

## **AvenueB & E Breaking Barriers**

Learn about two holistic academic support programs at UC Davis designed to support, retain, and graduate a diverse population of transfer students majoring in the Biological, Engineering and Computer Sciences. AvenueB & E cultivates a supportive community of scholars who are committed to making a difference in their fields and communities, while paving the way for students to follow in their footsteps; thereby, creating generational change. We support students in realizing their educational goals through intentional academic guidance, peer mentorship, faculty/industry mentorship, connections to internships/research opportunities, and scholarly awards to enable students to acquire STEMM degrees.

### **Presenters:**

Yesenia Cervantes-Tucker, UC Davis AvenueE  
Alyssa Arnold, Director of AvenueB  
Eden Zewdu Tadesse, UC Davis Student  
Shanice Gavene Blake, UC Davis Student



# AvenueB & AvenueE Breaking Barriers

Presented by: AvenueB/E Leadership

# AvenueB/E Program Directors



Alyssa Arnold  
AvenueB Program Director



Yesenia Cervantes-Tucker  
AvenueE Program Director

# Purpose

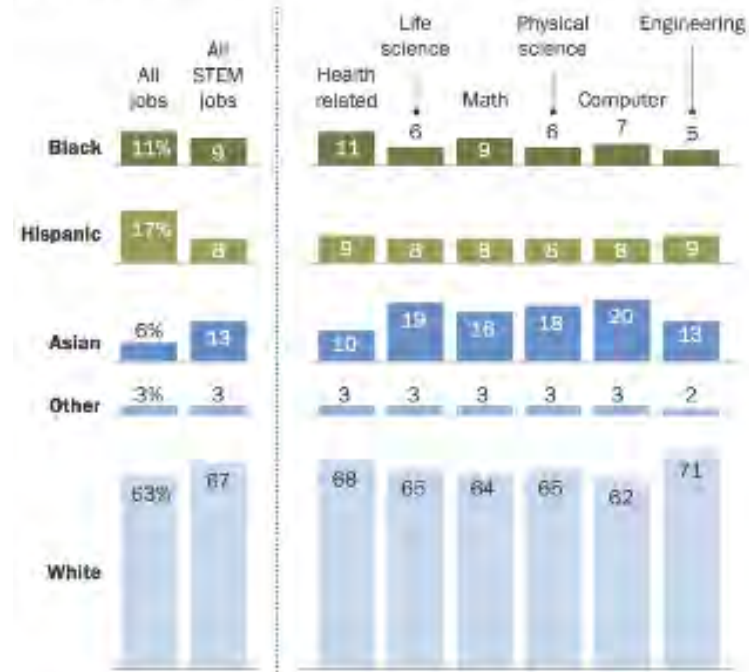
To cultivate a supportive community of scholars who are committed to making a difference in their fields and communities, while paving the way for students to follow in their footsteps; thereby, creating generational change.



# Data

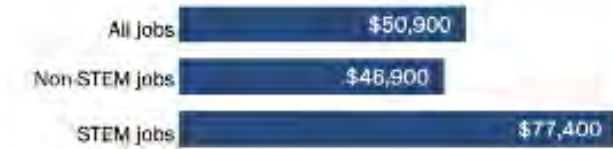
## Black and Hispanic workers remain underrepresented in the STEM workforce

% who are ...

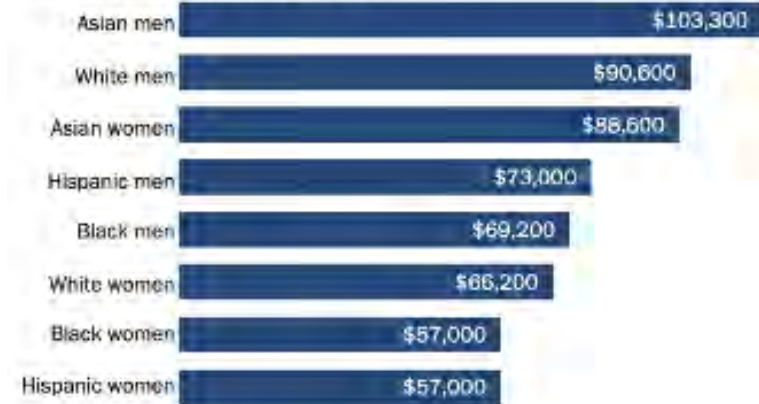


## Across all racial and ethnic groups, women in STEM earn less than their male counterparts

Median annual earnings of full-time, year-round workers ages 25 and older, in 2019 dollars



Among workers in STEM jobs who are ...



