1951

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The Exam

On January 29, 1951, David Lacks sat behind the wheel of his old Buick, watching the rain fall. He was parked under a towering oak tree outside Johns Hopkins Hospital with three of his children—two still in diapers—waiting for their mother, Henrietta. A few minutes earlier she'd jumped out of the car, pulled her jacket over her head, and scurried into the hospital, past the "colored" bathroom, the only one she was allowed to use. In the next building, under an elegant domed copper roof, a ten-and-a-half-foot marble statue of Jesus stood, arms spread wide, holding court over what was once the main entrance of Hopkins. No one in Henrietta's family ever saw a Hopkins doctor without visiting the Jesus statue, laying flowers at his feet, saying a prayer, and rubbing his big toe for good luck. But that day Henrietta didn't stop.

She went straight to the waiting room of the gynecology clinic, a wide-open space, empty but for rows of long straight-backed benches that looked like church pews.

"I got a knot on my womb," she told the receptionist. "The doctor need to have a look."

For more than a year Henrietta had been telling her closest girlfriends something didn't feel right. One night after dinner, she sat on her bed with her cousins Margaret and Sadie and told them, "I got a knot inside me."

"A what?" Sadie asked.

"A knot," she said. "It hurt somethin awful—when that man want to get with me, Sweet Jesus aren't them but some pains."

When sex first started hurting, she thought it had something to do with baby Deborah, who she'd just given birth to a few weeks earlier, or the bad blood David sometimes brought home after nights with other women—the kind doctors treated with shots of penicillin and heavy metals.

Henrietta grabbed her cousins' hands one at a time and guided them to her belly, just as she'd done when Deborah started kicking.

"You feel anything?"

The cousins pressed their fingers into her stomach again and again.

"I don't know," Sadie said. "Maybe you're pregnant outside your womb—you know that *can* happen."

"I'm no kind of pregnant," Henrietta said. "It's a knot."

"Hennie, you gotta check that out. What if it's somethin bad?"

But Henrietta didn't go to the doctor, and the cousins didn't tell anyone what she'd said in the bedroom. In those days, people didn't talk about things like cancer, but Sadie always figured Henrietta kept it secret because she was afraid a doctor would take her womb and make her stop having children.

About a week after telling her cousins she thought something was wrong, at the age of twenty-nine, Henrietta turned up pregnant with Joe, her fifth child. Sadie and Margaret told Henrietta that the pain probably had something to do with a baby after all. But Henrietta still said no.

"It was there before the baby," she told them. "It's somethin else."

They all stopped talking about the knot, and no one told Henrietta's husband anything about it. Then, four and a half months after baby Joseph was born, Henrietta went to the bathroom and found blood spotting her underwear when it wasn't her time of the month.

She filled her bathtub, lowered herself into the warm water, and spread her legs. With the door closed to her children, husband, and cousins, Henrietta slid a finger inside herself and rubbed it across her cervix until she found what she somehow knew she'd find: a hard lump, deep inside, as though someone had lodged a marble just to the left of the opening to her womb.

Henrietta climbed out of the bathtub, dried herself off, and dressed. Then she told her husband, "You better take me to the doctor. I'm bleedin and it ain't my time."

Her local doctor took one look inside her, saw the lump, and figured it was a sore from syphilis. But the lump tested negative for syphilis, so he told Henrietta she'd better go to the Johns Hopkins gynecology clinic.

Hopkins was one of the top hospitals in the country. It was built in 1889 as a charity hospital for the sick and poor, and it covered more than a dozen acres where a cemetery and insane asylum once sat in East Baltimore. The public wards at Hopkins were filled with patients, most of them black and unable to pay their medical bills. David drove Henrietta nearly twenty miles to get there, not because they preferred it, but because it was the only major hospital for miles that treated black patients. This was the era of Jim Crow—when black people showed up at white-only hospitals, the staff was likely to send them away, even if it meant they might die in the parking lot. Even Hopkins, which did treat black patients, segregated them in colored wards, and had colored-only fountains.

So when the nurse called Henrietta from the waiting room, she led her through a single door to a colored-only exam room—one in a long row of rooms divided by clear glass walls that let nurses see from one to the next. Henrietta undressed, wrapped herself in a starched white hospital gown, and lay down on a wooden exam table, waiting for Howard Jones, the gynecologist on duty. Jones was thin and graying,

his deep voice softened by a faint Southern accent. When he walked into the room, Henrietta told him about the lump. Before examining her, he flipped through her chart—a quick sketch of her life, and a litany of untreated conditions:

> Sixth or seventh grade education; housewife and mother of five. Breathing difficult since childhood due to recurrent throat infections and deviated septum in patient's nose. Physician recommended surgical repair. Patient declined. Patient had one toothache for nearly five years; tooth eventually extracted with several others. Only anxiety is oldest daughter who is epileptic and can't talk. Happy household. Very occasional drinker. Has not traveled. Well nourished, cooperative. Patient was one of ten siblings. One died of car accident, one from rheumatic heart, one was poisoned. Unexplained vaginal bleeding and blood in urine during last two pregnancies; physician recommended sickle cell test. Patient declined. Been with husband since age 15 and has no liking for sexual intercourse. Patient has asymptomatic neurosyphilis but cancelled syphilis treatments, said she felt fine. Two months prior to current visit, after delivery of fifth child, patient had significant blood in urine. Tests showed areas of increased cellular activity in the cervix. Physician recommended diagnostics and referred to specialist for ruling out infection or cancer. Patient canceled appointment. One month prior to current visit, patient tested positive for gonorrhea. Patient recalled to clinic for treatment. No response.

It was no surprise that she hadn't come back all those times for follow-up. For Henrietta, walking into Hopkins was like entering a foreign country where she didn't speak the language. She knew about harvesting tobacco and butchering a pig, but she'd never heard the words *cervix* or *biopsy*. She didn't read or write much, and she hadn't studied science in school. She, like most black patients, only went to Hopkins when she thought she had no choice.

Jones listened as Henrietta told him about the pain, the blood. "She says that she knew there was something wrong with the neck of her womb," he wrote later. "When asked why she knew it, she said that she felt as if there were a lump there. I do not quite know what she means by this, unless she actually palpated this area."

Henrietta lay back on the table, feet pressed hard in stirrups as she stared at the ceiling. And sure enough, Jones found a lump exactly where she'd said he would. He described it as an eroded, hard mass about the size of a nickel. If her cervix was a clock's face, the lump was at four o'clock. He'd seen easily a thousand cervical cancer lesions, but never anything like this: shiny and purple (like "grape Jello," he wrote later), and so delicate it bled at the slightest touch. Jones cut a small sample and sent it to the pathology lab down the hall for a diagnosis. Then he told Henrietta to go home.

Soon after, Jones sat down and dictated notes about Henrietta and her diagnosis: "Her history is interesting in that she had a term delivery here at this hospital, September 19, 1950," he said. "No note is made in the history at that time, or at the six weeks' return visit that there is any abnormality of the cervix."

Yet here she was, three months later, with a full-fledged tumor. Either her doctors had missed it during her last exams—which seemed impossible—or it had grown at a terrifying rate.

from the South. Word spread from Maryland to the farms of Virginia and the Carolinas, and as part of what would become known as the Great Migration, black families flocked from the South to Turner Station—the Promised Land.

The work was rough, especially for black men, who got the jobs white men wouldn't touch. Like Fred, black workers usually started in the bowels of partially built tankers in the shipyard, collecting bolts, rivets, and nuts as they fell from the hands of men drilling and welding thirty or forty feet up. Eventually, black workers moved up to the boiler room, where they shoveled coal into a blazing furnace. They spent their days breathing in toxic coal dust and asbestos, which they brought home to their wives and daughters, who inhaled it while shaking the men's clothes out for the wash. The black workers at Sparrows Point made about eighty cents an hour at most, usually less. White workers got higher wages, but Fred didn't complain: eighty cents an hour was more than most Lacksas had ever seen.

Fred had made it. Now he'd come back to Clover to convince Henrietta and Day that they should do the same. The morning after he came barreling into town, Fred bought Day a bus ticket to Baltimore. They agreed Henrietta would stay behind to care for the children and the tobacco until Day made enough for a house of their own in Baltimore, and then tickets north. A few months later, Fred got a draft notice shipping him overseas. Before he left, Fred gave Day all the money he'd saved, saying it was time to get Henrietta and the children to Turner Station.

Soon, with a child on each side, Henrietta boarded a coal-fueled train from the small wooden depot at the end of Clover's Main Street. She left the tobacco fields of her youth and the hundred-year-old oak tree that shaded her from the sun on so many hot afternoons. At the age of twenty-one, Henrietta stared through the train window at rolling hills and wide open bodies of water for the very first time, heading north and a new life.

1951

3

Diagnosis and Treatment

After her visit to Hopkins, Henrietta went about life as usual, cleaning and cooking for Day, their children, and the many cousins who stopped by. Then, a few days later, Jones got her biopsy results from the pathology lab: "Epidermoid carcinoma of the cervix, Stage I."

All cancers originate from a single cell gone wrong and are categorized based on the type of cell they start from. Most cervical cancers are carcinomas, which grow from the epithelial cells that cover the cervix and protect its surface. By chance, when Henrietta showed up at Hopkins complaining of abnormal bleeding, Jones and his boss, Richard Wesley TeLinde, were involved in a heated nationwide debate over what qualified as cervical cancer, and how best to treat it.

TeLinde, one of the top cervical cancer experts in the country, was a dapper and serious fifty-six-year-old surgeon who walked with an extreme limp from an ice-skating accident more than a decade earlier. Everyone at Hopkins called him Uncle Dick. He'd pioneered the use of estrogen for treating symptoms of menopause and made important early discoveries about endometriosis. He'd also written one of the

most famous clinical gynecology textbooks, which is still widely used sixty years and ten editions after he first wrote it. His reputation was international: when the king of Morocco's wife fell ill, he insisted only TeLinde could operate on her. By 1951, when Henrietta arrived at Hopkins, TeLinde had developed a theory about cervical cancer that, if correct, could save the lives of millions of women. But few in the field believed him.

Cervical carcinomas are divided into two types: invasive carcinomas, which have penetrated the surface of the cervix, and noninvasive carcinomas, which haven't. The noninvasive type is sometimes called "sugar-icing carcinoma," because it grows in a smooth layered sheet across the surface of the cervix, but its official name is *carcinoma in situ,* which derives from the Latin for "cancer in its original place."

In 1951, most doctors in the field believed that invasive carcinoma was deadly, and carcinoma in situ wasn't. So they treated the invasive type aggressively but generally didn't worry about carcinoma in situ because they thought it couldn't spread. TeLinde disagreed—he believed carcinoma in situ was simply an early stage of invasive carcinoma that, if left untreated, eventually became deadly. So he treated it aggressively, often removing the cervix, uterus, and most of the vagina. He argued that this would drastically reduce cervical cancer deaths, but his critics called it extreme and unnecessary.

