



A short history of women at Los Alamos

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Progress through the years

In 1944, chemist **Lilli Hornig** conducted plutonium research at Los Alamos—where she was physically segregated from her male colleagues. “I worked in a cubbyhole ... I was really just cut off from everything else,” she said in an interview. “I don’t know if that was because we were women or because we were doing work that we had to be segregated, but I suspect the former because it wasn’t the only place that it happened to me.”

Hornig felt that many men at that time were “not fond of women scientists generally” and often treated them as assistants rather than equals. “I was being asked to produce the readings, the data would go to someone else,” she remembered. “If I asked questions, that was all right ... but I never engaged anybody in what we could call a technical discussion, and I resented that very much ... I was unhappy, and that was the working situation.”

Although common, this working situation was not typical for all women — or men for that matter — at Los Alamos in the early days. In 1943, for example, nuclear physicist **Jane Hamilton Hall** received a raise “to bring her salary in line with those of comparable physicists on the project,” according to her division leader. In 1946, Hall’s performance review states that she was “not of secondary importance” on a project that she worked on with her husband. Hall went on to become the Laboratory’s only female assistant director.

During the Manhattan Project, 640 women worked at Los Alamos — about 11 percent of the total workforce. Today, women comprise 32 percent of the Lab’s workforce — 3,554 of 11,012 total employees. Women hold more than a quarter of management positions, and women are 22 percent of the professional R&D workforce.

“This shows us that we’ve made progress, but we’re not yet where we need to be,” says Laboratory Director **Terry Wallace**. “I’m committed to seeing more women promoted to management positions and appointed to leadership roles. The past excuse of, ‘There are no qualified women candidates,’ isn’t acceptable. It’s incumbent on search committees to find qualified women and give them a fair shot at the job.”

Workplace improvements are also a priority for Wallace, who submitted a request to the National Nuclear Security Administration (NNSA) for family leave benefits — aka paid maternity and paternity leave — shortly after becoming director. Wallace also recently reiterated the Laboratory’s zero-tolerance sexual harassment policy and encouraged anyone experiencing harassment in the workplace to speak up. “Under

no circumstances should anyone be made to feel like they are at risk for reporting something that never should have happened in the first place,” he says. “I often say that what makes Los Alamos such an exceptional place are the people who work here. That’s why it’s imperative that employees feel like they are treated fairly.”

“But equally as important,” Wallace continues, “is that they’re joining a place where their unique perspectives and experiences are valued; their work-life balance is respected; and they’re given real opportunities for advancement.”

To that end, women who work for Los Alamos today can know that they’re joining one of the most prestigious science and engineering institutions in the country with a rich history of discovery and innovation.

Take a look at that history via the following timeline, which highlights notable women at the Laboratory and their achievements, as well changes in federal legislation and the workplace that continue to make Los Alamos a great place for women to work.

1940s

1943: Dorothy McKibbin was a 45-year-old single mother and bookkeeper when J. Robert Oppenheimer hired her in 1943 to be the first point of contact for Manhattan Project scientists before they headed “up the hill” from Santa Fe to Los Alamos. Known as the “first lady of Los Alamos,” the relentless gatekeeper was stationed in a nondescript adobe at 109 E. Palace Avenue in Santa Fe, a position she held until the office closed in 1963.

Dorothy McKibbin (left) with Robert Oppenheimer and Victor Weisskopf at Oppenheimer's home in Los Alamos in 1944.

1943: Librarian **Charlotte Serber** was the only female group leader of the Manhattan Project. As such, she organized and protected secret documents in a space that featured a document room, a vault and a ditto (copying) machine. In addition to its official purpose, Serber later said the library was a “center for gossip” and a “hangout” space.

1943: In the 1940s, a “computer” was a person — usually a woman — whose job it was to perform calculations by hand, sometimes with the aid of a mechanical calculator. Women with degrees in mathematics and the sciences often took jobs as computers because of discrimination in their own fields. As a consequence, many of the women who became computers were vastly overqualified for their positions. At Los Alamos, approximately 20 computers worked in the T-5 Computation group by the end of the summer of 1943.