FRY, RICHARD, KENNEDY, BRIAN AND FUNK, CARY. "STEM Jobs See Uneven Progress in Increasing Gender, Racial and Ethnic Diversity". *Pew Research Center*. REPORT APRIL 1, 2021.

<https://www.pewresearch.org/science/2021/04/01/stem-jobs-see-uneven-progress-in-increasing-gender-racial-and-ethnic-diversity/>

**"The future never just happened,  
it was created."**



## Jane C. Wright

**Scientific discipline :** Biologist and Physician

**Date of birth :** November 20, 1919

**Place of birth :** Manhattan, New York

**Date of death:** February 19, 2013



Wright's father was one of the first African American graduates of Harvard Medical School, and he set a high standard for his daughters. Wright studied medicine at Meharry Medical College and Harvard Medical School. After spending time as a residential doctor at Bellevue and Harlem Hospital she would decide to dedicate herself to medical research. Wright would spend her career building on the foundational work of her father in chemotherapy. During the late 1940s, she and her father began to test chemotherapeutic formulations for treating leukemia and cancer of the lymphatic system. She is credited with developing a technique that tests the effects of drugs on cancer cells, using human tissue as opposed to lab mice.

In 1964, President Lyndon B. Johnson appointed Dr. Wright to the President's Commission on Heart Disease, Cancer, and Stroke. In 1967, she was named professor of surgery, head of the Cancer Chemotherapy Department, and associate dean at New York Medical College, becoming the highest ranked African American woman at a nationally recognized medical institution. In 1971, she became the first woman president of the New York Cancer Society. Wright retired in 1987, after which she was appointed Emeritus Professor at New York Medical College until her death in 2013.

McFadden, Christopher. "29 Highly Influential African American Scientists". *Interesting Engineering*. May 20, 2021. <https://interestingengineering.com/31-highly-influential-african-american-scientists>

## Patricia Bath

**Scientific discipline:** Ophthalmologist  
**Date of birth:** November 4, 1942  
**Place of birth:** Harlem, New York City  
**Date of death:** May 30, 2019



Born in Harlem in 1942, Bath was encouraged by her working-class parents to pursue her interests in science. She was the first African American to ever complete a residency in Ophthalmology, which she completed at New York University in 1973

After graduating, she would go on to lead a fruitful career in ophthalmology with the 'cherry on top' being her invention of the Laserphaco Probe - making her the first African American female medical professional to earn a medical patent, in 1986.

Bath also became the first female faculty member at the Department of Ophthalmology at UCLA's Jules Stein Eye Institute. She would also establish the American Institute for the Prevention of Blindness in 1976

During her fellowship in Ophthalmology at Columbia University, she discovered that African Americans were more likely to suffer from blindness, and significantly more likely to develop glaucoma than other patients.

McFadden, Christopher. "29 Highly Influential African American Scientists". *Interesting Engineering*. May 20, 2021. <https://interestingengineering.com/31-highly-influential-african-american-scientists>





## Valerie Thomas

**Scientific discipline:** Chemist, Physicist, and Computer Scientist

**Date of birth :** February 8, 1943

**Place of birth:** Maryland

Thomas is a highly accomplished and talented scientist and inventor. Born in 1943, she graduated Morgan State University as one of only two women in her class to major in physics and began a lifelong career working at NASA. She is best known as the inventor of the Illusion Transmitter, which has proved highly influential for NASA research. Thomas also helped develop the image-processing systems for LANDSAT (the first satellite to send images from space). Her invention would be widely adopted by NASA and is still used in the production of televisions and video screens. She retired from NASA in 1995.

Thomas continued to work for NASA until her retirement in 1995, serving in such positions as Space Physics Analysis Network (SPAN) project manager and most recently associate chief of the Space Science Data Operations Office. Over the course of her career Thomas contributed to the development of SPAN (Space Physics Analysis Network) for research related to Halley's comet, ozone hole studies, and a supernova.

For her contributions to science, she would earn various NASA awards including the Goddard Space Flight Center Award of Merit and the NASA Equal Opportunity Medal.