Diagnosing carcinoma in situ had only been possible since 1941, when George Papanicolaou, a Greek researcher, published a paper describing a test he'd developed, now called the Pap smear. It involved scraping cells from the cervix with a curved glass pipette and examining them under a microscope for precancerous changes that TeLinde and a few others had identified years earlier. This was a tremendous advance, because those precancerous cells weren't detectable otherwise: they caused no physical symptoms and weren't palpable or visible to the naked eye. By the time a woman began showing symptoms, there was little hope of a cure. But with the Pap smear, doctors could detect precancerous cells and perform a hysterectomy, and cervical cancer would be almost entirely preventable.

At that point, more than 15,000 women were dying each year from cervical cancer. The Pap smear had the potential to decrease that death rate by 70 percent or more, but there were two things standing in its way: first, many women—like Henrietta—simply didn't get the test; and, second, even when they did, few doctors knew how to interpret the results accurately, because they didn't know what the various stages of cervical cancer looked like under a microscope. Some mistook cervical infections for cancer and removed a woman's entire reproductive tract when all she needed was antibiotics. Others mistook malignant changes for infection, sending women home with antibiotics only to have them return later, dying from metastasized cancer. And even when doctors correctly diagnosed precancerous changes, they often didn't know how those changes should be treated.

TeLinde set out to minimize what he called "unjustifiable hysterectomies" by documenting what *wasn't* cervical cancer and by urging surgeons to verify smear results with biopsies before operating. He also hoped to prove that women with carcinoma in situ needed aggressive treatment, so their cancer didn't become invasive.

Not long before Henrietta's first exam, TeLinde presented his argument about carcinoma in situ to a major meeting of pathologists in Washington, D.C., and the audience heckled him off the stage. So he went back to Hopkins and planned a study that would prove them wrong: he and his staff would review all medical records and biopsies from patients who'd been diagnosed with invasive cervical cancer at Hopkins in the past decade, to see how many initially had carcinoma in situ.

Like many doctors of his era, TeLinde often used patients from the public wards for research, usually without their knowledge. Many

scientists believed that since patients were treated for free in the public wards, it was fair to use them as research subjects as a form of payment. And as Howard Jones once wrote, "Hopkins, with its large indigent black population, had no dearth of clinical material."

In this particular study—the largest ever done on the relationship between the two cervical cancers—Jones and TeLinde found that 62 percent of women with invasive cancer who'd had earlier biopsies first had carcinoma in situ. In addition to that study, TeLinde thought, if he could find a way to grow living samples from normal cervical tissue and both types of cancerous tissue—something never done before—he could compare all three. If he could prove that carcinoma in situ and invasive carcinoma looked and behaved similarly in the laboratory, he could end the debate, showing that he'd been right all along, and doctors who ignored him were killing their patients. So he called George Gey (pronounced *Guy*), head of tissue culture research at Hopkins.

Gey and his wife, Margaret, had spent the last three decades working to grow malignant cells outside the body, hoping to use them to find cancer's cause and cure. But most cells died quickly, and the few that survived hardly grew at all. The Geys were determined to grow the first *immortal* human cells: a continuously dividing line of cells all descended from one original sample, cells that would constantly replenish themselves and never die. Eight years earlier—in 1943—a group of researchers at the National Institutes of Health had proven such a thing was possible using mouse cells. The Geys wanted to grow the human equivalent—they didn't care what kind of tissue they used, as long as it came from a person.

Gey took any cells he could get his hands on—he called himself "the world's most famous vulture, feeding on human specimens almost constantly." So when TeLinde offered him a supply of cervical cancer tissue in exchange for trying to grow some cells, Gey didn't hesitate. And TeLinde began collecting samples from any woman who happened to walk into Hopkins with cervical cancer. Including Henrietta.

On February 5, 1951, after Jones got Henrietta's biopsy report back from the lab, he called and told her it was malignant. Henrietta didn't tell anyone what Jones said, and no one asked. She simply went on with her day as if nothing had happened, which was just like her—no sense upsetting anyone over something she could deal with herself.

That night Henrietta told her husband, "Day, I need to go back to the doctor tomorrow. He wants to do some tests, give me some medicine." The next morning she climbed from the Buick outside Hopkins again, telling Day and the children not to worry.

"Ain't nothin serious wrong," she said. "Doctor's gonna fix me right up."

Henrietta went straight to the admissions desk and told the receptionist she was there for her treatment. Then she signed a form with the words OPERATION PERMIT at the top of the page. It said:

> I hereby give consent to the staff of The Johns Hopkins Hospital to perform any operative procedures and under any anaesthetic either local or general that they may deem necessary in the proper surgical care and treatment of: _____.

Henrietta printed her name in the blank space. A witness with illegible handwriting signed a line at the bottom of the form, and Henrietta signed another.

Then she followed a nurse down a long hallway into the ward for colored women, where Howard Jones and several other white physicians ran more tests than she'd had in her entire life. They checked her urine, her blood, her lungs. They stuck tubes in her bladder and nose.

On her second night at the hospital, the nurse on duty fed Henri- a an early dinner so her stomach would be empty the next morning, -en a doctor put her under anesthetic for her first cancer treatment. Henrietta's tumor was the invasive type, and like hospitals nationwide,

Hopkins treated all invasive cervical carcinomas with radium, a white radioactive metal that glows an eerie blue.

When radium was first discovered in the late 1800s, headlines nationwide hailed it as "a substitute for gas, electricity, and a positive cure for every disease." Watchmakers added it to paint to make watch dials glow, and doctors administered it in powdered form to treat everything from seasickness to ear infections. But radium destroys any cells it encounters, and patients who'd taken it for trivial problems began dying. Radium causes mutations that can turn into cancer, and at high doses it can burn the skin off a person's body. But it also kills cancer cells.

Hopkins had been using radium to treat cervical cancer since the early 1900s, when a surgeon named Howard Kelly visited Marie and Pierre Curie, the couple in France who'd discovered radium and its ability to destroy cancer cells. Without realizing the danger of contact with radium, Kelly brought some back to the United States in his pockets and regularly traveled the world collecting more. By the 1940s, several studies—one of them conducted by Howard Jones, Henrietta's physician—showed that radium was safer and more effective than surgery for treating invasive cervical cancer.

The morning of Henrietta's first treatment, a taxi driver picked up a doctor's bag filled with thin glass tubes of radium from a clinic across town. The tubes were tucked into individual slots inside small canvas pouches hand-sewn by a local Baltimore woman. The pouches were called Brack plaques, after the Hopkins doctor who invented them and oversaw Henrietta's radium treatment. He would later die of cancer, most likely caused by his regular exposure to radium, as would a resident who traveled with Kelly and also transported radium in his pockets.

One nurse placed the Brack plaques on a stainless-steel tray. Another wheeled Henrietta into the small colored-only operating room on the second floor, with stainless-steel tables, huge glaring lights, and an all-white medical staff dressed in white gowns, hats, masks, and gloves.

With Henrietta unconscious on the operating table in the center of the room, her feet in stirrups, the surgeon on duty, Dr. Lawrence Wharton Jr., sat on a stool between her legs. He peered inside Henrietta, dilated her cervix, and prepared to treat her tumor. But first—though no one had told Henrietta that TeLinde was collecting samples or asked if she wanted to be a donor—Wharton picked up a sharp knife and shaved two dime-sized pieces of tissue from Henrietta's cervix: one from her tumor, and one from the healthy cervical tissue nearby. Then he placed the samples in a glass dish.

Wharton slipped a tube filled with radium inside Henrietta's cervix, and sewed it in place. He sewed a plaque filled with radium to the outer surface of her cervix and packed another plaque against it. He slid several rolls of gauze inside her vagina to help keep the radium in place, then threaded a catheter into her bladder so she could urinate without disturbing the treatment.

When Wharton finished, a nurse wheeled Henrietta back into the ward, and Wharton wrote in her chart, "The patient tolerated the procedure well and left the operating room in good condition." On a separate page he wrote, "Henrietta Lacks . . . Biopsy of cervical tissue . . . Tissue given to Dr. George Gey."

A resident took the dish with the samples to Gey's lab, as he'd done many times before. Gey still got excited at moments like this, but everyone else in his lab saw Henrietta's sample as something tedious—the latest of what felt like countless samples that scientists and lab technicians had been trying and failing to grow for years. They were sure Henrietta's cells would die just like all the others.

cervix and dropping them in dozens of roller tubes, she walked into the incubator room, slid the tubes one at a time into the drum, and turned it on. Then she watched as Gey's machine began churning slowly.

Henrietta spent the next two days in the hospital, recovering from her first radium treatment. Doctors examined her inside and out, pressing on her stomach, inserting new catheters into her bladder, fingers into her vagina and anus, needles into her veins. They wrote notes in her chart saying, "30 year-old colored female lying quietly in no evident distress," and "Patient feels quite well tonight. Morale is good and she is ready to go home."

Before Henrietta left the hospital, a doctor put her feet in the stirrups again and removed the radium. He sent her home with instructions to call the clinic if she had problems, and to come back for a second dose of radium in two and a half weeks.

Meanwhile, each morning after putting Henrietta's cells in culture, Mary started her days with the usual sterilization drill. She peered into the tubes, laughing to herself and thinking, *Nothing's happening. Big surprise.* Then, two days after Henrietta went home from the hospital, Mary saw what looked like little rings of fried egg white around the clots at the bottoms of each tube. The cells were growing, but Mary didn't think much of it—other cells had survived for a while in the lab.

But Henrietta's cells weren't merely surviving, they were growing with mythological intensity. By the next morning they'd doubled. Mary divided the contents of each tube into two, giving them room to grow, and within twenty-four hours, they'd doubled again. Soon she was dividing them into four tubes, then six. Henrietta's cells grew to fill as much space as Mary gave them.

Still, Gey wasn't ready to celebrate. "The cells could die any minute," he told Mary.

But they didn't. They kept growing like nothing anyone had seen,

doubling their numbers every twenty-four hours, stacking hundreds on top of hundreds, accumulating by the millions. "Spreading like crabgrass!" Margaret said. They grew twenty times faster than Henrietta's normal cells, which died only a few days after Mary put them in culture. As long as they had food and warmth, Henrietta's cancer cells seemed unstoppable.

Soon, George told a few of his closest colleagues that he thought his lab might have grown the first immortal human cells.

To which they replied, Can I have some? And George said yes.

1951

5

"Blackness Be Spreadin All Inside"

Henrietta knew nothing about her cells growing in a laboratory. After leaving the hospital, she went back to life as usual. She'd never loved the city, so almost every weekend she took the children back to Clover, where she worked the tobacco fields and spent hours churning butter on the steps of the home-house. Though radium often causes relentless nausea, vomiting, weakness, and anemia, there's no record of Henrietta having any side effects, and no one remembers her complaining of feeling sick.

