

## Henrietta Lacks (1920-1951)

Henrietta Lacks, born Loretta Pleasant, had terminal cervical cancer in 1951, and was diagnosed at The Johns Hopkins University in Baltimore, Maryland, where researchers collected and stored her cancer cells. Those cells went on to become the first immortal human cell line, which the researchers named HeLa. An immortal cell line is an atypical cluster of cells that continuously multiply on their own outside of the organism from which they came, often due to a mutation. Lacks's cancer cells enabled scientists to study human cells outside of the human body, though that was controversial since she did not voluntarily donate her cells for such research. Science writer Rebecca Skloot chronicled Lacks's life in her book, *The Immortal Life of Henrietta Lacks*, which became a movie in 2017. Lacks's HeLa cell line has contributed to numerous biomedical research advancements and discoveries and her story has prompted legal and ethical debates over the rights that an individual has to their genetic material and tissue.

Lacks was born on 1 August 1920 to Eliza Pleasant and John Randall Pleasant in Roanoke, Virginia. Lacks's mother died giving birth to her tenth child when Lacks was four years old. Following her mother's death in 1924, her father and his ten children moved to Clover, Virginia, where their relatives lived and their ancestors had worked as slaves. There, Lacks's father divided his children to be raised among relatives. According to Skloot, that is because Lacks's father did not have the patience for raising children. Lacks was raised by her grandfather, Tommy Lacks, who was simultaneously raising his other grandchild, Lacks's first cousin David Lacks, or Day. Though her cousin stopped attending school in the fourth grade, Lacks continued until sixth grade.

On 10 April 1941, at age twenty, Lacks married her cousin Day Lacks. According to Skloot, Lacks's cousins encouraged Lacks and her husband to follow them to Bethlehem Steel to escape the poverty that came with being tobacco farmers. After their marriage in 1941, the couple moved to Turner Station in Maryland, so Lacks's husband could work for Bethlehem Steel at Sparrows Point. There, the couple started their family. Both Lacks and her husband were Catholic, and together, they had five children, Lawrence, Lucile, David Jr., Deborah, and Joseph. Lacks's daughter Lucile, called Elsie, had developmental disabilities.

According to Skloot, around 1950, Lacks mentioned to her female cousins that she felt as though a knot was inside of her, though she did not seek medical attention. A week after telling her cousins about feeling a knot, Lacks became pregnant with her fifth child. After Lacks became pregnant with Joseph, Elsie was too big for Lacks to handle alone, according to Skloot, and the doctors recommended sending Elsie away to the Hospital for the Negro Insane, which was later renamed the Crownsville State Hospital in Crownsville, Maryland.

In January 1951, according to Skloot, Lacks continued to feel a knot inside her and, combined with her atypical vaginal bleeding and a lump on her cervix that persisted months after giving birth, she decided to seek medical attention. The cervix is the lowermost part of the uterus in the human female reproductive system and connects the vagina to the uterus. According to Skloot, prior to any hospital visits, everyone in Lacks's family would visit the local Jesus statue, lay flowers at the statue's feet, say a prayer, and rub the statue's big toe for good luck. Lacks decided to go to The Johns Hopkins Hospital only when she thought there were no other options for her. The Johns Hopkins Hospital was the only hospital in Lacks's area that would treat Lacks, though she received her care in what Skloot refers to as the colored ward of the hospital. In 1951, doctors diagnosed Lacks with cervical cancer at The Johns Hopkins Hospital in Baltimore, Maryland. Lacks kept her diagnosis private, only telling her husband that she needed to go to the doctor for medicine. Skloot remarks in her book that Lacks did not tell her family of her diagnosis because she was determined

to deal with her diagnosis herself and not cause anyone to worry.

Lacks received numerous tests at The Johns Hopkins Hospital in preparation for her first cancer treatment. Following the standard for the day, Lacks's first treatment involved Lawrence Wharton Jr., the surgeon on duty, taking tubes of radium, putting those tubes in little pouches, sometimes called Brack plaques, and then sewing those pouches to the inside of her cervix. Radium is a radioactive metal that is lethal to cells. However, though radium can cause mutations that ultimately lead to cancer, it can also be utilized to kill cancer cells. While Lacks was sedated on the operating table for her first procedure, her surgeon obtained two tissue samples from her, one taken from her tumor and one from her normal cervical tissue. Then, the physician placed Lacks's tissue samples in a glass dish and had a resident transfer the samples to The Johns Hopkins Hospital researcher and head of tissue culture research, George Otto Gey.