## Dr. Shirley Ann Jackson



**Scientific discipline:** Theoretical Physicist

**Date of birth:** August 5, 1946

**Place of birth:** Washington D.C.

**Date of death:** January 20, 2017

Jackson was very interested in science and mathematics as a child and would even conduct her own experiments (on honeybees) as a child. She would later use her passion for science to earn a B.Sc., M.Sc., and Ph.D. in Physics. Jackson was the first African-American woman to earn a Ph.D. from MIT in any field, and the second to earn a doctorate in Physics in the US.

After receiving her PhD, she worked at Fermilab, and also did a fellowship at CERN. In 1976, she accepted a position at Bell Laboratories she began working at AT & T's Bell Laboratories, conducting experiments and research into practical applications of theoretical physics. She would later head the U.S. Nuclear Regulatory Commission during the Clinton Administrations and became the 18th President of the Rensselaer Polytechnic Institute.

Her main contributions to science revolved around advancements in telecommunications that helped lead to the direct development of technologies such as the portable fax machine, touch-tone phones, and fiber optic cables. Jackson has received many honors and distinctions and serves on the board of directors in many organizations.



## Mae Carol Jemison

**Date of Birth :** October 17, 1956

**Field:** Engineer, Physician and NASA astronaut

Known for: American engineer, physician and NASA astronaut, Mae Carol Jemison became the first African American woman to travel in space when she went into orbit aboard the Space Shuttle Endeavour on September 12, 1992.

Connolly, Rachel & Kinney, Brooke. "Ten Black Scientists that Science Teachers Should Know About" *PBS Teachers Lounge* February 21, 2018. [HTTPS://WWW.PBS.ORG/EDUCATION/BLOG/TEN-BLACK-SCIENTISTS-THAT-SCIENCE-TEACHERS-SHOULD-KNOW-ABOUT-AND-FREE-RESOURCES%E2%80%8B](https://www.pbs.org/education/blog/ten-black-scientists-that-science-teachers-should-know-about-and-free-resources%E2%80%8B)

## Dasia T. Taylor

**Scientific discipline:** Medicine and Health

**School:** West High School, Iowa

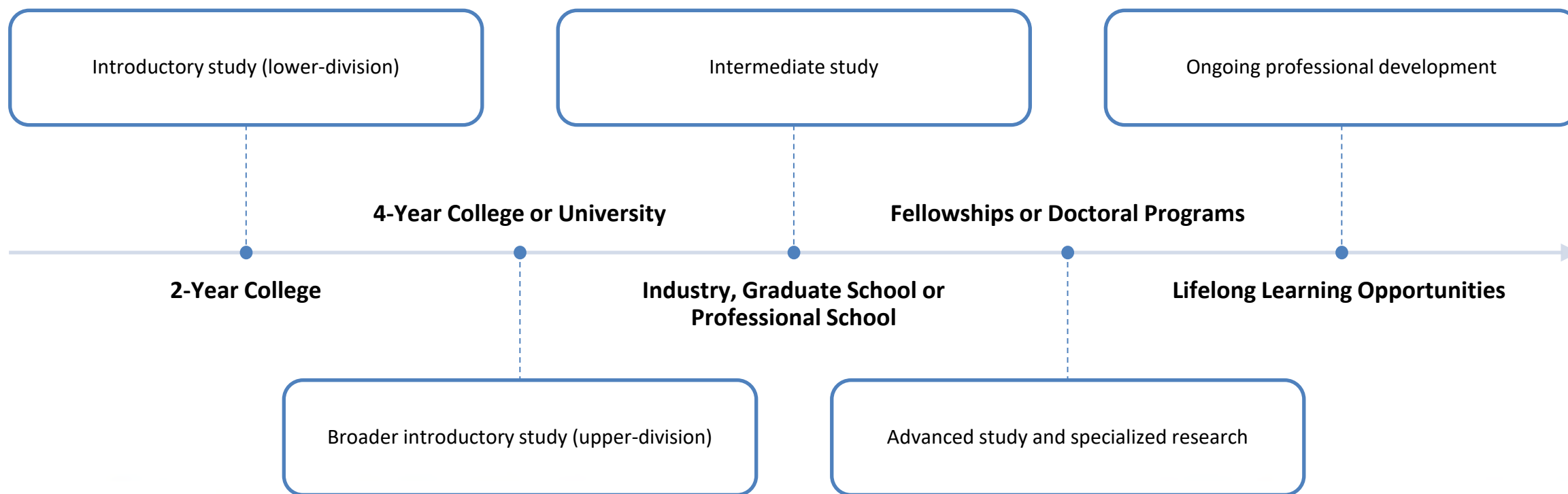
Dasia T. Taylor, 17, of North Liberty, designed a surgical suture that changes color if it comes in contact with infected tissue for her Regeneron Science Talent Search medicine and health project. Intrigued by an article describing “smart sutures” that use conductive coatings and sensors to detect wound infection, Dasia sought a way to replace expensive technology by using a naturally occurring substance that could flag infection due to pH changes, which in turn cause color changes. She used beet extract, which has antibacterial properties, to dye various suture materials. She found that thread made of polyester and cotton demonstrated the ideal combination of thickness, absorbency and noticeable darkening of color when exposed to solutions with a pH level indicative of infection. Dasia then replicated her results using the optimal thread in the form of sutures that she stitched into an artificial skin pad and exposed to various pH solutions. Her work may one day benefit developing countries where early detection of post-surgical infection could save many lives. At West High School in Iowa City, Dasia is a Green and Gold Academy mentoring captain and is involved in many social justice causes. She is the daughter of LaDonna Phillips.



