



ILLINOIS
SCIENCE &
TECHNOLOGY
COALITION

8TH EDITION

2026

RESEARCHERS TO KNOW

from idea to impact



From the Illinois Science & Technology Coalition

Every discovery starts with a person who decides to keep going. Research is patient work, built over years through early mornings in the lab, long conversations with students, and the steady effort of turning big questions into real answers. Progress like that rarely announces itself. It accumulates, one experiment, one mentee, one paper at a time.

That spirit is the story of this year's Researchers to Know. Our 2026 theme, "Still Building: People, Persistence, and Progress in Illinois Research," celebrates the people behind the state's scientific momentum. This year's honorees keep asking hard questions, keep mentoring students, keep publishing, and keep showing up for the communities their work serves.

For 2026, we again invited nominations from across Illinois' academic institutions, and we held to a simple goal: to identify individuals whose work exemplifies excellence across research impact, leadership, recognition, and public engagement. The response made one thing clear. Illinois has no shortage of excellence to celebrate.

After a rigorous review, we're proud to feature an expanded class of 15 researchers in this year's spotlight. They come from institutions across the state, representing the full breadth of Illinois' research community—a range that reflects a simple truth: world-class research happens in every corner of this state, and excellence is found wherever people commit themselves to the work.

Each of these researchers brings something distinct: cutting-edge laboratories, world-renowned scholarship, and deep commitments to the next generation. Some are advancing treatments for disease. Others are designing new materials, protecting the systems we all rely on, or helping communities make sense of emerging technology. Different fields, different methods, same underlying drive. The questions they pursue touch every corner of daily life, and they remind us that science is not abstract. It's tangible. It's hopeful. And it starts with people who decide to keep building.

Thank you to everyone who submitted nominations. Your time, insight, and care made this list possible. And to the researchers featured this year, congratulations! Your persistence, curiosity, and generosity represent the best of Illinois research, and we're honored to share your stories.

With gratitude and pride,

❖ *The ISTC Team*

about the list

THE 2026 COHORT

Across Illinois, researchers spent this year doing something quite remarkable: continuing. They kept exploring the unknown, kept solving real problems, and kept helping us understand the world we share. This year's Researchers to Know list highlights fifteen outstanding faculty whose work represents the very best of inquiry, creativity, and persistence in our state.

The 2026 cohort spans a diverse mix of disciplines, from health and materials science to artificial intelligence and environmental research. Some are uncovering the building blocks of disease. Others are shaping the future of computing, or unlocking insights into human behavior, learning, and the systems that sustain us. What connects them isn't a single field. It's a shared commitment to research that improves lives, informs public understanding, and builds stronger, healthier communities, even when the ground beneath that work is shifting.

This year's selection process was our most competitive yet. We received a wide range of nominations from across Illinois' universities, each one a reminder that, despite everything, the work didn't stop.

five criteria guided our selection

01 • RESEARCH IMPACT

advancing knowledge and practice meaningfully

02 • ACHIEVEMENTS

publications, grants, technologies, breakthroughs

03 • LEADERSHIP

mentorship, service, research culture

04 • RECOGNITION

institutional, national, or global honors

05 • ENGAGEMENT

sharing work through media and partnerships

BY THE NUMBERS

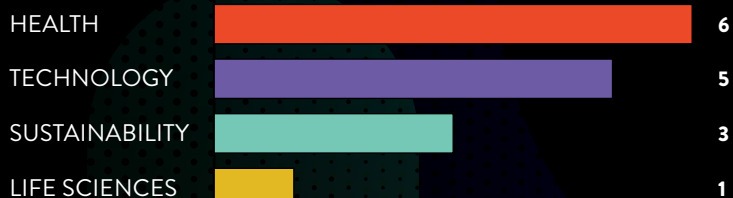
3X
nominations
most ever

15
researchers
awarded

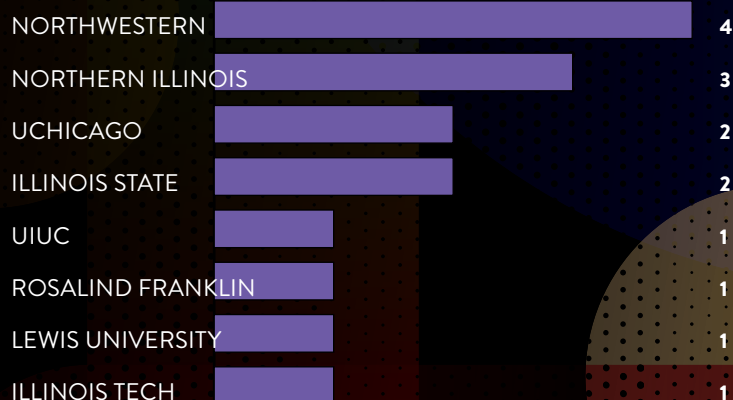
8
institutions
highlighted

4
industries
represented

THE COHORT BY INDUSTRY



THE COHORT BY UNIVERSITY



THE 15 *who kept building*

01

CLAY
Public Health

02

DAWSON
Aerospace

03

DUNCAN
Reproductive Health

04

GENSINI
Climate

05

GIANNESCHI
Materials

06

GRIPPO
Neuroscience

07

JAO
Public Health

08

KELEHER
Semiconductors

09

LOPES
Human-Computer Interaction

10

MADAK-ERDOGAN
Cancer

11

RHYKERD
Agriculture

12

SADD
Conservation

13

SUBRAHMANIAN
Artificial Intelligence

14

TULLMAN-ERCEK
Biotechnology

15

WUTTIG
Energy



SHONDRA LOGGINS CLAY, PHD

Associate Professor, School of Preventative and Applied Health

"When opportunities or resources disappear, you just find or pave another way to move forward. My motto is, onward and upward, despite any obstacles thrown my way. [...] your future research can really impact a community."

• 01

INSTITUTION:

Northern Illinois University

INDUSTRY:

HEALTH

FIELD:

PUBLIC HEALTH

FOCUS AREAS:

HEALTH DISPARITIES

BIOSTATISTICS

MATERNAL AND CHILD HEALTH

HEALTH DISPARITIES

COMMUNITY HEALTH

HEALTH DATA ANALYTICS

BIO

Shondra Loggins Clay is a health disparities researcher and data methodologist at Northern Illinois University whose work centers on maternal and child health and the gaps in outcomes across communities. She traces her path to the TRIO McNair Scholars Program at the University of Illinois, her first time in a research lab, and to a moment in class when a chart of infant mortality rates by race made her want to understand why such gaps exist. A mentor once told her that her skill in statistical analysis could open doors in almost any field, and it has. Grateful for the chances she was given, she now works to open the same doors for younger researchers.

RESEARCH

Dr. Clay studies why some groups experience worse health outcomes than others, working to identify the barriers behind those gaps and what can be done to close them. Her particular focus is maternal and child health, including the disproportionately high rates of adverse pregnancy outcomes among Black and African American women. As a methodologist she draws mainly on large secondary datasets, and she is now applying machine learning across two projects to make predictions about pregnancy outcomes. She is also a sought-after collaborator across disciplines, from rehabilitation and assistive technology to oncology and cardiac surgery, lending her analytic expertise to strengthen research wherever data is involved and to make findings useful to the communities they describe.

