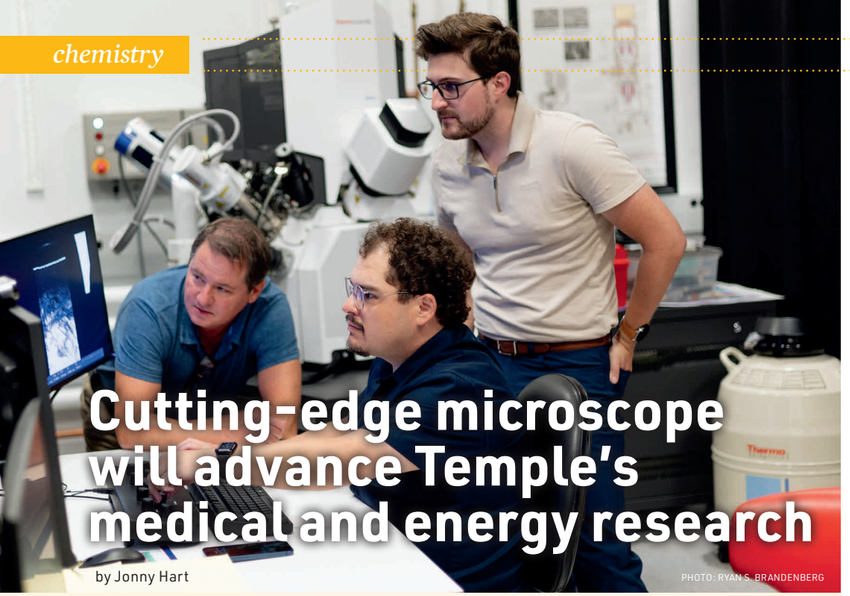


Cutting-edge microscope will advance Temple's medical and energy research

by Jonny Hart

PHOTO: RYAN S. BRANDENBERG

Scanning electron microscopes, and their ability to help researchers visualize matter at the nanoscale, regularly contribute to groundbreaking innovations. Semiconductor and quantum technologies for computing, drug and cancer treatments, battery technology, and photovoltaic solar panels have all advanced through the use of electron microscopy.

Now, thanks to a $3.3 million NSF award, Temple owns a brand new, state-of-the-art SEM-based platform. The instrument configuration will be one of just a few in the country, and only the second at a university.

CST faculty, led by Michael Zdilla, professor of chemistry; Dmitriy Dikin, technical manager of Temple's Nano Instrumentation Center; and Bernd Surrow, professor of physics, began meeting in 2024 to explore the acquisition of a new electron microscope.

"This system does things that no one else in the country can do, unless you live near UC Santa Barbara, so a ton of faculty leapt at the opportunity to be a part of this proposal," said Zdilla, principal investigator of the NSF award.

The system can use laser and ion beams to drill into or strip away layers of any material, providing a three-dimensional image of a sample. It also uses X-ray technology to detect a sample's elemental and structural composition, and it has an ion mass spectrometer, which can help researchers pinpoint where specific molecules are located in a sample.

"All of this information is condensed into a 3D, rotatable map showing where the elements and molecules are, down to the nanometer scale," Zdilla said. "And this is all done on a chunk the size of a centimeter. It is absolutely unheard of to get that level of information from a centimeter-sized object, including molecular and elemental mapping."

Because of its versatility, the instrument has attracted the attention of Temple researchers from a wide range of disciplines. Zdilla hopes to use the new instrument to make advancements in the replacement of flammable liquid electrolytes found in batteries, which are usually responsible for battery fires.

Temple's award includes funding for three years of training and support for the system, which will help researchers and students launch new research projects.

SETH HERZON, CST '02: GIVING BACK AND HONORING GRANT KROW

by Eddy Kosik

Seth Herzon, an organic chemist at Yale University, struggled so much in school that he nearly didn't attend college. It wasn't until one Temple professor took him under his wing that Herzon began to realize his own potential. Now, he's creating similar opportunities for future chemistry students.

"I was not a very good student," he said. "I didn't know how to go about learning. I would get piles of work, go home and just be overwhelmed."

It wasn't until sophomore year, when Herzon took an organic chemistry class with Professor Grant Krow that something finally clicked. Before the end of the semester, Herzon approached Krow about joining his lab. Krow said yes. "From there," Herzon said, "everything just kind of snowballed."

