

COULTER BME

M A G A Z I N E

FALL 2026

Eye on the Future

Researchers are combining artificial intelligence, advanced imaging, and biomechanics to predict vision loss, uncover hidden signs of disease, and reveal entirely new ways to understand human health. **PAGE 13**

**CRACKING THE
BRAIN'S CODE**

PAGE 6

**ADVANCED THERAPEUTICS
MARKS FIRST YEAR**

PAGE 20

DISCOVERY BEGINS WITH CURIOSITY.

Every breakthrough starts with a question.

What if we could predict who will lose vision from glaucoma and intervene much earlier? What if scientists could study how the lungs fight infection and heal in real time? What if we could better prepare the next generation of leaders to bring breakthrough therapies from the laboratory to the patients who need them? These questions are among those at the heart of biomedical engineering and reflected throughout the stories in this year's magazine.

Across the Wallace H. Coulter Department of Biomedical Engineering, our faculty, students, alumni, and partners are advancing knowledge and improving lives through bold ideas and interdisciplinary collaboration.

In our cover story, Associate Professor Michaël J.A. Girard brings together AI, biomechanics, and advanced ophthalmic imaging to address one of the most important challenges in glaucoma: identifying which patients are most likely to lose vision, where damage will occur, and how quickly the disease will progress. Through the Eagle-Eye Suite, a new model for an eye clinic at the Emory Eye Center, he is creating a unique setting where clinicians, engineers, and AI scientists can develop and test new imaging technologies and AI tools directly in patients, with the goal of making glaucoma care more predictive and personalized.

That same spirit of innovation drives the work of Professor Ankur Singh, whose team helped develop the first lung-on-a-chip with a functioning immune system. This groundbreaking technology mimics how human lungs breathe, respond to disease, and heal, allowing researchers to observe immune responses in real time and create powerful new tools for studying respiratory disease. Singh's research offers an unprecedented window into human immunity that could reshape the future of drug development, infectious disease research, and precision medicine.

Innovation also depends on developing leaders who can turn discoveries into treatments. This year, we celebrate the inaugural graduates of our Master of Biomedical Innovation and Development in Advanced Therapeutics program. As advanced therapeutics continue to reshape medicine, these pioneers are helping build the workforce needed to navigate the complex path from scientific breakthrough to patient care.

Innovation extends beyond the laboratory. This year marked the successful launch of *Holy Shift! Biomedical Breakthroughs Shaping Tomorrow*, our faculty-led podcast that brings the stories behind biomedical discovery to broader audiences. Through conversations with researchers, the podcast highlights the people, passions, and perseverance behind scientific progress.

Finally, this issue showcases the remarkable achievements of the Leave No Trace Capstone team, whose global journey to Ecuador and award-winning work to improve surgical safety demonstrate the impact students can make when engineering, creativity, and service come together to solve real-world healthcare challenges.

As you explore this issue, I hope these stories inspire you as much as they inspire me. They remind us that the future of healthcare belongs to those willing to ask bold questions and pursue new possibilities.

Alyssa Panitch
Chair, Wallace H. Coulter Department
of Biomedical Engineering
Georgia Tech and Emory University

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What inspires a scientist to pursue answers to medicine's biggest challenges? Coulter BME's newest podcast reveals the personal journeys, pivotal moments, and groundbreaking research behind today's biomedical discoveries.

13 Reading Between the Eyes

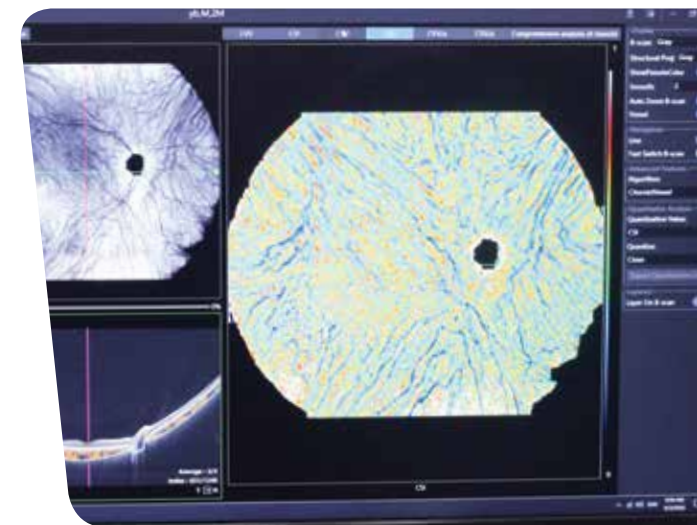
AI is helping researchers decode microscopic clues that could change the way we diagnose and treat eye disease.

19 Team Leave No Trace Working to Make Surgeries Safer

After observing surgeries in Ecuador, a Capstone team turned firsthand insights into an innovative device designed to reduce preventable surgical complications. Their work is proving that student ideas can have global impact.

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Coulter BME By the Numbers

The Wallace H. Coulter Department of Biomedical Engineering (Coulter BME) is a true success story in risk-taking and innovation — a visionary partnership between a leading public engineering school and a highly respected private medical school.

No. 1 BME undergraduate program in the nation
U.S. News & World Report, 2026 Best Colleges

No. 1 BME graduate program in the nation
U.S. News & World Report, 2026 Best Colleges

STUDENTS

1,106
undergraduate students
59% women
25% underrepresented minorities
Nearly **75%** of BME undergrads engage in research

463
graduate students
50% women
27% underrepresented minorities
After graduating, **51%** of BME Ph.D.s go into academia; **42%** take industry or government positions

FACULTY

88
primary faculty members
25% of tenure-track faculty are women and **10%** are URM
19 professional track faculty
5 NAE Fellows (current and emeritus)
1 NAE Gordon Prize to 3 BME faculty for Pioneering Engineering Education

\$90M+ annual research awards (FY25)
59+ patents issued to faculty since 2015

Degree Programs

B.S. in Biomedical Engineering
Georgia Tech

M.S. in Biomedical Engineering
Georgia Tech

Master of Biomedical Innovation and Development
Georgia Tech

Master of Biomedical Innovation and Development — Advanced Therapeutics
Emory University

M.S. in Robotics (Interdisciplinary)
Georgia Tech

M.D. and M.S. Robotics Dual Degree
Emory University and Georgia Tech

Ph.D. in Biomedical Engineering
Emory University and Georgia Tech

M.D. / Ph.D. in Biomedical Engineering
Emory University and Georgia Tech

Interdisciplinary Ph.D. programs
Georgia Tech

- Bioengineering
- Bioinformatics
- Computational Science and Engineering
- Machine Learning
- Neuroscience and Neurotechnology
- Robotics

Leadership

ALYSSA PANITCH
Wallace H. Coulter Department Chair

JAYDEV DESAI
Senior Associate Chair and Associate Chair for Undergraduate Studies

ESSY BEHRAVESH
Director of Student Services

LAURA CHRISTIAN
Director of Academic Effectiveness for Graduate Studies

MICHAEL DAVIS
Associate Chair for Graduate Studies

STEPHANIE FUCHS
Director of Learning Innovation

SCOTT HOLLISTER
Associate Chair for Translational Research

HANJOONG JO
Associate Chair for Emory

MICHELLE LAPLACA
Associate Chair for Faculty Development

CHENG ZHU
Executive Director for International Programs

LUKE O'CONNELL
Director of Development, Georgia Tech

TONJA HOLDER
Director of Development, Discovery Programs

Research Focus Areas

Biomaterials and Regenerative Technologies • Biomedical Imaging and Instrumentation
Biomedical Informatics and Systems Modeling • Biomedical Robotics • Cancer Technologies
Cardiovascular Engineering • Engineering Education • Immunoengineering • Neuroengineering
Personalized Medicine For All • Synthetic Biology

Momentum Delivered: How Kinetix Fund Is Reimagining the Future of Biomedical Innovation

The evolution of Biolocity into Kinetix Fund marks a bold new effort to connect discovery, commercialization, and investment while accelerating breakthrough healthcare technologies across Georgia Tech, Emory, Atlanta, and the Southeast.

For more than a decade, Biolocity has quietly helped some of Georgia Tech and Emory University's most promising biomedical discoveries make the difficult journey from the laboratory to the marketplace. Along the way, Biolocity-supported teams have launched startups, attracted more than \$350 million in follow-on funding, helped launch products, created hundreds of jobs, and guided technologies toward improving patient health.

But success revealed a new challenge.

As Atlanta's life sciences ecosystem continued to grow, Biolocity's leaders began to see promising innovations falling through the cracks. Some projects arrived too early for intensive commercialization support. Others graduated from the program still needing additional guidance and funding before they could attract serious investors. At the same time, demand for the program was increasing faster than its capacity to serve innovators.

Those realities sparked a fundamental question: What if Biolocity could become something larger?

The answer is Kinetix Fund, a bold new identity and expanded vision designed to accelerate biomedical innovation across Georgia Tech, Emory University, Atlanta, and the Southeast. More than a new name, Kinetix represents a strategy to create a seamless commercialization pathway that helps innovators navigate every stage of their journey from discovery to patient impact.

The Gaps No One Was Solving

Biolocity's model long centered on helping researchers move promising technologies from academic discovery toward commercialization. Through milestone-driven funding, biweekly mentorship meetings, entrepreneur support, market assessments, and investor preparation, the program has become known for its highly personalized approach.

"What makes it special is having the opportunity to talk with people who have had this wide breadth of experience every other week," said Jessie Buckelew, associate director of Kinetix. "As you create a business, you're going to make mistakes, everyone makes mistakes, but having the opportunity to talk with people who have been through these experiences and have made so many mistakes on their own that you can learn from and help avoid is incredible."

Yet despite the program's success, Director Angela Gill Nelms and Buckelew identified two critical gaps in the innovation pipeline.

On the front end, many promising projects emerging from programs such as CREATE-X, Capstone Design, and The Hatchery lacked access to life sciences-specific commercialization support before they were ready for Biolocity.

"We have an ecosystem that has a lot of different players that like to collaborate together," Nelms said. "But what we don't do well is actually coordinating efforts."

On the back end, successful Biolocity teams often reached the end of the program just before becoming attractive to venture investors, creating what leaders viewed as a dangerous "valley of death" between early validation and long-term growth.

"It's kind of heartbreaking to think about teams that would come out of the program and not have a clear path forward to continue working on their project and actually getting it to market," Buckelew said. "Knowing that we're getting more of this amazing technology actually into the hands of patients is really important."

“

Funding is great, but that's not what makes this special. ... What makes it special is the mentorship, guidance, and community that helps teams avoid mistakes and move faster."

— JESSIE BUCKELEW



Kinetix
Fund

Momentum Delivered

Because discovery just isn't enough

and commercialization foundations needed to strengthen their technologies, refine their business concepts, and develop a path toward future funding opportunities. By engaging innovators earlier, leaders hope to prevent high-potential projects from losing momentum before they ever reach the market.