When she wasn't in Clover, Henrietta spent her time cooking for Day, the children, and whichever cousins happened to be at her house. She made her famous rice pudding and slow-cooked greens, chitlins, and the vats of spaghetti with meatballs she kept going on the stove for whenever cousins dropped by hungry. When Day wasn't working the night shift, he and Henrietta spent evenings at home, playing cards and listening to Bennie Smith play blues guitar on the radio after the kids went to sleep. On the nights Day worked, Henrietta and Sadie would wait until the door slammed, count to one hundred, then jump out of bed, put on their dancing clothes, and sneak out of the house,

careful not to wake the children. Once they got outside, they'd wiggle their hips and squeal, scampering down the street to the dance floors at Adams Bar and Twin Pines.

"We used to really swing out heavy," Sadie told me years later. "We couldn't help it. They played music that when you heard it just put your soul into it. We'd two-step across that floor, jiggle to some blues, then somebody maybe put a quarter in there and play a slow music song, and Lord we'd just get out there and shake and turn around and all like that!" She giggled like a young girl. "It was some beautiful times." And they were beautiful women.

Henrietta had walnut eyes, straight white teeth, and full lips. She was a sturdy woman with a square jaw, thick hips, short, muscular legs, and hands rough from tobacco fields and kitchens. She kept her nails short so bread dough wouldn't stick under them when she kneaded it, but she always painted them a deep red to match her toenails.

Henrietta spent hours taking care of those nails, touching up chips and brushing on new coats of polish. She'd sit on her bed, polish in hand, hair high on her head in curlers, wearing the silky slip she loved so much she hand-washed it each night. She never wore pants, and rarely left the house without pulling on a carefully pressed skirt and shirt, sliding her feet into her tiny, open-toed pumps, and pinning her hair up with a little flip at the bottom, "just like it was dancin toward her face," Sadie always said.

"Hennie made life come alive—bein with her was like bein with fun," Sadie told me, staring toward the ceiling as she talked. "Hennie just love peoples. She was a person that could really make the good things come out of you."

But there was one person Henrietta couldn't bring out any good in. Ethel, the wife of their cousin Galen, had recently come to Turner Station from Clover, and she hated Henrietta—her cousins always said it was jealousy.

"I guess I can't say's I blame her," Sadie said. "Galen, that husband of Ethel's, he was likin Hennie more than he like Ethel. Lord, he

followed Hennie! Everywhere she go, there go Galen—he tried to stay up at Hennie house all the time when Day gone to work. Lord, Ethel *was* jealous—made her hateful to Hennie somethin fierce. Always seemed like she wanted to hurt Hennie." So Henrietta and Sadie would giggle and slip out the back to another club anytime Ethel showed up.

When they weren't sneaking out, Henrietta, Sadie, and Sadie's sister Margaret spent evenings in Henrietta's living room, playing bingo, yelling, and laughing over a pot of pennies while Henrietta's babies—David Jr., Deborah, and Joe—played with the bingo chips on the carpet beneath the table. Lawrence was nearly sixteen, already out having a life of his own. But one child was missing: Henrietta's oldest daughter, Elsie.

Before Henrietta got sick, she took Elsie down to Clover every time she went. Elsie would sit on the stoop of the home-house, staring into the hills and watching the sunrise as Henrietta worked in the garden. She was beautiful, delicate and feminine like Henrietta, who dressed her in homemade outfits with bows and spent hours braiding her long brown curls. Elsie never talked, she just cawed and chirped like a bird as she waved her hands inches from her face. She had wide chestnut eyes that everyone stared into, trying to understand what went on in that pretty head. But she just stared back, unflinching, her eyes haunted with fear and sadness that only softened when Henrietta rocked her back and forth.

Sometimes Elsie raced through the fields, chasing wild turkeys or grabbing the family mule by the tail and thrashing against him until Lawrence pulled her off. Henrietta's cousin Peter always said God had that child from the moment she was born, because that mule never hurt her. It was so mean it snapped at air like a rabid dog and kicked at the wind, but it seemed to know Elsie was special. Still, as she grew, she fell, she ran into walls and doors, burned herself against the woodstove. Henrietta made Day drive her and Elsie to revival meetings so preachers in tents could lay hands on Elsie to heal her, but

it never worked. In Turner Station, sometimes Elsie bolted from the house and ran through the street screaming.

By the time Henrietta got pregnant with baby Joe, Elsie was too big for Henrietta to handle alone, especially with two babies. The doctors said that sending Elsie away was the best thing. So now she was living about an hour and a half south of Baltimore, at Crownsville State Hospital—formerly known as the Hospital for the Negro Insane.

Henrietta's cousins always said a bit of Henrietta died the day they sent Elsie away, that losing her was worse than anything else that happened to her. Now, nearly a year later, Henrietta still had Day or a cousin take her from Turner Station to Crownsville once a week to sit with Elsie, who'd cry and cling to her as they played with each other's hair.

Henrietta had a way with children—they were always good and quiet when she was around. But whenever she left the house, Lawrence stopped being good. If the weather was nice, he'd run to the old pier in Turner Station, where Henrietta had forbidden him to go. The pier had burned down years earlier, leaving tall wooden pilings that Lawrence and his friends liked to dive from. One of Sadie's sons nearly drowned out there from hitting his head on a rock, and Lawrence was always coming home with eye infections that everyone blamed on the water being contaminated by Sparrows Point. Anytime Henrietta got word that Lawrence was at the pier, she'd storm down there, drag him out of the water, and whip him.

"*Ooooh* Lord," Sadie said once, "Hennie went down there with a switch. Yes *Lord.* She pitched a boogie like I never seen." But those were the only times anyone could ever remember seeing Henrietta mad. "She was tough," Sadie said. "Nothin scared Hennie."

For a month and a half, no one in Turner Station knew Henrietta was sick. The cancer was easy to keep secret, because she only had to go back to Hopkins once, for a checkup and a second radium treatment. At that point the doctors liked what they saw: her cervix was a bit red and inflamed from the first treatment, but the tumor was

shrinking. Regardless, she had to start X-ray therapy, which meant visiting Hopkins every weekday for a month. For that, she needed help: Henrietta lived twenty minutes from Hopkins, and Day worked nights, so he couldn't take her home after radiation until late. She wanted to walk to her cousin Margaret's house a few blocks from Hopkins and wait there for Day after her treatments. But first she'd have to tell Margaret and Sadie she was sick.

Henrietta told her cousins about the cancer at a carnival that came to Turner Station each year. The three of them climbed onto the Ferris wheel as usual, and she waited till it got so high they could see across Sparrows Point toward the ocean, till the Ferris wheel stopped and they were just kicking their legs back and forth, swinging in the crisp spring air.

"You remember when I said I had a knot inside me?" she asked. They nodded yes. "Well, I got cancer," Henrietta said. "I been havin treatments down at John Hopkins."

"What?!" Sadie said, looking at Henrietta and feeling suddenly dizzy, like she was about to slide off the Ferris wheel seat.

"Nothin serious wrong with me," Henrietta said. "I'm fine."

And at that point it looked like she was right. The tumor had completely vanished from the radium treatments. As far as the doctors could see, Henrietta's cervix was normal again, and they felt no tumors anywhere else. Her doctors were so sure of her recovery that while she was in the hospital for her second radium treatment, they'd performed reconstructive surgery on her nose, fixing the deviated septum that had given her sinus infections and headaches her whole life. It was a new beginning. The radiation treatments were just to make sure there were no cancer cells left anywhere inside her.

But about two weeks after her second radium treatment, Henrietta got her period—the flow was heavy and it didn't stop. She was still bleeding weeks later on March 20, when Day began dropping her off each morning at Hopkins for her radiation treatments. She'd change into a surgical gown, lie on an exam table with an enormous machine mounted on the wall above her, and a doctor would put strips of lead

inside her vagina to protect her colon and lower spine from the radiation. On the first day he tattooed two black dots with temporary ink on either side of her abdomen, just over her uterus. They were targets, so he could aim the radiation into the same area each day, but rotate between spots to avoid burning her skin too much in one place.

After each treatment, Henrietta would change back into her clothes and walk the few blocks to Margaret's house, where she'd wait for Day to pick her up around midnight. For the first week or so, she and Margaret would sit on the porch playing cards or bingo, talking about the men, the cousins, and the children. At that point, the radiation seemed like nothing more than an inconvenience. Henrietta's bleeding stopped, and if she felt sick from the treatments, she never mentioned it.

But things weren't all good. Toward the end of her treatments, Henrietta asked her doctor when she'd be better so she could have another child. Until that moment, Henrietta didn't know that the treatments had left her infertile.

Warning patients about fertility loss before cancer treatment was standard practice at Hopkins, and something Howard Jones says he and TeLinde did with every patient. In fact, a year and a half before Henrietta came to Hopkins for treatment, in a paper about hysterectomy, TeLinde wrote:

> The psychic effect of hysterectomy, especially on the young, is considerable, and it should not be done without a thorough understanding on the part of the patient [who is] entitled to a simple explanation of the facts [including] loss of the reproductive function. . . . It is well to present the facts to such an individual and give her ample time to digest them. . . . It is far better for her to make her own adjustment before the operation than to awaken from the anesthetic and find it a *fait accompli.*

In this case, something went wrong: in Henrietta's medical record, one of her doctors wrote, "Told she could not have any more children.

Says if she had been told so before, she would not have gone through with treatment." But by the time she found out, it was too late.

Then, three weeks after starting X-ray therapy, she began burning inside, and her urine came out feeling like broken glass. Day said he'd been having a funny discharge, and that she must have given him that sickness she kept going to Hopkins to treat.

"I would rather imagine that it is the other way around," Jones wrote in Henrietta's chart after examining her. "But at any rate, this patient now has . . . acute Gonorrhea superimposed on radiation reaction."

Soon, however, Day's running around was the least of Henrietta's worries. That short walk to Margaret's started feeling longer and longer, and all Henrietta wanted to do when she got there was sleep. One day she almost collapsed a few blocks from Hopkins, and it took her nearly an hour to make the walk. After that, she started taking cabs.

One afternoon, as Henrietta lay on the couch, she lifted her shirt to show Margaret and Sadie what the treatments had done to her. Sadie gasped: The skin from Henrietta's breasts to her pelvis was charred a deep black from the radiation. The rest of her body was its natural shade—more the color of fawn than coal.

"Hennie," she whispered, "they burnt you black as tar."

Henrietta just nodded and said, "Lord, it just feels like that blackness be spreadin all inside me."

1999

6

"Lady's on the Phone"

Eleven years after learning about Henrietta in Defler's classroom—on my twenty-seventh birthday—I stumbled on a collection of scientific papers from something called "The HeLa Cancer Control Symposium" at Morehouse School of Medicine in Atlanta, one of the oldest historically black colleges in the country. The symposium had been organized in Henrietta's honor by Roland Pattillo, a professor of gynecology at Morehouse who'd been one of George Gey's only African-American students.

When I called Roland Pattillo to see what he knew about Henrietta, I told him I was writing a book about her.

"Oh you are?" he said, laughing a slow, rumbling laugh that said, *Oh child, you have no idea what you're getting into.* "Henrietta's family won't talk to you. They've had a terrible time with the HeLa cells."