HIGHLIGHTS & AWARDS

Dr. Clay's influence shows in the range and reach of her collaborations. Her recent publications include studies on county-level access to maternity care and low birthweight by race in *Social Work in Public Health*, on race and quality of life for older heart-surgery patients in *JHLT Open*, and on children with hard-to-treat cancers in *Pediatric Blood and Cancer*. She helped seed a growing regional network through the Mid-American Conference Maternal and Child Health Equity Research Conference, hosted at NIU, connecting her with researchers at Ball State and Bowling Green. As federal data sources for this work have come under threat, she has kept building, turning to machine learning and cross-institution partnerships to keep advancing health equity when resources disappear.

SCOTT DAWSON

Associate Professor of Mechanical and Aerospace Engineering

BIO

Scott Dawson is an associate professor at Illinois Institute of Technology who studies the messy, swirling motion of air and fluids known as turbulence. His research builds simpler, more interpretable models of the turbulent flows that shape everything from the air rushing over an airplane wing to how efficiently an engine or power plant runs. Less than ten years into his career, he has already built a respected research program while earning a reputation as a clear and inventive teacher, the same qualities showing up whether he is writing equations or working with students in the classroom. His research contributes to the tools researchers use to understand and predict turbulent flows.

RESEARCH

Dr. Dawson develops mathematical and computational methods that cut through the complexity of turbulent flows, capturing their essential patterns without having to model every detail. His techniques help reveal where energy builds up in a flow and how organized structures form and fade, and they build on and extend tools that are increasingly used to study, predict, and control turbulence. Increasingly he pairs these methods with machine learning techniques to make them faster and more flexible and useful. The payoff is practical: by making these notoriously difficult flows easier to model, his work helps engineers design and predict the behavior of the systems involving air, fluids, heat, and energy more safely and efficiently.

HIGHLIGHTS & AWARDS

Dr. Dawson has published more than 30 papers in his field's leading journals, including the Journal of Fluid Mechanics and Nature Communications. His work has earned two of engineering's most competitive early-career honors, the NSF CAREER Award and the Department of Energy Early Career Award, along with more than \$1.6 million in research funding. In 2025 he was elected an Associate Fellow of the American Institute of Aeronautics and Astronautics, and he has been invited to speak at institutions such as Caltech, Imperial College, and Argonne National Laboratory. He also won his department's Excellence in Teaching Award, and his doctoral graduates have gone on to hold research positions at UCLA, Penn State, and Argonne.



"Research is also a form of education. Students are not simply watching discoveries happen; they are helping make them. They learn how to ask better questions, test ideas, deal with failure, and keep going when the answer is not obvious."

02 •

INSTITUTION:

Illinois Institute of Technology

INDUSTRY:

TECHNOLOGY

FIELD:

AEROSPACE

FOCUS AREAS:

AERODYNAMICS FLUID MECHANICS
ENGINEERING SYSTEMS TURBULENCE
REDUCED-ORDER MODELING



"The female reproductive system is one of the first to age; as a physician in our field once noted, the ovary is probably the only organ that reaches its peak before its first use."

• 03

INSTITUTION:

Northwestern University

INDUSTRY:

HEALTH

FIELD:

REPRODUCTIVE HEALTH

FOCUS AREAS:

OVARIAN AGING

FERTILITY

WOMEN'S HEALTH

CONTRACEPTIVE SCIENCE

REPRODUCTIVE LONGEVITY

FRANCESCA E. DUNCAN, PHD

Thomas J. Watkins Memorial Professor in Reproductive Medicine

BIO

Francesca Duncan is a reproductive biologist at Northwestern University who studies how and why fertility changes as women age. She holds the Thomas J. Watkins Memorial Professorship in Reproductive Science, serves as an associate professor at the Feinberg School of Medicine, and co-directs the university's Center for Reproductive Science. She earned her doctorate at the University of Pennsylvania and completed her training at both Penn and Northwestern. Throughout her career she has pushed the field to see the ovary not as a simple clock running down, but as a living, changing organ whose biology we can understand and influence. She also helps train the next generation of reproductive scientists at Northwestern.

RESEARCH

Dr. Duncan's lab has changed how scientists think about fertility and aging. For years, declining fertility was blamed almost entirely on the egg. Her research showed that the environment around the egg matters too, as the aging ovary develops inflammation, scarring, and other changes that affect how it works. Seeing the problem this way opens the door to treatments that could help preserve fertility and protect women's long-term health. She also leads a major effort to develop new, non-hormonal forms of birth control, the Ovarian Contraceptive Discovery Initiative, which could expand the choices available to people who cannot or prefer not to use today's hormonal methods.

HIGHLIGHTS & AWARDS

Dr. Duncan is widely recognized for the originality of her work, with honors including a Fulbright award, the Virendra B. Mahesh New Investigator Award, the R. V. Short Medal, and the Rolly Simpson Frontiers in Reproduction Distinguished Alumni Award. She has published extensively, served on editorial boards, and held leadership roles in major scientific societies. Her impact reaches well beyond her own lab: she trains the next generation of scientists and physician-researchers, brings together biology, medicine, and engineering, and helps make Illinois a center for reproductive science. Her research has also reached wide audiences, with national features connecting ovarian health to longevity and the broader picture of women's health, a topic drawing growing public interest.

VITTORIO (VICTOR) GENSINI, PHD, CCM

Professor, Department of Earth, Atmosphere, and Environment

BIO

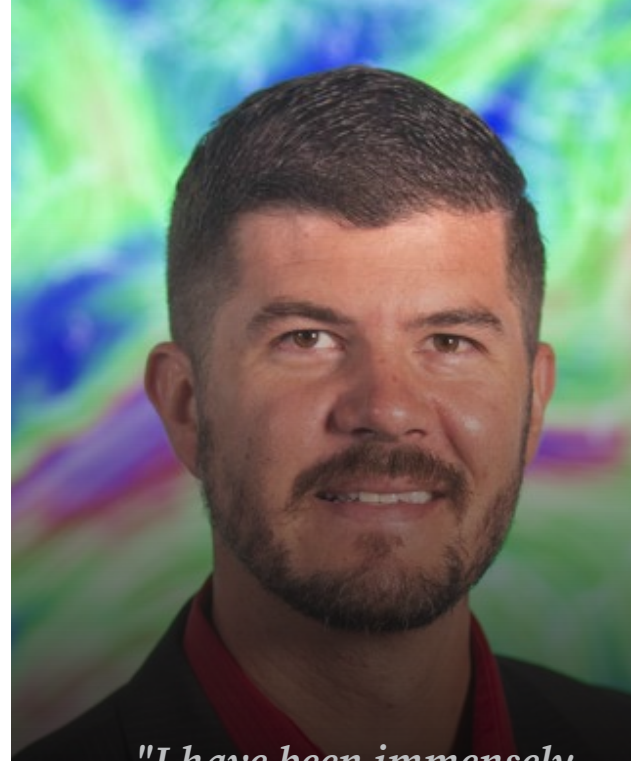
Victor Gensini is a professor in the Department of Earth, Atmosphere and Environment at Northern Illinois University and director of its Center for Interdisciplinary Research on Convective Storms. He studies severe storms, including tornadoes, hail, and other forms of extreme weather, and the science of forecasting them before they strike. His work spans applied climatology, weather prediction, and how a warming climate is changing the storms that affect homes, farms, and communities. He is also a dedicated teacher, bringing graduate and undergraduate students and student forecasters into research and field work that reaches far beyond the classroom. His work has also made him a trusted public voice when severe weather is in the news.