Kinetix Forge

At the center of the ecosystem is Kinetix Forge, the evolution of Biolocity's core program and the organization's primary commercialization engine. This milestone-driven program will continue the high-touch support model that has defined Biolocity's success for the past decade. Selected teams participate in an intensive application process before entering a year-long program featuring biweekly commercialization reviews, investor and market readiness coaching, pitch development, milestone planning, budget refinement, and direct engagement with experienced entrepreneurs, industry experts, and investors. Forge also incorporates a strong emphasis on accountability and coachability, qualities program leaders view as essential indicators of future entrepreneurial success.

"Funding is great, but that's not what makes this special. You can get funding in other places," Buckelew said. "What makes it special is the mentorship, guidance, and community that helps teams avoid mistakes and move faster."

Why Kinetix?

The new brand emerged after months of conversations with researchers, entrepreneurs, mentors, investors, and ecosystem stakeholders.

"We asked people what this program meant to them," Nelms said. "One of the challenges we had with Biolocity is that people saw the 'bio' and really thought it was much narrower than what it was."

The team found that participants consistently described the program not simply as a funding source but as a catalyst that created momentum.

"People were like, 'this is high energy,'" Nelms said. "We're really pouring gas and momentum into building the technology of the future."

The result became Kinetix Fund, a name intentionally chosen to reflect movement, acceleration, and progress. Its tagline, "Momentum Delivered. Because discovery just isn't enough," captures the organization's belief that great science alone is not enough to change lives. Scientific breakthroughs require business strategy, commercialization expertise, investor connections, regula-

tory guidance, and coordinated support to reach the market.

A Three-Part Model for Growth

The Kinetix Fund framework expands Biolocity's proven model into a comprehensive commercialization pipeline, creating clearly defined pathways for innovators at every stage of development. Rather than serving a single point in the innovation journey, Kinetix is designed to help promising technologies progress from early concept validation to investor readiness and long-term growth.

Kinetix Jump

The first component, Kinetix Jump, is designed to address a long-standing gap in the ecosystem. Many promising innovations emerging from Capstone Design, CREATE-X, The Hatchery, and other Georgia Tech or Emory University research laboratories show significant potential but are not yet ready for the intensive commercialization process required by Biolocity's traditional model.

Kinetix Jump will provide early-stage innovators with the guidance, mentorship,

Kinetix Advance

The third pillar, Kinetix Advance, focuses on technologies that have already demonstrated promise through Kinetix Forge but require additional support to reach major commercialization inflection points. Nelms describes this stage as helping companies navigate the difficult transition between academic innovation and venture-backed growth. The program is envisioned as a competitive second- and third-year funding opportunity that will provide continued commercialization

support, strategic guidance, and access to investors while helping startups de-risk their technologies for future fundraising. Unlike Forge, where technologies remain under university intellectual property structures, Advance will work with companies that have moved further along the commercialization pathway. The long-term vision also includes an equity component that could create a self-sustaining model capable of reinvesting future success back into the next generation of innovators.

Together, the three programs create a continuum of support: Jump prepares innovators for commercialization, Forge accelerates promising technologies toward market readiness, and Advance helps emerging companies achieve the scale and investment needed to generate lasting impact. By connecting these stages under a single umbrella, Kinetix aims to create a seamless pathway that keeps breakthrough biomedical innovations moving forward rather than allowing them to stall at critical points in development.

From Biomedical Engineer to Ecosystem Builder

The vision behind Kinetix reflects the experiences of both leaders who now guide the program.

Nelms discovered biomedical engineering as a 29-year-old single mother returning to school at Georgia Tech. The experience transformed her career, eventually leading her through clinical research, startup leadership, and executive positions across multiple companies.

“When people make fun of me because I bleed biomedical engineering, which really stands for ‘best major ever,’ it’s because I’ve really seen throughout the past 20 years the impact it’s made in my life, in the community, and the level of graduates that we have that are skyrocketing into leadership positions,” she said.

Bucklelew’s path followed a different route but arrived at the same destination. A Georgia Tech biomedical engineering graduate, she built her career in medical technology and startup leadership before returning to campus. One of her earliest startup opportunities came through a connection Nelms helped facilitate more than a decade ago.

“

Our goal is not simply to create more startups. It’s to create an environment where great ideas have a dramatically higher probability of becoming solutions that improve lives.”

— ANGELA GILL NELMS



“It took very little convincing on my part,” Buckelew said of joining the program. “I was really excited about what the program was doing and the things that Angela wanted to do.”

What ultimately drew her back was the opportunity to treat Biolocity not as a traditional academic initiative but as a growing venture.

“Angela really wanted us to come in and treat Biolocity kind of like our next startup,” Buckelew said. “How do we treat this less like an academic program and more like a startup to be able to really continue to grow this and reach a broader audience?”

That entrepreneurial mindset now shapes their shared vision for Kinetix.

Building the Future of Atlanta Innovation

The rebrand arrives alongside broader efforts to strengthen commercialization pathways throughout Georgia Tech and Atlanta’s life sciences community, including the Georgia Tech Life Sciences Collective, an initiative focused on improving coordination among researchers, entrepreneurs, investors, and commercialization programs.

For Nelms, the long-term goal extends far beyond launching new companies.

“Kinetix exists to turn breakthrough discoveries into real-world impact by building the commercialization engine they need to survive the journey from the lab to the people who need them,” she said. “We’re not just funding innovation. We’re funding an engine for innovation.”

Bucklelew shares a similar vision, one rooted in Atlanta’s future.

“I love Atlanta,” she said. “I don’t want to build businesses elsewhere. I want to stay here, and I want to see more businesses choosing to stay here as well.”

Together, they believe Kinetix can help create a more connected innovation ecosystem where researchers, clinicians, entrepreneurs, investors, and industry partners are no longer working in isolated silos but advancing technologies through a coordinated pathway.

“Our goal is not simply to create more startups,” Nelms said. “It’s to create an environment where great ideas have a dramatically higher probability of becoming solutions that improve lives.”

• KELLY PETTY

The Body's Hidden Signals

Zachary Danziger wants to know how the nervous system controls the body.

Fingers typing on a keyboard. A bladder that knows when to hold and when to let go. Though they seem like worlds apart, both depend on complex communication networks. Wallace H. Coulter Department of Biomedical Engineering Associate Professor Zachary Danziger studies those hidden signals that allow the nervous system to control the body and what happens when those signals break down.

Danziger’s research focuses on developing new models to serve as surrogates for the human body. These models give researchers less-invasive ways to study how the body’s systems interact and communicate, while finding potential therapies that could help people regain lost functionality.

One area of focus is brain-computer interfaces. Brain-computer interfaces help people with paralysis to send commands to devices like power wheelchairs, robotic arms, or other assistive technologies to turn thoughts into actions. The challenge is decoding those intentions from the brain’s electrical signals.

As Danziger explains “That’s a difficult thing to do, from recording someone’s brain signals to figuring out what they want, because we don’t speak the language of the brain.”

Brain-computer interface research typically relies on neural signals recorded from electrodes implanted in the brain. But in Danziger’s lab, participants move their hands and fingers in a virtual environment, while artificial intelligence (AI) generates simulated neural signals based on their movements. With this approach, researchers can evaluate brain-computer interface algorithms across large groups of participants that would not be possible through clinical studies.

“In the history of brain-computer interfaces ... there’s something like 40 to 70 total people who have ever had these systems implanted,” explains Danziger. “Our last study had 100 participants. In the in one

study, we can get more [participants] than in entire history of this field.”

The next step is to determine how well those algorithms perform in human studies. Through a collaboration with Coulter BME Associate Professor Chethan Pandarinath and Emory University’s BrainGate clinical trial team, Danziger’s lab is sharing the most promising findings for evaluation in future studies involving participants with implanted electrodes.

Understanding how neural signals produce movement is only one part of Danziger’s research. His lab also investigates how the nervous system controls another essential bodily function: bladder control.

“Most of the time people forget they even have a bladder. It just works.”

According to data from the National Institutes of Health, 20 million Americans are affected by underactive bladder, a condition that makes it difficult to fully empty the bladder. The condition can lead to other health problems like urinary tract

infections. Finding out why the bladder is not emptying is a crucial step towards developing treatment.

Danziger’s team is looking at the role of the urethra, and how its neurons impact bladder contraction. Their research suggests that may be possible to boost neural activity to reduce the symptoms.

The questions Danziger studies are simple: How does the body know what to do, and what happens when those signals fail? Answering them requires a team of experts from AI, mathematics, computer science, physiology, and biomedical engineering. Bringing these disciplines together has become an important part of Danziger’s work. He often takes on a role as a translator, helping experts from different fields work towards understanding how the nervous system controls the body.

It can be challenging, but as Danziger says “when it works, it’s great because it’s a much bigger project than anyone could do on their own.” • LEEANNA ALLEN



A 'Holy Shift' in Science Storytelling

Coulter BME's new podcast delivers research, insights, and unexpected moments straight from the experts.

In a dark studio at Emory University, a biomedical engineering researcher recalls the third-grade anatomy book that sparked a lifelong fascination with science. Another remembers building wheelchair technology in Mexico and discovering how engineering could transform lives. A third shares how a loved one's Parkinson's disease diagnosis set them on a path toward biomedical research.

These moments are the kinds of personal stories listeners hear on *Holy Shift! Biomedical Breakthroughs Shaping Tomorrow*, the Wallace H. Coulter Department of Biomedical Engineering's new podcast.

Created by associate professors Erin Buckley and Zachary Danziger, and hosted by Angela Gill Nelms, Managing Director of Biocology, the podcast takes audiences behind the scenes to hear about the stories and science that drive innovations in biomedical engineering.

"If you read academic journals, science can be pretty dry... this podcast was an opportunity to show that science is interesting, it's a natural human pursuit.

Everybody likes to poke around at stuff and see how it works," said Danziger.

Designed for what Buckley calls the science curious, *Holy Shift!* welcomes listeners who may not have a research background but are interested in understanding how scientific discoveries happen. Each episode features a candid conversation between Nelms and a Coulter BME faculty member about the research they pursue, the challenges they face, and the experiences that shaped their careers.

Holy Shift! is a first for Coulter BME in the podcast space. The idea grew from a desire to create a platform where researchers could share the stories behind their work while helping audiences better understand the critical role of basic research in medical progress.

With support from department chair Alyssa Panitch, Buckley attended podcasting training through Emory University's Public Scholarship Academy and assembled the team, recruiting Danziger as co-producer and Nelms, an experienced podcast host, to guide the conversations.

Season 1 featured topics ranging from

Alzheimer's disease therapies that use light and sound to personalized medicine to microscopic medical interventions. Along the way, guests discussed the passions, questions, and experiences that sparked their interest in biomedical engineering. Guests also share the time, talent, financial resources, and

infrastructure it takes to make good science happen.

For Nelms, those stories are often the most memorable part of the conversation.