According to Skloot, at that time patients at The Johns Hopkins Hospital, like Lacks, routinely had their cells collected to aid in research endeavors at the hospital without their knowledge. Gey aimed to develop what was called an immortal human cell line, or cells that would continuously replenish themselves in the laboratory. Gey provided Lacks's tissue samples to his research assistant Mary Kubicek, and he tasked Kubicek with culturing Lacks's tumor cells and healthy cervical cells. Cell culture involves growing tissues or cells outside of the individual from which the cells were derived. According to Skloot, Kubicek was skeptical that Lacks's cells would continuously proliferate, as none of the cell samples she had cultured previously had successfully proliferated. Kubicek picked up Lacks's tumor sample, covered it in culture medium, and labeled the sample, "HeLa," or He for the first two letters of Henrietta and La for the first two of Lacks. According to Skloot, during that time in history, it was common for physicians to use patient samples from public wards without their knowledge or consent. The only form of consent that The Johns Hopkins Hospital had Lacks sign was titled, "Operation Permit," which stated that she consented to the hospital performing any operative procedures and anesthetic deemed necessary for proper surgical care.

According to Skloot, though Kubicek did not expect Lacks's cells to hold any more success than the other patient cells she had attempted to culture, the HeLa cell line did succeed and Lacks's cervical tumor cells continued to proliferate, or grow continuously, at a previously unprecedented rate. Weeks after Lacks left the hospital following her initial radium treatment to resume working in the tobacco fields, her tumor cells continued to grow in culture at Gey's lab, proliferating twenty times faster than her normal cells. When the HeLa cell line successfully proliferated in 1951, Gey informed his colleagues that his lab may have grown the first immortal human cell line, offering them vials of Lacks's cells.

For a little over a month after her diagnosis in 1951, Lacks's family did not know of her cancer. Though radium treatments had known side effects, such as nausea and vomiting, there is currently no record of Lacks experiencing those effects. However, as her treatments progressed and her tumor began to shrink, the next course of action in her treatment regimen was X-ray therapy. Because her husband worked nights and could not pick her up from treatment, she needed to tell two of her cousins about her cancer so she could wait with them until her husband could pick her up. However, Lacks's cancer had quickly spread throughout her body and by September of 1951, Lacks's internal organs were almost entirely covered in cancerous tumors.

Lacks died on 4 October 1951, with the official cause of her death being terminal uremia. Terminal uremia occurs when the kidneys are unable to filter blood the way that they should, and consequently, high levels of toxins build up in the blood. Normally functioning kidneys work with the liver to remove and filter out toxins and other byproducts that the body produces. Though there was no obituary for Lacks, Gey's lab came to know of her death, according to Skloot, and Gey requested an autopsy to validate the potential for further samples from Lacks's various organs. However, to comply with the law, which held that an autopsy could not be completed without permission, Gey needed permission from Lacks's family. According to Skloot, physicians only convinced Lacks's husband to authorize the autopsy after claiming they would run medical tests on Lacks that could produce beneficial health information for his children.

As of 2020, the cells Gey collected from Lacks are some of the most commonly used cells in biomedical research. Scientists have used Lacks's cells, through the HeLa cell line, to test the effects of

zero gravity on human cells in space, to study the human genome, and across a wide array of disease and vaccine research. Despite the widespread use of Lacks's cells in research, Lacks's identity as the donor of the HeLa cell line was known only to the scientific community in 1970, before Lacks's own family became aware in 1975. Though Gey claimed that his initial intent was to keep Lacks's name private, maintaining the secrecy of the HeLa cell donor allowed for research institutions and companies to profit from Lacks's cells. That also meant that Lacks's family gave no consent and received no compensation for Lacks's unwitting donation. Many researchers attribute the contemporary requirement for documented patient consent for research samples to Lacks's story.

On 25 March 1976, reporter Michael Rogers first brought the HeLa cell line's connection with Lacks to public attention. According to Skloot, Rogers had learned about the HeLa cell line after seeing "Helen Lane Lives!" written over a urinal in a medical school bathroom. Rogers initially set out to find the elusive Helen Lane but upon meeting scientist Walter Nelson-Rees, Rogers identified Lacks as the true donor of the HeLa cell line. Before Rogers revealed Lacks's identity to the public, only rumors of the identity of the woman whose cells produced the HeLa cell line circulated among the public, Helen Lane being one of the rumored names of the donor. Rogers's Rolling Stone article established Lacks as the actual woman whose cells were used to make the HeLa cell line. In 2010, Skloot published her book, *The Immortal Life of Henrietta Lacks*, which was later developed into a film by the same name, released in 2017. Skloot describes Lacks as a poor black tobacco farmer, whose cells became one of the most important tools in medicine. In her book, Skloot combines Lacks's personal narrative with historical context regarding ethical issues of race and class in medicine. Lacks's daughter Deborah Lacks provided personal insight regarding her mother's story to Skloot in the making of *The Immortal Life of Henrietta Lacks*.

Though Henrietta Lacks died on 4 October 1951 at The Johns Hopkins Hospital in Baltimore, Maryland, her cells continue to live on through the HeLa cell line, as of 2020.

## Sources

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