RESEARCH

Dr. Gensini's guiding belief is that severe-weather science should reduce uncertainty for people who must make hard decisions under pressure. His research examines what drives hail, tornadoes, and damaging winds, and how a warming climate may reshape those hazards, using high-resolution atmospheric simulations and a growing toolkit of data science and AI paired with physical understanding rather than replacing it. Much of this now runs through CIRCS, the severe-storms research center he helped build to connect universities, federal partners, and industry. Through the large field campaign ICECHIP, he and his students gather new hail observations in the field, where, as he puts it, the atmosphere does not care about anyone's schedule or proposal deadlines.

HIGHLIGHTS & AWARDS

The milestone Dr. Gensini is proudest of is helping build CIRCS from an idea into a functioning research center that treats tornadoes, hail, and damaging winds not only as atmospheric science but as problems of infrastructure, insurance, agriculture, and communication. In 2025, NIU and the University of Wisconsin-Madison launched the center with support from NSF and NOAA, part of a record that includes dozens of peer-reviewed papers and roughly \$6.9 million in external funding. His ICECHIP campaign is drawing new attention to hail, and in March 2026 his team measured and 3-D scanned a record-size Illinois hailstone. A trusted public voice, he is featured across national outlets and increasingly asked to brief insurers and the National Academies.



"I have been immensely shaped by students. Their energy keeps reminding me that research is not just about answering yesterday's questions more precisely; it is about giving the next generation better tools, better judgment, and better ways to serve society."

04 •

INSTITUTION:

Northern Illinois University

INDUSTRY:

SUSTAINABILITY

FIELD:

CLIMATE

FOCUS AREAS:

**HAIL FORECASTING TORNADOES
EXTREME WEATHER CLIMATE CHANGE
APPLIED CLIMATOLOGY**



NATHAN C. GIANNESCHI, PHD

Jacob & Rosaline Cohn Professor of Chemistry, Materials Science and Engineering, Biomedical Engineering and Pharmacology

BIO

Nathan C. Gianneschi is the Jacob and Rosaline Cohn Professor of Chemistry at Northwestern University, with appointments spanning chemistry, materials science and engineering, biomedical engineering, and pharmacology. His direction was set as an undergraduate, the first time he made a new molecule in a lab and found himself wondering whether chemistry could be used to build artificial proteins. That question, posed at the interface of chemistry and biology, still defines his work on biomimetic materials, substances designed to imitate the clever structures nature builds. What drives him is less any single result than the urge to create alongside likeminded colleagues, and the hope of leaving the world meaningfully different, especially by improving human health in ways not possible today.

RESEARCH

Gianneschi's group designs materials at scales far smaller than a single cell that respond to the conditions inside the body. A signature idea is to build materials that assemble themselves only where they are needed, using cues such as the enzymes found at a tumor or a site of inflammation as a trigger. His lab also creates proteomimetics, synthetic polymers that behave like proteins, which can reach disease targets long considered undruggable, including drivers of cancer and, in newer work, pathways implicated in neurodegenerative disease. To watch these delicate materials form and move, his team helped pioneer a way to image them directly in liquid, a capability now used well beyond his own lab.

HIGHLIGHTS & AWARDS

Gianneschi's honors include the Presidential Early Career Award for Scientists and Engineers, the nation's highest early-career honor, along with the NIH Director's New Innovator and Transformative Research Awards. He is a Sloan Fellow, a Kavli Fellow of the National Academy of Sciences, and a Fellow of the Royal Society of Chemistry, and in 2025 he received the Kabiller Young Investigator Award. This year his group published a study in *Nature Materials* revealing the structure of fully solvated hydrogels, the soft water-rich materials found in contact lenses and wound dressings, and a paper in *Nature Communications* on proteomimetic polymers that degrade cancer-driving proteins. A polymer-based approach from his lab has also slowed, in preclinical research, the protein damage behind Huntington's disease.

"My work is motivated by a desire to create and the hope that, together with like-minded colleagues, we can leave the world meaningfully better than we found it."

• 05

INSTITUTION:

Northwestern University

INDUSTRY:

TECHNOLOGY

FIELD:

MATERIALS

FOCUS AREAS:

NANOMATERIALS CHEMISTRY

BIOMEDICAL MATERIALS

PROTEIN DEGRADATION

THERAPEUTIC POLYMERS



ANGELA J. GRIPPO, PHD

Professor, Department of Psychology

BIO

Angela Grippo is a professor of psychology at Northern Illinois University who studies how stress, emotion, and social experience shape physical health. Her path was built by mentors and collaborators: nurturing professors at Drake University who first drew her into research, faculty role models at the University of Iowa who helped her focus on the link between mood disorders like depression and conditions like heart disease, and postdoctoral advisors at Loyola and the University of Illinois at Chicago who supported her turn toward the neurobiology of social stress. What motivates her is a goal she states plainly: to make a difference in science, and especially for real people living in the real world.

RESEARCH

Dr. Grippo's research seeks to improve public health by uncovering the neurobiological and behavioral mechanisms that connect stress, emotion, and health. Her lab uses animal models, including socially bonded prairie voles, as tools to see how the brain interacts with the body and behavior, and how a loss of social connection can drive changes that mirror depression and heart disease in people. Just as central is what protects against that harm: her team has shown that exercise, enriched surroundings, and even listening to music can buffer the effects of isolation. Her current federally funded work examines treatments for the social stress and loneliness experienced during adolescence, and how the brain builds resilience across the lifespan.

HIGHLIGHTS & AWARDS

In September 2025, Dr. Grippo received a new National Institutes of Health grant from the National Heart, Lung and Blood Institute to study treatments for adolescent social stress, building on a body of work recognized earlier in her career by the American Psychological Association and, in 2026, with NIU's Presidential Research, Scholarship and Artistry Professorship. Over the past year her team published a series of studies showing that everyday strategies, such as physical exercise and listening to classical music, can protect against the anxiety, depression, and cardiovascular effects of social isolation, findings that translate directly to people. She is equally proud of her students, several of whom earned recognition for conference presentations, dissertation research, and public service.



"I hope I am making a difference in science – but especially making a difference for real people living in the real world – through my research, teaching, service, and outreach activities."

