threats via Facebook by known offender
04/03/22	5:20 PM	200 S 38th St	Complainant stated two unknown offenders pointed guns at him

### 18th District

**Below are the Crimes Against Persons from the 18th District:** 9 incidents (4 robberies, 2 aggravated assaults, 2 assaults, and 1 domestic assault) with 2 arrests were reported for **March 28-April 3, 2022** by the 18th District covering the Schuylkill River to 49th St & Market St to Woodland Avenue.

03/28/22	8:50 AM	4700 Baltimore Ave	Robbery
03/28/22	10:59 AM	3925 Walnut St	Robbery/Arrest
03/29/22	7:32 AM	4508 Sansom St	Assault
03/29/22	3:39 PM	4700 Chestnut St	Aggravated Assault
03/30/22	7:53 AM	428 S 45th St	Robbery
03/31/22	2:22 AM	4233 Chestnut St	Domestic Assault/Arrest
04/03/22	10:55 AM	3401 Civic Center Blvd	Assault
04/03/22	5:22 PM	200 S 38th St	Aggravated Assault
04/03/22	8:40 PM	4644 Hazel Ave	Robbery

## Almanac

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URL: [www.upenn.edu/almanac](http://www.upenn.edu/almanac)

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## Penn Researchers Shorten Manufacturing Time for CAR T Cell Therapy

A new approach from Penn Medicine researchers could cut the time it takes to alter patients' immune cells for infusion back into the body to find and attack cancer. The cell manufacturing process for this type of immunotherapy that was pioneered at Penn—CAR T cell therapy—typically takes nine to 14 days. In a pre-clinical study published in *Nature Biomedical Engineering*, a team in the Perelman School of Medicine abbreviated this process and generated functional CAR T cells with enhanced anti-tumor potency in just 24 hours.

These results demonstrate the potential for a vast reduction in the time, materials, and labor required to generate CAR T cells, which could be especially beneficial in patients with rapidly progressive disease and in resource-poor healthcare environments. The study was led by the Center for Cellular Immunotherapies researchers Michael C. Milone, an associate professor of pathology and laboratory medicine, and Saba Ghassemi, a research assistant professor of pathology and laboratory medicine.

"While traditional manufacturing approaches used to create CAR T cells that take several days to weeks continue to work for patients with 'liquid' cancers such as leukemia, there is still a significant need to reduce the time and cost of producing these complex therapies," Dr. Milone said. "Building on our research from 2018 that reduced the standard manufacturing approach to three days, and now to less than 24 hours, the manufacturing method reported in this study is a testament to the potential to innovate and improve the production of CAR T cell therapies for the benefit of more patients."

CAR T cell therapy is a type of immunotherapy used to fight cancer with a patient's own altered immune cells. T cells are taken from a patient's blood and changed in the lab by adding a gene for a receptor (called a chimeric antigen receptor or CAR). The CAR T cells are then infused back into a patient to find, bind to, and destroy cancer cells. However, when removed too long from the body during the engineering process, T cells can lose their ability to replicate, which is central to their effectiveness as a living drug. Thus, the Penn research team sought to shorten the process without sacrificing the T cell potency. In animal models, the researchers learned that the quality, rather than the quantity, of the CAR T cell product is an important determinant of their efficacy. Their experiment provided evidence that a smaller number of high-quality CAR T cells that are generated without extensive expansion outside the body is superior to a higher number of reduced-quality CAR T cells that are extensively expanded before returning to the patient.

Traditional manufacturing approaches require T cells to be stimulated (or "activated") in a way that induces the cells to replicate and expand in number. A key to the Penn researchers' manufacturing approach is the lentiviral vector that delivers the CAR gene to the T cells. Lentiviral vectors, which are derived from the human immunodeficiency virus (HIV), are able to transfer genes like the CAR to cells without the need for this initial "activation" step, but the efficiency of this process was low. Using engineering approaches that partly built upon knowledge of how HIV naturally infects T cells, the Penn researchers developed a way to overcome this requirement for T cell activation and deliver genes directly to non-activated T cells freshly isolated from the blood. This had the dual benefit of expediting the overall manufacturing process while also maintaining T cell potency. Patients are not being infected with HIV through this process. The process of engineering T cells is costly and time-intensive, since the treatment must be manufactured for each individual patient. The team hopes that cutting manufacturing time could make the therapy more cost-effective and accessible to more patients.

"This innovative approach is remarkable in that it may be able to help patients who might otherwise not be able to benefit from CAR T cell therapy such as those with rapidly progressing cancer due to significant time currently need to generate these therapies," Dr. Ghassemi said. "Efficient reprogramming of T cells with a CAR in as little as 24 hours in a more simplified manufacturing process without T cell activation or extensive culture outside the body also offers the possibility of expanding where and when these therapies are produced. Not only might it improve the production capacity of centralized manufacturing facilities, but if simple and consistent enough, it might be possible to produce these therapies locally near the patient, which could be tantamount to addressing the many logistical challenges that impede delivery of this effective therapy, especially in resource-poor environments."

