

Inspiration For Future Scientists

Quotes from Dr. Agnes Naranjo Stroud-Lee

“I found my professional role as a cell biologist extremely fascinating and a very satisfying career. I hope that I may serve as an example to the younger generation of scientists of all races.”



Dr. Stroud-Lee at Los Alamos National Laboratories, 1970s

“One piece of advice for students? ‘Get with it!’ Science may seem to be a little harder than other careers, but the rewards of being a scientist are great!”

“I went into the scientific field because in 7th grade, I had a good teacher who made science interesting. I had this thing about wanting to know how something worked. In college, my botany and zoology professors asked for my help in their research. Look for ways to pursue your interests!”

“Science may seem to be a little harder than other careers, but the rewards of being a scientist are great!”



Dr. Agnes Naranjo Stroud-Lee (1922-2018)

“I believe that all my work in the fields of Biology and Cancer Research has contributed to the prevention of diseases and birth defects. It has also made in-roads into scientific knowledge where other scientists can use my research to further their pursuit of science ... I found my professional role as a cell biologist extremely fascinating and a very satisfying career. I hope that I may serve as an example to the younger generation of scientists of all races.”

“Students need to think of a career-directed education in science, which requires a lot of ‘self-determination’”

Santa Clara Pueblo

Santa Clara Pueblo is a federally recognized Native American tribe located on the Rio Grande in northern New Mexico. In its traditional Tewa language, still spoken today, it is known as Kha’p’o Owingeh (Valley of Wild Roses). Famous for producing polished black and red pottery with deeply carved designs, Santa Clara is a thriving modern community with strong ties to its indigenous culture. Tribal members are prominent in the fields of science, medicine, law, education, business, forestry, and agriculture.



Resources

- AgnesNaranjoLee.com
- en.wikipedia.org/wiki/Floy_Agnes_Lee
- IndianPueblo.org
- <https://www.manhattanprojectvoices.org/oral-histories/floy-agnes-lees-interview>

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AGNES
NARANJO
STROUD-LEE

Pioneering Scientist
from Santa Clara Pueblo

Notable Accomplishments



Pioneer in Radiation Biology & Cytogenetics

Studied the effects of ionizing radiation on chromosomes in animal and human cells. Research conducted at Argonne National Laboratory, Jet Propulsion Laboratory (Senior Scientist), and Los Alamos National Laboratory.



Doctoral Degree in Biological Sciences

University of Chicago • 1966
Thesis: “Effects of X-irradiation on DNA Synthesis in Regenerating Liver”



Published Over 40 Scientific Journal Articles

Inclusion in several science education textbooks.



Society for In Vitro Biology

(Previously, Tissue Culture Association)
Member and Officer 1948-2018
Named Honorary Member 1989

American Indian Science & Engineering Society

Founding Member • Board of Directors



Numerous Awards & Other Prestigious Scientific Society Memberships

Her Story

AGNES NARANJO STROUD-LEE was a leader in the field of cytogenetics in the 20th century, despite the odds against her as a Native American woman. Her father, Severiano Naranjo, was born at Santa Clara Pueblo in New Mexico, attended Indian boarding schools, and around 1910, married her mother, a German- American teacher from Indiana. Aggie was born in 1922; she and her four siblings grew up at the Albuquerque Indian School. She earned a BS in Biology at the University of New Mexico in 1945.



Graduation Day at the University of Chicago, 1966.

Aggie worked in the Manhattan Project at Los Alamos National Lab in the mid-1940’s, taking blood samples from scientists, including Enrico Fermi, Alvin Graves, and Louis Slotin, who worked under assumed names. Aggie related, “after the bomb was dropped, the GIs who worked at the laboratory...came up and shook my hand and said, ‘You were the person who stuck the hand of the great Enrico Fermi.’... I said, ‘Oh, I can’t believe that,’ because I was beating him in tennis every time. So when we went out to play tennis later, I didn’t beat him; I tried not to. We became very, very good friends.”

Fermi asked Aggie to come to Chicago to research radiation’s effects on living tissue. “I started out by getting to Argonne National Laboratory and the University of Chicago, so I was going to school and working eight hours. I married a graduate student in the same biology division, and [my daughter**] is the result of it. But he had cancer, melanoma, and he died when she was two years



Agnes (middle) with her grandchildren Sam Reifel (left) and Peggy Reifel (right).

old.... I decided, ‘I went to Chicago to get my PhD, and I’m going to get it.’ I worked and went to school, and it took me about fourteen years.” [PhD in Zoology, University of Chicago, 1966].

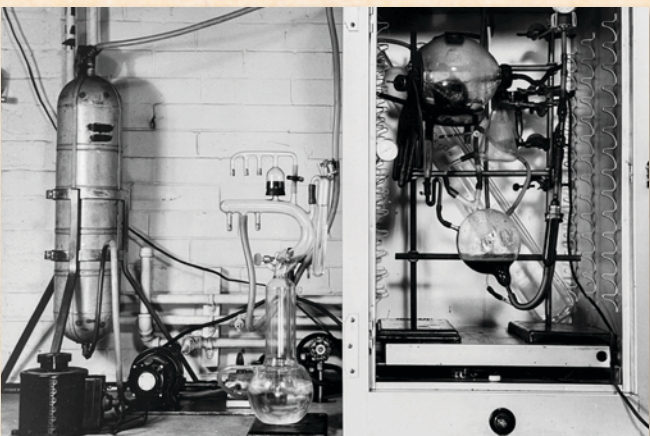
In 1968, Aggie returned West, taking a position at Pasadena Foundation for Medical Research, then at Jet Propulsion Laboratory, in California. Later she returned to Los Alamos National Laboratory, retiring from there in 1979.

In the 1950s and ‘60s, at Argonne, Aggie helped develop the digital analysis of human chromosomes. Until then, chromosomes had been photographed, the images printed and cut out, then arranged to create a complete set or karyotype.

Working with a team of mathematicians, “I was the eyes and the brain on which the computer was taught”*, leading to automated karyotype maps that are still used today. Also at Argonne, she worked with another colleague to develop an early prototype heart/lung machine for open heart surgery on dogs.

Aggie published 40 scientific articles and chapters; joined numerous scientific organizations, holding office in several; attended hundreds of scientific meetings, conferences and trainings; and always worked to advance cancer research, tissue culture, and cytogenetics. Always advocating for Native Americans in science, she was a founding member of the American Indian Science and Engineering Society and mentored many students.

Aggie always studied and kept subscriptions to several research journals. Years of looking into microscopes impacted her vision until, nearly blind, she was able to read only with the help of an enlarging device. When she passed away in 2018 at 95, several recent scientific journals were on her desk waiting to be read.



Artificial heart-lung apparatus built by Agnes N. Stroud and George Svihla at Argonne National Laboratory