An IBM computer in 1952.

1943: In the spring of 1943, **Mary Frankel** arrived at Los Alamos. With degrees in both psychology and mathematics, Frankel became a junior scientist in the Computation group (T-5). She became an expert in using numerical methods to solve physical equations and was in charge of setting up the problems for the staff to run on desk calculators.

1943: The first **Women’s Army Corps (WAC)** detachment arrived in Los Alamos on Aug. 24, 1943. Many WACs had technical training and engaged in scientific research.

Others served as hospital technicians, clerks and secretaries. The detachment was deactivated on Oct. 19, 1946.

Members of the Women's Army Corps at Los Alamos in 1945.

1944: Explosives technician **Frances Dunne** was recruited to work at Los Alamos in 1944 and was part of the assembly crew for the Trinity test the following year. The only woman in the Explosives Assembly group, her small hands and manual dexterity were key considerations in this unusual profession because she could adjust the trigger in the high-explosive shells of model weapons better than her male counterparts.

1944: A Manhattan Project WAC, **Jane Heydorn** arrived in Los Alamos in 1944 and began work as a telephone operator, monitoring calls for leaks of classified information. She later developed bomb-testing equipment as an electronics technician and then went on to operate Clementine, the world's first fast neutron nuclear reactor.

1945: Nuclear physicist **Elizabeth "Diz" Riddle Graves** came to Los Alamos with her husband, Al Graves. The couple helped with the testing of the Trinity bomb in July 1945. Graves, seven months pregnant at the time, watched from a cabin 40 miles away. Five years later, she became a group leader in the experimental physics division, where she researched neutron interactions with matter and material.

1946: [Floy Agnes "Aggie" Naranjo Lee](#), a member of Santa Clara Pueblo, worked as a technician in the hematology lab at Los Alamos. She collected and examined blood samples from Manhattan Project scientists, including Louis Slotin after the criticality accident that exposed him to a fatal dose of radiation in 1946. After the war ended, Enrico Fermi, with whom she played tennis, encouraged Lee to continue her studies at the University of Chicago.

In a [Voices of the Manhattan Project](#) interview, Lee described how Manhattan Project officials told the local public that Los Alamos was a "hideout for pregnant WACs. Santa Fe loved that story — they believed it," she said.

The Women's Army Corps at Los Alamos.

1940s: Physicist **Elda Anderson** is credited with preparing the first sample of nearly pure uranium-235 acquired by Los Alamos for experimentation.

1950s

1951: After earning a mathematics degree in 1931, **Marjorie Devaney** decided to come to Los Alamos because it was one of the few places in the world with a computer. She joined the MANIAC (Mathematical Analyzer, Numerical Integrator, and Computer) group of the Theoretical Division in 1951 as one of the MANIAC I's first programmers, then called "coders." She went on to have a 40-year-long career at the Laboratory.

An operator tends to MANIAC's coding instruments.

1952: Mathematician **Mary Tsingou** programmed the very first numerical scientific experiment for the MANIAC — the first experiment conducted entirely on a computer. Considered an important first step in the development of Chaos Theory, it was originally called the Fermi-Pasta-Ulam Problem after its famous male contributors. In 2008, the

physics community finally renamed it the Fermi-Pasta-Ulam-Tsingou Problem to reflect Tsingou's involvement.

Most of MANIAC's early operators and programmers were women who started at Los Alamos as human computers.

1955: After working for the Manhattan Project at the Hanford, Washington site, nuclear physicist **Jane Hamilton Hall** joined the Laboratory in 1945 and quickly rose through the ranks of the physics and weapons divisions. In 1955, she became the Lab's first female assistant director, and in 1966, President Lyndon Johnson appointed her to the General Advisory Committee of the Atomic Energy Commission (AEC). "The GAC was the real group of experts," explains Lab historian Alan Carr. "If you were [one of the nine people] on the GAC, you were advising the people who were advising the president on very serious matters. The head of the AEC was the very rough equivalent of today's Secretary of Energy — it was a very big deal."