This study is a catalyst for more clinical research to investigate how the engineered CAR T cells, through this shortened approach, work in patients with specific cancers. Penn scientists led research, development, and clinical trials of this pioneering CAR T therapy in collaboration with Novartis and Children's Hospital of Philadelphia. In 2017, the experimental therapy, now known as Kymriah®, became the first CAR T cell approved by the

U.S. Food and Drug Administration (FDA), for the treatment of pediatric and young adult patients with acute lymphoblastic leukemia (ALL). The therapy was also approved for certain types of lymphoma in 2018.

The study originated in work supported by the Novartis Institutes for BioMedical Research through a research alliance with the University of Pennsylvania. It was funded by a St. Baldrick's Foundation Scholar Award, a National Blood Foundation Scientific Research Grant Award, and the Office of the Assistant Secretary of Defense for Health Affairs through the Peer-Reviewed Cancer Research Program.

Adapted from a [Penn Medicine News press release](#), March 29, 2022.

## Researchers Find Topological Phenomena at High Technologically Relevant Frequencies

New research published in *Nature Electronics* describes topological control capabilities in an integrated acoustic-electronic system at technologically relevant frequencies. This work paves the way for additional research on topological properties in devices that use high-frequency sound waves, with potential applications including 5G communications and quantum information processing. The study was led by Qicheng (Scott) Zhang, a postdoc in the lab of Charlie Johnson, in collaboration with the group of Bo Zhen and colleagues from the Beijing University of Posts and Telecommunications and the University of Texas at Austin.

This research builds on concepts from the field of topological materials, a theoretical framework developed by Penn's Charles Kane and Eugene Mele. One example of this type of material is a topological insulator, which acts as an electrical insulator on the inside but has a surface that conducts electricity. Topological phenomena are hypothesized to occur in a wide range of materials, including those that use light or sound waves instead of electricity. Dr. Zhang was interested in studying topological phononic crystals, metamaterials that use acoustic waves, or phonons. In these crystals, topological properties are known to exist at low frequencies in the megahertz range, but Dr. Zhang wanted to see if topological phenomena might also occur at higher frequencies in the gigahertz range because of the importance of these frequencies for telecommunication applications such as 5G.

To study this complex system, the researchers combined state-of-the-art methodologies and expertise across theory, simulation, nanofabrication, and experimental measurements. First, researchers in the Zhen lab, who have expertise in studying topological properties in light waves, conducted simulations to determine the best types of devices to fabricate. Then, based on the results of the simulations and using high-precision tools at Penn's Singh Center for Nanotechnology, the researchers etched nanoscale circuits onto aluminum nitride membranes. These devices were then shipped to the lab of Keji Lai at UT Austin for microwave impedance microscopy, a method that captures high-resolution images of the acoustic waves at incredibly small scales. Dr. Lai's approach uses a commercial atomic force microscope with modifications and additional electronics developed by his lab.

"Before this, if people want to see what's going on in these materials, they usually need to go to a national lab and use X-rays," Dr. Lai said. "It's very tedious, time-consuming, and expensive. But in my lab, it's just a tabletop setup, and we measure a sample in about 10 minutes, and the sensitivity and resolution are better than before."

The key finding of this work is the experimental evidence showing that topological phenomena do in fact occur at higher frequency ranges. "We demonstrated that we can have this interesting physics at a useful range, and now we can build up the platform for more interesting research to come," said Dr. Zhang. Another important result is that these properties can be built into the atomic structure of the device so that different areas of the material can propagate signals in unique ways, results that were predicted by theorists but were "amazing" to see experimentally. "That also has its own important implications: When you're conveying a wave along a sharp trail in ordinary systems that don't have these topological effects, at every sharp turn you're going to lose something, like power, but in this system you don't," said Dr. Johnson, the Rebecca W. Bushnell Professor of Physics and Astronomy. Researchers say that this work provides a critical starting point for progress in both fundamental physics research as well as for developing new devices and technologies. In the near term, the researchers are interested in modifying their device to make it more user-friendly and improving its performance at higher frequencies, including frequencies that are used for applications such as quantum information processing.

"In terms of technological implications, this is something that could make its way into the toolbox for 5G or beyond," said Dr. Johnson. "The basic technology we're working on is already in your phone, so the question with topological vibrations is whether we can come up with a way to do something useful at these higher frequency ranges that are characteristic of 5G."

Adapted from a [Penn Today article](#) by Erica K. Brockmeier, March 28, 2022.