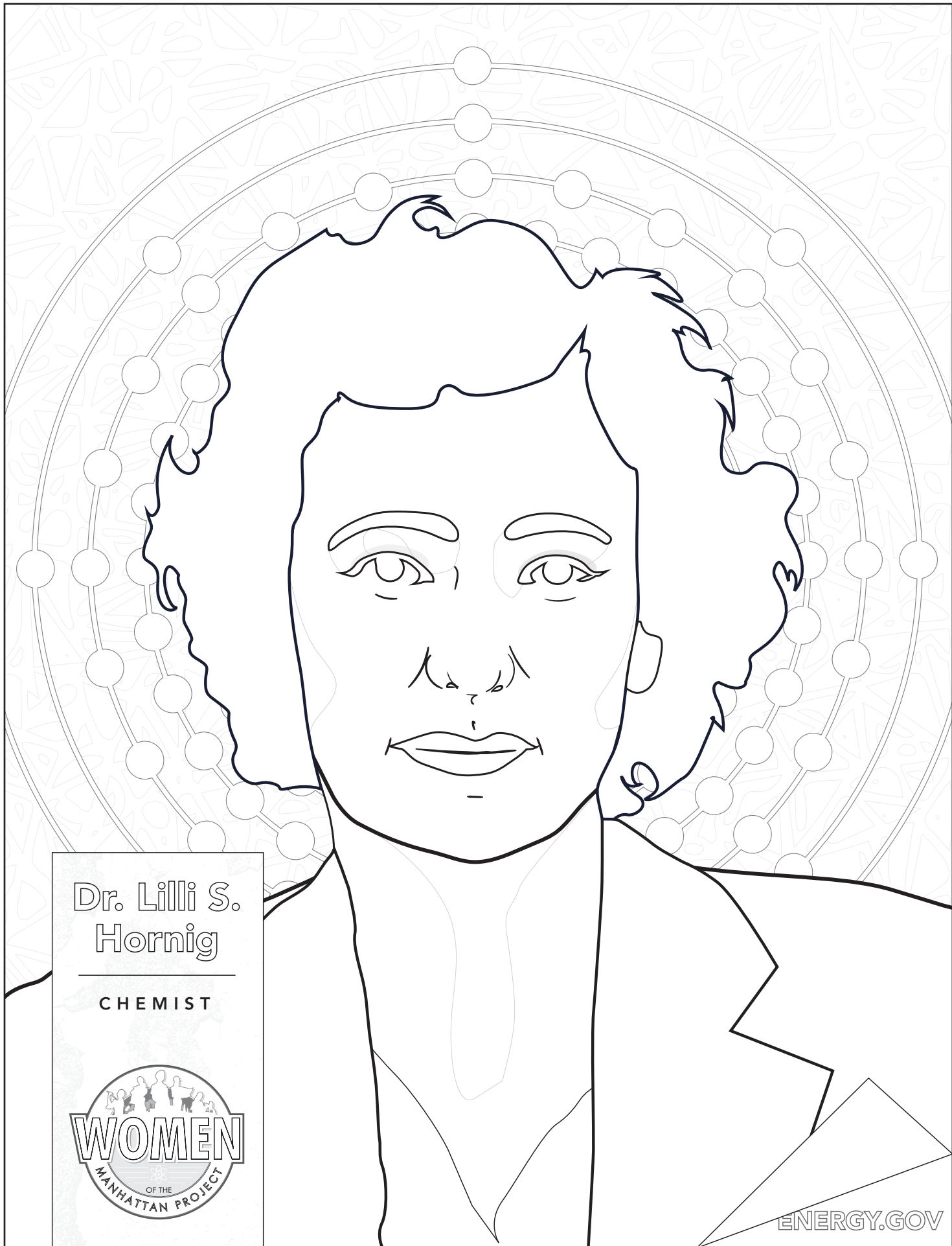




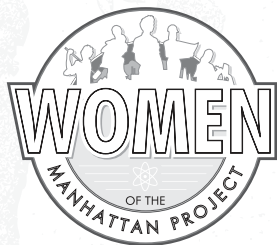
 COLORING BOOK 

ENERGY.GOV



Dr. Lilli S.  
Hornig

CHEMIST



ENERGY.GOV

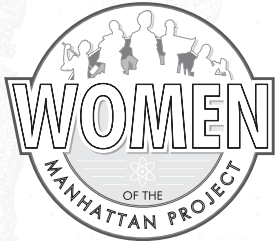
Blanche  
Lawrence

BIOCHEMIST



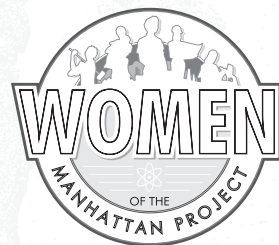
Irene  
Joliot-Curie

CHEMIST &  
PHYSICIST



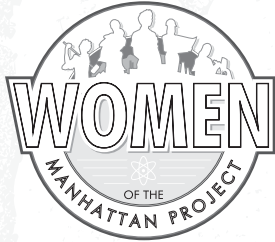
Floy  
Agnes-Lee

BIOLOGIST



# Calutron Girls

EQUIPMENT  
TECHNICIANS



# ABOUT THE SCIENTISTS



DR. LILLI HORNIG

Dr. Lilli Hornig was a chemist who worked on the Manhattan Project in Los Alamos, New Mexico. She studied plutonium and chemistry, and later worked in the explosives group alongside her husband.