"You know her family?" I said. "Can you put me in touch with them?

"I do have the ability to put you in touch with them, but you need to answer a few questions, starting with 'Why should I?' "

1920s . 1930s . 1940s . 1950s . 1960s . 1970s . 1980s . 1990s . 2000s

▲

1951

7

The Death and Life of Cell Culture

On April 10, 1951, three weeks after Henrietta started radiation therapy, George Gey appeared on WAAM television in Baltimore for a special show devoted to his work. With dramatic music in the background, the announcer said, "Tonight we will learn why scientists believe that cancer can be conquered."

The camera flashed to Gey, sitting at a desk in front of a wall covered with pictures of cells. His face was long and handsome, with a pointed nose, black plastic bifocals, and a Charlie Chaplin mustache. He sat stiff and straight-backed, tweed suit perfectly pressed, white handkerchief in his breast pocket, hair slicked. His eyes darted off screen, then back to the camera as he drummed his fingers on the desk, his face expressionless.

"The normal cells which make up our bodies are tiny objects, five thousand of which would fit on the head of a pin," he said, his voice a bit too loud and stilted. "How the normal cells become cancerous is still a mystery."

He gave viewers a basic overview of cell structure and cancer using diagrams and a long wooden pointer. He showed films of cells

moving across the screen, their edges inching further and further into the empty space around them. And he zoomed in on one cancer cell, its edges round and smooth until it began to quiver and shake violently, exploding into five cancer cells.

At one point he said, "Now let me show you a bottle in which we have grown massive quantities of cancer cells." He picked up a clear glass pint-sized bottle, most likely full of Henrietta's cells, and rocked it in his hands as he explained that his lab was using those cells to find ways to stop cancer. He said, "It is quite possible that from fundamental studies such as these that we will be able to learn a way by which cancer cells can be damaged or completely wiped out."

To help make that happen, Gey began sending Henrietta's cells to any scientist who might use them for cancer research. Shipping live cells in the mail—a common practice today—wasn't done at the time. Instead, Gey sent them via plane in tubes with a few drops of culture medium, just enough to keep them alive for a short time. Sometimes pilots or stewards tucked the tubes in their shirt pockets, to keep the cells at body temperature as if they were still in an incubator. Other times, when the cells had to ride in the cargo hold, Gey tucked them into holes carved in blocks of ice to keep them from overheating, then packed the ice in cardboard boxes filled with sawdust. When shipments were ready to go, Gey would warn recipients that the cells were about to "metastasize" to their cities, so they could stand ready to fetch the shipment and rush back to their labs. If all went well, the cells survived. If not, Gey packaged up another batch and tried again.

He sent shipments of HeLa cells to researchers in Texas, India, New York, Amsterdam, and many places between. Those researchers gave them to more researchers, who gave them to more still. Henrietta's cells rode into the mountains of Chile in the saddlebags of pack mules. As Gey flew from one lab to another, demonstrating his culturing techniques and helping to set up new laboratories, he always flew with tubes of Henrietta's cells in his breast pocket. And when scientists visited Gey's lab to learn his techniques, he usually sent

them home with a vial or two of HeLa. In letters, Gey and some of his colleagues began referring to the cells as his "precious babies."

The reason Henrietta's cells were so precious was because they allowed scientists to perform experiments that would have been impossible with a living human. They cut HeLa cells apart and exposed them to endless toxins, radiation, and infections. They bombarded them with drugs, hoping to find one that would kill malignant cells without destroying normal ones. They studied immune suppression and cancer growth by injecting HeLa cells into immune-compromised rats, which developed malignant tumors much like Henrietta's. If the cells died in the process, it didn't matter—scientists could just go back to their eternally growing HeLa stock and start over again.

Despite the spread of HeLa and the flurry of new research that followed, there were no news stories about the birth of the amazing HeLa cell line and how it might help stop cancer. In Gey's one appearance on television, he didn't mention Henrietta or her cells by name, so the general public knew nothing of HeLa. But even if they had known, they probably wouldn't have paid it much mind. For decades the press had been reporting that cell culture was going to save the world from disease and make man immortal, but by 1951 the general public had stopped buying it. Cell culture had become less a medical miracle than something out of a scary science-fiction movie.

It all started on January 17, 1912, when Alexis Carrel, a French surgeon at the Rockefeller Institute, grew his "immortal chicken heart."

Scientists had been trying to grow living cells since before the turn of the century, but their samples had always died. As a result, many researchers believed it was impossible to keep tissues alive outside the body. But Carrel set out to prove them wrong. At age thirty-nine he'd already invented the first technique for suturing blood vessels together, and had used it to perform the first coronary bypass and develop

methods for transplanting organs. He hoped someday to grow whole organs in the laboratory, filling massive vaults with lungs, livers, kidneys, and tissues he could ship through the mail for transplantation. As a first step, he'd tried to grow a sliver of chicken-heart tissue in culture, and to everyone's amazement, it worked. Those heart cells kept beating as if they were still in the chicken's body.

Months later, Carrel won a Nobel Prize for his blood-vessel-suturing technique and his contributions to organ transplantation, and he became an instant celebrity. The prize had nothing to do with the chicken heart, but articles about his award conflated the immortal chicken-heart cells with his transplantation work, and suddenly it sounded like he'd found the fountain of youth. Headlines around the world read:

CARREL'S NEW MIRACLE POINTS WAY TO AVERT OLD AGE! . . .
SCIENTISTS GROW IMMORTAL CHICKEN HEART . . .
DEATH PERHAPS NOT INEVITABLE

Scientists said Carrel's chicken-heart cells were one of the most important advances of the century, and that cell culture would uncover the secrets behind everything from eating and sex to "the music of Bach, the poems of Milton, [and] the genius of Michelangelo." Carrel was a scientific messiah. Magazines called his culture medium "an elixir of youth" and claimed that bathing in it might make a person live forever.

But Carrel wasn't interested in immortality for the masses. He was a eugenicist: organ transplantation and life extension were ways to preserve what he saw as the superior white race, which he believed was being polluted by less intelligent and inferior stock, namely the poor, uneducated, and nonwhite. He dreamed of never-ending life for those he deemed worthy, and death or forced sterilization for everyone else. He'd later praise Hitler for the "energetic measures" he took in that direction.

Carrel's eccentricities fed into the media frenzy about his work. He was a stout, fast-talking Frenchman with mismatched eyes—one brown, the other blue—who rarely went out without his surgeon's cap. He wrongly believed that light could kill cell cultures, so his laboratory looked like the photo negative of a Ku Klux Klan rally, where technicians worked in long black robes, heads covered in black hoods with small slits cut for their eyes. They sat on black stools at black tables in a shadowless room with floors, ceilings, and walls painted black. The only illumination came from a small, dust-covered skylight.

Carrel was a mystic who believed in telepathy and clairvoyance, and thought it was possible for humans to live several centuries through the use of suspended animation. Eventually he turned his apartment into a chapel, began giving lectures on medical miracles, and told reporters he dreamed of moving to South America and becoming a dictator. Other researchers distanced themselves, criticizing him for being unscientific, but much of white America embraced his ideas and saw him as a spiritual adviser and a genius.

Reader's Digest ran articles by Carrel advising women that a "husband should not be induced by an oversexed wife to perform a sexual act," since sex drained the mind. In his best-selling book, *Man, the Unknown,* he proposed fixing what he believed was "an error" in the U.S. Constitution that promised equality for all people. "The feeble-minded and the man of genius should not be equal before the law," he wrote. "The stupid, the unintelligent, those who are dispersed, incapable of attention, of effort, have no right to a higher education."

His book sold more than two million copies and was translated into twenty languages. Thousands showed up for Carrel's talks, sometimes requiring police in riot gear to keep order as buildings filled to capacity and fans had to be turned away.

Through all of this, the press and public remained obsessed with Carrel's immortal chicken heart. Each year on New Year's Day, the *New York World Telegram* called Carrel to check on the cells; and every January 17 for decades, when Carrel and his assistants lined up

in their black suits to sing "Happy Birthday" to the cells, some newspaper or magazine retold the same story again and again:

CHICKEN HEART CELLS ALIVE TEN YEARS . . .
FOURTEEN YEARS . . . TWENTY . . .

Each time, the stories promised the cells would change the face of medicine, but they never did. Meanwhile, Carrel's claims about the cells grew more fantastical.

At one point he said the cells "would reach a volume greater than that of the solar system." *The Literary Digest* reported that the cells could have already "covered the earth," and a British tabloid said they could "form a rooster . . . big enough today to cross the Atlantic in a single stride, [a bird] so monstrous that when perched on this mundane sphere, the world, it would look like a weathercock." A string of best-selling books warned of the dangers of tissue culture: one predicted that 70 percent of babies would soon be grown in culture; another imagined tissue culture producing giant "Negroes" and two-headed toads.

But the fear of tissue culture truly found its way into American living rooms in an episode of *Lights Out,* a 1930s radio horror show that told the story of a fictional Dr. Alberts who'd created an immortal chicken heart in his lab. It grew out of control, filling the city streets like The Blob, consuming everyone and everything in its path. In only two weeks it destroyed the entire country.

The real chicken-heart cells didn't fare so well. In fact, it turned out that the original cells had probably never survived long at all. Years after Carrel died awaiting trial for collaborating with the Nazis, scientist Leonard Hayflick grew suspicious of the chicken heart. No one had ever been able to replicate Carrel's work, and the cells seemed to defy a basic rule of biology: that normal cells can only divide a finite number of times before dying. Hayflick investigated them and concluded that the original chicken-heart cells had actually died soon after Carrel put them in culture, and that, intentionally or not, Carrel

had been putting new cells in the culture dishes each time he "fed" them using an "embryo juice" he made from ground tissues. At least one of Carrel's former lab assistants verified Hayflick's suspicion. But no one could test the theory, because two years after Carrel's death, his assistant unceremoniously threw the famous chicken-heart cells in the trash.

Either way, by 1951, when Henrietta Lacks's cells began growing in the Gey lab—just five years after the widely publicized "death" of Carrel's chicken heart—the public image of immortal cells was tarnished. Tissue culture was the stuff of racism, creepy science fiction, Nazis, and snake oil. It wasn't something to be celebrated. In fact, no one paid much attention to it at all.

1951

8

"A Miserable Specimen"

In early June, Henrietta told her doctors several times that she thought the cancer was spreading, that she could feel it moving through her, but they found nothing wrong with her. "The patient states that she feels fairly well," one doctor wrote in her chart, "however she continues to complain of some vague lower abdominal discomfort. . . . No evidence of recurrence. Return in one month."

There's no indication that Henrietta questioned him; like most patients in the 1950s, she deferred to anything her doctors said. This was a time when "benevolent deception" was a common practice—doctors often withheld even the most fundamental information from their patients, sometimes not giving them any diagnosis at all. They believed it was best not to confuse or upset patients with frightening terms they might not understand, like *cancer.* Doctors knew best, and most patients didn't question that.