She says being a good podcast host starts with genuine curiosity about people. While every episode explores innovative research, some of the most compelling moments appear when guests reflect on the experiences that led them to biomedical engineering in the first place.

Buckley says, "I get goosebumps during some of the conversations. I think those personal stories are what stick with viewers."

Creating each episode is a collaborative effort. Faculty members share background information about their work before joining Nelms in the Emory University podcast studio for conversations that go beyond research findings to explore the motivations, challenges, and unexpected moments behind their work. The episodes are then edited and distributed through podcast, video, and social media platforms.

As producers, Buckley and Danziger remain involved throughout the process. During recordings, they try to stay out of sight to avoid distracting guests, while exchanging Slack messages reacting to memorable stories, surprising insights, or moving moments.

For faculty members, translating technical concepts for a general audience can be hard. Buckley's advice to guests is simple: "Talk like you're talking to your grandma."

She credits Nelms with helping faculty members feel comfortable enough to set aside technical language and focus on storytelling.

In episode 12, "Mind Over Bladder," Danziger took off his co-producer hat

and stepped in front of the microphone to discuss his urology and bladder health research as a guest.

During the episode, he shared people can be uncomfortable talking about bladder health, but older audiences who may be experiencing some of the conditions his team is studying are very engaged, often telling him he's doing "God's work."

For Nelms, that moment captured exactly what *Holy Shift!* aims to do: blend science, humanity, and humor in ways that help audiences connect with research on a personal level.

Like the researchers it features, the podcast itself is an experiment.

"We're trying to teach ourselves how to do it and then going for it and learning from our mistakes," Danziger said.

That spirit of curiosity and exploration is a big part of the show's identity. As Buckley put it, "It's a shoestring operation, but it's been a lot of fun."

Since launching in September 2025, *Holy Shift!* has attracted audiences

through podcast, video, and social media platforms. The first season received more than 20,000 views on YouTube, and the team hopes to continue growing its audience in future seasons.

The response from the Coulter BME community has been especially encouraging.

"We have a lot of students and faculty who listen, and everyone has told me how much they love learning more about their colleagues, or in the case of the students, their professors," Buckley said.

Season 2 begins in Fall 2026, and will introduce listeners to conversations about artificial intelligence, cardiovascular research, and protein engineering, among other topics. Future plans include featuring alumni and affiliate researchers to discuss their careers, research, and the paths that brought them to biomedical engineering.

At the end of every episode, Nelms asks guests about their *Holy Shift!* moment,

TUNE IN TO HOLY SHIFT!

Subscribe to *Holy Shift! Biomedical Breakthroughs Shaping Tomorrow* on your favorite listening platform. New episodes drop every other Wednesday.



Left: Erin Buckley gets ready to record an episode.
Opposite page: Host Angela Gill Nelms (left) shares a laugh with guest and BME professor Mike Davis.
(PHOTOS COURTESY: ERIN BUCKLEY)

Research Briefs

Breathtaking Breakthrough: Lung-on-a-Chip Defends Itself

Ankur Singh and Rachel Ringquist with the microscopic lung-on-a-chip that has a built-in immune system.
(PHOTO: CHRIS MCKENNEY)

In a stunning leap forward for biomedical engineering, Georgia Tech and Vanderbilt University researchers have developed the first lung-on-a-chip with a functioning immune system — a miniature, living model that mimics how real lungs breathe, fight disease, and heal.

Ankur Singh, director of Georgia Tech's Center for Immunoengineering co-directed the study with longtime collaborator Krishnendu "Krish" Roy, Bruce and Bridgitt Evans dean of engineering and University Distinguished Professor at Vanderbilt. Rachel Ringquist, Roy's graduate student, and now a postdoctoral fellow with Singh, led the work as part of her doctoral dissertation. The research is published in the journal *Nature Biomedical Engineering*.

This innovation allows scientists to observe immune responses in real time, potentially revolutionizing how we study respiratory illnesses and test treatments. Singh says "It was an amazing breakthrough moment." The chip, soft and pliable like a gummy bear, could pave the way for more accurate disease models and reduce reliance on animal testing.

• GEORGIA TECH RESEARCH NEWS

HOW NEW INFORMATION TRIGGERS THE BRAIN TO NAVIGATE CHANGING ENVIRONMENTS



SINGER: JERRY GRILLO

Annabelle Singer, McCamish Foundation Associate Professor, and co-researcher Stephanie Prince, uncovered how the brain rapidly adapts to new information during navigation, shedding light on cognitive flexibility. Using a virtual reality maze and neural recordings from mice, the study revealed that the hippocampus and prefrontal cortex play distinct roles when plans change.

The hippocampus simultaneously represents both old and new goals, while the prefrontal cortex quickly shifts focus to the new destination — often before movement begins. These findings, published in *Nature Communications*, help explain how healthy brains process change and may inform future research into neurological disorders like Alzheimer's and depression, where such adaptability is impaired. • JOSHUA STEWART

Cancer Atlas Achieves Critical Milestone

The Cancer and Organ Degradome Atlas (CODA) project, funded by the Advanced Research Projects Agency for Health (ARPA-H), has been approved to continue into the next phase of research.

ARPA-H project aims to create one-size-fits-all tests for early cancer detection. In the initial phase, researchers proved it was possible to catalog the enzyme activity around tumors and healthy tissue. This earned the team approval to continue with the next phase, which uses the tool to understand the unique "signatures" for tumors from different kinds of cancer.

CODA is led by Gabe Kwong, Robert A. Milton Professor in the Wallace H. Coulter Department of Biomedical Engineering, along with Georgia Tech researchers John Blazeck in the School of Chemical and Biomolecular Engineering and Peng Qiu in Coulter BME and colleagues at Columbia University and Mount Sinai.

• JOSHUA STEWART



KWONG: CANDLER HOBBS

Seeing Science Clearly

With little formal training or education, many biomedical engineers lack the skills to design and evaluate effective data visualizations. How can biomedical engineers know if a scientific figure is good or not?

Ahmet Coskun, associate professor in the Wallace H. Coulter Department of Biomedical Engineering, and his team created an algorithm to help researchers evaluate scientific figures called Metrics for Evaluation and Discretization of Biomedical Visuals (MEDVIS), published in *PLOS One*.

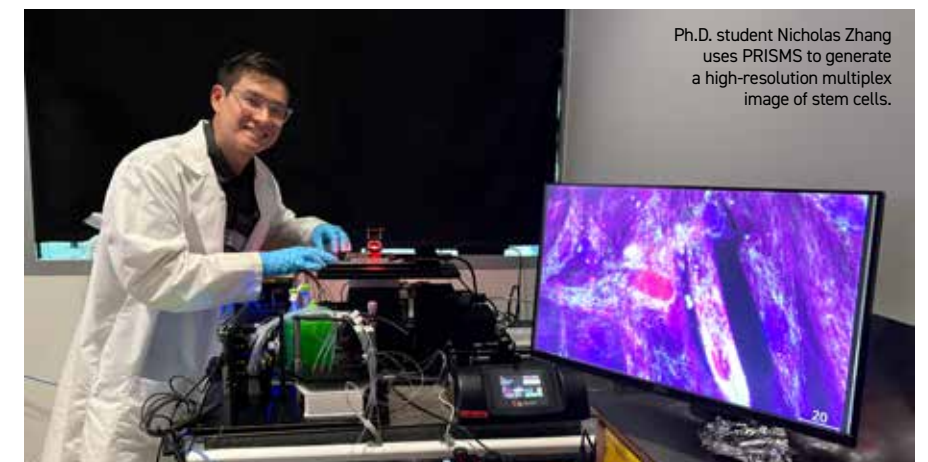
MEDVIS quantitatively evaluates figures on four criteria: white space, number of visualizations, color density, and image complexity. The algorithm provides a score and lets researchers know if their visualizations are "good" or if there are areas for improvement.

In validation studies, MEDVIS results aligned strongly with assessments from trained researchers. The team hopes to use deep learning to train MEDVIS to evaluate more advanced criteria and integrate the tool into existing artificial intelligence platforms, as well as develop a web-based version to make the tool widely available. • LEEANNA ALLEN

Democratizing Discovery: Seeing Diseases Through PRISMS

Understanding diseases means knowing not only how cells and molecules function in the body, but where they are located. Creating these detailed maps is not easy. Instrument and operating can top \$1 million for complex imaging and analysis. Systems rarely work together, and sample preparation takes time, space, and specialized expertise, making the technology out of reach for many labs.

Biomedical engineers at Coulter BME, led by associate professor Ahmet Coskun, set out to remove these roadblocks to make the technology cheaper, customizable, and easier to access, while still producing high-quality datasets. They



Ph.D. student Nicholas Zhang uses PRISMS to generate a high-resolution multiplex image of stem cells.

created Python-based robotic imaging and staining for modular spatial omics (PRISMS), an open-source, automated process, and published in the journal *Lab on a Chip*.

With PRISMS, labs can map large areas of tissue as well as zoom in on proteins and biomarkers at 10%-20% of the usual cost.

The modular nature means researchers can mix and match components and capabilities according to their needs and even add in their own algorithms. PRISMS can allow labs to run more samples, analyze larger datasets, and better collaborate with other labs. • LEEANNA ALLEN



The Doctor Is In

Microsurgeon Shao-Yun Hsu is working with Georgia Tech researchers to develop biomaterials that could transform lymphedema treatment — potentially replacing lymph node transplants with engineered solutions.

Hsu joined Dr. Brandon Dixon's lab at Georgia Tech to pursue a Ph.D. in biomedical engineering, aiming to revolutionize treatment for lymphedema — a chronic and debilitating condition affecting over 150 million people worldwide.

Motivated by her patients and a lack of effective long-term solutions, Hsu is collaborating with Dixon and Dr. Andrés García on a National Institutes of Health (NIH)-funded project to improve the success rate of lymph node transplants. Their approach combines surgical expertise with engineered biomaterials, including hydrogel and lipid nanoparticles, to enhance lymphatic regeneration. The ultimate goal: to make lymph node transplants more effective — or even obsolete — by replacing them with synthetic alternatives. Hsu's journey from the operating room to the research lab exemplifies the power of clinician-engineer collaboration in solving complex medical challenges. • JOSHUA STEWART

Brandon Dixon (left) and Shao-Yun Hsu are working to improve lymph node transplant surgery. (PHOTO: CANDLER HOBBS)

MARKOWITZ INVESTIGATES THE MECHANICS OF MOVEMENT

Jeff Markowitz, assistant professor in the Wallace H. Coulter Department of Biomedical Engineering, and his laboratory are working to understand the basics of movement to help people with diseases like Parkinson's and Huntington's. Markowitz's lab developed injectable nanoparticles that can light up inside a mouse model to learn how each joint, ligament, and muscle moves independently. Eventually, this motion capture method could be applied to humans.