06 •

INSTITUTION:

Northern Illinois University

INDUSTRY:

HEALTH

FIELD:

NEUROSCIENCE

FOCUS AREAS:

MENTAL HEALTH

STRESS BIOLOGY

CARDIOVASCULAR HEALTH

SOCIAL ISOLATION

BEHAVIORAL NEUROSCIENCE



"One of the best things you can do is build your community. Finding people who genuinely care about the work – and about you – makes an enormous difference in staying motivated."

● 07

INSTITUTION:

*Rosalind Franklin University
of Medicine and Science*

INDUSTRY:

HEALTH

FIELD:

PUBLIC HEALTH

FOCUS AREAS:

HEALTH BEHAVIOR

CESSATION RESEARCH

MENTHOL CIGARETTES

CARDIOVASCULAR HEALTH

TOBACCO REGULATORY SCIENCE

NANCY C. JAO, PHD

Assistant Professor, Department of Psychology

BIO

Nancy Jao is an assistant professor at Rosalind Franklin University of Medicine and Science who studies tobacco use, health outcomes, and regulations. She came into nicotine research almost by accident, drawn to clinical psychology after college and landing in a lab that ran smoking-cessation trials, where she saw how clinical studies and mechanistic research could inform each other. That link never stopped interesting her. She believes good research questions should translate across disciplines, and she stays curious well outside her own, drawing at times on food science or pain management. For her, what someone smokes and why, whether for stress, connection, or simply taste, is what makes smoking far more complex than it appears.

RESEARCH

Dr. Jao's central project, funded by an NIH K01 award from the National Heart, Lung, and Blood Institute, asks whether menthol, a common flavoring in cigarettes, raises the risk of cardiovascular disease and alters smoking behavior. She combines biological markers of inflammation with real-time tracking of how people smoke during their daily lives, work made timely as states restrict menthol and companies respond with menthol-like cooling additives. She has also completed a national pilot study on nicotine use among adolescents and young adults, and is starting to examine the growing overlap between cannabis and tobacco use, a shift that is changing what people even mean when they say they smoke.

HIGHLIGHTS & AWARDS

In just a few years on the faculty, Dr. Jao has assembled a record that stands out at any career stage. Her NIH K01 career-development award is accompanied by pilot grants from the University of Chicago, the University of Michigan, and Rosalind Franklin University/DePaul University. She also received a renewed NIH Loan Repayment Program award, earned the New Investigator Award for Best Abstract from the Society for Research on Nicotine and Tobacco and the Scholarship Award from Rosalind Franklin University, and was invited to join a translational research center at the University of Illinois Chicago as well as the University of Chicago Comprehensive Cancer Center, broadening her reach across addiction and cancer fields.

DR. JASON J. KELEHER

Professor and Director of COMPASS, Department of Chemistry

BIO

Jason Keleher is a professor of chemistry at Lewis University and director of its COMPASS program, and a leading expert in the precise polishing that makes modern computer chips possible. His research philosophy took shape at Clarkson University under his late PhD advisor, Dr. Yuzhou Li, who taught him less about chemistry than about how to think: to ask better questions, welcome unexpected results, and follow evidence across disciplinary lines. That mechanism-driven approach still guides his Keleher Research Group today. Yet he is quick to say his greatest inspiration is not the science but the students, and that publications and technologies may define a career, while the people we mentor define a legacy.

RESEARCH

Dr. Keleher's group studies the chemistry and engineering behind chemical mechanical planarization, the polishing step that flattens each microscopic layer of a semiconductor wafer. Rather than reaching for ever-stronger chemistries, his team asks why a process behaves as it does, then designs smarter, more selective, and more sustainable alternatives. A signature example is his partnership with Araca Inc. to develop silicon carbide polishing slurries that eliminate permanganate, a common but problematic oxidizer. Recent projects extend into sustainable CMP chemistries, advanced photoresist processing, diamond polishing, and pairing gentler formulations with physical methods like megasonic energy, all conducted hand in hand with

the companies that build the world's chip-manufacturing equipment.

HIGHLIGHTS & AWARDS

This past year, Dr. Keleher finalized a patent for silicon carbide wafer polishing developed with Araca Inc., one of nine U.S. patents to his name. His program is powered by a transformative federal investment championed by Congresswoman Lauren Underwood and Senator Dick Durbin, alongside sustained industry partnerships with companies such as Applied Materials, ProSys, and Araca. He helped host the CMP Users Group Meeting at Lewis University and co-organized a national symposium at the Electrochemical Society meeting in Seattle. Most telling is his record with students: he has guided more than 150 research students, many now working at institutions and companies across the country, a reflection of a mentor who turns curiosity into careers.



"Every experiment should teach us something, every challenge should make us think differently, and every student should leave more confident than when they arrived. [...] publications and technologies define a career, but the people we mentor define a legacy."

08 •

INSTITUTION:
Lewis University

INDUSTRY:
TECHNOLOGY

FIELD:
SEMICONDUCTORS

FOCUS AREAS:
CHEMICAL MECHANICAL PLANARIZATION
WAFER MANUFACTURING
MATERIALS CHEMISTRY
INDUSTRY PARTNERSHIPS



"The core question I keep returning to is: can computing expand human ability, preserve agency, and teach rather than automate? [...] My motivation is not to automate (especially not to automate what gives us joy), but to augment it."

● 09

INSTITUTION:
University of Chicago

INDUSTRY:

TECHNOLOGY

FIELD:

HUMAN-COMPUTER INTERACTION

FOCUS AREAS:

EMBODIED AI HUMAN AUGMENTATION

WEARABLES ACCESSIBILITY

PHYSICAL COMPUTING

PEDRO LOPES

Associate Professor of Computer Science

BIO

Pedro Lopes is an associate professor of computer science at the University of Chicago who envisions a world where computers assist us physically, not just cognitively. The idea traces back to his early years as a patient in physical rehabilitation, recovering from injuries. Today's AI, he notes, is brilliant with words and symbols but cannot show you how to move your body, so he builds interfaces that connect computing directly to muscle and movement. His aim is not to automate what people do, especially not what brings them joy, but to augment it: to help someone learn a physical skill, reach safety, or recover ability. He sees these body-integrated devices as the natural successor to wearables.

RESEARCH

Dr. Lopes builds devices that guide the body through gentle electrical muscle stimulation, giving force feedback and haptic training without the bulk of robotic exoskeletons. His recent Generative Muscle Stimulation system senses a person's pose, view, and surroundings, then uses multimodal AI to generate real-time assistance, demonstrated by helping a user load a bicycle onto a Chicago bus rack. A guiding concern is agency: related systems trigger help only from the user's own muscle signals or speed up reaction time without forcing movement, so assistance always feels like the person's own action. He also explores sensations of temperature, smell, and touch, and how interfaces can drive attitude change on challenges like electronic waste.