Especially black patients in public wards. This was 1951 in Baltimore, segregation was law, and it was understood that black people didn't question white people's professional judgment. Many black

patients were just glad to be getting treatment, since discrimination in hospitals was widespread.

There's no way of knowing whether or how Henrietta's treatment would have differed if she'd been white. According to Howard Jones, Henrietta got the same care any white patient would have; the biopsy, the radium treatment, and radiation were all standard for the day. But several studies have shown that black patients were treated and hospitalized at later stages of their illnesses than white patients. And once hospitalized, they got fewer pain medications, and had higher mortality rates.

All we can know for sure are the facts of Henrietta's medical records: a few weeks after the doctor told her she was fine, she went back to Hopkins saying that the "discomfort" she'd complained about last time was now an "ache" in both sides. But the doctor's entry was identical to the one weeks earlier: "No evidence of recurrence. Return in one month."

Two and a half weeks later, Henrietta's abdomen hurt, and she could barely urinate. The pain made it hard to walk. She went back to Hopkins, where a doctor passed a catheter to empty her bladder, then sent her home. Three days later, when she returned complaining once again of pain, a doctor pressed on her abdomen and felt a "stony hard" mass. An X-ray showed that it was attached to her pelvic wall, nearly blocking her urethra. The doctor on duty called for Jones and several others who'd treated Henrietta; they all examined her and looked at the X-ray. "Inoperable," they said. Only weeks after a previous entry declared her healthy, one of the doctors wrote, "The patient looks chronically ill. She is obviously in pain." He sent her home to bed.

Sadie would later describe Henrietta's decline like this: "Hennie didn't fade away, you know, her looks, her body, it didn't just fade. Like some peoples be sick in the bed with cancer and they look so *bad*. But she didn't. The only thing you could tell was in her eyes. Her eyes were tellin you that she wasn't gonna be alive no more."

Until that point, no one except Sadie, Margaret, and Day knew Henrietta was sick. Then, suddenly, everyone knew. When Day and the cousins walked home from Sparrows Point after each shift, they could hear Henrietta from a block away, wailing for the Lord to help her. When Day drove her back to Hopkins for X-rays the following week, stone-hard tumors filled the inside of her abdomen: one on her uterus, one on each kidney and on her urethra. Just a month after a note in her medical record said she was fine, another doctor wrote, "In view of the rapid extension of the disease process the outlook is quite poor." The only option, he said, was "further irradiation in the hopes that we may at least relieve her pain."

Henrietta couldn't walk from the house to the car, but either Day or one of the cousins managed to get her to Hopkins every day for radiation. They didn't realize she was dying. They thought the doctors were still trying to cure her.

Each day, Henrietta's doctors increased her dose of radiation, hoping it would shrink the tumors and ease the pain until her death. Each day the skin on her abdomen burned blacker and blacker, and the pain grew worse.

On August 8, just one week after her thirty-first birthday, Henrietta arrived at Hopkins for her treatment, but this time she said she wanted to stay. Her doctor wrote, "Patient has been complaining bitterly of pain and she seems genuinely miserable. She has to come in from a considerable distance and it is felt that she deserves to be in the hospital where she can be better cared for."

After Henrietta checked into the hospital, a nurse drew blood and labeled the vial COLORED, then stored it in case Henrietta needed transfusions later. A doctor put Henrietta's feet in stirrups once again, to take a few more cells from her cervix at the request of George Gey, who wanted to see if a second batch would grow like the first. But Henrietta's body had become so contaminated with toxins normally flushed from the system in urine, her cells died immediately in culture.

During Henrietta's first few days in the hospital, the children came with Day to visit her, but when they left, she cried and moaned for hours. Soon the nurses told Day he couldn't bring the children anymore, because it upset Henrietta too much. After that, Day would park the Buick behind Hopkins at the same time each day and sit on a little patch of grass on Wolfe Street with the children, right under Henrietta's window. She'd pull herself out of bed, press her hands and face to the glass, and watch her children play on the lawn. But within days, Henrietta couldn't get herself to the window anymore.

Her doctors tried in vain to ease her suffering. "Demerol does not seem to touch the pain," one wrote, so he tried morphine. "This doesn't help too much either." He gave her Dromoran. "This stuff works," he wrote. But not for long. Eventually one of her doctors tried injecting pure alcohol straight into her spine. "Alcohol injections ended in failure," he wrote.

New tumors seemed to appear daily—on her lymph nodes, hip bones, labia—and she spent most days with a fever up to 105. Her doctors stopped the radiation treatment and seemed as defeated by the cancer as she was. "Henrietta is still a miserable specimen," they wrote. "She groans." "She is constantly nauseated and claims she vomits everything she eats." "Patient acutely upset . . . very anxious." "As far as I can see we are doing all that can be done."

There is no record that George Gey ever visited Henrietta in the hospital, or said anything to her about her cells. And everyone I talked to who might know said that Gey and Henrietta never met. Everyone, that is, except Laure Aurelian, a microbiologist who was Gey's colleague at Hopkins.

"I'll never forget it," Aurelian said. "George told me he leaned over Henrietta's bed and said, 'Your cells will make you immortal.' He told Henrietta her cells would help save the lives of countless people, and she smiled. She told him she was glad her pain would come to some good for someone."

1999

9

Turner Station

A few days after my first conversation with Day, I drove from Pittsburgh to Baltimore to meet his son, David "Sonny" Lacks Jr. He'd finally called me back and agreed to meet, saying he'd gotten worn out from my number showing up on his pager. I didn't know it then, but he'd made five panicked phone calls to Pattillo, asking questions about me before calling.

The plan was that I'd page Sonny when I got to Baltimore, then he'd pick me up and take me to his brother Lawrence's house to meet their father and—if I was lucky—Deborah. So I checked in to the downtown Holiday Inn, sat on the bed, phone in my lap, and dialed Sonny's pager. No reply.

I stared through my hotel room window at a tall, Gothic-looking brick tower across the street with a huge clock at the top. It was a weatherbeaten silver, with big letters spelling B-R-O-M-O-S-E-L-T-Z-E-R in a circle around its face. I watched the hands move slowly past the letters, paged Sonny every few minutes, and waited for the phone to ring.

Eventually I grabbed the fat Baltimore phone book, opened to the

I shook my head no.

"Voodoo," he whispered. "Some peoples is sayin Henrietta's sickness and them cells was man- or woman-made, others say it was doctor-made."

As he talked, the preacher's voice on the radio grew louder, saying, "The Lord, He's gonna help you, but you got to call me right now. If my daughter or sister had cancer! I would get on that phone, cause time's running out!"

Cootie yelled over the radio. "Doctors say they never heard of another case like Henrietta's! I'm sure it was either man-made or spirit-made, one of the two."

Then he told me about spirits in Lacks Town that sometimes visited people's houses and caused disease. He said he'd seen a man spirit in his house, sometimes leaning against the wall by his woodstove, other times by the bed. But the most dangerous spirit, he told me, was the several-ton headless hog he saw roaming Lacks Town years ago with no tail. Links of broken chain dangled from its bloodstained neck, dragging along dirt roads and clanking as it walked.

"I saw that thing crossin the road to the family cemetery," Cootie told me. "That spirit stood right there in the road, its chain swingin and swayin in the breeze." Cootie said it looked at him and stomped its foot, kicking red dust all around its body, getting ready to charge. Just then, a car came barreling down the road with only one headlight.

"The car came along, shined a light right on it, I swear it was a hog," Cootie said. Then the spirit vanished. "I can still hear that chain draggin." Cootie figured that car saved him from getting some new disease.

"Now I don't know for sure if a spirit got Henrietta or if a doctor did it," Cootie said, "but I do know that her cancer wasn't no regular cancer, cause regular cancer don't keep on growing after a person die."

1951

11

"The Devil of Pain Itself"

By September, Henrietta's body was almost entirely taken over by tumors. They'd grown on her diaphragm, her bladder, and her lungs. They'd blocked her intestines and made her belly swell like she was six months pregnant. She got one blood transfusion after another because her kidneys could no longer filter the toxins from her blood, leaving her nauseated from the poison of her own body. She got so much blood that one doctor wrote a note in her record stopping all transfusions "until her deficit with the blood bank was made up."

When Henrietta's cousin Emmett Lacks heard somebody at Sparrows Point say Henrietta was sick and needed blood, he threw down the steel pipe he was cutting and ran looking for his brother and some friends. They were working men, with steel and asbestos in their lungs and years' worth of hard labor under their calluses and cracked fingernails. They'd all slept on Henrietta's floor and eaten her spaghetti when they first came to Baltimore from the country, and anytime money ran low. She'd ridden the streetcar to and from Sparrows Point to make sure they didn't get lost during their first weeks in the city.

She'd packed their lunches until they found their feet, then sent extra food to work with Day so they didn't go hungry between paychecks. She'd teased them about needing wives and girlfriends, and sometimes helped them find good ones. Emmett had stayed at Henrietta's so long, he had his own bed in the hallway at the top of the stairs. He'd only moved out a few months earlier.

The last time Emmett saw Henrietta, he'd taken her to visit Elsie in Crownsville. They found her sitting behind barbed wire in the corner of a yard outside the brick barracks where she slept. When she saw them coming she made her birdlike noise, then ran to them and just stood, staring. Henrietta wrapped her arms around Elsie, looked her long and hard in the eyes, then turned to Emmett.

"She look like she doin better," Henrietta said. "Yeah, Elsie look nice and clean and everything." They sat in silence for a long time. Henrietta seemed relieved, almost desperate, to see Elsie looking okay. That was the last time she would see her daughter—Emmett figures she knew she was saying goodbye. What she didn't know was that no one would ever visit Elsie again.

A few months later, when Emmett heard Henrietta needed blood, he and his brother and six friends piled into a truck and went straight to Hopkins. A nurse led them through the colored ward, past rows of hospital beds to the one where Henrietta lay. She'd withered from 140 pounds to about 100. Sadie and Henrietta's sister Gladys sat beside her, their eyes swollen from too much crying and not enough sleep. Gladys had come from Clover by Greyhound as soon as she got word Henrietta was in the hospital. The two had never been close, and people still teased Gladys, saying she was too mean and ugly to be Henrietta's sister. But Henrietta was family, so Gladys sat beside her, clutching a pillow in her lap.

A nurse stood in the corner watching as the eight big men crowded around the bed. When Henrietta tried to move her arm to lift herself, Emmett saw the straps around her wrists and ankles, attaching her to the bed frame.

"What you doin here?" Henrietta moaned.

"We come to get you well," Emmett said to a chorus of yeahs from the other men.

Henrietta didn't say a word. She just lay her head back on the pillow.

Suddenly her body went rigid as a board. She screamed as the nurse ran to the bed, tightening the straps around Henrietta's arms and legs to keep her from thrashing onto the floor as she'd done many times before. Gladys thrust the pillow from her lap into Henrietta's mouth, to keep her from biting her tongue as she convulsed in pain. Sadie cried and stroked Henrietta's hair.