Markowitz and his team are part of the Institute for Neuroscience, Neurotechnology, and Society (INNS), an interdisciplinary research institute launched in July 2025. INNS brings together researchers, including 37 faculty members from Coulter BME, across disciplines to study how the brain and body work together.

• TESS MALONE

Light-Powered Soft Lens Brings Human-Like Vision to Robotics

Georgia Tech researchers have developed a bio-mimetic, light-activated soft lens that mimics the human eye's ability to refocus and adjust to varying light conditions. The research, published in *Science Robotics*, opens new possibilities for soft robotics, biomedical imaging, and autonomous vision systems.

Inspired by the human eye's response to light, lead author Corey Zheng, a Ph.D. candidate in the Wallace H. Coulter Department of Biomedical Engineering, developed a lens system that uses light-activated artificial muscles to control focal length. When illuminated, these muscles contract and stretch the lens, enabling precise optical adjustments without electronics or batteries.



The team also introduced a prototype electronics-free camera, combining the soft lens with a liquid-based imaging circuit powered by light-activated valves to control fluid flow instead of traditional electronic photodetectors. This innovation could be used in chemically driven or passive soft systems, enabling enhanced autonomy for biomimetic robots.

The research was conducted in collaboration with BME Professor Shu Jia, senior author of the study. • KELLY PETTY

GEORGIA TECH USES COMPUTING AND ENGINEERING METHODS TO SHIFT NEUROSCIENCE PARADIGMS

Annabelle Singer, Garrett Stanley, and Chethan Pandarinath are at the forefront of Georgia Tech's neuro-computation revolution. Together, their work blends engineering, data science, and neuroscience to transform how we treat neurological disease.

Annabelle Singer, an associate professor in the Coulter Department of Biomedical Engineering, and her lab study Alzheimer's disease, which affects how circuits of neurons work together. They're now working to fix those circuits by examining how different patterns of stimulation can affect the brain's immune cells and signals and use that information to develop possible therapies.

Singer's lab works with a new therapy called sensory flicker, where lights and sounds turn on and off at specific frequencies, stimulating sensory brain regions. They've found that sensory flicker can also reach deeper cognitive circuits that affect memory, and different frequencies of stimulation alter immune signals.

"We could potentially use it as a control knob on the nervous system's immune component, which plays a role in a lot of these diseases," Singer said.

Parkinson's disease is often viewed as a movement disorder, but it also affects sensing, perception, and thinking. Garrett Stanley and his team are monitoring neurons across brain regions, to determine more holistically how Parkinson's affects the brain. "We want to interact with and stimulate different parts of these circuits to develop intervention strategies," explained Stanley, a professor in the Coulter Department of Biomedical Engineering and director of the McCamish Parkinson's Disease Innovation Program.

Stanley and his team measure brain activity with electrodes or gene manipulation that make neurons fluorescent and improve measurement. From these data, researchers can discover how sensory perception or decision-making functions in a neurological disease like Parkinson's.

His recent research delves into the thalamus, a deep brain structure that interprets sensory inputs and helps the brain decide how to respond. He believes that understanding the thalamus and how it interacts with other brain regions could be important for understanding what breaks down in Parkinson's patients.

Pandinath is building brain-computer interfaces that help paralyzed patients. When his father was diagnosed with Parkinson's disease, Pandarinath realized he could bring his expertise in electrical and computer engineering and physics to help people with neurodegenerative diseases.

Now he builds assistive devices that tap into these circuits to potentially help patients with partial paralysis from stroke, ALS, or spinal cord injuries to regain movement and communication.

"When the brain has effectively been disconnected from the body, our goal is to build devices that interface with the brain directly," Pandarinath said. "So, when somebody thinks about an action, we can help them perform it, whether it's controlling a computer or moving a robotic arm."

Pandinath's group also collaborates with other researchers' neuroscientific datasets and applies machine learning to them. With machine learning, the group can better parse how the data can be used to create devices that aid patients. • TESS MALONE

This painting by Michaël Girard's mother hangs in his BME lab.

When the Eye Tells the Story

INSIDE MICHAËL GIRARD'S EFFORTS TO HARNESS AI, BIOMECHANICS, AND NEXT-GENERATION IMAGING TO SOLVE GLAUCOMA'S BIGGEST MYSTERIES AND EXPAND THE POSSIBILITIES OF VISION SCIENCE.

The giant painting of an eye hanging inside Michaël Girard's Eagle-Eye Suite research lab isn't just artwork. Painted by his mother, it serves as a daily reminder of the organ that has captivated him for more than two decades and inspired a career spent trying to solve one of medicine's most stubborn mysteries: why people lose their sight.

The answer, Girard believes, may lie at the intersection of disciplines that rarely shared a common language until recently: engineering, ophthalmology, biomechanics, and artificial intelligence.

Today, the associate professor in the Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech and Emory University leads the Ophthalmic Engineering & Innovation Laboratory (OEIL), where researchers are building sophisticated AI models designed to predict glaucoma progression, help physicians make more informed treatment decisions, and ultimately uncover why the disease damages the optic nerve in the first place.

Glaucoma affects the optic nerve, the bundle of more than a million nerve fibers that transmits visual information from the eye to the brain. It is among the leading causes of irreversible blindness, yet researchers still cannot reliably predict which patients will experience rapid decline and which ones will not.

What drew Girard to the problem was his realization that glaucoma is not simply a biological disease.

"It's actually a mechanical disease," he said. "Things are being stretched too much in the eye."

Every day, the pressure inside the eye fluctuates. It changes when people blink, move their eyes, exercise, lie down, or even rub their eyes. Over time, those seemingly minor pressure changes place stress on delicate tissues surrounding the optic nerve. For some people, those tissues appear resilient. For others, they may be remarkably fragile.

This natural eye function belies a fundamental question about vision loss Girard is working to uncover: Why do some people with glaucoma remain stable for decades while others lose their sight with alarming speed?

Years of studying those forces led Girard and his collaborators to a striking realization: the way eye tissues stretch and deform may reveal who is at greatest risk of vision loss.

“The stretch or the stress in your eye tissues can predict glaucoma progression,” Girard said. “Who’s going to go blind and how fast?”

Finding that answer, however, requires an enormous amount of data.

That challenge gave rise to the Eagle-Eye Suite, a next-generation imaging center that combines advanced ophthalmic imaging technologies with artificial intelligence.

The facility’s sophisticated instruments, including optical coherence tomography (OCT), capture incredibly detailed views of the retina, optic nerve, blood vessels, and other structures inside the eye. The resulting images provide far



Left: Researchers in the Eagle-Eye Suite lab capture optical images to analyze.
Below: Associate Professor Michaël J. A. Girard, Ph.D. in his lab.
(PHOTOS: KELLY PETTY)

entists what amounts to a window into the body. Researchers now believe eye imaging may reveal clues about conditions ranging from diabetes and cardiovascular disease to Alzheimer’s disease and other neurological disorders. This rapidly growing field is known as oculosics.

“If there’s something going on in your brain, it might be reflected here as well,” Girard said. “If you have diabetes, your blood vessels start to look different.”

The possibility that a routine eye scan could one day provide early warnings about multiple diseases has fueled excitement throughout the field. Yet for Girard, the most important question remains the one that first captured his imagination years ago.

Why do optic nerve cells die?

That question sits at the center of an NIH-funded research program that is actively recruiting up to 1,000 glaucoma

patients and healthy volunteers around the local Atlanta area. By combining advanced imaging, biomechanical testing, and AI-driven analysis, Girard hopes to uncover the mechanisms that cause irreversible nerve damage.

The answer could unlock possibilities that sound more like science fiction than modern medicine.

Scientists are already exploring stem-cell therapies, retinal implants, full-eye transplantation, and brain-computer interfaces capable of transmitting visual information directly to the brain. While significant technical hurdles remain, Girard believes artificial intelligence may play a central role in helping researchers understand how to recreate or replace damaged visual pathways.

“We’re not necessarily far off from having a bionic eye,” he said. “This is not sci-fi.”

The road to that future will be measured in years of research, millions of images, and countless data points collected from patients who volunteer to participate in studies today.

Yet that prospect is precisely what energizes Girard.

While public conversations about AI often focus on fear and uncertainty, he sees opportunity.

“People shouldn’t fear AI,” he said. “AI will help us explore the human body.”

For Girard, exploration has always been the point. Whether studying the microscopic architecture of the optic nerve or envisioning technologies that could one day restore sight, he remains motivated by the same belief that first drew him to biomechanics: there is still so much left to discover.

And perhaps nowhere offers a clearer view of that future than the eye itself.

• KELLY PETTY

One of the reasons ophthalmology has become such fertile ground for AI innovation is that the eye offers an unusually clear view of living tissue. Blood vessels, nerve fibers, and cellular structures can all be visualized noninvasively, giving scientists what amounts to a window into the body.

more information than a physician could reasonably analyze alone, creating the perfect environment for AI.

“We have all these amazing imaging technologies, but it’s very complex,” Girard said. “We need help from computers. We

need help from AI to be able to detect glaucoma as early as possible.”

His team is training AI algorithms using decades of clinical data, imaging records, treatment histories, and patient outcomes. The goal is not to replace physicians but to give them additional insight into what might happen next.

An AI model may eventually help a clinician determine whether a patient is likely to remain stable or face rapid vision loss. It could identify the treatments that have worked best for similar patients and flag subtle warning signs that might otherwise go unnoticed. The ultimate objective, Girard says, is personalized medicine, where treatment recommendations are tailored to the individual instead of the average patient.

But the implications extend well beyond glaucoma.

One of the reasons ophthalmology has become such fertile ground for AI innovation is that the eye offers an unusually clear view of living tissue. Blood vessels, nerve fibers, and cellular structures can all be visualized noninvasively, giving sci-



LEARN MORE about Dr. Girard’s glaucoma research and how you can become a study participant.



Biolocity Announces 2026-2027 Awardees

The new cohort and seed funding group are advancing the future of cancer care, surgery, diagnostics, and healthcare delivery.

From safer surgeries and expanded cancer treatment options to precision diagnostics and healthcare workforce resilience, Biolocity’s recently announced 2026-2027 cohort and seed funding group are tackling some of medicine’s most complex challenges.

The commercialization program has selected a new class of innovators from Emory University and Georgia Tech whose technologies have the potential to transform patient care and improve health outcomes. Teams presented their projects to a panel of judges from industry, business, medicine, and academia during Biolocity Pitch Day in May.

“This year’s Biolocity cohort reflects the breadth and strength of innovation happening across Emory and Georgia Tech. From improving cancer drug discovery to making surgery safer and addressing healthcare workforce challenges, these teams are tackling complex problems with creativity, rigor, and a commitment to improving lives. We are

excited to support them as they transform promising discoveries into real-world impact,” said Angela Gill Nelms, director of Biolocity.

The 2026-2027 program cycle includes a full Biolocity cohort and a seed funding group. Full-cohort teams will participate in Biolocity’s intensive commercialization programming through biweekly, milestone-focused meetings centered on strategic development, execution, and investor readiness.