HIGHLIGHTS & AWARDS

Dr. Lopes's Generative Muscle Stimulation, the first system to let AI physically assist the body rather than only describe what to do, won a Best Paper Award at CHI 2026, the top venue in his field. His deep move into neuroscience made him the only computer scientist on the faculty of the University of Chicago's Neuroscience Institute. His work is supported by an NSF CAREER Award, a Sloan Fellowship, and industry awards from Sony and Google, and his broader record includes many best-paper honors and coverage across hundreds of press features, among them a device that speeds reaction time and entered the Guinness World Records. Tellingly, his trainees have gone on to faculty posts at MIT, UT Austin, and Loyola.



ZEYNEP MADAK ERDOGAN, PHD

Associate Dean, Graduate College; Associate Director for Education, Cancer Center at Illinois; Sylvia D. Stroup Scholar and Professor, Food Science and Human Nutrition

BIO

Zeynep Madak-Erdogan is a professor of food science and human nutrition at the University of Illinois at Urbana-Champaign, where she also serves as an associate dean in the Graduate College and an education leader at the Cancer Center at Illinois. She has long been fascinated by how cells translate the outside world into biological response, but collaborative work with colleagues at UIC reshaped her focus: they found that women from disadvantaged neighborhoods carried cancer-linked molecular signals before any weight gain, evidence that the body already knows, in a sense, what zip code it lives in. Grateful for the mentors and opportunities that shaped her, she describes her purpose simply, as leading by serving.

RESEARCH

Dr. Madak-Erdogan's team works to understand how environment shapes disease at the molecular level, and to make that knowledge useful to the communities that need it most. Much of the lab examines how nutrition, metabolism, and hormonal signaling drive breast cancer risk, progression, and treatment response, especially in postmenopausal women and survivors. Her group has pioneered methods that fuse geography with tumor biology, including a technique that reconstructs breast-tumor architecture to show how social and biological environments jointly shape outcomes. That same molecular and environmental framework is now expanding into maternal health, where early findings

from a cohort of 200 postpartum women reveal striking tradeoffs between stress hormones and the hormones vital to maternal mental health.

HIGHLIGHTS & AWARDS

Dr. Madak-Erdogan's recent honors include the AACR Michael B. Kastan Award for Research Excellence and the University of Illinois University Scholar designation, both in 2024. Her 2026 paper in Cancer Research introduced a way to reconstruct breast-tumor architecture by pairing spatial molecular data with geographic information, opening a new methodological frontier. She serves as Co-Lead of Project 1 in the NICHD-funded University of Illinois Maternal Health Research Center of Excellence, the engine behind her lab's expansion into pregnancy outcomes. Her cancer work is anchored at the Cancer Center at Illinois, recently named the eighth NCI-designated basic cancer center in the country, and sustained in lean funding years by the Sylvia D. Stroup Scholarship, which she credits as real infrastructure.



"For me the answer has always been to lead by serving [...]. Do work that matters to people outside the lab, invest in the people around you, and trust that the rest follows."

10 ●

INSTITUTION:

*University of Illinois
Urbana-Champaign*

INDUSTRY:

HEALTH

FIELD:

CANCER

FOCUS AREAS:

CANCER DISPARITIES

BREAST CANCER

NUTRITION

HORMONE SIGNALING

METABOLISM



"The opportunity to help develop practical solutions that improve soil health, protect water quality, and create a more sustainable future for agriculture is what keeps me excited about coming to work every day."

• 11

INSTITUTION:

Illinois State University

INDUSTRY:

SUSTAINABILITY

FIELD:

AGRICULTURE

FOCUS AREAS:

CLIMATE-SMART AGRICULTURE

SOIL SCIENCE

BIOFUELS

FOOD SECURITY

SUSTAINABLE CROPPING

ROBERT L. RHYKERD, PH.D.

Professor of Soil Science, Department of Agriculture

BIO

Rob Rhykerd is a professor of agronomy and soil science at Illinois State University who is fascinated by the potential of winter cover crops. More than 90 percent of Midwest farmland sits bare through the winter, and he sees those idle acres as a chance to pull carbon from the air, keep fertilizer out of streams, and build healthier soil. His path began early, in the research plots of his father, an agronomy professor, and took root in a soil science course in 1985. A turning point came in 2019, when a colleague invited him onto a USDA project to develop pennycress as a winter crop, driven by a belief that agriculture need not choose between productivity and stewardship.

RESEARCH

Dr. Rhykerd's research shows how a single management practice, planting winter cover crops, can address several challenges at once: capturing carbon, reducing the nutrient runoff that feeds the Gulf of Mexico dead zone, improving soil health, and supplying feedstock for renewable fuels. His work helped turn pennycress, once dismissed as a weed, into CoverCress, among the first new agronomic crops introduced in the United States in decades, and has shown it can fit into corn and soybean rotations without cutting yields. His group also studies converting cover-crop biomass into renewable energy through anaerobic digestion. In 2026 he is expanding this research into southern Illinois, whose different soils and climate will help build a statewide picture of cover-crop performance.

HIGHLIGHTS & AWARDS

Since 2024, Dr. Rhykerd has co-authored six peer-reviewed articles advancing the case for winter cover crops, spanning carbon sequestration, soil microbial diversity, nutrient retention, and turning biomass into renewable fuel through anaerobic digestion. His work is supported by the USDA's National Institute of Food and Agriculture, the Illinois Nutrient Research and Education Council, the Illinois and Iowa Soybean Associations, and Illinois State University, funding that sustains the long-term field experiments this research requires. His pennycress studies connect to findings from Argonne National Laboratory that the crop can cut aviation-fuel emissions by nearly two-thirds. A Fellow of the American Society of Agronomy, he takes as much pride in watching students grow into scientists and co-authors as in the research itself.



BEN SADD

Professor of Infectious Disease Ecology

BIO

Ben Sadd is a professor of infectious disease ecology at Illinois State University who is drawn to the sheer complexity of health across living systems. Biology, he notes, rarely offers simple explanations, so he studies how microbes, nutrition, reproduction, and environment interact to determine whether an individual thrives or falls ill, using native bumble bees and crickets as his windows into these questions. His parents instilled early habits of curiosity and hard work, and mentors during his PhD gave him the confidence to cross disciplinary lines, echoing his advisor Paul Schmid-Hempel's reminder that nature does not care how universities organize their departments. He now runs a lab built on curiosity, inclusion, and community.

RESEARCH

Dr. Sadd's research explores the evolutionary ecology of health, asking how variation in health outcomes emerges from the interactions among organisms and their environment. Working with bumble bees and crickets, his group studies how beneficial gut microbes, immunity, and reproduction shape resilience to disease, and it has helped move the microbiome field from simply cataloging which microbes are present toward understanding what they actually do. Three lines now stand out: how gut microbes and social living intersect to shape bee behavior and health, how aggression and immunity are linked in crickets, and how an often-overlooked life stage, the larva, shapes pollinator resilience and, ultimately, the health of the ecosystems that agriculture depends on.

