

WOMEN IN STEM SHOWCASE



Lina Rodriguez Salamanca, PhD

1982–

Plant Pathologist



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Background

Lina Rodriguez Salamanca was born and raised in Colombia. She studied microbiology at La Universidad de los Andes in Bogotá, earning her bachelor's degree in 2005. After graduating, she worked at the International Center of Tropical Agriculture (CIAT) in Cali, Colombia, researching the molecules that identify certain genetic traits (molecular markers) related to disease resistance, drought tolerance, and legumes.

Plant Pathology Career

In 2007, Rodriguez Salamanca moved to Michigan to continue her studies at Michigan State University. While working toward her master's degree in plant pathology, she focused on the **pathological analysis** of asparagus and the effects of soil-borne pathogens *Fusarium* (a fungi) and *Phytophthora* (a water mold). For her dissertation, she focused on the *Colletotrichum* fungus and its effects on onions and celery.

Rodriguez Salamanca currently works at Virginia Tech as the Plant Disease Clinic Manager and Diagnostician in the School of Plant and Environmental Sciences. She analyzes and diagnoses plant samples, reports results, and provides recommendations on best practices. She also maintains an online photo gallery of a variety of plant problems and creates educational materials on plant disease and diagnosis for farmers and master gardeners.



Scan QR Code to
visit the
Plant Problem
Image Gallery

STEM Vocabulary Word

Pathological analysis—the scientific study of (plant) diseases and the factors that can cause them; also known as phytopathology.

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Cecelia Payne, PhD

1900–1979

Astrophysicist



Background

Cecelia Payne was born and raised in England. In 1919, she won a scholarship to Cambridge University, where she studied physics and chemistry, which was unusual for women at the time. Her fascination with astronomy began after she attended a lecture by Sir Arthur Eddington, an astronomer and physicist who encouraged her curiosity and granted her access to the library at Cambridge Observatory.

Astrophysics Career

In 1923, Payne moved to the United States to continue her studies at Radcliffe College (which was later incorporated into Harvard University). At the time, the chemical makeup of the Sun and other stars was a popular debate in the field of astrophysics. The discovery of **spectroscopy** seemed promising: readings from our Sun appeared to match the spectra of several heavy elements, including calcium and iron.

Payne decided to dig deeper and discovered that the spectroscope's broad readings were actually the result of the stars' different temperatures, and not vastly different chemical compositions. In her 1925 dissertation she proposed that stars were overwhelmingly made of hydrogen and helium, the two lightest elements. Although her results were initially met with doubt, she received her PhD, and her findings were soon confirmed by additional research. Today, scientists agree that stars in the Milky Way are approximately 74% hydrogen and 24% helium, with heavier elements making up the last 2%.

STEM Vocabulary Word

Spectroscopy—the science of analyzing the wavelengths of light (in this case, starlight) to understand the chemical structure of the object emitting or reflecting the light.



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Aisha Bowe

1985–

Engineer & Entrepreneur



Background

Aisha Bowe was born and raised in Ann Arbor, Michigan. Although she was encouraged to pursue cosmetology by her high school counselor, her father encouraged her to take a math class at nearby Washtenaw Community College. She later transferred to the University of Michigan to study aerospace engineering, where she completed her bachelor's degree in 2008 and earned a master's in **space systems engineering** a year later.

Engineering Career

In 2009, Bowe joined NASA's Ames Research Center as a mission engineer in the Aviation Systems Division. Her work focused on developing technologies and algorithms for everything from air traffic safety and fuel optimization to nanosatellite missions. She also served as a NASA's liaison for the Mathematics, Engineering, Science Achievement (MESA) program, which serves California students with disadvantaged backgrounds.

Bowe will be the first Black woman to fly to space with private space company Blue Origin, which will make her the sixth Black woman to cross the Karman line (where the Earth's atmosphere ends and space begins).

Entrepreneurial Career

In 2013, Bowe founded STEMBoard, a technical company that specializes in providing professional advisory and solutions for government agencies and other high-profile clients. In 2022, she also created LINGO, a company that creates and sells project-based activity kits to encourage STEM learning, especially in technology.

STEM Vocabulary Word

Space systems engineering—the design, construction, and testing of aircraft, rockets, satellites, and other equipment that moves in space.



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Wendy Mao, PhD

1976–

Geologist



Background

Wendy Li-Wen Mao was born and raised in Washington, D.C. Her father studied and worked at the Geological Laboratory at the Carnegie Institution of Washington. She studied materials science and engineering at the Massachusetts Institute of Technology, earning her bachelor's degree in 1998. In 2001, Mao began pursuing her PhD at the University of Chicago and finished her doctorate in 2005 with her thesis titled *Geophysics and geochemistry of iron in the Earth's core*.

Geology Career

After receiving her PhD, Mao worked for two years at Los Alamos National Laboratory in New Mexico. In 2007, Mao joined Stanford College as professor of geological science. Her research studies extreme environments to develop more efficient energy storage and generation methods. She has used x-ray technology to study the mineral zircon, and the formation of ice and how it responds to pressure and temperature.

Mao has also developed alloys (metallic compounds) that are both light and strong through the property of hexagonal **close packing**. These alloys are produced by applying and removing high pressure, which forces the metal atoms to abandon their natural magnetic tendencies.

STEM Vocabulary Word

Close packing—a configuration that arranges spheres in a way that achieves the highest density; many crystals demonstrate close packing of identical atoms.



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