When Herzon decided to give back to Temple after finding success in his own career, he gifted $50,000 to endow the Grant Krow Memorial Scholarship, which provides financial support for undergraduate or graduate chemistry students, with preference for those conducting organic chemistry research.

"I just hope that it creates opportunities," Herzon said. "Maybe there's a faculty member considering taking an undergraduate into the lab for the summer, and that student needs a stipend to make it possible. Maybe this fund can help make that happen."

PHOTO: SETH HERZON



PHOTO: RYAN S. BRANDENBERG



FIRST-GEN CHEMISTRY STUDENT AIMS TO INSPIRE OTHERS

by Khalil Bullock

For many Temple CST students, being the first in their family to attend college is more than a personal milestone—it's a turning point for generations to come.

For Juan Diego Cervantes Ramirez, a senior chemistry major with a minor in Spanish from Warminster, Pennsylvania, being a first-generation college student is about proving what's possible. Born in Abington, Pennsylvania, and raised between Warminster, Pa. and Mexico, Ramirez returned to the U.S. his senior year of high school determined to pursue higher education.

"Coming back and choosing Temple felt right and it was close to home," he said. "But the transition wasn't easy." As a commuter student navigating language barriers and financial challenges, Ramirez leaned on Temple's Tri-Alpha Honor Society and CST's First-Gen Initiative for support.

Now a proud member of the Diamond Marching Band, Ramirez has found both community and confidence. He hopes to pursue a career in forensics or research and inspire his younger siblings with a simple message: "With dedication and effort, you can do it, too."

TEMPLE'S #YOUAREWELCOMEHERE SCHOLARSHIP HELPS LAUNCH CAREER

by Brent Baum

When Ayna Mammedova, CST '23, '24, first imagined studying at Temple, it initially seemed out of reach. Mammedova was coming from Turkmenistan—6,400 miles away—and facing the challenges of accessibility to a U.S. college education as an international student. That dream became a reality when she earned Temple's #YouAreWelcomeHere scholarship, a $20,000 renewable scholarship awarded each year to two first-year international students.

"Growing up in a small town in Turkmenistan, I never imagined I could study in the U.S. With Temple's idea to create the #YouAreWelcomeHere scholarship, it made that dream not feel so far away anymore," said Mammedova, a biochemistry major who also earned a PSM in bioinformatics at Temple.

Now an associate bioinformatics scientist at the Coriell Institute for Medical Research, Mammedova analyzes biological data contributing to groundbreaking research, exploring innovative approaches to understanding and treating cancer.

Mammedova credits associate professors Vladi Wilent and Carol Manhart of the Chemistry Department, and other CST faculty for providing guidance and support that made even the most challenging scientific concepts understandable.

"They were amazing professors in the way they explained very complex concepts in small, easy steps and ensured all students received any help they needed," she said.

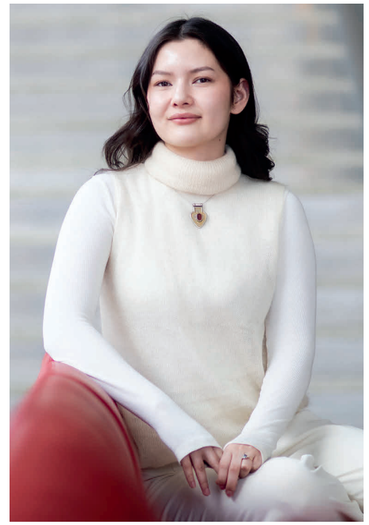


PHOTO: RYAN S. BRANDENBERG

CLIMBING TO THE TOP OF DRUG DISCOVERY

With Philadelphia emerging as a major hub for biotechnology, Ladder Bio sits at the cutting edge. Tackling difficult-to-treat targets in inflammation, autoimmune disease and oncology, the company is commercializing a unique platform to generate next generation therapeutics.

Founder Christian Schafmeister, professor of chemistry, and his innovative team have pioneered the development of spiroligomer molecules–synthetic, ladder-shaped compounds engineered to be small enough to penetrate cells and selectively target proteins. Ladder Bio plans to use these molecules to create an oral drug as an alternative to treatments that require injections. Ultimately, the spinout is opening a new chemical space and therapeutic modality for drug discovery.