"Lord," Emmett told me years later. "Henrietta rose up out that bed wailin like she been possessed by the devil of pain itself."

The nurse shooed Emmett and his brothers out of the ward to the room designated for colored blood collection, where they'd donate eight pints of blood. As Emmett walked from Henrietta's bedside, he turned to look just as the fit began to pass and Gladys slid the pillow from Henrietta's mouth.

"That there's a memory I'll take to my grave," he told me years later. "When them pains hit, looked like her mind just said, *Henrietta, you best leave.* She was sick like I never seen. Sweetest girl you ever wanna meet, and prettier than anything. But them cells, boy, them cells of hers is somethin else. No wonder they never could kill them . . . That cancer was a terrible thing."

Soon after Emmett and his friends visited, at four o'clock on the afternoon of September 24, 1951, a doctor injected Henrietta with a heavy dose of morphine and wrote in her chart, "Discontinue all medications and treatments except analgesics." Two days later, Henrietta awoke terrified, disoriented, wanting to know where she was and what the doctors had been doing to her. For a moment she forgot her own name. Soon after that, she turned to Gladys and told her she was going to die.

"You make sure Day takes care of them children," Henrietta told

her sister, tears streaming down her face. "Especially my baby girl Deborah." Deborah was just over a year old when Henrietta went into the hospital. Henrietta had wanted to hold Deborah, to dress her in beautiful clothes and braid her hair, to teach her how to paint her nails, curl her hair, and handle men.

Henrietta looked at Gladys and whispered, "Don't you let anything bad happen to them children when I'm gone."

Then she rolled over, her back to Gladys, and closed her eyes.

Gladys slipped out of the hospital and onto a Greyhound back to Clover. That night, she called Day.

"Henrietta gonna die tonight," she told him. "She wants you to take care of them kids—I told her I'd let you know. Don't let nuthin happen to them."

Henrietta died at 12:15 a.m. on October 4, 1951.

1951

12

The Storm

There was no obituary for Henrietta Lacks, but word of her death reached the Gey lab quickly. As Henrietta's body cooled in the "colored" freezer, Gey asked her doctors if they'd do an autopsy. Tissue culturists around the world had been trying to create a library of immortal cells like Henrietta's, and Gey wanted samples from as many organs in her body as possible, to see if they'd grow like HeLa. But to get those samples after her death, someone would have to ask Henrietta's husband for permission.

Though no law or code of ethics required doctors to ask permission before taking tissue from a living patient, the law made it very clear that performing an autopsy or removing tissue from the dead without permission was illegal.

The way Day remembers it, someone from Hopkins called to tell him Henrietta had died, and to ask permission for an autopsy, and Day said no. A few hours later, when Day went to Hopkins with a cousin to see Henrietta's body and sign some papers, the doctors asked again about the autopsy. They said they wanted to run tests that

might help his children someday. Day's cousin said it wouldn't hurt, so eventually Day agreed and signed an autopsy permission form.

Soon Henrietta's body lay on a stainless-steel table in the cavernous basement morgue, and Gey's assistant, Mary, stood in the doorway breathing fast, feeling like she might faint. She'd never seen a dead body. Now there she was with a corpse, a stack of petri dishes, and the pathologist, Dr. Wilbur, who stood hunched over the autopsy table. Henrietta's arms were extended, as if she were reaching above her head. Mary walked toward the table, whispering to herself, *You're not going to make a fool of yourself and pass out.*

She stepped around one of Henrietta's arms and took her place beside Wilbur, her hip in Henrietta's armpit. He said hello, Mary said hello back. Then they were silent. Day wanted Henrietta to be presentable for the funeral, so he'd only given permission for a partial autopsy, which meant no incision into her chest and no removal of her limbs or head. Mary opened the dishes one by one, holding them out to collect samples as Wilbur cut them from Henrietta's body: bladder, bowel, uterus, kidney, vagina, ovary, appendix, liver, heart, lungs. After dropping each sample into a petri dish, Wilbur put bits of Henrietta's tumor-covered cervix into containers filled with formaldehyde to save them for future use.

The official cause of Henrietta's death was terminal uremia: blood poisoning from the buildup of toxins normally flushed out of the body in urine. The tumors had completely blocked her urethra, leaving her doctors unable to pass a catheter into her bladder to empty it. Tumors the size of baseballs had nearly replaced her kidneys, bladder, ovaries, and uterus. And her other organs were so covered in small white tumors it looked as if someone had filled her with pearls.

Mary stood beside Wilbur, waiting as he sewed Henrietta's abdomen closed. She wanted to run out of the morgue and back to the lab, but instead, she stared at Henrietta's arms and legs—anything to avoid looking into her lifeless eyes. Then Mary's gaze fell on Henrietta's feet, and she gasped: Henrietta's toenails were covered in chipped bright red polish.

"When I saw those toenails," Mary told me years later, "I nearly

fainted. I thought, *Oh jeez, she's a real person.* I started imagining her sitting in her bathroom painting those toenails, and it hit me for the first time that those cells we'd been working with all this time and sending all over the world, they came from a live woman. I'd never thought of it that way."

A few days later, Henrietta's body made the long, winding train ride from Baltimore to Clover in a plain pine box, which was all Day could afford. It was raining when the local undertaker met Henrietta's coffin at the Clover depot and slid it into the back of a rusted truck. He rolled through downtown Clover, past the hardware store where Henrietta used to watch old white men play checkers, and onto Lacks Town Road, turning just before The Shack, where she'd danced only a few months earlier. As the undertaker drove into Lacks Town, cousins filed onto porches to watch Henrietta pass, their hands on hips or clutching children as they shook their heads and whispered to the Lord.

Cootie shuffled into his yard, looked straight into the falling rain, and yelled, "Sweet Jesus, let that poor woman rest, you hear me? She had enough!"

Amens echoed from a nearby porch.

A quarter-mile down the road, Gladys and Sadie sat on the broken wooden steps of the home-house, a long pink dress draped across their laps and a basket at their feet filled with makeup, curlers, red nail polish, and the two pennies they'd rest on Henrietta's eyes to keep them closed for the viewing. They watched silently as the undertaker inched through the field between the road and the house, his tires sinking into puddles of red mud.

Cliff and Fred stood in the graveyard behind the house, their overalls drenched and heavy with rain. They'd spent most of the day thrusting shovels into the rocky cemetery ground, digging a grave for Henrietta. They dug in one spot, then another, moving each time their shovels hit the coffins of unknown relatives buried with no markers.

Eventually they found an empty spot for Henrietta near her mother's tombstone.

When Cliff and Fred heard the undertaker's truck, they walked toward the home-house to help unload Henrietta. When they got her into the hallway, they opened the pine box, and Sadie began to cry. What got her most wasn't the sight of Henrietta's lifeless body, it was her toenails: Henrietta would rather have died than let her polish get all chipped like that.

"Lord," Sadie said. "Hennie must a hurt somethin worse than death."

For several days, Henrietta's corpse lay in the hallway of the home-house, doors propped open at each end to let in the cool wet breeze that would keep her body fresh. Family and neighbors waded through the field to pay respects, and all the while, the rain kept coming.

The morning of Henrietta's funeral, Day walked through the mud with Deborah, Joe, Sonny, and Lawrence. But not Elsie. She was still in Crownsville and didn't even know her mother had died.

The Lacks cousins don't remember much about the service—they figure there were some words, probably a song or two. But they all remember what happened next. As Cliff and Fred lowered Henrietta's coffin into her grave and began covering her with handfuls of dirt, the sky turned black as strap molasses. The rain fell thick and fast. Then came long rumbling thunder, screams from the babies, and a blast of wind so strong it tore the metal roof off the barn below the cemetery and sent it flying through the air above Henrietta's grave, its long metal slopes flapping like the wings of a giant silver bird. The wind caused fires that burned tobacco fields. It ripped trees from the ground, blew power lines out for miles, and tore one Lacks cousin's wooden cabin clear out of the ground, threw him from the living room into his garden, then landed on top of him, killing him instantly.

Years later, when Henrietta's cousin Peter looked back on that day, he just shook his bald head and laughed: "Hennie never was what you'd call a beatin-around-the-bush woman," he said. "We shoulda knew she was tryin to tell us somethin with that storm."

1951–1953

13
The HeLa Factory

Not long after Henrietta's death, planning began for a HeLa factory—a massive operation that would grow to produce trillions of HeLa cells each week. It was built for one reason: to help stop polio.

By the end of 1951 the world was in the midst of the biggest polio epidemic in history. Schools closed, parents panicked, and the public grew desperate for a vaccine. In February 1952, Jonas Salk at the University of Pittsburgh announced that he'd developed the world's first polio vaccine, but he couldn't begin offering it to children until he'd tested it on a large scale to prove it was safe and effective. And doing that would require culturing cells on an enormous, industrial scale, which no one had done before.

The National Foundation for Infantile Paralysis (NFIP)—a charity created by President Franklin Delano Roosevelt, who'd himself been paralyzed by polio—began organizing the largest field trial ever conducted to test the polio vaccine. Salk would inoculate 2 million children and the NFIP would test their blood to see if they'd become immune. But doing this would require millions of neutralization tests,

which involved mixing blood serum from newly vaccinated children with live poliovirus and cells in culture. If the vaccine worked, the serum from a vaccinated child's blood would block the poliovirus and protect the cells. If it didn't work, the virus would infect the cells, causing damage scientists could see using a microscope.

The trouble was, at that point, the cells used in neutralization tests came from monkeys, which were killed in the process. This was a problem, not because of concern for animal welfare—which wasn't the issue then that it is today—but because monkeys were expensive. Doing millions of neutralization tests using monkey cells would cost millions of dollars. So the NFIP went into overdrive looking for a cultured cell that could grow on a massive scale and would be cheaper than using monkeys.

The NFIP turned to Gey and a few other cell culture experts for help, and Gey recognized the opportunity as a gold mine for the field. The NFIP's March of Dimes was bringing in an average of $50 million in donations each year, and its director wanted to give much of that money to cell culturists so they could find a way to mass-produce cells, which they'd been wanting to do for years anyway.

The timing was perfect: by chance, soon after the NFIP contacted Gey for help, he realized that Henrietta's cells grew unlike any human cells he'd seen.

Most cells in culture grew in a single layer in a clot on a glass surface, which meant they ran out of space quickly. Increasing their numbers was labor-intensive: scientists had to repeatedly scrape the cells from one tube and split them into new ones to give them more space. HeLa cells, it turned out, weren't picky—they didn't need a glass surface in order to grow. They could grow floating in a culture medium that was constantly stirred by a magnetic device, an important technique Gey developed, now called growing in suspension. This meant that HeLa cells weren't limited by space in the same way other cells were; they could simply divide until they ran out of culture medium. The bigger the vat of medium, the more the cells grew. This discovery meant that if HeLa was susceptible to poliovirus, which not all cells

were, it would solve the mass-production problem and make it possible to test the vaccine without millions of monkey cells.

