

Celebrating Native Americans STEM



November is Native American Heritage Month, or as it is commonly referred to, American Indian and Alaska Native Heritage Month. The month is a time to celebrate rich and diverse cultures, traditions, and histories and to acknowledge the important contributions of Native people. This month, we celebrate some pioneering and contemporary Native American scientists and engineers. Historically, the Native people demonstrated incredible ingenuity and knowledge of the world around them. For instance, the development of agricultural techniques, an understanding of the stars in the sky, or the rich understanding of the medicinal use of plants - Native Americans were practicing science long before European settlers. Sadly, much of their knowledge and ingenuity was appropriated by Europeans.

Historically, Native Americans experienced many challenges finding their way to modern science. A common theme in the stories of many of the pioneering Native American scientists was the need to leave their homes to attend schools where they were often discouraged from practicing their native languages and cultures. Another common theme among these pioneers was the importance of finding the intersection between their rich native culture and modern science – it is at this intersection where these pioneers are truly special. Here are just a few brief narratives highlighting the lives of pioneering Native American scientists, along with a few brief biographies of contemporary Native American scientists.

Susan La Flesche Picotte, Physician, Omaha Nation, (1865-1915)



In 1873 as a young child on the Omaha Reservation, Susan Le Flesche witnessed an elder die because the local white doctor would not come to give her care – despite being sent for four times. She credited this experience as her inspiration to become a physician to provide care for the people she lived with on the Omaha Reservation.

Having studied at the Women's Medical College of Pennsylvania in Philadelphia, Dr. Le Flesche became the first Native American to graduate from medical school in 1889 – 35 years before the U.S. government would recognize Native Americans as citizens. She graduated as valedictorian after only two years of a three-year program.

After a year's internship in Philadelphia, at only 24-years old, she returned home to serve the Omaha people; 1,300 people over 450 square miles. Shortly before her death, she fulfilled a dream to open a hospital in the reservation town of Walthill, NE; the first private hospital on a Native American reservation. Today the hospital houses a museum dedicated to the work of Dr. Susan La Flesche Picotte and the history of the Omaha and Winnebago tribes.

Mary Golda Ross, Mathematician and Engineer, Cherokee Nation (1908-2008)



Mary Golda Ross was born in 1908 in Park Hill, OK. Her great grandfather was Cherokee Chief John Ross, who led the Cherokee Nation during the Indian Removal era of the 1830s that resulted in the forced relocation of thousands of Cherokee people to west of the Mississippi River in present-day Oklahoma. She enrolled at the Northeastern State Teacher's College at the age of 16 and graduated with a degree in mathematics in 1928. She taught science and math in rural Oklahoma during the Great Depression, after which she worked for the Bureau of Indian Affairs and then as an advisor to girls at the Santa Fe Indian Boarding School in New Mexico, which later became the Institute of American Indian Arts.

Ross earned her Master's degree in 1938 from the Colorado State Teachers College, where she took "every astronomy class they had." She was hired as a mathematician by Lockheed in 1942 during WWII, where she worked on the Lockheed P-38 Lightning fighter plane. After the war, Lockheed supported her education at UCLA where she earned professional certification as an engineer, becoming the first known Native American female engineer and the first female engineer at Lockheed. In 1952, she joined the (then-secret) Skunk Works project. Much of her work in the research, evaluation, and testing of top-secret rocket and missile systems is still classified. Ross also helped write NASA's Planetary Flight Handbook, the agency's guide to space travel.

For more information on Native American Heritage month, scan this code:



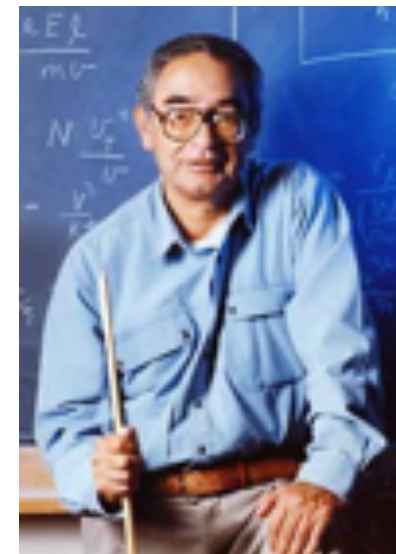
Bertha Parker Pallan Cody, Archeologist, Seneca Nation (1907-1978)



Without any formal university education, she is credited as one of the (if not the) first Native American female archeologist. In 1929, she discovered and performed a solo excavation at the Scorpion Hill Pueblo Site, with the finds on display at the Southwest Museum where she worked until 1941. She discovered and published on many archeological sites through the 1960's. She's best known for discovering the skull of a ground sloth next to a manmade artifact in the famed Gypsum Cave, proving that man and beast coexisted.