Seed-funded teams will participate in quarterly commercialization and milestone review meetings designed to support promising technologies at different stages of commercialization as they advance toward impact.

“Biolocity was designed around a simple idea: transformative innovations don’t all start from the same place, so they shouldn’t all receive the same type of support. By offering both an intensive cohort experience and seed funding opportunities, we can meet teams where

they are,” Nelms said. “Early-stage technologies gain momentum, while teams at more advanced stages of commercialization receive the structure, mentorship, and guidance needed to accelerate toward impact.”

Through an intensive, multi-stage application and evaluation process, Biolocity identifies high-potential technologies and equips innovators with the strategic guidance, mentorship, and expertise needed to accelerate progress and position innovations for real-world impact.

Participating teams receive support including pitch coaching, market and competitive assessments, milestone development, and commercialization guidance. Faculty innovators and project teams work closely with experienced entrepreneur advisors to identify risks, strengthen development strategies, and position their technologies for downstream funding and market success.

BIOLOCITY BY THE NUMBERS (2015 – 2025)



2026-2027 BIOLOCITY COHORT

TEAM CELORB

MEMBERS Shuichi Takayama, Ph.D.; Yesim Gokmen-Polar, Ph.D.; Nathan Ocampo

PROJECT CELORB is developing advanced human tissue models that enable cancer drug developers to evaluate both therapeutic effectiveness and lung toxicity on a single platform. By combining patient-derived cancer and immune cells with engineered scaffolds, the technology delivers faster, more predictive preclinical insights than traditional rodent or organoid models.

TEAM OrganoAb Biosciences

MEMBERS Ankur Singh, Ph.D.; Andrés J. García, Ph.D.; Tracey Mullen, MBA; Jean Koff, M.D., M.S.

PROJECT OrganoAb Biosciences is developing a next-generation antibody discovery platform designed to unlock previously inaccessible therapeutic targets. By enabling the generation of human antibodies against difficult-to-target proteins, the platform has the potential to expand treatment pipelines across cancer and other complex diseases while reducing early-stage discovery risk.

TEAM Protected Surgical Suction Tip

MEMBERS Orr Shaul, M.D.

PROJECT The Protected Surgical Suction Tip is a dual-state surgical device that combines powerful suction with atraumatic tissue protection in a single instrument. Surgeons can instantly switch between open high-flow mode and a mesh-protected mode, reducing clogs, tissue injury, and instrument exchanges while improving efficiency and patient safety across surgical specialties.

2026-2027 SEED FUNDING GROUP

TEAM AnchorDoc

MEMBERS Yue Chen, Ph.D.; Samuel Wilcox; Chang Zhou, Ph.D.; John Moon, M.D.; Hanssen Li, M.D.; Nicholas Lima, M.D.

PROJECT AnchorDoc is a medical device designed to securely stabilize drainage catheters during movement and in wet conditions where existing solutions often fail. The technology aims to reduce complications, avoid repeat procedures, and improve patient safety and comfort in both hospital and home-care settings.

TEAM Blood Rheology Solutions

MEMBERS Vivien Sheehan, M.D., Ph.D.; Wilbur A. Lam, M.D., Ph.D.; Ashwin Patel, MBBS, Ph.D., MPH; Megan Merritt-Garza, MS; Srija Ponna, M.S.; Jedidah Titus, B.S.

PROJECT Blood Rheology Solutions is advancing a precision medicine approach for sickle cell disease through clinically validated diagnostic technologies that identify the underlying drivers of patient complications and match patients with the most appropriate therapies. The platform has the potential to improve clinical trial success, enable earlier intervention, and support proactive disease management before severe complications occur.

TEAM EsoBASE™

MEMBERS Anand S. Jain, M.D.

PROJECT EsoBASE™ is a single-use device designed to reduce dangerous complications during stomach and esophageal procedures without requiring general anesthesia. By redirecting stomach contents away from the airway, the technology has the potential to make high-risk endoscopic procedures safer, faster, and more accessible across care settings.

TEAM NeuroBot

MEMBERS Kimberly Hoang, M.D.; Azadeh Ansari, Ph.D.; Emmett Z. Freeman

PROJECT NeuroBot is developing tiny, steerable microrobots designed to help surgeons safely access and treat hard-to-reach brain tumors. The technology aims to make biopsies and targeted therapies more precise, less invasive, and more repeatable, potentially improving diagnostic accuracy, treatment options, and patient outcomes.

TEAM WorkforceIQ

MEMBERS Omid Razmpour, Ph.D., MBA, RN; Sokol Tushe, Ph.D.; Donald Lee, Ph.D.; Tyki Wada, MBA

PROJECT WorkforceIQ is developing a data-driven platform that helps healthcare leaders identify early warning signs of nursing burnout and workforce instability before staff attrition occurs. Grounded in peer-reviewed methods for dynamic risk forecasting, the platform translates hospital operational data into actionable insights — strengthening workforce retention, supporting nurses, and improving continuity of patient care.



Team Leave No Trace Working to Make Surgeries Safer

Retained surgical items (RSIs) are serious yet preventable surgical complications in which sponges or gauze are unintentionally left inside a patient after surgery. In low- and middle-income countries, where access to intraoperative imaging is limited, surgical teams often rely solely on manual counting. This contributes to rates of RSIs as high as 1 in 300, increasing the risk of infection, repeat operations, and prolonged recovery.

Leave No Trace, a BME Advanced Capstone team, is addressing this challenge with RECOVERY — a comprehensive visibility and tracking system designed specifically for resource-constrained operating rooms. The system combines ultraviolet (UV)-reactive surgical sponges that fluoresce under UV light with SurgiClip magnetic attachments and the SurgiRack display system, providing surgical teams with a clear visual workflow to support counting and quickly identify missing items before closure.

Team Leave No Trace, which includes BME students Thanmayee Kavuri, Neha Shahrawat, Ryan Altera, Saif Khan, and bioinformatics student Maxi Brogi, began

their journey in an introductory biomedical engineering class, learning the basics of engineering and design.

In January, the team traveled to Ecuador to shadow surgical teams in Quito, giving them valuable firsthand insight into real workflows, constraints, and clinical needs. They used these observations to refine RECOVERY to better fit into the operating room environment, filing a provisional patent in April.

“Traveling to Ecuador was truly a once-in-a-lifetime experience. Seeing our technology in operating rooms not only informed our design process but showed us that this problem goes beyond preventing RSIs and applies to increasing access to equitable healthcare,” said Kayuri.

Shahrawat credits Advanced Capstone for providing the enrichment opportunities to take RECOVERY to the next level. “Capstone was an amazing opportunity to develop essentially a novel medical device for an unmet clinical need in just 16 weeks. Advanced [Capstone] mirrors the real world and helps us create something that truly helps save lives.”

By designing alongside clinicians and prioritizing accessibility and simplicity, Leave No Trace aims to reduce pre-

ventable surgical harm and help ensure retained surgical items truly become “never events.”

The team’s innovation and impact have already been recognized beyond the classroom — Leave No Trace competed at the United States Hult Prize Nationals at the University of Arizona and were one of 80 teams selected out of 18,000 teams for the Hult Prize Digital Incubator, highlighting both the global relevance and entrepreneurial potential of their solution. They will join other student founders in the Digital Incubator for mentorship, hands-on learning, and venture development opportunities while they continue competing for \$1 million in seed funding.

Reflecting on their journey together, Khan says, “It’s so fun to see how things pan out after working for four years... seeing how much you have learned and grown. It all builds up to this.” • KAYDEN SHUSTER

Above: the team demonstrates the RECOVERY system at a hospital in Quito, Ecuador. (PHOTO COURTESY: LEAVE NO TRACE)

Powering the Future of Advanced Therapeutics

The new Master of Biomedical Innovation and Development in Advanced Therapeutics program is training professionals who can navigate the scientific, regulatory, and business challenges of bringing advanced therapies to patients.

When Divya Singh was working as a surgeon, some of the patients who stayed with her longest were young women diagnosed with aggressive cancers that had few effective treatment options. She followed advances in gene therapy, stem cells, and other emerging treatments, wondering how promising discoveries in the laboratory could become real therapies for patients. Across Atlanta, Georgia Tech biology graduate Rachel Clark was asking a different question: where did she fit within the rapidly evolving biotechnology industry? One was searching for better therapies. The other was searching for a career path. Both found answers in the inaugural Master of Biomedical Innovation and Development in Advanced Therapeutics (MBID-AT) program.

Just one year later, Singh, Clark, and six classmates crossed the stage at Emory University, becoming the first graduates of a program designed to prepare leaders for one of medicine’s most promising frontiers. The cohort entered the program in August 2025 and graduated in July 2026, helping launch a new educational model focused on cell therapies, gene therapies, regenerative medicine, biologics, and other advanced therapeutic technologies.

The full-time, 12-month professional master’s program was created to address a growing need within the biomedical industry. While scientific breakthroughs in advanced therapeutics are accelerating, companies increasingly need professionals who understand not only the science,

but also manufacturing, clinical development, regulatory affairs, quality systems, reimbursement, and commercialization. The MBID-AT curriculum was designed to teach that entire lifecycle.

“These job roles didn’t exist 10 years ago, but they exist today,” said Carolyn Yeago, director of the program. “There’s so much that people need to learn and be prepared for to be ready to make an impact in a company and make sure these products get to patients.”

Students move through coursework covering topics such as emerging technologies, preclinical development, clinical operations, manufacturing strategies, regulatory affairs, ethics, intellectual property, financing, and reimbursement. The goal is not simply to train researchers.

It is to develop professionals capable of guiding therapies from concept to patient care.

For Clark, the breadth of the curriculum was eye-opening.

Before joining the program, she had worked in pharmaceutical manufacturing and quality assurance through internships and co-ops. Although she had been exposed to parts of the industry, she realized she had only seen small pieces of a much larger ecosystem.

“Seeing all the things that happen to establish quality assurance, and then seeing what happens after quality assurance was like, ‘Oh my gosh,’” Clark said. “I’m going into industry feeling so much more confident than I ever had before.”



The inaugural cohort of the Master of Biomedical Innovation and Development in Advanced Therapeutics program graduated this summer.



Right: The inaugural cohort of the MBID-AT master's program (top to bottom, left to right): Nikhil Murari, Peyton Quathamier, Divya Singh, Rachel Clark, Chien-Ling (Amy) Chou, Madison McCoy, Alayah Collins, Ermina Murshedi.

Below: Rachel Clark (left) and Madison McCoy (right) on tour at an Atlanta-based pharmaceutical company.

Opposite page: Students in the MBID-AT program heard from guest speakers who shared their career journeys and offered advice on entering into the advanced therapeutics field. (PHOTOS COURTESY: CAROLYN YEAGO)



Like many members of the inaugural cohort, Clark did not initially realize she was joining the program's very first class. "I didn't know this was the first year," she said. "[But] I personally really liked having a small cohort. I felt like my voice was heard."

