Assistant Professor Samira Kiani will use support from her DARPA Young Faculty Award to integrate advanced technologies in gene editing and treatment methods in efforts to improve treatment for hearing loss, a widespread issue facing returning combat veterans.

She’ll make use of the new gene-editing tool known as CRISPR — clustered regularly interspaced short palindromic repeats — to increase or decrease the gene expressions that produce certain proteins in hopes of enhancing the regeneration of certain cell pods within the ear damaged by trauma caused by explosions or other very loud noises.

“We want to see if we can safely stimulate genes to make the proteins that could actually restore nonfunctioning cells in the ear,” Kiani says. “If the system works, it could make treatment and therapy available to people much faster.”

Her work will involve the creation of custom-made designs to control CRISPR functions for gene manipulation, while maintaining a level of safety for human applications. If successful, Kiani hopes her research will lead to more methods of restorative gene therapy for other ailments.
Data snapshot

Focused on student success

20,275 fall 2016 enrollment* estimated
3,523 degrees granted 2015-2016
2,859 fall 2016 first-time freshmen* estimated
30% of Barrett, the Honors College students are in the Fulton Schools

24 undergraduate programs • 39 graduate programs • Two campuses plus online

Get our latest news: fulcircle.asu.edu

Freshmen enrolled in the Fulton Schools

Freshman Retention

Ph.D.

Master's

Undergraduate

Freshman Retention

Engineering Degrees Awarded

0-6 7-9 10-13 14-15 16-17


85% 87% 88% 85% 86% 89% 90% 87% 87% 87%

Fulton Schools

Freshman Retention

Engineering Degrees Awarded

0-6 7-9 10-13 14-15 16-17


85% 87% 88% 85% 86% 89% 90% 87% 87% 87%
Focused on student success

We are leading critical national initiatives

- QESST NSF-DOE Engineering Research Center with partners MIT, Caltech, Georgia Tech and others
- CBBG NSF Engineering Research Center with partners Georgia Tech, New Mexico State and UC Davis
- Partner on two NSF Engineering Research Centers: NEWT with Rice University, Yale and UTEP and FREEDM Systems with NC State University, Florida State University, Florida A&M University and Missouri S&T
- Two NSF I/UCRC planning grants Building Reliable Advances and Innovation in Neurotechnology and Center for Assured and Scalable Data Engineering
- $18 million from USAID to establish the U.S.-Pakistan Centers for Advanced Studies in Energy (USPCAS-E) to improve power production in Pakistan
- HEEAP, Higher Engineering Education Alliance Program (Intel, Siemens) $20M cash and more than $50M in-kind donations by academic, government and industry partners
- 32 young investigator awards from NSF CAREER, AFOSR YIP, DARPA YFA, NASA and NIH Directors/Development over the past three years

New facilities

- Fulton Schools Residential Community on the Tempe campus opening fall 2017; Generator Labs opened fall 2016 in Engineering Center. Other new facilities include: College Avenue Commons, eSpaces, Bricky Mezzanine and Interdisciplinary Science and Technology Building 4.

We are supporting a vibrant community

- $98.33M research awards FY 2016
- $99.43M research expenditures FY 2016
- 1,000+ undergraduates conducting research

Invention Disclosures

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Note: The diagrams and charts are illustrative and do not contain specific data.
1. **We build engineers:** more than a discipline, engineering is a mind-set, a way of looking at the world. Students in the Fulton Schools of Engineering are part of a community of problem solvers, people who are passionate about designing and making innovative and entrepreneurial solutions. Our students are distinguished by their transdisciplinary methods, their understanding of the societal implications of their decisions, and their potential for success in traditional and non-traditional engineering careers alike.

2. **We've reinvented the first-year experience for students** — introductory engineering classes engage students in projects like creating solar cars or testing buildings during seismic activity.

3. At **E2, our innovative program for incoming freshmen**, our new students are engineers from day one — thinkers, makers, builders, inventors — participating in team-building games like toxic transport and boat building that promote team building and problem-solving skills. E2 also introduces incoming students to our peer mentors. Peer mentoring is integral to the set of attributes and principles that create the Fulton Difference.

4. **We foster entrepreneurship.** Aspiring entrepreneurs can find like-minded students in our incredible new space: **Generator Labs**, which provides Fulton Schools students with the ability to explore and expand their entrepreneurial mindset, to prototype projects anchored in human-centered design and to truly make an impact on the world around them. Students in Engineering Projects in Community Service (EPICS) and Startup Center programs use this space to team up and innovate. The Startup Center offers signature entrepreneurship and innovation courses, workshops, expert mentoring, new venture competitions and more.

5. Fulton Schools researchers excel in areas that are as varied as they are critical, including robotics, alternative energy and power systems, rehabilitative devices, engineering education, global security and national defense, and next generation adaptive materials. We are **leading world-class research centers** including two national Engineering Research Centers, QESST and CBBG.

   The National Science Foundation/Department of Energy funded **Quantum Energy and Sustainable Solar Technologies (QESST)** Engineering Research Center brings together partners worldwide to find affordable, accessible energy solutions and further education efforts in photovoltaics.

   The **Center for Bio-mediated and Bio-inspired Geotechnics (CBBG)** Engineering Research Center works to expand the emerging field of biogeotechnical engineering that promises solutions to some of the world’s biggest environmental and infrastructure development challenges.

   **Fulton Schools is a partner on two ERCs** — Nanosystems Engineering Research Center for Nanotechnology-Enabled Water Treatment led by Rice University and FREEDM Systems Engineering Research Center led by North Carolina State University.

6. We bridge the Tempe and Polytechnic campuses with **state-of-the-art labs, study spaces and residence halls.** You’ll find faculty and students — including undergraduate students engaged in research — working on engineering solutions in our 3D Print Lab, Device and Usability Lab, Startup Labs and more.

   We’re also opening a 1,600-bed residence hall on the Tempe campus in fall 2017. Built from the ground up, this new facility includes learning and study spaces, a gym and social lounges.

7. The Fulton Schools offer a **dedicated career center** that provides coaching to students from day one all the way through job searches for alumni. We host biannual career fairs and an annual Career Exploration Night geared toward freshmen. The Fulton Schools Career Center connects students to internships, co-ops and job opportunities.

8. We have more than **60 student organizations** engaged in activities from rockets to robots — a great way to get hands-on experience, make connections with industry and have fun. Our student teams enter and win national competitions.

9. We say you’re never too young to be an engineer. Our outreach and summer programs **engage thousands of K-12 students** each year in robotics, programming, solar energy, rocketry, mobile apps and more.

10. **We represent the many faces of engineering,** with more than 20,000 students from all 50 states and Puerto Rico, and 83 countries. We have Navajo students aiding reservation construction projects and more than a hundred National Hispanic Scholars. Our female first-time freshmen enrollment has doubled since 2011. Our inclusive approach paired with diversity programming has attracted a record number of incoming freshmen in each of the last five years, making us the largest engineering school in the U.S. in terms of undergraduate enrollment. One out of every five students at ASU is a student in the Fulton Schools.