

Modern Medicine: How Did We Get Here

By: Camille Amparo, sophomore majoring in Biological Sciences

In today's fast paced, technology-dependent society, it is more expected rather than anticipated for new discoveries to contribute to the advancement of peoples' lifestyle and overall health. However, most do not take the time to wonder about the origins or source of such new discoveries, not giving the subject more thought than where the food on their table came from. Yet the journey of how we got to where we are today is far more interesting than what many people may have imagined. And though the story of those involved may be overshadowed by the greater effects that their advancement had on people around the world, it should never be forgotten that even in the seemingly hardened world of science, there is an untold side waiting to be heard.

Searching for the Key

Though now it seems like it should be a relatively easy task to obtain human cells to study, just over 60 years ago, scientists were struggling to grow cells that could be used to further study diseases and develop possible treatments for them. Researchers were hoping to develop "immortal" cell lines, or human cells grown in a laboratory that can grow indefinitely and live on forever. The realization that the ability to study the cells outside of the body would give scientists the key to potentially developing treatments and preventative measures for diseases made the task of creating immortal cells a top priority. After decades of trying to develop these cells, scientists came upon a line of cells that would forever change the world of modern science and medicine.

Who was Henrietta Lacks?

In the early 1950s, a black tobacco farmer, Henrietta Lacks, was diagnosed with a severe case of cervical cancer at the age of 30. During treatment at John Hopkins Hospital in Baltimore, Maryland, a doctor took a sample of Lacks' tumor and without her consent, gave her cells to a group of scientists who had been trying unsuccessfully for years to grow human cells in culture. For some reason that remains unsolved to this day, Lacks' cells did not die, allowing them to be used to test the effect of various vaccines or treatments without having to experiment on a living human subject. With the ability to monitor the effects of various types of exposure on the body inside the laboratory, scientists were given an unparalleled opportunity to study the human body and further explore the complex world of cells that had not been able to fully understand before. Lacks' immortal cells, known to scientists as simply the HeLa cells, thus became an essential part of medical research. For example, HeLa cells played a critical role in



Henrietta Lacks and her husband prior to being diagnosed with cervical cancer in 1951.

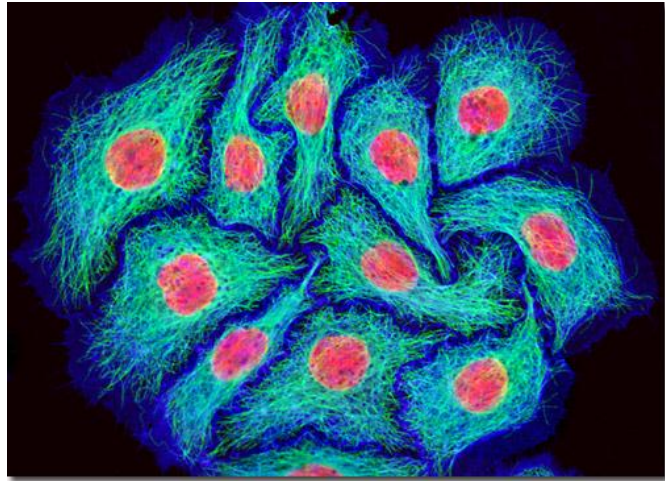
the developments of several vaccines, including the polio vaccine and helped scientists to successfully develop the methods of in vitro fertilization, gene mapping and even cloning.

The Unsung Hero

Despite the enormous impact that Lacks made on medicine and society as a whole, she was completely unrecognized as the source of the HeLa cells. For more than twenty years after they were first collected, the cells were being used by scientists around the world for various studies, yet the most they knew about the source of the cells was that the first two letters of her first name started with “h” and “e” and her last name started with “l” and “a.”

Not even Lacks’ family knew that parts of her were still very much alive in the laboratory, much less that her cells were contributing to some of the most innovative and important scientific research in history.

It wasn’t until scientists had realized that HeLa cells could easily spread through unwashed hands and through the air to contaminate other cells that Lacks’ family was notified of the work that had been conducted on her cells for more than two decades without anyone’s consent. The only way to distinguish the HeLa cells from



Sample of human cervical adenocarcinoma cells, HeLa cell line.

the cells that they had contaminated would have to be come through a comparison of the genetic makeup of the different cells. Hoping to use Lacks’ family members DNA in order to reconstruct a possible map of her genes, scientists had to give up one of the most significant secrets of science at the time.

Telling the Truth

When Lacks’ family was finally told of the work that had been done on her cells since her death, they were left with many questions: why hadn’t anyone told the Lacks family about the use of Henrietta’s cells once it had been discovered that they could serve as the immortal cell line that scientists had sought for years? Why hadn’t they received recognition or financial compensation especially when most of the Lacks’ family was living in extreme poverty and had little higher education? But most importantly, this controversy turned the spotlight on what would be one of the fundamental questions of bioethics: do we control what we are made of or do we relinquish that right to recognition and compensation to those that actually make the scientific discovery?

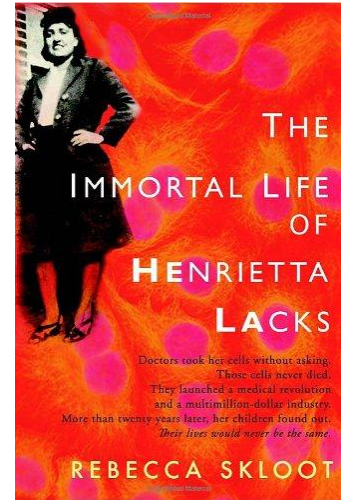
Other than being essential to the development of numerous vaccines and treatments, the HeLa cells began another revolution in the medical field by further blurring the lines between business and science. For example, a multimillion-dollar industry focused solely on selling human samples to be studied in the laboratory setting was born in the aftermath of the HeLa cells chaos. With the possibility that one of these samples may lead to a discovery as amazing as the HeLa cells, there seems to good reason to develop such an intense network of biological samples. However, with more money and an entire industry invested in such a prospect, the

interests of those involved just cannot be cast aside. And as history shows, protecting such interests may not always lead to what is best from a scientific perspective for the protection and non-exploitation of such samples and the sources they came from.

The Next Step

There is no doubt that as more complex discoveries and advancements are brought into our lives, the need to implement strict legislation concerning the legal rights of such discoveries will be more obvious. But Lacks' complicated and fascinating story should make everyone take a second to consider how far science and medicine have come and the limitless potential of the future discoveries thanks to the cells of one woman. Most importantly, people should realize that more power comes with more responsibilities. Though what those responsibilities are may not be clear just yet, we can be sure to find out soon enough.

For further information about Henrietta Lacks, her contribution to science and HeLa cells check your local library or bookstore for The New York Times Best Selling Novel, [The Immortal Life of Henrietta Lacks](#) by Rebecca Skloot.



Sources:

<http://www.smithsonianmag.com/science-nature/Henrietta-Lacks-Immortal-Cells.html#ixzz1nz7Z91uj>

<http://www.jhu.edu/jhumag/0400web/01.html>