Bertha Parker was born in 1907 in Chautauqua County, NY. Her mother was an actress of Abenaki descent, her father an archeologist of Seneca descent; he was first president of the Society for American Archology. Having spent her childhood acting in Hollywood and with the Ringling Brothers circus, Yewas (her Seneca name) later began work on an archeological expedition site in Nevada. Having worked as a cook on the expedition site, she began to take an interest in learning archeological techniques.

Fred Begay, Nuclear Physicist, Navajo Nation (1932-2013)



His research focused on controlled thermonuclear fusion. Fusion in plasmas- hot ionized gases- could potentially provide a clean, practically unlimited energy source as an alternative to fossil fuels. Through his studies, he spent considerable time examining the relationship between modern scientific ideas and traditional Navajo ideas of religion and medicine. He credits his culture for instilling in him an intuition of abstract ideas and he believed that this aspect of his culture conferred an advantage when he learned about concepts such as Einstein's theory of relativity and quantum mechanics.

Fred Begay, also Fred Young or Clever Fox, was born at Towaoc, CO on the Ute Mountain Indian Reservation. His parents were Navajo healers and taught him the songs used in Navajo healing ceremonies from an early age. He was introduced to physics for the first time when he returned from serving in the Korean War and enrolled at the University of New Mexico in 1955 without having attended high school. Without being familiar with academic subjects, his decision to study physics was "just an accident." This 'accident' continued, and he received his Ph.D. in nuclear physics in 1971, the first Native American to do so. He joined the research staff of Los Alamos National Laboratory, with fellowships at Stanford University and the University of Maryland during his career.

For more biographies of contemporary Native American scientists, visit the SACNAS biography project by scanning this code:



Advancing Chicanos/Hispanics & Native Americans in Science



Aaron Yazzie, NASA Mechanical Engineer, Navajo Nation



Aaron Yazzie was born in Tuba city, AZ. He attended Stanford University where he completed internships at two NASA research centers. After graduating with a degree in mechanical engineering, he joined NASA's Jet Propulsion Laboratory in Pasadena, CA. He has developed mechanical systems that help analyze Mars' atmosphere and Martian soil samples. His work contributed to the "Curiosity" Rover in 2012, the "InSight" Lander in 2018 and his latest technology is aboard the "Perseverance" Rover that touched down on Mars in 2021.

Annette Lee, Astronomer and Artist, Lakota Nation



Annette Lee earned Bachelor's degrees in both Mathematics and Fine Art, Master's degrees in both Astrophysics and Fine Art, and a PhD in Physics and Astronomy (That's 5 degrees for those counting!). She is currently an Associate Professor of Physics and Astronomy at St. Cloud State University and works with Lakota and Ojibwe communities to preserve cultural astronomical and ecological knowledge. She is the founder and director of the Native Skywatchers, a program created to remember and revitalize indigenous star and earth knowledge and to communicate the traditions of Indigenous peoples and their living relationship with the sky and earth. The program also aims to address inequities in education for Native youth and to inspire cultural pride.

Robin Wall Kimmerer, Plant Ecologist and Botanist, Citizen Potawatomi Nation



Robin Wall Kimmerer holds a BS degree in Botany from SUNY College of Environmental Science and Forestry, and MS and PhD degrees in botany from the University of Wisconsin. She currently holds a faculty appointment at her alma mater and is the director for the Center for Native Peoples and the Environment. In addition to increasing access for Native students to study environmental science, the center aims to create programing that draws on wisdom of both Native and scientific knowledge with a shared goal – sustainability. Kimmerer believes in a traditional ecological knowledge approach that is an empirical scientific approach that accounts for cultural and spiritual considerations – the latter having been often marginalized by the greater scientific community.

Donna Nelson, Chemist, Creek Nation



Donna Nelson was born and raised in Eufaula, OK. She earned her PhD in Chemistry from the University of Texas at Austin and is currently a Professor at her alma mater, the University of Oklahoma. She served as the President of the American Chemical Society in 2016. Along with her research in chemistry, she is also known for her role as a scientific advisor in the television series "Breaking Bad." She developed what have become known as the 'Nelson Diversity Surveys' that examine diversity in the STEM disciplines. In 2004, this work was recognized by when she received the Woman of Courage Award from the National Organisation for Women.