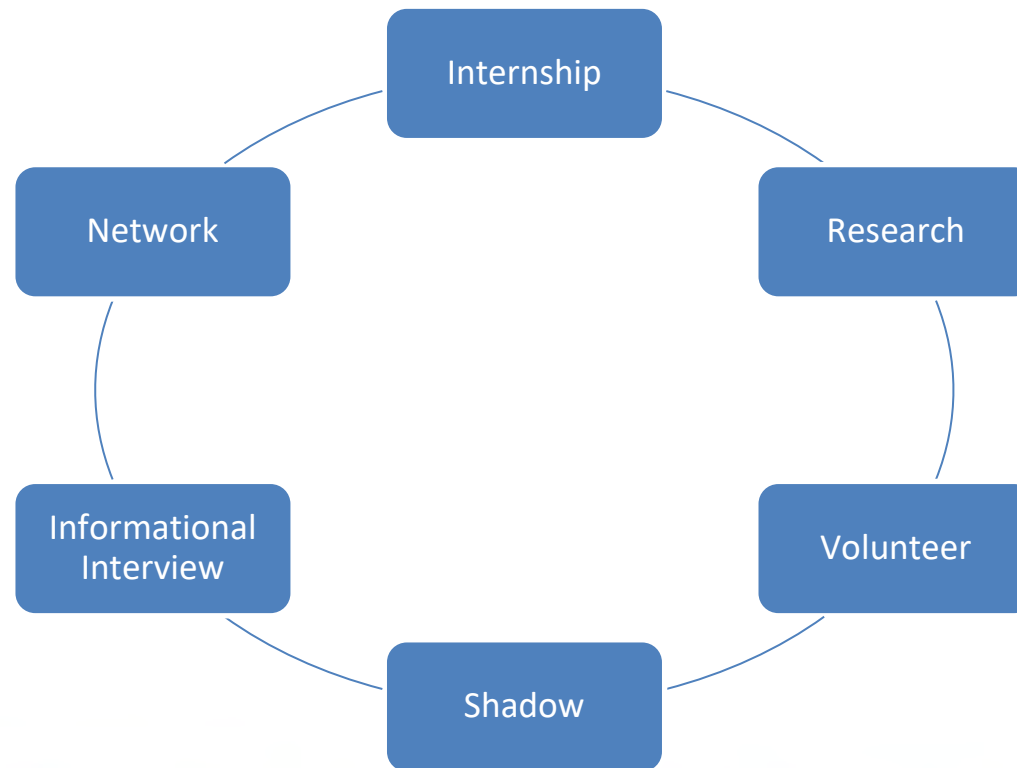
Huynh, Anjali and Krupa, Michelle. "A student harnessed the power of beets to make healing from surgery safer -- and more equitable". *CNN*. April 17, 2021, <https://www.cnn.com/2021/04/17/us/student-beets-color-changing-sutures-wellness-trnd/index.html>

Regeneron Science Talent Search, A Program of Society for Science. "Regeneron Science Talent Search 2021 Finalists". 2021 <https://spscdn.blob.core.windows.net/files/Documents/SEP/STS/2021/Program-Books/Finalist.pdf>