So in April 1952, Gey and one of his colleagues from the NFIP advisory committee—William Scherer, a young postdoctoral fellow at the University of Minnesota—tried infecting Henrietta's cells with poliovirus. Within days they found that HeLa was, in fact, *more* susceptible to the virus than any cultured cells had ever been. When they realized this, they knew they'd found exactly what the NFIP was looking for.

They also knew that, before mass-producing any cells, they'd need to find a new way to ship them. Gey's air freight shipping system worked fine for sending a few cells to colleagues here and there, but it was too expensive for shipping on a massive scale. And growing cells by the billions wouldn't help anyone if they couldn't get those cells where they needed to go. So they began experimenting.

On Memorial Day 1952, Gey gathered a handful of tubes containing HeLa cells and enough media for them to survive for a few days, and packed them into a tin lined with cork and filled with ice to prevent overheating. Then he typed up careful instructions for feeding and handling, and sent Mary to the post office to ship them to Scherer in Minnesota. Every post office in Baltimore was closed for the holiday except the main branch downtown. Mary had to take several trolleys to get there, but she made it. And so did the cells: When the package arrived in Minneapolis about four days later, Scherer put the cells in an incubator and they began to grow. It was the first time live cells had ever been successfully shipped in the mail.

In the coming months—to test different delivery methods, and make sure the cells could survive long trips in any climate—Gey and Scherer sent tubes of HeLa cells around the country by plane, train, and truck, from Minneapolis to Norwich to New York and back again. Only one tube died.

When the NFIP heard the news that HeLa was susceptible to poliovirus and could grow in large quantities for little money, it immediately contracted William Scherer to oversee development of a HeLa

Distribution Center at the Tuskegee Institute, one of the most prestigious black universities in the country. The NFIP chose the Tuskegee Institute for the project because of Charles Bynum, director of "Negro Activities" for the foundation. Bynum—a science teacher and civil rights activist who was the first black foundation executive in the country—wanted the center to be located at Tuskegee because it would provide hundreds of thousands of dollars in funding, many jobs, and training opportunities for young black scientists.

In just a few months, a staff of six black scientists and technicians built a factory at Tuskegee unlike any seen before. Its walls were lined with industrial steel autoclaves for steam sterilizing; row upon row of enormous, mechanically stirred vats of culture medium; incubators; glass culturing bottles stacked on their sides; and automatic cell dispensers—tall contraptions with long, thin metal arms that squirted HeLa cells into one test tube after another. The Tuskegee team mixed thousands of liters of Gey culture medium each week, using salts, minerals, and serum they collected from the many students, soldiers, and cotton farmers who responded to ads in the local paper seeking blood in exchange for money.

Several technicians served as a quality-control assembly line, staring through microscopes at hundreds of thousands of HeLa cultures each week, making sure the samples were alive and healthy. Others shipped them on a rigid schedule to researchers at twenty-three polio-testing centers around the country.

Eventually, the Tuskegee staff grew to thirty-five scientists and technicians, who produced twenty thousand tubes of HeLa—about 6 trillion cells—every week. It was the first-ever cell production factory, and it started with a single vial of HeLa that Gey had sent Scherer in their first shipping experiment, not long after Henrietta's death.

With those cells, scientists helped prove the Salk vaccine effective. Soon the *New York Times* would run pictures of black women hunched over microscopes examining cells, black hands holding vials of HeLa, and this headline:

UNIT AT TUSKEGEE HELPS POLIO FIGHT
Corps of Negro Scientists Has Key Role in Evaluating of Dr. Salk's Vaccine
HELA CELLS ARE GROWN

Black scientists and technicians, many of them women, used cells from a black woman to help save the lives of millions of Americans, most of them white. And they did so on the same campus—and at the very same time—that state officials were conducting the infamous Tuskegee syphilis studies.

At first the Tuskegee Center supplied HeLa cells only to polio testing labs. But when it became clear that there was no risk of a HeLa shortage, they began sending the cells to any scientist interested in buying them, for ten dollars plus Air Express fees. If researchers wanted to figure out how cells behaved in a certain environment, or reacted to a specific chemical, or produced a certain protein, they turned to Henrietta's cells. They did that because, despite being cancerous, HeLa still shared many basic characteristics with normal cells: They produced proteins and communicated with one another like normal cells, they divided and generated energy, they expressed genes and regulated them, and they were susceptible to infections, which made them an optimal tool for synthesizing and studying any number of things in culture, including bacteria, hormones, proteins, and especially viruses.

Viruses reproduce by injecting bits of their genetic material into a living cell, essentially reprogramming the cell so it reproduces the virus instead of itself. When it came to growing viruses—as with many other things—the fact that HeLa was malignant just made it *more* useful. HeLa cells grew much faster than normal cells, and therefore produced results faster. HeLa was a workhorse: it was hardy, it was inexpensive, and it was everywhere.

And the timing was perfect. In the early fifties, scientists were just beginning to understand viruses, so as Henrietta's cells arrived in labs around the country, researchers began exposing them to viruses of all kinds—herpes, measles, mumps, fowl pox, equine encephalitis—to study how each one entered cells, reproduced, and spread.

Henrietta's cells helped launch the fledgling field of virology, but that was just the beginning. In the years following Henrietta's death, using some of the first tubes of her cells, researchers around the world made several important scientific advances in quick succession. First, a group of researchers used HeLa to develop methods for freezing cells without harming or changing them. This made it possible to send cells around the world using the already-standardized method for shipping frozen foods and frozen sperm for breeding cattle. It also meant researchers could store cells between experiments without worrying about keeping them fed and sterile. But what excited scientists most was that freezing gave them a means to suspend cells in various states of being.

Freezing a cell was like pressing a pause button: cell division, metabolism, and everything else simply stopped, then resumed after thawing as if you'd just pressed play again. Scientists could now pause cells at various intervals during an experiment so they could compare how certain cells reacted to a specific drug one week, then two, then six after exposure. They could look at identical cells at different points in time, to study how they changed with age. And by freezing cells at various points, they believed they could see the actual moment when a normal cell growing in culture became malignant, a phenomenon they called *spontaneous transformation.*

Freezing was just the first of several dramatic improvements HeLa helped bring to the field of tissue culture. One of the biggest was the standardization of the field, which, at that point, was a bit of a mess. Gey and his colleagues had been complaining that they wasted too much time just making medium and trying to keep cells alive. But more than anything, they worried that since everyone was using different media ingredients, recipes, cells, and techniques, and few knew

their peers' methods, it would be difficult, if not impossible, to replicate one another's experiments. And replication is an essential part of science: a discovery isn't considered valid if others can't repeat the work and get the same result. Without standardized materials and methods, they worried that the field of tissue culture would stagnate.

Gey and several colleagues had already organized a committee to develop procedures to "simplify and standardize the technique of tissue culturing." They'd also convinced two fledgling biological supply companies—Microbiological Associates and Difco Laboratories—to begin producing and selling ingredients for culture media, and taught them the techniques necessary to do so. Those companies had just started selling media ingredients, but cell culturists still had to make the media themselves, and they all used different recipes.

Standardization of the field wasn't possible until several things happened: first, Tuskegee began mass-producing HeLa; second, a researcher named Harry Eagle at the National Institutes of Health (NIH) used HeLa to develop the first standardized culture medium that could be made by the gallon and shipped ready to use; and, third, Gey and several others used HeLa to determine which glassware and test-tube stoppers were least toxic to cells.

Only then, for the first time, could researchers around the world work with the same cells, growing in the same media, using the same equipment, all of which they could buy and have delivered to their labs. And soon they'd even be able to use the first-ever clones of human cells, something they'd been working toward for years.

Today, when we hear the word *clone,* we imagine scientists creating entire living animals—like Dolly the famous cloned sheep—using DNA from one parent. But before the cloning of whole animals, there was the cloning of individual cells—Henrietta's cells.

To understand why cellular cloning was important, you need to know two things: First, HeLa didn't grow from *one* of Henrietta's cells. It grew from a sliver of her tumor, which was a cluster of cells. Second, cells often behave differently, even if they're all from the same sample, which means some grow faster than others, some produce

more poliovirus, and some are resistant to certain antibiotics. Scientists wanted to grow cellular clones—lines of cells descended from individual cells—so they could harness those unique traits. With HeLa, a group of scientists in Colorado succeeded, and soon the world of science had not only HeLa but also its hundreds, then thousands, of clones.

The early cell culture and cloning technology developed using HeLa helped lead to many later advances that required the ability to grow single cells in culture, including isolating stem cells, cloning whole animals, and in vitro fertilization. Meanwhile, as the standard human cell in most labs, HeLa was also being used in research that would advance the new field of human genetics.

Researchers had long believed that human cells contained forty-eight chromosomes, the threads of DNA inside cells that contain all of our genetic information. But chromosomes clumped together, making it impossible to get an accurate count. Then, in 1953, a geneticist in Texas accidentally mixed the wrong liquid with HeLa and a few other cells, and it turned out to be a fortunate mistake. The chromosomes inside the cells swelled and spread out, and for the first time, scientists could see each of them clearly. That accidental discovery was the first of several developments that would allow two researchers from Spain and Sweden to discover that normal human cells have forty-six chromosomes.

Once scientists knew how many chromosomes people were *supposed* to have, they could tell when a person had too many or too few, which made it possible to diagnose genetic diseases. Researchers worldwide would soon begin identifying chromosomal disorders, discovering that patients with Down syndrome had an extra chromosome number 21, patients with Klinefelter syndrome had an extra sex chromosome, and those with Turner syndrome lacked all or part of one.

With all the new developments, demand for HeLa grew, and Tuskegee wasn't big enough to keep up. The owner of Microbiological Associates—a military man named Samuel Reader—knew nothing about science, but his business partner, Monroe Vincent, was a researcher who understood the potential market for cells. Many scientists needed cells, but few had the time or ability to grow them in large

enough quantities. They just wanted to buy them. So together, Reader and Vincent used HeLa cells as the springboard to launch the first industrial-scale, for-profit cell distribution center.

It started with what Reader lovingly referred to as his Cell Factory. In Bethesda, Maryland, in the middle of a wide-open warehouse that was once a Fritos factory, he built a glass-enclosed room that housed a rotating conveyor belt with hundreds of test-tube holders built into it. Outside the glass room, he had a setup much like Tuskegee's, with massive vats of culture medium, only bigger. When cells were ready for shipping, he'd sound a loud bell and all workers in the building, including the mailroom clerks, would stop what they were doing, scrub themselves at the sterilization station, grab a cap and gown, and line up at the conveyor belt. Some filled tubes, others inserted rubber stoppers, sealed tubes, or stacked them inside a walk-in incubator where they stayed until being packaged for shipping.

Microbiological Associates' biggest customers were labs like NIH, which had standing orders for millions of HeLa cells delivered on set schedules. But scientists all over the world could call in orders, pay less than fifty dollars, and Microbiological Associates would overnight them vials of HeLa cells. Reader had contracts with several major airlines, so whenever he got an order, he'd send a courier with cells to catch the next flight out, then have the cells picked up from the airport and delivered to labs by taxi. Slowly, a multibillion-dollar industry selling human biological materials was born.