Hornig was originally offered a job as a typist, even though she had a bachelors in chemistry and a masters from Harvard. She quipped she was an awful typist, and showed her credentials for a research position.

After witnessing the first detonation of the atomic bomb from the Sandia Mountains near Los Alamos, she later signed a petition advocating for demonstrating the bomb as a warning instead of dropping it on a population.

After the war, Lilli Hornig founded Higher Education Resource Services (HERS), which researches historic discrimination against women and challenges sexist hiring practices. She was also the first director of the Committee on the Education and Employment of Women in Science and Engineering at the National Academy of Sciences.



BLANCHE LAWRENCE

Blanche J. Lawrence worked in the Health Division of the University of Chicago's Metallurgical Laboratory or "Met Lab" during the Manhattan Project. She was one of the few African-American women scientists of her day.

She graduated from Tuskegee University, where she belonged to the Physical Education Club and the Creative Dance Group.

After World War II, she continued working at the Met Lab's successor, Argonne National Lab.

In September 1949, she was featured in an Ebony Magazine issue focusing on "Atom Scientists."

She was the widow of a Tuskegee Airman, Captain Erwin Lawrence. Her husband died on a mission over enemy airfield near Athens, Greece.



IRÈNE JOLIOT-CURIE

Irène Joliot-Curie is the daughter of famous scientist Marie Curie. But she is famous in her own right as a Nobel Prize winner, science groundbreaker, and talented mathematician.

During WWI, she and her mother worked as nurse radiographers in field hospitals — using the X-ray equipment created by her parents' research.

After the war, Irène taught a young chemical engineer, Frédéric Joliot, who later became her husband and research partner. The duo discovered the positron and neutron. Although they didn't claim these discoveries and didn't work directly on the Manhattan Project, Irène and Frédéric's research was instrumental in nuclear science and creating the atomic bomb.

Irène was active in promoting women's education, and had a son and a daughter who also became noted scientists. She died from leukemia at the age of 59, after years of radiation exposure.





## FLOY AGNES-LEE

Floy Agnes “Aggie” Lee worked as a hematology technician, testing the blood of scientists who’d been exposed to massive amounts of radiation during the Manhattan Project.

One of the scientists whose blood she tested was Louis Slotin, who was exposed to a severe dose of radiation during an experiment in May 1946. He died nine days after the experiment. The radioactive core that killed him had earlier claimed the life of another scientist and became known as the “demon core.”

Before becoming a scientist, Lee wanted to become a member of the Women’s Airforce Service Pilots or WASPs. She worked in a grocery store to pay for flying lessons and was only one flight shy of qualifying when the program was disbanded in 1944.

After the war, Lee moved to Chicago and worked for Argonne National Laboratory doing research on cancer and radiation biology. She eventually earned her doctorate in zoology from University of Chicago.

Lee passed away in 2018, but her legacy as a fierce advocate for STEM education and a minority woman who did pioneering research on radiation and cancer lives on.



## CALUTRON GIRLS

“Calutron Girls” were young women hired to work at Y-12 at Oak Ridge National Laboratory. Many were just out of high school, and were tasked with monitoring the Calutron, which was the machine that separated enriched uranium isotopes.

Oak Ridge, Tennessee, where the Calutron was located, is often called the “Secret City.” It wasn’t on any maps, but at the height of the war, 75,000 people lived and worked there. However, the culture of secrecy ran very deep. Because of this, most of these young women didn’t know what they were working on. All they were told was that their work would be vital to the war effort. Letters were heavily censored and some Calutron operators saw that when their colleagues asked too many questions, they were soon out of a job.

In a contest, Oak Ridge proved the young women were more effective at their work than a group of scientists. They also proved to have a better touch when adjusting the dials than the scientists who were constantly fiddling with them.

One of these women, Ruth Huddleston, was interviewed for our Direct Current podcast. You can hear directly from Ruth and learn more about what it was like to work at Y-12 during the Manhattan Project in the episode titled “Ruth’s Story.”  
Listen at [energy.gov/podcast](https://energy.gov/podcast).







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