HIGHLIGHTS & AWARDS

Dr. Sadd measures his proudest outcomes in people: student mentees who have moved on to PhD and MD programs at institutions including Stanford and Vanderbilt, and to fellowships such as the USDA NIFA Postdoctoral Fellowship. Their work has helped bring his NIH-supported research on beneficial microbes and immunity in bumble bees to publication, with students as key co-authors. His broader record includes dozens of peer-reviewed papers and more than \$6.25 million in funding from agencies including the USDA, NSF, NIH, and the U.S. Fish and Wildlife Service, and in 2024 he received Illinois State University's Outstanding University Researcher Award. Through a Howard Hughes Medical Institute Scholars Program, he is also helping train the next generation of civically engaged scientists.

"Discovery is not confined to senior scientists nor should it be solely attributed to them, but rather it happens every day in labs where students are trusted with real problems and supported as they learn to think independently."

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INSTITUTION:

Illinois State University

INDUSTRY:

LIFE SCIENCES

FIELD:

CONSERVATION

FOCUS AREAS:

INFECTIOUS DISEASE ECOLOGY

IMMUNITY

POLLINATOR HEALTH

HOST-MICROBE INTERACTIONS

EVOLUTIONARY BIOLOGY





V.S. SUBRAHMANIAN

Walter P. Murphy Professor of Computer Science

"If a piece of research demonstrably improves the life of even one person, I believe that is more important than a scientific paper that does not, even if it has 10K citations."

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INSTITUTION:

Northwestern University

INDUSTRY:

TECHNOLOGY

FIELD:

AI

FOCUS AREAS:

AI SECURITY CYBERSECURITY

MISINFORMATION PUBLIC POLICY

BEHAVIORAL MODELING

BIO

V.S. Subrahmanian is the Walter P. Murphy Professor of Computer Science at Northwestern University, where he founded and directs the Northwestern Security and AI Laboratory. He began his career as a core artificial-intelligence researcher after earning his doctorate in 1989 and wrote his first cybersecurity paper soon after. His path took a turn in 1993, when a flight he was on made an emergency landing in Belgrade over a reported security threat, an experience that pushed him toward the study of physical safety. He has worked at that intersection of AI and security ever since, guided by a conviction that research matters most when it improves lives. Before joining Northwestern in 2021, he led research institutes at Dartmouth College and the University of Maryland.

RESEARCH

Dr. Subrahmanian builds AI systems that turn floods of messy information, including text, images, locations, and online activity, into early warning about dangerous events. His deepfake work centers on GODDS, a free service that helps journalists judge whether an image, audio clip, or video is likely real or fabricated, and that can sharpen the accuracy of other detection tools. A second major effort forecasts political violence: an early-warning system that uses public data to anticipate when and how certain armed groups may strike, with monthly reports shared to defense, government, and academic subscribers. In cybersecurity, he designs defenses that anticipate an attacker's next move,

including which software weaknesses are most likely to be exploited.

HIGHLIGHTS & AWARDS

Subrahmanian's tools are built to help people prepare for what comes next rather than only explain what already happened. GODDS launched in July 2024 and has been used by more than 75 reporters worldwide; with Microsoft and the human-rights group WITNESS, his team released a public dataset of over 60,000 deepfakes for testing detection methods. He has worked with federal judges on how courts should handle evidence claimed to be fake. His political violence-forecasting reports reach more than 110 subscribers, with plans to widen coverage by 2027. A Fellow of the American Association for the Advancement of Science (AAAS) and the Association for the Advancement of Artificial Intelligence (AAAI), he co-wrote The Android Malware Handbook and is a frequent expert voice in national media.

DANIELLE TULLMAN-ERCEK

James N. and Nancy J. Farley Professor in Manufacturing and Entrepreneurship; Professor, Chemical and Biological Engineering

BIO

Danielle Tullman-Ercek is a professor and chair of the Department of Chemical and Biological Engineering at Northwestern University, where she also co-directs the Center for Synthetic Biology and the Master of Biotechnology program. As a student she wanted to be an architect, until an early video of proteins folding into pumps, tunnels, and machine-like shapes convinced her that nature was the better builder. That fascination with how tiny building blocks assemble has driven her ever since. She earned her undergraduate degree at Illinois Institute of Technology and her doctorate at the University of Texas at Austin, then trained in California at UC San Francisco and a national laboratory. A recognized leader in synthetic biology, she has turned laboratory discoveries into tools for medicine, manufacturing, and energy.

RESEARCH

Dr. Tullman-Ercek engineers proteins, the molecules that do much of the work inside living cells, into useful devices. She is known for redesigning elaborate natural structures such as the protein shells of viruses and the pumps that move cargo through a cell, systems long thought too intricate to alter. Her work showed the opposite: nature built them to be adaptable, so a single small change can shift how they look or behave. Her group now templates proteins into programmable nanomaterials with potential applications spanning agriculture, medicine, and defense. As one example, she is developing twelve-sided protein

shells whose patterned surfaces could yield responsive materials, among them camouflage that changes with its surroundings.

HIGHLIGHTS & AWARDS

In the past year Tullman-Ercek was granted three patents, among them one for a more efficient way to make proteins in bacteria that is now being licensed to a company spun out of her lab. Her recent work in ACS Nano demonstrated the many geometric shapes a single protein building block can form. Her honors include the Searle Leadership Award, an NSF CAREER Award, and election as a Fellow of the American Institute for Medical and Biological Engineering. She launched the first NSF-funded undergraduate research program in synthetic biology, helped lead a national research consortium, and is chair of a division of the American Chemical Society. She co-founded Opera Bioscience, adding to the state's life-sciences economy.



"The fun part of research is never knowing what you will learn; we are doing experiments that have never been done before and unexpected results are the threads of brand new investigations."

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INSTITUTION:

Northwestern University

INDUSTRY:

HEALTH

FIELD:

BIOTECH

FOCUS AREAS:

BIOMANUFACTURING

SYNTHETIC BIOLOGY

VACCINES

PROTEIN ENGINEERING

MRNA DELIVERY



ANNA WUTTIG

Assistant Professor of Chemistry

“In our group, we love following the molecules where they may take us, and at the same time, maximize the impact of our findings.”

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INSTITUTION:

University of Chicago

INDUSTRY:

SUSTAINABILITY

FIELD:

ENERGY

FOCUS AREAS:

ELECTROCATALYSIS

SUSTAINABLE CHEMISTRY

DECARBONIZATION

RENEWABLE ENERGY

CHEMICAL MANUFACTURING

BIO

Anna Wuttig is working out how to make the chemicals modern life depends on using electricity instead of fossil fuels. A Neubauer Family Assistant Professor of chemistry at the University of Chicago since July 2021, she leads a research program in electrocatalysis, an approach with enormous stakes for energy and the climate. She earned her undergraduate degree at Princeton and her doctorate at MIT as a graduate fellow, then completed her postdoctoral training at the University of California, Berkeley before establishing her own laboratory. Her work brings fresh, fundamental understanding to questions that will help decide whether industry can shift to cleaner, more sustainable ways of making the materials we use every day.