Jane and David Hall were co-group leaders on Clementine, the world's first fast plutonium reactor.

1960s

1963: Congress passed the **Equal Pay Act (EPA)**, which promised equal pay for equal work, regardless of the race, color, religion, national origin or sex of the worker. The EPA was the first U.S. legislation targeted to eliminate gender-based pay inequities, thereby ushering in a new norm of gender equality in the workplace.

1963: German-born American theoretical physicist Maria Goeppert Mayer came to Los Alamos in 1945 to work with Edward Teller on the development of the atomic bomb. After World War II, Goeppert Mayer continued working with Teller at the University of Chicago and eventually developed a mathematical model for the structure of nuclear shells for which she was awarded the Nobel Prize in Physics in 1963.

1964: The **Federal Civil Rights Act** passed, including Title VII, which guaranteed equal opportunity (aka no discrimination) in employment. The Civil Rights Act also created the Equal Employment Opportunity Commission to enforce workplace equality.

President Kennedy signs the Equal Pay Act.

1964: Biochemist **Julia Hardin** joined the Laboratory in 1964 to research and study mutations — genetic changes — that occur in DNA when it is exposed to radiation. Previously, she worked as technical administrator for the Atomic Energy Commission in Richland, Washington. "There was a big effort then to recruit blacks, and for the first time in my life it became obvious to me that I was a statistic," she said in 1984. "I've probably been a statistic here in Los Alamos, but I've never felt like one. With a personality and attitude like mine, you overcome color and people become people." Hardin later became the director of the Historically Black Colleges and Universities Education Program, and recruited many African American science and engineering students for summer internships at the Laboratory.

Los Alamos Scientific Laboratory published The Atom, an employee magazine. In 1974, the magazine highlighted women scientists and featured Julia Hardin on the cover.

1965: President Lyndon B. Johnson's Executive Order 11246 **prohibited sex discrimination** by government contractors and requires affirmative action plans for hiring women. The order "prohibits federal contractors and federally assisted construction contractors and subcontractors, who do over \$10,000 in Government business in one year from discriminating in employment decisions on the basis of race, color, religion, sex or national origin." The order also required contractors to "take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex or national origin."

1967: President Lyndon B. Johnson issued Executive Order 11375, which **expanded affirmative action policies** to cover discrimination based on sex. As a result, federal agencies and contractors must take active measures to ensure that women, as well as minorities, have the same employment and educational opportunities as men.

1970s

1973: August 26 became **Women's Equality Day**. The date was selected to commemorate the 1920 certification of the 19th Amendment to the Constitution, which granted women the right to vote. The day recognizes women's continuing efforts toward equal rights for all citizens.

1978: The **Pregnancy Discrimination Act**, an extension of the Equal Rights Amendment, banned employment discrimination against pregnant women. The act also mandated that employers provide the same benefits to women at any stage of pregnancy, delivery or recovery from delivery when they are medically unable to work as to all other employees with temporarily disabling conditions.

President Carter signs the Pregnancy Discrimination Act, an extension of the Equal Rights Amendment.

1979: Chemist **Darleane Hoffman** came to Los Alamos with her husband, a physicist, in 1953. During her 31 years at the Laboratory, Hoffman's numerous contributions provided a basis for scientific methods used today in the national security community. In 1979, she became the first woman to lead a scientific division — the Chemistry and Nuclear Chemistry Division — and in 1993, she helped confirm the existence of element 106, seaborgium. In 2014, she was honored with the Los Alamos Medal, the highest award given by the Laboratory.

Chemist Darleane Hoffman.

1980s

1980: President Jimmy Carter designated March 2–8 as **National Women's History Week**. "From the first settlers who came to our shores, from the first American Indian families who befriended them, men and women have worked together to build this nation," Carter said in his message to the nation. "Too often the women were unsung

and sometimes their contributions went unnoticed. But the achievements, leadership, courage, strength and love of the women who built America was as vital as that of the men whose names we know so well.”