What could have felt daunting quickly became one of the program's greatest strengths. With only eight students, the cohort developed close relationships with faculty, industry instructors, and one another.

"I got really close with my cohort. I got really close with my professors," Clark said. "I don't think that would have been as possible if it wasn't that small of a cohort."

That close-knit environment also allowed students from vastly different backgrounds to learn from one another. The inaugural class included engineers, life scientists, clinicians, and even practicing physicians.

Singh, who previously practiced surgery in India and conducted clinical research involving difficult-to-treat breast cancers, found herself working alongside peers whose experiences ranged from engineering to pharmaceutical manufacturing.

"I found that really, really interesting because the way they have managed to bring everything from the bench to bedside, literally, into one," Singh said.

A defining feature of the program is its co-instructional model. Many courses are taught by professionals actively working in the biotechnology industry, providing students with real-world perspectives and extensive professional networks. Among them is John Moscariello, chief technical officer of biotechnology company NoveGen, who teaches Clinical and Commercial Scale Manufacturing Strategies.

Moscariello says one of the greatest challenges facing the advanced therapeutics industry is not scientific discovery, but workforce development. As cell and gene therapies become increasingly sophisticated, companies need professionals with specialized knowledge that extends well beyond traditional drug development. Understanding how living cells function, how viral vectors behave, and how complex therapies are manufactured requires a new set of technical and operational skills. Moscariello argues that the consequences of this skills gap extend well beyond the biotechnology sector.

"If we can't get these products to market, and these products are life changers, the world suffers," he said.

Programs like MBID-AT were created to help fill that gap by training students to lead every stage of therapeutic development and bring breakthrough treatments to patients more efficiently and effectively.

Moscariello's career as a biotechnology executive also is an example of the types of invaluable industry connections the program provides. Students regularly interacted with guest lecturers working in biotechnology, manufacturing, regulatory affairs, commercialization, and clinical development. For many, those conversations revealed career paths they had never previously considered.

In Clark's case, one of those discoveries helped shape her future.

Through the program, she completed an internship with a contract research organization, an area of the industry she knew little about before enrolling.

"I am working at a job that I didn't even know existed a year ago," Clark said. "I would have never been able to apply to this because I didn't know it was a thing."

Shortly before graduation, she accepted a position with Medpace in Cincinnati as a project coordinator supporting oncology clinical trials. The opportunity combines her passion for cancer research with the clinical strategy and project management skills developed throughout the program.

Meanwhile, Singh plans to continue working in clinical trials through Emory's Hope Clinic while also consulting for a company operating in the advanced therapeutics space. She credits the program with expanding how she thinks about patient access, ethics, reimbursement, and diversity in clinical research.

"We've always been taught that access and pricing shouldn't happen at the end," Singh said. "It should happen when you are researching and building the product itself."

The program's signature capstone project challenged students to apply those lessons in practice. Working with faculty researchers, teams evaluated promising therapeutic technologies and developed comprehensive plans addressing preclinical development, regulatory pathways, manufacturing strategies, intellectual property, financing, and commercialization. The experience required students to think like scientists, business leaders, regulators, and entrepreneurs all at once.

As cell and gene therapies become increasingly sophisticated, companies need professionals with specialized knowledge that extends well beyond traditional drug development.



Looking ahead, Yeago hopes to expand partnerships with faculty researchers, biotechnology companies, startups, healthcare organizations, and institutions across Atlanta and beyond. She envisions future collaborations with organizations such as Winship Cancer Institute, Children's Healthcare of Atlanta, and biotechnology companies building the region's growing advanced therapeutics ecosystem.

For Singh, the program reinforced her desire to help bring advanced therapies to patients around the world. For Clark, it revealed a career she never knew existed. Their journeys were different,

but together they illustrate the program's larger mission: preparing professionals who can bridge the gap between innovation and patient impact.

As the inaugural cohort begins careers in clinical research, biotechnology, manufacturing, consulting, and healthcare, the "fearless eight," as Yeago described them during commencement, have done more than earn a degree. They have helped establish a new model for educating the workforce that will shape the future of advanced therapeutics and, ultimately, the future of medicine itself. • KELLY PETTY

Department News



The delegation from Yonsei University joins Alyssa Panitch (front left) and Coulter BME faculty and students.

COULTER BME DEEPENS GLOBAL PARTNERSHIP WITH YONSEI UNIVERSITY

The Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech and Emory University has taken a significant step toward establishing a joint Ph.D. program with Yonsei University, following a successful inaugural Yonsei-Emory-Georgia Tech Joint Biomedical Engineering Workshop this year.

The three-day workshop, which brought 15 Yonsei University faculty members from Seoul to Atlanta, aimed to strengthen research collaboration among the three institutions.

The workshop brought together faculty, graduate students, and post-doctoral fellows, bolstered by the support of Georgia Tech Vice Provost Bernard Kippelen and Emory Vice Provost Jane Gatewood. The Yonsei delegation was led by Vice President Won Yong Lee and National Research Lab Director Jae Whan Song.

Faculty shared research presentations, toured labs and facilities on the Georgia Tech and Emory campuses, and met with students, postdoctoral fellows, and leadership to explore a wide range of partnership opportunities.

"The energy surrounding the workshop was palpable, and I am looking forward to future workshops and collaborative programs," said Department Chair Alyssa Panitch. • LEEANNA ALLEN

College of Engineering Honors Coulter BME Alumni

Three alumni from the Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech and Emory University were recognized during the 2026 College of Engineering Alumni Awards Induction Ceremony held this spring.

Tahir Haque, BME 2011, and Cassandra McIltrout, BME 2022, were inducted into the Council of Outstanding Young Engineering Alumni, which recognizes graduates who have distinguished themselves through professional practice and service to the Institute, the engineering profession, or society at large.

The College also honored Craig L. Duvall, Ph.D. BME 2007, with the Academy of Distinguished Engineering Alumni Award in recognition of his contributions to biomedical engineering. • LEEANNA ALLEN



From left: BME grads Tahir Haque, Cassandra McIltrout, and Craig Duvall were honored at the College of Engineering Alumni Awards. (PHOTOS: GARY MEEK)



Team Valsaviors, winner of Best BME Capstone Project, and Team Liver, Laugh, Love, winner of Best Overall Project at the Georgia Tech Spring 2026 Capstone Expo. (PHOTO BY KAYDEN SCHUSTER)

BME Teams Continue Capstone Expo Winning Streak

For the sixth consecutive semester, students from the Wallace H. Coulter Department of Biomedical Engineering won top honors at the College of Engineering's annual spring Capstone Expo.

Team Liver, Laugh, Love tied for Best Overall Capstone Project for an innovative liver machine perfusion and transport device, designed to keep donor livers at optimal temperatures for up to 12 hours, deliver oxygen to both the portal vein and hepatic artery, and enable organs to be safely transported across long distances.

The team's approach has the potential to significantly expand the number of viable donor livers available for transplantation across the United States.

Team Valsaviors, winners of the Best BME Capstone Project, developed a single-use, patient-oriented device that standardizes the Valsalva maneuver — a critical diagnostic technique used to detect left ventricular outflow tract obstruction in patients with hypertrophic cardiomyopathy.

The team's device visually guides patients to achieve and maintain the correct pressure, eliminating much of the inconsistency inherent in self-directed efforts.

Biomedical engineering capstone teams MindFrame and Kidney Krew captured Honorable Mention awards, and BME was also represented on Team Char Wars which won Best Interdisciplinary Project. • KELLY PETTY

“I learned a lot about how industry works, and that’s going to really help all of us in the future — whether it be working in industry or growing startups.”

— TZAK LAU, TEAM VALSAVIORS

DWECK NAMED TO FORBES 30 UNDER 30 LIST

Gabriella Dweck, BME 2019, was named to *Forbes'* 30 Under 30 list for 2026. The honorees were selected from a pool of more than 10,000 candidates across 20 industries.

Using microbial fermentation, Dweck's company, Oleo, hopes to preserve forests while cutting emissions. According to *Forbes*, it intends to accomplish this by transforming plant waste into biofuel feedstocks.

Dweck earned her bachelor's degree in biomedical engineering from Tech before earning a master's from Stanford University in design impact.

Forbes reports that Oleo has raised over \$1.6 million in venture capital and grants. • STEVEN GAGLIANO



Faculty Accolades

Hanjoong Jo receives Scientist of the Year Award

Wallace H. Coulter Distinguished Faculty Chair Professor Hanjoong Jo received the 2025 Scientist of the Year Award from the Korean-American Scientists and Engineers Association and Korean Federation of Science and Technology Societies at the 38th annual U.S.-Korea Conference on Science, Technology, and Entrepreneurship. The award praised Jo as a leader who “exemplifies scientific excellence, international collaboration, and community leadership.”

Jo has worked to establish a thriving network of biomedical engineers between the United States and Korea. He is an internationally recognized leader in vascular mechanobiology, whose pioneering work has revealed how blood flow and mechanical forces drive the development of atherosclerosis and related cardiovascular diseases. His team’s discoveries have identified flow-sensitive genes and proteins as novel therapeutic targets to prevent and treat these diseases.

Systems Biology Introductory Textbook Earns Award of Excellence

“A First Course in Systems Biology,” by Coulter BME professors Melissa Kemp and Eberhard Voit, earned the 2026 Textbook & Academic Authors Association Textbook Excellence Award for making systems biology accessible to students and researchers.

Kemp and Voit released the third edition of the textbook last spring. The latest version offered a simplified introduction to systems biology, illustrations, and examples targeted to advanced undergraduates and graduate students.

Desai Named to National Academy of Inventors Senior Members Class of 2026

Jaydev P. Desai, professor, Cardiovascular Biomedical Engineering Distinguished Chair, and associate chair of undergraduate studies, has been named to the National Academy of Inventors Class of 2026 Senior Members.

Desai’s selection reflects his record of advancing medical robotics and translational biomedical innovation. He is the founding Editor in Chief of the *Journal of Medical Robotics Research* and the Editor in Chief of the *Encyclopedia of Medical Robotics*. He has delivered invited talks at the National Academy of Sciences “Distinctive Voices” seminar series and participated in the National Academy of Engineering’s U.S. Frontiers of Engineering Symposium.

Desai’s scholarly impact includes more than 225 peer reviewed publications, pioneering graduate and undergraduate mentorship, and significant contributions to the Institute for Robotics and Intelligent Machines at Georgia Tech.



Coskun Lab Receives \$500K CZI Grant for Mapping Tissue Health

Biological tissues are constantly changing, but most imaging methods capture only a single moment frozen in time. Coulter BME associate professor Ahmet F. Coskun, hopes to turn those snapshots into a movie, giving researchers a dynamic, real-time view of tissue health.