RESEARCH

Dr. Wuttig studies what happens at the tiny boundary where a solid surface meets a liquid and electricity sets chemistry in motion, a poorly understood zone that turns out to be crucial. By understanding it at the molecular level, her lab is writing the design rules for cleaner ways to make chemicals and store renewable energy, replacing fossil-fuel-driven manufacturing with electricity-powered alternatives. Her work ranges from coaxing surfaces to build specific molecules to figuring out, step by step, how these reactions actually unfold. As a faculty member of the University of Chicago's Department of Chemistry, she connects her research to Illinois's broader effort on climate and energy.

Highlights & Awards

Dr. Wuttig's lab and research have been recognized by a Camille Dreyfus Foundation Teacher-Scholar Award, a Sloan Research Fellowship, an NSF CAREER Award, a Bayer Early Excellence in Science Award in Chemistry, among other recognitions. As the world's need to cut carbon emissions grows more urgent, and with her lab hitting its stride at the meeting point of fundamental discovery and practical relevance, she is emerging as one of Illinois's most promising early-career scientists and a leader in the search for sustainable chemistry.



STILL BUILDING

People, Persistence, and Progress in Illinois Research

WHAT FIFTEEN ILLINOIS RESEARCHERS REVEAL ABOUT HOW DISCOVERY GETS BUILT

In a demonstration this past year, a research participant at the University of Chicago lifted a bicycle onto the rack of a city bus with help from a computer system developed in Pedro Lopes's lab. Electrodes placed on the participant's skin delivered small electrical pulses that activated their muscles in sequence: the biceps and shoulder raised the bicycle, the fingers gripped it, and the triceps guided it onto the rack. The system coordinated the participant's own muscles to help them complete the task. That approach reflects Lopes's view of technology: "My motivation is not to automate (especially not to automate what gives us joy)," Lopes says, "but to augment it."

Lopes is one of fifteen Illinois researchers named to this year's Researchers to Know, the annual recognition from the Illinois Science & Technology Coalition (ISTC). They work across eight Illinois universities in fields as varied as pollinator immunity and electrocatalysis, yet their projects reveal a common pattern in how discovery moves forward across Illinois. Research begins with people, depends on persistence, and produces progress others can see and use. Those stages reinforce one another: trained researchers stay with difficult questions over time, and their results help prepare the next generation. This cohort is a snapshot of that process underway.

People: The Engine of Discovery

Ask this cohort what actually moved their work forward, and almost no one names a machine or a method; they name a person. A well-trained scientist may produce many discoveries, which is why a lab's ability to make new findings is inseparable from its ability to train the people who will make the next.

That priority holds true across fields that share almost nothing else. Jason Keleher, a chemist at Lewis University whose group develops the liquid mixtures used to smooth the surface of silicon-carbide chips, says it plainly: "publications and technologies define a career, but the people we mentor define a legacy." Ben Sadd, who studies immunity in bumble bees and crickets at Illinois State University, locates discovery not in the senior scientist but on the training bench, where students are handed real problems early; several of his own moved on this year to programs at Stanford and Vanderbilt and to a national fellowship. Victor Gensini of Northern Illinois University takes students into the path of real storms during severe-weather fieldwork and says they keep his own sense of purpose sharp. Across very different fields, the principle is consistent: mentorship is one of the ways a research community keeps producing new ideas and new researchers.

People also sustain research by preserving the places where students and established researchers exchange ideas. This year, the Midwest Universities Fluid Mechanics Conference, an annual fixture for more than half a century, nearly folded when its venue closed with months to spare. It was Scott Dawson of Illinois Institute of Technology who salvaged it, relocating the meeting on short notice and running it with more talks than ever and at lower cost to students. None of that advanced his own research, but it kept researchers in his field connected, preserving a forum for collaboration.

Taken together, these examples show the people behind university research in Illinois. Students, mentors, collaborators, and professional relationships form the infrastructure of discovery. Building that capacity is the first stage. Persistence gives those people the time to turn difficult questions into results.

Persistence: Why Real Progress Takes Time

Discovery keeps a slower clock than almost anything else in modern life. The eureka moment is largely a fiction; the real work is a long, uncertain middle of incremental results. Getting through it takes individual resolve, but rarely that alone. It also takes mentors, collaborators, and institutions willing to wait. Across this cohort, that persistence takes a few different forms.

Sometimes it is patience with problems that pay off slowly. Robert Rhykerd, a soil scientist at Illinois State University, studies pennycress, a winter crop once considered little more than a weed. More than 90 percent of Midwest farmland sits bare during the winter, creating an opportunity to put those acres to work with winter cover crops. Pennycress can serve as feedstock for sustainable aviation fuel, which researchers at Argonne National Laboratory report could reduce carbon emissions by nearly two-thirds compared with conventional petroleum-based jet fuel. Rhykerd's research examines how winter cover crops affect soil health and agricultural systems over time. Because soil regeneration is a slow process, he maintains long-term field experiments that can capture effects a shorter study might miss. The discipline reflects a recognition that some questions require years of observation.

Sometimes it is conviction ahead of consensus. In 1993, an emergency landing in Belgrade over a reported terrorist threat left a young computer scientist named V.S. Subrahmanian with a question that still drives him: how to use artificial intelligence to make people safer. He began forecasting the movements of violent groups in 2007, when he said, "people thought I was crazy." They no longer do; AI applications are now common across defense and intelligence work, and a free deepfake-detection tool his Northwestern University lab released last year is already in the hands of dozens of journalists.

And sometimes persistence means treating failure as useful information. At Northwestern University, Danielle Tullman-Ercek studies and engineers complex protein structures, learning how changes to their design affect the way they assemble and function. Her work aims to adapt these structures for uses ranging from vaccine development and targeted mRNA delivery to sustainable biomanufacturing. When an experiment goes sideways, she treats the result as a clue rather than a loss. Shondra Loggins Clay of Northern Illinois University brings the same adaptability to research on maternal and child health. She uses health data analytics and biostatistics to investigate why Black women experience disproportionately high rates of adverse pregnancy outcomes and to inform strategies that could reduce those inequities. She is now incorporating machine learning into that work, extending the same willingness to try another approach when one path closes.

Patience, conviction, and a tolerance for failure are three expressions of the same refusal to let the clock set the terms of the work. This is the second thing the cohort reveals, and it is what the "still" in "still building" really means. Progress in research is not a steady climb; it is the occasional visible payoff of long stretches of mostly invisible persistence. For long stretches, the building looks like waiting, which leaves an obvious question: what is all that patience actually producing?

Progress: What the Work Delivers

Progress is where people and persistence become visible. In this cohort, it includes tools people can use now and knowledge that brings future applications closer. Lopes's muscle-stimulation system is one example. Subrahmanian's deepfake detector is another. Both grew from sustained work that applied computation to a human problem. People built expertise, persistence carried the question, and progress placed a tool in someone's hands.