1987: Congress declared the entire month of March as **National Women’s History Month**. A special Presidential Proclamation is issued every March that honors the achievements of American women.

1987: Tinitia Oliver started at Los Alamos in 1987 as a radiation control technician and has since worked as a maintenance coordinator, team leader and currently as a work execution manager. Oliver oversees seven craft superintendents, and together they manage the craft teams — carpenters, painters, electricians, pipefitters, mechanics, laborers, insulators and sheet metal workers — who maintain Lab facilities.

1990s

1993: The **Family and Medical Leave Act (FMLA)** went into effect for large employers, who must grant a maximum of 12 weeks of unpaid, job-protected leave to expecting employees for the birth or adoption of a child. Not only did the FMLA Act protect women’s jobs should they decide to have a baby, it also left the FMLA open to men should they want to take leave or remain home to care for a spouse, child or parent with a serious illness.

Bill Clinton celebrates the 20th anniversary of FMLA.

1995: Jill Trehella was named the first female Laboratory Fellow in 1995 after coming to Los Alamos in 1984 to launch a biological neutron-scattering program. Fellows are limited to 2 percent of the Laboratory’s technical staff. Upon naming her leader of the Lab’s Bioscience Division in 2000, Lab Director John Browne said, “Jill is one of those unique scientists who come along only about once every decade, who combine their passion for science with their excellence in research and their leadership skills to make a true difference in an organization.”

Other female Lab Fellows include **Michelle Thomsen** (1997), **Merri Wood-Schultz** (2001), **Bette Korber**(2002), **Carol Burns** (2003), **Jane Nordholt** (2006), **Joyce Guzik** (2006), **Antoinette Taylor** (2009), **Brenda Dingus** (2011), **Cheryl Kuske** (2013), **Jaqueline Kiplinger** (2014) and **Jennifer Hollingsworth**(2016).

1999: Earle Marie Hanson joined the Laboratory in 1976 after receiving a doctorate in chemistry from the Massachusetts Institute of Technology. She made many significant contributions to weapons engineering and from 1999–2003 served as the first female division leader of an engineering division — the Engineering Science Applications Division — where she oversaw approximately 900 full-time employees.

2000s

2003: Program manager **Carolyn Mangeng** studied energy and environmental assessments, military systems and nuclear weapons before serving as deputy associate director (AD) of the Nuclear Weapons Directorate from 2002–2003, during which time she had specific oversight of stockpile management activities. She became Los Alamos’ first female deputy Laboratory director (acting) in 2003 and worked as the deputy AD for Environmental Programs before her retirement in 2006.

Carolyn Mangeng (center) alongside Phil Romero and Gary Johnson.

2005: Biophysicist **Karissa Sanbonmatsu** is a transgender woman who researches how DNA is reprogrammed during life, how genes are switched on and off and how gigantic RNA molecules affect the switches. In 2012, Sanbonmatsu and her team published the first structure of such a molecule. In 2005, Sanbonmatsu became the first woman at the Laboratory to receive the Presidential Early Career Award in Science and Engineering.

2004: Fourteen years after joining the Lab's Theoretical Biology group in 1990, theoretical biologist **Bette Korber** became Los Alamos' first female E. O. Lawrence Award winner for her studies delineating the genetic characteristics of the human immunodeficiency virus (HIV). Several of her HIV vaccines are currently in human clinical trials. Korber, who is also a Laboratory Fellow, was named to the Thomson Reuters list of "The World's Most Influential Scientific Minds" in 2014.

Bette Korber holds a hand-woven basket she received from children she met through the Ark program in South Africa.

2010s

2010: The **Affordable Health Care Act** was signed into law. Under this law, private health insurance companies must provide birth control without co-pays or deductibles. The law also requires private insurance companies to cover preventive services.