Coskun and his team are building a platform called SMASH (Spatial Mechanomics with Active Surface Harvesting), which is designed to map the life of tissues across space and time. The team recently received a \$500,000 award from Chan Zuckerberg Initiative (CZI) to support the development of the SMASH platform over the next two years.

Spatial omics is a way to study genes, proteins, and other biological molecules while keeping track of where they are in tissue. Traditionally, spatial omics requires destroying samples for a one-time look at where molecules are in the tissue. The SMASH platform will allow researchers to see not only the “where,” but also the “when” and “how” of molecules without destroying the tissue, creating a “movie” from these snapshots.



From left: Ahmet Coskun, Andrei Fedorov (George W. Woodruff School of Mechanical Engineering) and Khalid Salaita (Emory University) are developing a new platform to study living tissues over time.



Clockwise from top left: Lakshmi “Prasad” Dasi, Edward Botchwey, Scott Hollister, Kim Paige, Mark Prausnitz, and Shalu Suri.

Innovation Award. Dasi is a recognized researcher and entrepreneur in cardiovascular science and technology.

Edward Botchwey, Ph.D. was honored with the Outstanding Achievement in Research Engagement and Outreach Award. Botchwey’s research explores how the body’s natural signaling molecules can be used to guide healing.

Shalu Suri, Ph.D. was honored with the Faculty Award for Academic Outreach. Suri leads multiple high-impact efforts across academic levels (K-12 through industry) towards curriculum development, professional education, and preparing the future cell manufacturing workforce.

Mark Prausnitz, Ph.D., Regents’ Professor and J. Erskine Love, Jr. Chair in Chemical and Biomolecular Engineering, and BME program faculty member received the Class of 1934 Distinguished Professor Award, recognizing outstanding achievement in teaching, research, and service.

At the College of Engineering level, two Coulter BME leaders were recognized during the fifth annual Faculty Excellence Awards ceremony. Professor and Associate Chair for Translational Research Scott

BME Faculty Elected to the AIMBE College of Fellows

BME faculty Chethan Pandarinath and Annabelle Singer were elected by peers and members into the American Institute for Medical and Biological Engineering (AIMBE) College of Fellows as part of the Class of 2026.

Pandarinath, an associate professor, was recognized for “outstanding contributions to computational neural engineering through the development of gold standard methods of latent space analysis.” Pandarinath’s research studies how the brain encodes and transforms information to develop assistive devices for people with disabilities and neurological disorders to regain movement and communication.

Singer, an associate professor and McCamish Foundation Early Career Professorship appointee, was elected “for her contributions to neural circuit engineering as a new approach to Alzheimer’s disease and manipulation of the brain’s immune system.”



Chethan Pandarinath (left) and Annabelle Singer. (PHOTOS COURTESY: AIMBE)

Emory’s Researcher Appreciation Day Recognizes Coulter BME Faculty

Emory School of Medicine recognized eight BME faculty as part of Researcher Appreciation Day. These researchers were nominated by peers in the School of Medicine and colleagues for their work to advance knowledge, efforts to develop new technologies, and dedication to new ideas. Coulter BME honorees included:

- Siva Bhavani
- Luke Brewster
- Zachary Danziger

- Chuan Huang
- Svjetlana Miocinovic
- Amir Pourmorteza
- Philip Santangelo
- Xiaofeng Yang

Faculty and Staff Honored for Excellence in Research, Outreach, and Teaching

Faculty from BME were honored at the Georgia Tech Faculty and Staff Honors Awards.

Lakshmi “Prasad” Dasi, Ph.D. and Rozelle Vanda Wesley Professor received the Outstanding Achievement in Research

Hollister, Ph.D., received the Outstanding Achievement in Entrepreneurship and Innovation Award. Hollister is internationally known for pioneering work in image-based computational design and 3D biomaterial printing, developing patient-specific medical devices and regenerative medicine solutions.

Kim Paige, Ph.D., Director of Retention and Engagement in Coulter BME, was honored with the Outstanding Service Award for her commitment to student success. Paige has led numerous initiatives that strengthen student engagement, leadership development, retention, and wellbeing, including the department's Peer Advising Leaders (PALs) program and Finals Fuel Up activities.

Promotions for Research and Academic Faculty

Several members of the department's research and academic professional community achieved important career milestones through promotions recognized by the Georgia Tech Office of the

Vice Provost for Faculty:

- Rachel Pitts Hall (right) was promoted to Senior Academic Professional
- Thangam Natarajan was promoted to Research Engineer II
- Larissa Doudy was promoted to Research Technologist II
- Soojung Lee and Anthony Lien were each promoted to Senior Research Scientist



ogy, Lawrence Technological University, Baylor University, and the University of Washington Tacoma on a new, multi-institutional effort funded by the National Science Foundation to improve mentorship and expand opportunities for undergraduate research experiences in engineering.

The \$699,071 award will support the creation of an Undergraduate Research Excellence Network (UREN).

The UREN will provide coaching, training materials, and workshops to help faculty, postdoctoral researchers, and graduate students strengthen their approaches to mentoring undergraduate researchers. A focus of the network will be helping students adopt an entrepreneurial mindset — encouraging them to take ownership of projects and see how their work can create value.

\$600K NSF Grant for Undergraduate Mentorship and Research Initiative

The Coulter Department is partnering with Rose-Hulman Institute of Technol-

Student Accolades

Graduate Students Win Honors for Best Ph.D. Thesis

Anamik Jhunjhunwala (left) and Yooree Grace Chung are two of ten graduate students honored this year with the Sigma Xi Best Ph.D. Thesis Award.

The award is granted by the Georgia Tech Sigma Xi Club, the honor society of scientists and engineers dedicated to recognizing scientific achievement and promoting integrity and public understanding of science.

Coulter BME Announces Department Award Student Winners

Seven undergraduate and five graduate students were recognized for excellence in research and academics.

"Our student award recipients exemplify the best of Coulter BME: intellectual curiosity, commitment to excellence, and a drive to use biomedical engineering to help people," said Alyssa Panitch, Wallace H. Coulter chair.

UNDERGRADUATE AWARDS

- Outstanding Academic Achievement Award: Inho Lee
- Outstanding Academic Service Award: Tanisha Chanda
- Outstanding Community Service Award: Ashika Srivastava
- S.K. Jain Outstanding Research: Saif Khan
- Outstanding Industrial Experience or Entrepreneur: Karen Netto
- G. D. Jain Outstanding Senior: Neha Shahrawat
- BME/CoE Honors: Paul Pelkowski

GRADUATE AWARDS

- Outstanding Community Service: Taofik Suleiman
- Outstanding Departmental Service: Rohan Dhamdhare
- Outstanding Fundamental/Basic Research: Maria Giraldo-Castano
- Outstanding Entrepreneurship: Samuel Wilcox
- Outstanding Teaching/Mentorship: Connor White

Vlahos Lab Helps Transplanted Cells Thrive in Type 1 Diabetes Treatment

Alexander Vlahos, assistant professor in Coulter BME, has been awarded a five-year, research grant from Breakthrough T1D, the leading global type 1 diabetes (T1D) research and advocacy organization, to support pioneering work aimed at improving therapies for T1D.

Researchers have looked at transplanting pancreatic islets as a potential therapy, but poor blood vessel formation, immune rejection, and cellular stress following transplantation make the transplant process challenging.

Vlahos' research combines synthetic biology and tissue engineering in a new way: engineering cells to actively reshape their local environment after transplantation to make it more hospitable for the graft. The project focuses on programming cells to sense stress and respond dynamically.

Additional Faculty Honors

Several Coulter BME faculty were honored nationally this past year for innovation and excellence in research.

- Leslie Chan: BMES CMBE Rising Star Award
- Anant Madabhushi: 2025 Highly Cited Researchers list from Clarivate.
- Rafael Davalos: Lifetime Achievement Award from the American Electrophoresis Society (AES).
- Michelle LaPlaca: 2025 NINDS Director's Award for outstanding contributions, service, and dedication to the success of the Neurotrauma Preclinical Common Data Elements (CDE) & Data Standards (NT-PRECEDES) program.

BME in the News

CNN visited Annabelle Singer's lab to look at how her research uses flickering lights and sound to help slow memory decline. Singer and her team hope this non-invasive therapy developed through years of collaborative research may someday help millions of people with Alzheimer's disease and dementia.

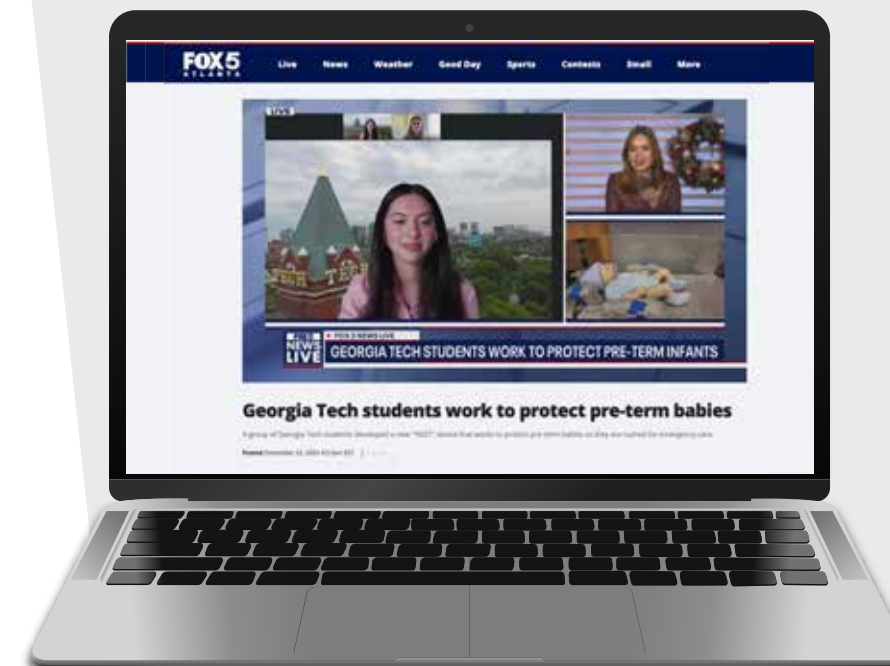
Tara Deans gave **The Conversation's** readers a behind-the-scenes look at synthetic biology research and ethics. Deans' lab created SpudCell, a cell-like system built from nonliving components that can perform some life-like functions, including growth and copying genetic material, but cannot function independently. Her work helps scientists better understand how cells work and develop safer biotechnology applications.

Fox 5 Atlanta spoke with Chethan Pandarinath about his work to help people with minimal verbal function due to paralysis from conditions like ALS, stroke, and spinal cord injuries to communicate with others. A three-millimeter sensor implanted

in the brain picks up and sends electrical activity to a computer where artificial intelligence (AI) algorithms translate the brain waves into speech.

