

ASU program to prepare students to become leaders in regenerative medicine

NIH awards \$2.1M grant to establish Regenerative Engineering, Science, and Technology Education Program

By Hannah Weisman, ASU News
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The greatest innovators know that generating impact requires talent across the lab, boardroom, newsroom and beyond.

And it's no different when it comes to the field of regenerative medicine.

Empowering graduates to meet the explosive growth in the field starts with producing well-rounded graduates who are prepared to take on the engineering challenges of tomorrow.

To that end, the [National Institutes of Health](#) awarded Arizona State University a \$2.1 million T32 institutional training grant to establish the Regenerative Engineering, Science, and Technology Education Program, or RESTEP, which will prepare doctoral students to become leaders in the rapidly expanding field of regenerative medicine and diversify their skill sets.

This doctoral training program will support eight doctoral students each year from schools¹ within the [Ira A. Fulton Schools of Engineering](#) and [The College of Liberal Arts and Sciences](#).

For two years, these trainees will engage in a structured, cohort-based program that combines rigorous research training with professional development and experiential learning.

RESTEP is jointly led by [Sarah Stabenfeldt](#), an ASU President's Professor of biomedical engineering, [David Brafman](#), an associate professor of biomedical engineering, and [Kenro Kusumi](#), senior vice provost and dean of The College and a professor of life sciences.

Together, the three principal investigators bring complementary expertise in biomedical engineering, regenerative medicine and life sciences to guide the first NIH-funded training initiative of its kind in Arizona.

“This program gives students an unparalleled opportunity to connect their academic training with the real-world demands of regenerative medicine,” Stabenfeldt says. “It’s about creating graduates who are not only skilled scientists, but also agile problem-solvers who understand industry and patient needs.”

Training the next generation of regenerative medicine leaders

RESTEP aims to give trainees experimental laboratory research and motivate them to develop cross-disciplinary skills and engage with the local regenerative medicine industry, a field that focuses on repairing or replacing damaged or diseased tissues and organs.

Students will work in the laboratories of the [Regenerative Medicine Core](#), gaining hands-on experience in advanced areas such as stem cell biology, tissue engineering, biomaterials development and gene and cell therapies. The students will participate in technical bootcamps, workshops and equipment-specific training designed to sharpen their technical expertise, along with scientific communication skills, teamwork, leadership and the responsible conduct of research.

The Regenerative Medicine Core provides a unique hub for stem cell culture, imaging and biomanufacturing, while ASU’s additional facilities give trainees access to world-class platforms in flow cytometry, advanced microscopy, genomics, nanofabrication and preclinical imaging.

Research mentors are already developing patient-specific stem cell models of Alzheimer’s disease, designing biomaterials for musculoskeletal and cardiovascular repair and creating translational immunotherapies that will be strengthened by the formal training framework of RESTEP.

The curriculum emphasizes the importance of connecting science to society and taking knowledge beyond the lab. Trainees will learn about entrepreneurship, intellectual property and the process of translating laboratory discoveries into therapies and technologies that directly improve the health care industry. The trainees will connect directly with this ecosystem by completing internships, attending workshops on commercialization and building professional networks with local industry leaders.

“RESTEP was designed to prepare our students not just as excellent scientists, but as innovators who can move discoveries from the lab to the clinic,” Stabenfeldt says. “They will leave ASU with both deep technical expertise and the entrepreneurial perspective needed to impact human health.”

Building bridges to industry and beyond

Phoenix’s growing influence as a hub for biotechnology innovation is a natural backdrop for the program’s strong focus on industry and entrepreneurship.

Students will also participate in events such as [Venture Café Phoenix](#), held weekly at the [Phoenix Bioscience Core](#), which connects researchers, entrepreneurs, venture capitalists and business leaders. The curriculum will provide trainees with opportunities to pitch ideas, network and gain insight into the challenges and opportunities of bringing regenerative technologies to market.

Brafman says that RESTEP builds on the vibrant regenerative medicine ecosystem already thriving at ASU.

“RESTEP leverages the critical mass of regenerative medicine activities that already exist at ASU and takes them to the next level,” he says. “By creating a structured training environment that unites faculty, facilities and industry engagement, we are building a foundation for the next generation of leaders in this field.”

A legacy of excellence

The first RESTEP cohort launched this fall. Over its five-year cycle, the program will train more than 30 doctoral students, providing them with a foundation to pursue careers in academia, industry, government and beyond.

By the end of their training, students will not only have conducted cutting-edge research but also built the professional skills, entrepreneurial mindset and industry connections necessary to lead the future of regenerative medicine.

“RESTEP is not just about training PhD students,” Brafman says. “It’s about shaping the future of regenerative medicine by building a workforce that is innovative, inclusive and prepared to tackle the biggest challenges in human health.”

“ASU has established itself as a national leader in regenerative medicine research,” Kusumi says. “RESTEP ensures that we will also be a leader in training the people who will carry this work forward to transform health care.”

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¹ The units include: the School of Biological and Health Systems Engineering, the School for Engineering of Matter, Transport and Energy, the School of Life Sciences and the School of Molecular Sciences.

Main image



Sarah Stabenfeldt, an ASU President's Professor of biomedical engineering in the School of Biological and Health Systems Engineering, and Diana Herrera-Diaz, a biomedical engineering doctoral student, conduct an experiment in the lab. Photo courtesy of Sarah Stabenfeldt