2012: In 2012, **Patti Buntain** was named the first female manager of a Life Extension Program at Los Alamos. Buntain earned a degree in mechanical engineering from the University of New Mexico and has held a number of positions in the Laboratory's Weapons Program. In 2014, she received the Order of the Nucleus Award from the U.S. Air Force, which is given to individuals who have made a significant contribution to the Air Force nuclear enterprise.

2013: **Physicist Susan Seestrom** joined the Lab in 1986 as a nuclear physicist and eventually became the first woman leader of the Physics Division and the Weapons Physics Directorate. In 2013, she was the first woman to become a Senior Fellow at the Laboratory. Seestrom is also the first (and only) woman to chair the Nuclear Science Advisory Committee for both the Department of Energy and the National Science Foundation.

2013: Chemistry Division Leader **Carol Burns** was named Deputy Principal Associate Director for the Science, Technology, and Engineering Directorate. Burns was raised in Los Alamos and said her appreciation for "the eminent women we see throughout the history of Los Alamos" started with the moms of her schoolmates who were employed at the Lab.

2016: The Laboratory was named a **top-50 employer** for Latina women by *Latina Style* magazine. Although the Laboratory doesn't have a fast-track promotion program specifically for Hispanic women, it does offer a mentoring program to encourage the advancement of female employees. "If you would have told me as a young Hispanic girl growing up in Northern New Mexico that I would one day serve in an important role for a world-renowned institution in support of the national security mission, I would have

thought it unattainable,” says Leah Sanchez, group leader for the Human Resources Field & Central Services group. “Los Alamos National Laboratory provided me that opportunity.”

Leah Sanchez (left) of the Human Resources Division with Tatiana Espinoza, shortly after the Laboratory was named a top-50 employer for Latina women.

2017: In an ongoing effort to support employee health and wellness, [Mamava pods](#), which provide privacy for nursing mothers, were installed at locations across the Laboratory.

Los Alamos was the first place in New Mexico to install a Mamava pod, which is essentially a prefabricated unit equipped with electrical outlets, USB ports, benches, tabletops, motion-activated lighting and vents. The **Fair Labor Standards Act** states that large employers are required to provide both adequate time and space for nursing employees to express milk.

Mamava units at the Laboratory allow working moms and visitors to breastfeed or pump in privacy. This unit is installed at the Study Center.

2018: A dedicated phone line was created to report sexual harassment, and a **Sexual Harassment Officer** was appointed to facilitate the investigation process. [Read the Lab’s sexual harassment policy here.](#)

2018: As the Lab’s first female principal associate director, **Nancy Jo Nicholas** leads Laboratory programs with a special focus on developing and applying the scientific and engineering capabilities to address complex national and global security threats. “I’m surrounded by strong, intelligent and dedicated women at the Lab all the time,” she says. “To see women rise to leadership positions seems really natural to me, and I’m glad I can be part of it.”

2018: **Carolyn Zerkle** became the Laboratory’s executive director on Jan. 1, 2018.

Previously, Zerkle was the associate director for the Business Innovation Directorate, a new organization at the Lab that combined business services and information technology to enhance efficiency and bolster quality and speed of service.

“I really think we’re seeing this seismic shift — not only at the Laboratory, but throughout the country,” Zerkle says. “We’re seeing positions where, previously, women weren’t represented in any real way to seeing them in sizeable numbers and in positions of power and authority. It’s heartening to witness and is a trajectory that I think will continue.”

Carol Burns (left) and Carolyn Zerkle (center) joined other women ADs on a panel moderated by Director Charlie McMillan on Sept. 15, 2016.

2018: In April, new **paid maternity leave benefits** provide 100 percent of pay up to six consecutive weeks for childbirth delivery and recovery — eligible full- and part-time employees no longer have to use sick or vacation leave. “We understand the huge undertaking for new moms in balancing their dual roles as mothers and LANL employees,” says Director Terry Wallace. “My hope is that the new paid maternity leave is another valuable benefit to help address the needs of our workforce and make Los Alamos National Laboratory the best place to work.”

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