PBS's brain science series *Your Fantastic Mind* highlighted how researchers are using artificial intelligence to diagnose and monitor cognitive decline and Alzheimer's disease. Gari Clifford discussed how his team uses AI to track changes in eye movements and physical activity linked to cognitive decline. Anant Madabhushi shared research that uses AI to analyze images of blood vessels in the eye, identifying subtle signs of Alzheimer's disease and helping researchers monitor treatment effectiveness.

BME Capstone's Team Storks were featured on **Fox 5 Atlanta**, showcasing their innovative transport incubator for NICU babies to make helicopter and ambulance transfers safer, reducing the risk of hemorrhage during critical care. The team earned a golden ticket to the Inventure Prize competition.



Alumna Abbey Wojtowicz Shares the Power of Communicating Science

When Abbey Wojtowicz, Ph.D. 2009, looks back on her career, one lesson stands above the rest: scientific breakthroughs only create impact when people understand them.

Today, Wojtowicz serves as Medical Director for Inflammatory Bowel Disease (IBD) Lifecycle Management and Launch Strategy at Takeda, where she helps guide the medical strategy behind therapies for patients living with chronic inflammatory diseases. The role draws on skills she began developing years ago as a doctoral student in the Wallace H. Coulter Department of Biomedical Engineering.

Her journey into biomedical engineering began at the University of Illinois. An introductory bioengineering course exposed her to professionals working across the field, and she quickly became fascinated by tissue engineering.

"I loved the idea that certain therapies could signal the body to heal itself," she said.



Above: Wojtowicz received the "Best Presenter Award" at a recent American College of Gastroenterology conference.

Below: Wojtowicz and her family at Commencement in 2009 with advisor Andrés García (far right). (PHOTOS COURTESY OF ABBEY WOJTOWICZ)

That interest led her into research labs studying biomaterials, imaging, and bone tissue engineering before beginning her Ph.D. at Coulter BME. She studied tissue engineering under the mentorship of Petit Director's Chair in Bioengineering and Bioscience Andrés García.

Yet one of the most influential moments of her doctoral training came not in the lab, but while preparing a presentation.

As Wojtowicz practiced explaining her research to fellow graduate students, she realized that communicating complex science required as much thoughtful design as conducting the research itself. She refined her slides, adjusted her

“Research not communicated is as good as research not done.”

— ABBEY WOJTOWICZ



language, and focused on helping her audience understand unfamiliar concepts without sacrificing scientific rigor.

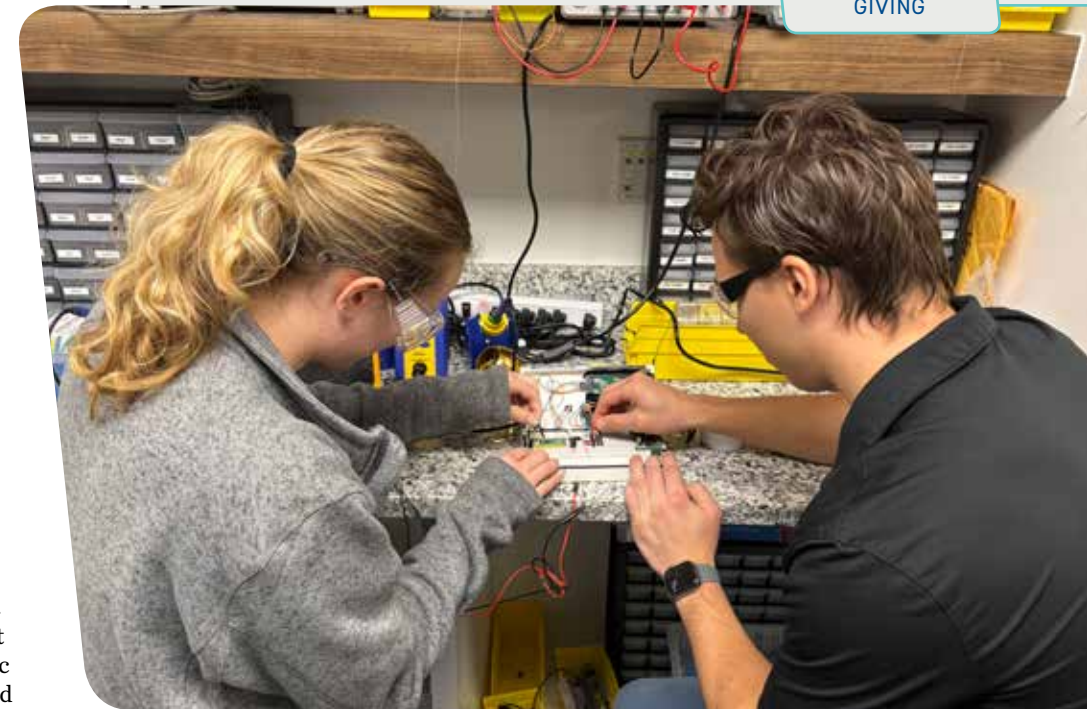
That realization helped shape a career connecting science, medicine, and people. After earning her Ph.D. in 2009, Wojtowicz moved into the biopharmaceutical industry, beginning in medical affairs and eventually taking on leadership roles across multiple therapeutic areas, including wound healing, neuroscience, and gastroenterology.

Today, she focuses on inflammatory bowel diseases such as Crohn's disease and ulcerative colitis. Wojtowicz is particularly excited about advances in noninvasive diagnostic tools, such as intestinal ultrasound, and a growing pipeline of targeted therapies that could transform how IBD is treated. She is also passionate about expanding access to specialized care for patients in underserved areas and helping bring new treatment options to pediatric patients, who often have fewer approved therapies available than adults.

In 2025, Wojtowicz returned to Coulter BME as an instructor in the Master of Biomedical Innovation and Development (MBID) program, teaching a course on Medical Ethics, Medical Affairs and Clinical Communications. The opportunity allowed her to share with students the realities of transforming scientific discoveries into products that reach patients.

Wojtowicz encourages students to remain curious, open-minded, and resilient, lessons she learned at an early age from her parents, who nurtured her love of science. Today, those influences continue to shape her life, whether she is mentoring students, supporting new mothers in her community, or encouraging her own children to stop and notice the wonders of the natural world.

Her lifelong fascination with science, encouraged by supportive mentors and family, and strengthened through years of industry experience, continue to guide her work. Whether collaborating with physicians, mentoring students, or helping bring new therapies to patients, Wojtowicz remains driven by the same goal that first captured her imagination: translating scientific innovation into meaningful human impact. • LEEANNA ALLEN



GIVING

Hahn Family Challenge Aims to Double Impact for Student Innovation

Matching campaign will strengthen the Design Garden, expand Capstone opportunities, and support the next generation of healthcare innovators.

Every biomedical breakthrough begins with an idea. At the Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech and Emory University, those ideas often take shape in classrooms, makerspaces and design studios where students are challenged to solve real-world healthcare problems. Now, a new philanthropic initiative is poised to accelerate that work by investing directly in the student innovation experience.

The Hahn Family BME Design & Innovation Challenge will provide a dollar-for-dollar match on new gifts of \$5,000 or more, up to \$100,000, helping expand resources for the department's Design Garden makerspace (recently renamed the Hahn Family Design Garden), Capstone Design program, and other student-centered innovation priorities. The challenge is funded through the generosity of the Hahn family: Joan Stanesco, Eileen Hahn, Jocelyn Hahn (BMED 2024), Rene Hahn (ME 2024), and Terrence Hahn.

"This gift by the Hahn Family will be an incredible stimulus for the Biomedical Engineering Department's Capstone program. With this gift, we will be able to expand the technical capabilities available to our students and continue improving the experiential learning process that is found

dational to Capstone,” says Chris Revell, Professor of the Practice in Coulter BME and a co-director of the BME Capstone Design program.

For students, the impact of those investments reaches far beyond the classroom.

In Coulter BME’s Capstone Design program, students work in multidisciplinary teams to address unmet clinical and industry needs. Over the course of the academic year, they move from problem identification and concept development to prototyping and testing, gaining firsthand experience in the process of translating ideas into practical healthcare solutions. The program connects students with faculty experts, clinicians and industry partners, providing exposure to the collaborative environment that drives innovation in modern medicine.

Many of those ideas come to life in the Hahn Family Design Garden, the department’s makerspace and innovation hub. The space provides students with access to tools, equipment and resources that enable hands-on experimentation, rapid prototyping and iterative design. It serves as a place where creativity meets engineering, allowing students to test concepts, learn from failures and refine solutions before bringing them into clinical or commercial settings.

Through this challenge, greater investment in infrastructure and experiences that make experiential learning possible will be addressed.

The initiative also reflects a broader commitment to preparing students for careers at the intersection of engineering, medicine and entrepreneurship. Through design-driven experiences, students develop technical expertise while learning how to work across disciplines, communicate with stakeholders and navigate the complexities of healthcare innovation. These experiences often serve as launching points for future research, startup ventures and industry careers.

The Hahn family’s matching commitment is intended to encourage alumni, corporate partners, and friends of the department to invest in that mission. Every qualifying gift to the BME Design and Innovation Fund will be matched dollar for dollar, effectively doubling the immediate impact of donor support.

Beyond serving as an opportunity to build momentum around hands-on, industry-aligned education, the challenge is intended to help engage a broader network of alumni, attract new corporate partnerships, and further position Coulter BME as a model for experiential learning in biomedical engineering.

For donors, the appeal is straightforward: invest in a student’s ability to turn an idea into a solution that can improve lives.

Whether that means equipping a makerspace, supporting a prototype, sponsoring a project team or creating new opportunities for collaboration with clinicians and industry experts, every matched gift contributes to an ecosystem where innovation can flourish. Those investments help ensure that future biomedical engineers have the tools, mentorship and experiences needed to tackle some of healthcare’s most pressing challenges.

As the challenge moves forward, the Department hopes the campaign will inspire a community-wide effort to support the next generation of innovators and problem-solvers.

“Coulter BME is grateful for the vision and generosity the Hahn Family has shown,” says Luke O’Connell, Director of Development in Coulter BME. “Their commitment builds on the remarkable success of our Capstone Design students and will help the next generation of healthcare innovators continue that momentum.”

• KELLY PETTY

The Hahn family, from left: Terrence Hahn, Joan Stanesco, Jocelyn Hahn (BMED 2024), Eileen Hahn, and Rene Hahn (ME 2024, M.S. ME 2026). (PHOTO COURTESY: TERRENCE HAHN)



SUPPORT STUDENT INNOVATION IN BME

New gifts of \$5,000 or more to the BME Design and Innovation Fund (#55D334) qualify for the Hahn Family’s dollar-for-dollar match, up to a total of \$100,000 in matching funds. The challenge operates on a first-come, first-served basis until all matching funds have been claimed.

Every matched contribution helps strengthen the Design Garden, support Capstone Design projects, and empower students to create the healthcare solutions of tomorrow.

To make a gift, scan the QR code or visit:
b.gatech.edu/3RZh7WW



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