# Pathways to Careers



# Experiential Learning Opportunities



# Career Opportunities

Engineering Departments	Applications	Employment
Mechanical & Aerospace Engineering	Combustion, heating and cooling, autonomous cars, rockets	Tesla, Boeing, NASA, energy consulting, manufacturing
Electrical & Computer Engineering	Power plants, eclectic-power lines, computer hardware, wireless communication	Computer companies, utility companies
Biological & Agricultural Engineering	Food processing, crop production, biofuels	PepsiCo, Genentech, Chamness Biodegradables
Civil & Environmental Engineering	Building structures, bridges, dams, water & air pollution	Construction, solar-energy companies, Caltrans
Chemical Engineering	Chemical processing and packaging, plastics, oil drilling	Chemical plants, oil companies, drug companies

# Career Opportunities Cont.

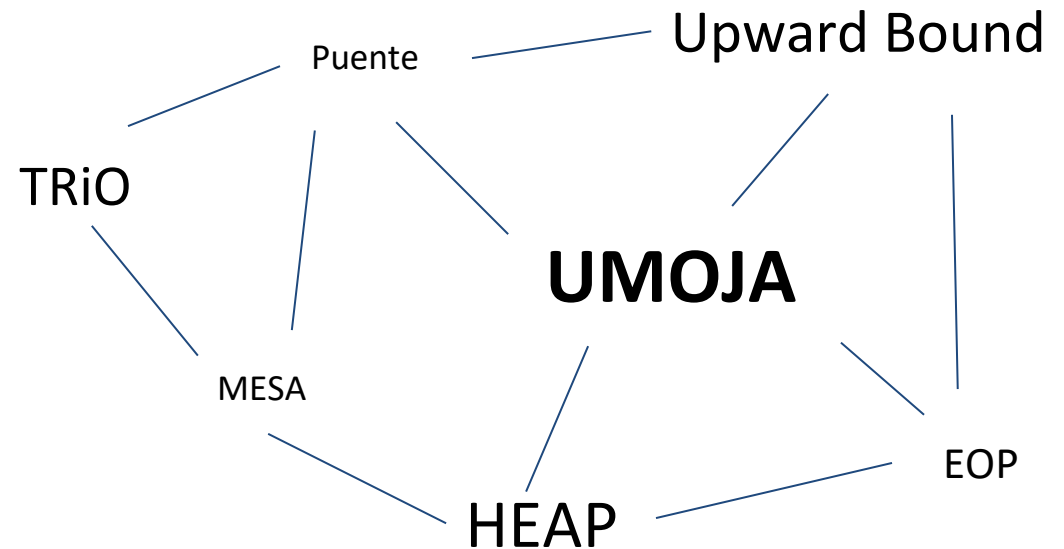
Biological Sciences Department	Applications	Employment
Biochemistry and Molecular Biology	Research, healthcare, education, food science	Hospitals, government, public and private schools
Genetics and Genomics	Mathematics, public health, biological sciences	Modeling and simulation companies, biotechnology companies, government
Plant Biology	Bioenergy, biotechnology, public horticulture	Research organizations, federal laboratories, plant propagation businesses
Cell Biology	Grant-writing, biological engineering,, immunology	Colleges and universities, pharmaceutical companies, zoos and aquariums
Evolution Ecology and Biodiversity	Sustainability, planning, soil and water conservation	Environmental consulting firms, Nonprofit organizations, privately owned farms and ranches



# Academic Support Programs

There exist several support programs at both two-year and four-year institutions, and although each program is unique, the common thread is that they provide holistic supports and services to enhance your academic experience, broaden your horizons and position you for success.

We strongly encourage you to research programs available at your four-year institutions of interest!





Program Benefits	For CC Students (LRCCD, CCCCD, SJDCCD, PCCD, YCCD)	For UCD Students
A Supportive Community	X	X
Targeted Admissions Advising	X	
Admissions Workshops & Information Sessions	X	
Scholar Awards (for eligible students)	X	X
Transfer Bridge Program		X
Targeted Academic Advising, Support & Tutoring	X (cc partners)	X
Research Opportunities		X
Industry Connections	X	X
Peer, Faculty and Industry Mentors		X
Enrichment Opportunities	X	X
Career/Graduate School Preparation	X	X

# Student Contributions to Scholarship



Mabry, Nehemiah. "The World is Waiting". *STEM Media*. October 14, 2018. <https://www.youtube.com/watch?v=cA9F6pQXtTw>

# THANK YOU

## Q&A