That movement from laboratory question to practical application also appears in the cohort's chemistry research. At Northwestern University, Nathan Gianneschi engineers polymers that behave like proteins. He says computational protein design is advancing quickly, and he is applying those tools to cancer and Alzheimer's targets that have long resisted treatment. At the University of Chicago, Anna Wuttig studies the charged boundary where an electrode meets a liquid, deriving rules for electricity-driven reactions that could make chemical manufacturing considerably cleaner. Both projects use advances in computation and analysis to move difficult questions closer to practical use.

Progress can also mean understanding a biological process clearly enough to give future research a stronger starting point. At Northwestern University, Francesca Duncan studies how the ovary ages, including how inflammation and scarring remodel it over time. Her laboratory has helped show that changes in the ovarian environment, along with changes in the egg itself, contribute to fertility decline. That finding has expanded the field's understanding of reproductive aging and gives context to Duncan's observation that "the ovary is probably the only organ that reaches its peak before its first use."

Other researchers examine how conditions outside the clinic shape health. At the University of Illinois at Urbana-Champaign, Zeynep Madak-Erdogan studies how diet and environment mark breast cancer. At Rosalind Franklin University, Nancy Jao studies how nicotine flavors affect behavior and heart health. At Northern Illinois University, Angela Grippo studies how everyday habits such as exercise and music guard the body against chronic stress. Together, their work examines how diet, environment, behavior, and stress shape health across a person's life.

The fifteen researchers show that progress does not take a single form. It can be a tool in someone's hands, a potential crop for aviation fuel, a cleaner manufacturing process, or a clearer explanation of reproductive aging, cancer, nicotine, and stress. Across Illinois universities, long-term research is producing results that other people can test, use, and build on.

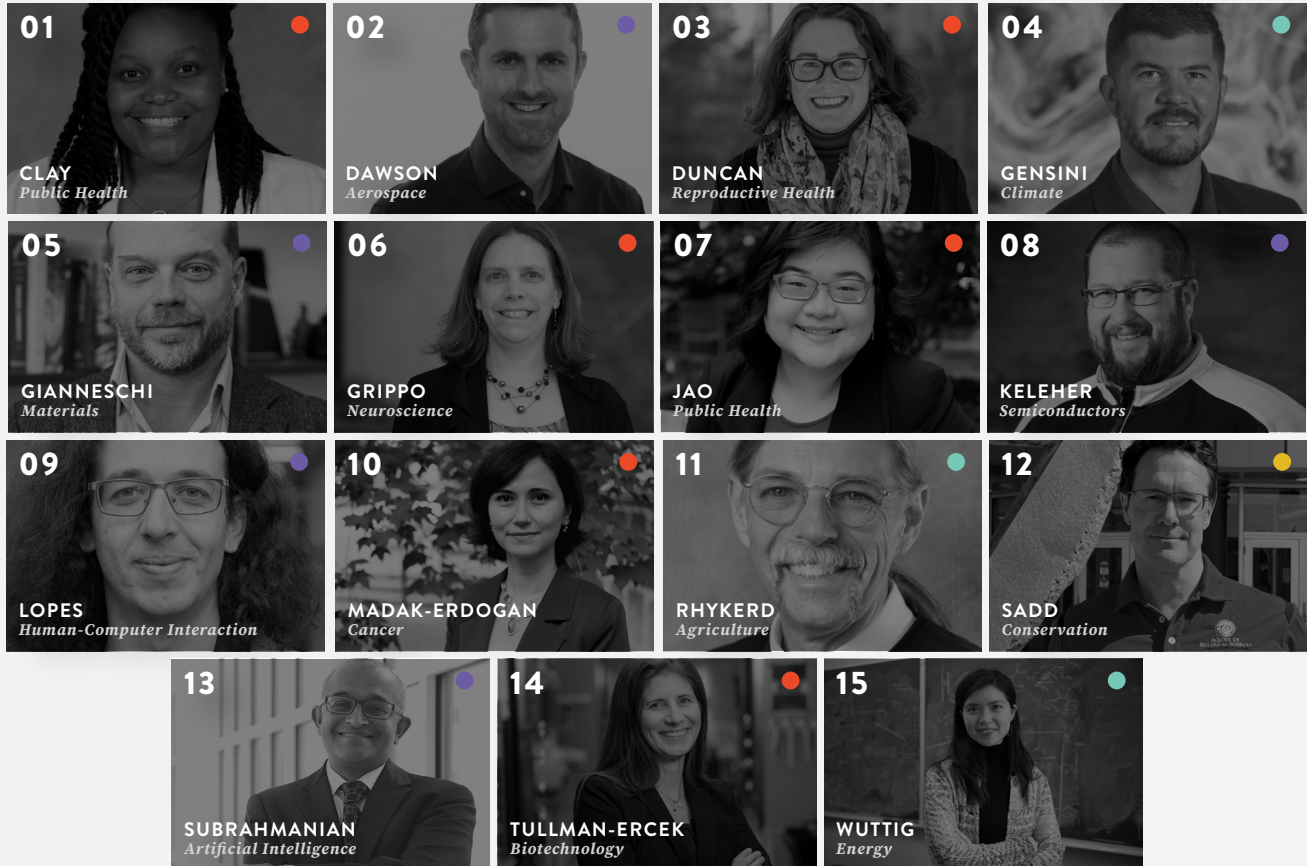
Still Building

None of this can run on its own. The process the title describes keeps going only as long as the conditions around it hold. It depends on senior researchers who spend their time training juniors and on universities that treat that training as central to their purpose. It depends on departments and centers deliberately built so that a chemist and a biologist can find each other, and on collaborators inside and outside universities who are willing to stay with work whose payoff lies a decade away. Remove any one of those supports and the whole thing slows.

It is easy to see the discovery and miss the scaffolding beneath it, but the scaffolding is what makes discovery repeatable rather than the result of luck. What this cohort documents is not fifteen isolated feats of brilliance but the health of the structure underneath them: the mentorship, the institutions, the collaborations, and the patience that lets capable people turn hard questions into things the rest of us can use.

That is what the title describes. People make persistence possible. Persistence produces progress. Progress gives the next generation better questions and tools to build on. Across fifteen researchers and eight institutions, this year's Researchers to Know cohort from ISTC shows that cycle continuing throughout Illinois. The work is unfinished because research always is. Each answer becomes a starting point, and each researcher trained to pursue it expands what Illinois can build next.

Congratulations to the **2026 RESEARCHERS TO KNOW**



With Gratitude to Our Nominators & Collaborators

Thank you to all of this year's nominators and points of contact for your thoughtful submissions, edits, and continued support of the Researchers to Know initiative. Your time, insight, and collaboration were essential in helping us highlight researchers whose work is transforming Illinois—and the world. We're incredibly grateful for your partnership in making this recognition possible and look forward to connecting with you again in 2027.

Congratulations to our 2026 Researchers to Know—your work is more than discovery; it's a blueprint for what's possible. Thank you for daring to ask bold questions, forging new paths, and elevating Illinois as a hub of innovation. Your dedication, curiosity, and leadership inspire us to imagine a future shaped by science, equity, and bold collaboration.



KATE CALABRA
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2026

RESEARCHERS TO KNOW