Reader recruited the top minds in the field to tell him what products they needed most and show him how to make them. One of the scientists who consulted for Reader was Leonard Hayflick, arguably the most famous early cell culturist left in the field today. When I talked with him he said, "Microbiological Associates and Sam Reader were an absolute revolution in the field, and I'm not one to use the word *revolution* lightly."

As Reader's business grew, demand for cells from Tuskegee plummeted. The NFIP closed its HeLa production center because places like Microbiological Associates now supplied scientists with all the

cells they needed. And soon, HeLa cells weren't the only ones being bought and sold for research—with media and equipment standardization, culturing became easier, and researchers began growing cells of all kinds. But none grew in quantities like HeLa.

As the Cold War escalated, some scientists exposed Henrietta's cells to massive doses of radiation to study how nuclear bombs destroyed cells and find ways to reverse that damage. Others put them in special centrifuges that spun so fast the pressure inside was more than 100,000 times that of gravity, to see what happened to human cells under the extreme conditions of deep-sea diving or spaceflight.

The possibilities seemed endless. At one point, a health-education director at the Young Women's Christian Association heard about tissue culture and wrote a letter to a group of researchers saying she hoped they'd be able to use it to help the YWCA's older women. "They complain that the skin and tissues of the face and neck inevitably show the wear and tear of years," she wrote. "My thought was that if you know how to keep tissue alive there must be some way of equalizing the reserve supply to the area of the throat and face."

Henrietta's cells couldn't help bring youth to women's necks, but cosmetic and pharmaceutical companies throughout the United States and Europe began using them instead of laboratory animals to test whether new products and drugs caused cellular damage. Scientists cut HeLa cells in half to show that cells could live on after their nuclei had been removed, and used them to develop methods for injecting substances into cells without destroying them. They used HeLa to test the effects of steroids, chemotherapy drugs, hormones, vitamins, and environmental stress; they infected them with tuberculosis, salmonella, and the bacterium that causes vaginitis.

At the request of the U.S. government, Gey took Henrietta's cells with him to the Far East in 1953 to study hemorrhagic fever, which was killing American troops. He also injected them into rats to see if they'd cause cancer. But mostly he tried to move on from HeLa, focusing instead on growing normal and cancerous cells from the same patient, so he could compare them to each other. But he couldn't escape

the seemingly endless questions about HeLa and cell culture from other scientists. Researchers came to his lab several times each week wanting to learn his techniques, and he often traveled to labs around the world to help set up cell-culture facilities.

Many of Gey's colleagues pressured him to publish research papers so he could get credit for his work, but he always said he was too busy. At home he regularly stayed up all night to work. He applied for extensions on grants, often took months to answer letters, and at one point continued to pay a dead employee's salary for three months before anyone noticed. It took a year of nagging from Mary and Margaret for George to publish anything about growing HeLa; in the end, he wrote a short abstract for a conference, and Margaret submitted it for publication. After that, she regularly wrote and submitted his work for him.

By the mid-fifties, as more scientists began working with tissue culture, Gey became weary. He wrote to friends and colleagues saying, "Someone should coin a contemporary phrase and say, at least for the moment, 'The world has gone nuts over tissue culture and its possibilities.' I hope that some of this hullabaloo over tissue culture has at least had a few good points which have helped others . . . I wish for the most part, however, that things would settle down a bit."

Gey was annoyed by the widespread fixation on HeLa. After all, there were other cells to work with, including some he'd grown himself: A.Fi. and D-1 Re, each named after the patient it came from. He regularly offered them to scientists, but they were harder to culture, so they never took off like Henrietta's cells. Gey was relieved that companies had taken over HeLa distribution so that he didn't have to do it himself, but he didn't like the fact that HeLa was now completely out of his control.

Since the launch of the HeLa production factory at Tuskegee, Gey had been writing a steady stream of letters to other scientists, trying to restrict the way they used Henrietta's cells. At one point he wrote his longtime friend and colleague Charles Pomerat, lamenting the fact that others, including some in Pomerat's lab, were using HeLa for

research Gey was "most capable" of doing himself, and in some cases had already done, but not yet published. Pomerat replied:

> With regard to your . . . disapproval for a wide exploration of the HeLa strain, I don't see how you can hope to inhibit progress in this direction since you released the strain so widely that it now can be purchased commercially. This is a little bit like requesting people not to work on the golden hamster! . . . I realize that it is the goodness of your heart that made available the HeLa cell and therefore why you now find that everybody wants to get into the act.

Pomerat suggested that Gey should have finished his own HeLa research before "releasing [HeLa] to the general public since once released it becomes general scientific property."

But Gey hadn't done that. And as soon as HeLa became "general scientific property," people started wondering about the woman behind the cells.

14

Helen Lane

So many people knew Henrietta's name, someone was bound to leak it. Gey had told William Scherer and his adviser Jerome Syverton in Minneapolis, plus the people at the NFIP, who'd probably told the team at Tuskegee. Everyone in the Gey lab knew her name, as did Howard Jones, Richard TeLinde, and the other Hopkins doctors who'd treated her.

Sure enough, on November 2, 1953, the *Minneapolis Star* became the first publication to name the woman behind the HeLa cells. There was just one thing—the reporter got her name wrong. HeLa, the story said, was "from a Baltimore woman named Henrietta Lakes."

No one knows who leaked the near-correct version of Henrietta's name to the *Minneapolis Star.* Soon after the article ran, Gey got a letter from Jerome Syverton, saying, "I am writing to assure you that neither Bill nor I provided the [*Minneapolis Star*] with the name of the patient. As you know, Bill and I concur in your conviction that the cell strain should be referred to as HeLa and that the patient's name should not be used."

Regardless, a name was out. And two days after it was published,

Roland H. Berg, a press officer at the NFIP, sent Gey a letter saying he planned to write a more detailed article about HeLa cells for a popular magazine. Berg was "intrigued with the scientific and human interest elements in such a story," he wrote, and he wanted to learn more about it.

Gey replied saying, "I have discussed the matter with Dr. TeLinde, and he has agreed to allow this material to be presented in a popular magazine article. We must, however, withhold the name of the patient."

But Berg insisted:

> Perhaps I should describe further to you my ideas on this article, especially in view of your statement that the name of the patient must be withheld. . . . To inform [the public] you must also interest them. . . . You do not engage the attention of the reader unless your story has basic human interest elements. And the story of the HeLa cells, from what little I know of it now, has all those elements. . . .
>
> An intrinsic part of this story would be to describe how these cells, originally obtained from Henrietta Lakes, are being grown and used for the benefit of mankind. . . . In a story such as this, the name of the individual is intrinsic. As a matter of fact, if I were to proceed with the task my plan would be to interview the relatives of Mrs. Lakes. Nor would I publish the story without the full cooperation and approval of Mrs. Lakes' family. Incidentally, you may not be aware, but the identity of the patient is already a matter of public record inasmuch as newspaper reports have completely identified the individual. For example, I can refer you to the story in the *Minneapolis Star,* dated November 2, 1953.
>
> I am entirely sympathetic to your reasons for withholding the name of the patient and thus prevent a possible invasion of privacy. However, I do believe that in the kind of article I am projecting there would be complete protection of the rights of all individuals.

Berg didn't explain how releasing Henrietta's name to the public would have protected the privacy or rights of her family. In fact, doing so would have forever connected Henrietta and her family with the cells and any medical information eventually derived from their DNA. That wouldn't have protected the Lackses' privacy, but it certainly would have changed the course of their lives. They would have learned that Henrietta's cells were still alive, that they'd been taken, bought, sold, and used in research without her knowledge or theirs.

Gey forwarded the letter to TeLinde and others at Hopkins, including the head of public relations, asking how they thought he should respond.

"I see no reason why an interesting story cannot be made of it without using her name," TeLinde replied. "Since there is no reason for doing it I can see no point in running the risk of getting into trouble by disclosing it."

TeLinde didn't say what "trouble" he worried they might get into by releasing Henrietta's name. Keeping patient information confidential was emerging as a standard practice, but it wasn't law, so releasing it wasn't out of the question. In fact, he wrote Gey, "If you seriously disagree with me in this, I will be glad to talk to you."

Gey wrote to Berg saying, "An interesting story could still be built around a fictitious name." But he wasn't entirely opposed to releasing her real name. "There may still be a chance for you to win your point," he wrote. "I fully realize the importance of basic human interest elements in a story such as this and would propose therefore that you drop down to see Dr. TeLinde and myself."

Gey never told Berg that the *Minneapolis Star* article had Henrietta's name wrong, and Berg never wrote his article. But the press wasn't going away. A few months later, a reporter from *Collier's* magazine by the name of Bill Davidson contacted Gey—he was planning to write a story identical to the one Berg had proposed. This time Gey

took a harder stance, perhaps because Davidson wasn't affiliated with one of Gey's major funding organizations, as Berg was. Gey agreed to be interviewed under two conditions: that he be allowed to read and approve the final article, and that the magazine not include the personal story or full name of the patient the cells came from.

The editor of the story balked. Like Berg, she wrote that "the human story behind these cells would be of great interest to the public." But Gey wouldn't budge. If she wanted him or any of his colleagues to talk with Davidson, *Collier's* would have to publish the article without the patient's name.

The editor eventually agreed, and on May 14, 1954, *Collier's* published a story about the power and promise of tissue culture. Watching HeLa cells divide on a screen, Davidson wrote, "was like a glimpse at immortality." Because of cell culture, he said, the world was "on the threshold of a hopeful new era in which cancer, mental illness and, in fact, nearly all diseases now regarded as incurable will cease to torment man." And much of that was thanks to cells from one woman, "an unsung heroine of medicine." The story said her name was Helen L., "a young woman in her thirties when she was admitted to the Johns Hopkins Hospital with an incurable cancer of the cervix." It also said Gey had grown Helen L.'s cells from a sample taken *after* her death, not before.

There's no record of where those two pieces of misinformation came from, but it's safe to assume they came from within the walls of Hopkins. As agreed, the *Collier's* editor had sent the story to Gey before publication for review. One week later she got a corrected version back from Joseph Kelly, the head of public relations at Hopkins. Kelly had rewritten the article, presumably with Gey's help, correcting several scientific errors but leaving two inaccuracies: the timing of growing the cells and the name Helen L.

Decades later, when a reporter for *Rolling Stone* asked Margaret Gey where the name Helen Lane came from, she'd say, "Oh, I don't know. It was confused by a publisher in Minneapolis. The name wasn't supposed to be revealed at all. It was just that somebody got confused."

One of Gey's colleagues told me that Gey created the pseudonym to throw journalists off the trail of Henrietta's real identity. If so, it worked. From the moment the *Collier's* article appeared until the seventies, the woman behind the HeLa cells would be known most often as Helen Lane, and sometimes as Helen Larson, but never as Henrietta Lacks. And because of that, her family had no idea her cells were alive.