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## 3[C] – Medical Research, Ethics, and HeLa Cells



During the 1930's and 40's, George Gey, like many medical researchers, was hunting for a cure for cancer. He became convinced the key to sustaining an effective research program lay in finding and propagating a type of human cell that would reproduce indefinitely in the laboratory. This would make possible a wide range of experiments that could not be conducted on cells in living subjects. Every attempt, however, ended in failure. Then in February 1951, a woman named Henrietta Lacks went to The John Hopkins Hospital in Baltimore, Maryland, complaining of pain and bleeding. She was diagnosed with cervical cancer, and some of her cancerous cells were removed and sent to Gey, who was now head of tissue research at the hospital. When Gey placed these cells in a solution, they behaved like no cells he had seen before. They grew prolifically. Gey had finally found the cell line for which he had been searching. Sadly, on October 4, the very day he appeared on television to announce his breakthrough, Henrietta died. Gey named the cells "HeLa" after their unwitting donor.



(38) What impact did the cells taken from Henrietta Lacks have on the work of George Gey?

1. They provided him with the ideal material on which to test his newly developed cancer therapies as they came from one of the most common forms of cancer.
2. They enabled him to fulfill his long-held wish to implement a research program using human cells that could multiply continually in artificial conditions.
3. They inspired him to reconsider the direction of his work and to focus on areas of medical search that did not involve cancer.
4. They helped him conduct safe experiments on patients in order to test possible cues for several well-known fatal diseases.

### Further Questions

1) What did George Gey feel was the key to sustaining an effective research program for a cure for cancer?

*He felt the key to sustaining an effective research program lay in finding and propagating a type of human cell that would reproduce indefinitely in the laboratory.*

2)How were Henrietta Lack's cancerous cells different from other cells?

*When Gey placed these cells in a solution, they behaved like no cell he had seen before. They grew prolifically.*

Gey's dream of finding a cure for cancer remained just that. Nevertheless, the HeLa cell line thrived and went on to contribute to many medical advances.

 

Gey shared his miraculous new cell line with other researchers, and soon it was being used in many different fields of research, including infertility treatment, cloning and AIDS. The most notable use of HeLa cells was in development of a polio vaccine. Since the 19th century, the polio virus had left many thousands of people, especially children, paralyzed. In 1954, HeLa cells were used in procedures that allowed scientists to identify and grow the polio virus strain that caused paralysis. Medical researcher Jonas Salk then used this information to develop a vaccine, which was subsequently tested on HeLa cells before being made available to the public. The cells also became important in industry, where they were used to test cosmetics and other materials as well as genetic research. All the while, Henrietta's children knew nothing of this. In fact, it was not until 1974 that they learned, by chance, of the amazing fate of their mother's cells. The wife of one of Henrietta's sons happened to meet a scientist at a party, who asked her whether she was related to Henrietta Lacks. When she said she was, the scientist revealed that her mother-in-law's cells were now ubiquitous in scientific laboratories around the world. She rushed home and informed her family who then contacted The John Hopkins Hospital.

(39) How were HeLa cells important in efforts to fight polio?
1. The cells were used both to cultivate a specific type of polio virus and to determine whether Jonas Salk's polio vaccine was effective.
2. Competition among scientists to develop a way of using the cells in a polio vaccine increased as a result of the cells being readily available..
3. The cells were particularly susceptible to the polio virus, so the effects of experimental vaccines could easily be observed when tested on them.
4. Before the 1950s, vaccines for polio were only safe for adults, but the use of HeLa cells allowed the development of an alternative that could be given to children.

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**Further Questions**

3) What was the most notable use of HeLa cells
*The most notable use of HeLa cells was in development of a polio vaccine.*
4) How did Henrietta's children learn about the fate of their mother's cells?
*The wife of one of Henrietta's sons met a scientists at a party and he revealed that her mother-in-law's cells were now ubiquitous in scientific laboratories.*

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By pure coincidence, researchers were already seeking Henrietta's surviving relatives. It was suspected that HeLa cells, which were difficult to keep isolated due to their resilience and prolific rate of reproduction, were contaminating other supposedly independent cell lines used in research. Many researchers believed the only way to determine the true extent of this contamination was to get detailed information about the source of HeLa cells, which meant obtaining blood samples from relatives of Henrietta. Under the pretense of concern about whether members of the family were at risk of developing cancer, researchers persuaded Henrietta's children to allow them to take blood samples. Once the samples had been taken, the family heard nothing more. For Ruth Faden,

 

professor of biomedical ethics and John Hopkins University, the case of HeLa cells raises two issues: “One is the question of consent, and the other is what, if anything, is morally or legally due to a person or their heirs if something of commercial value is developed from their cells.”

(40) Researchers at The John Hopkins Hospital were trying to contact Henrietta’s relatives because they

1. had been accused of unethical practices in their use of HeLa cells, and were pressured to obtain approval for further research from Henrietta’s family.
2. wanted to be certain no members of Henrietta’s family was at risk of developing the same type of cancer that killed her.
3. needed to start a new line of HeLa cells as Henrietta’s original cells had changed over time and become less suitable for use in medical research.
4. required cell samples from Henrietta’s family to help them understand the degree to which HeLa cells had invaded other cell lines.

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**Further Questions** eTOC English Teachers On Call

5) Why were the HeLa cells difficult to keep isolated?

*They were difficult to keep isolated due to their resilience and prolific rate of reproduction.*

6) What are the issues raised by the case of the HeLa cells?

*One is the question of consent and the other is what is morally or legally due a person or their heirs if something of commercial value is developed from their cells.*

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Both of these issues are more complicated than they appear. Today, unlike in the 1950s, the principle of “informed consent” has become widely recognized, yet this can be very hard to define because medical science is often too complicated for the average person to fully understand. An even more difficult issue is the fact that scientists cannot always know how samples may be used as research progresses. In the case of Henrietta, the samples were originally taken for purposes quite different from those that ultimately turned out to be important. It is the latter of the issues raised by Faden about which Henrietta’s family expressed the most concern. Desperately poor, they were shocked to learn that Henrietta’s cells had become the basis of a billion-dollar industry, in which they were sold to researchers for large sums of money. Many of the legal issues have yet to be settled, but some argue that donors of body tissue and genetic material are not due compensation because they inevitably benefit from the common public good brought by new medicines. Yet, in the case of Henrietta’s family—some of whom could not even afford medical insurance—this argument is hardly persuasive. As long as medical research disproportionately benefits the wealthy, it is hard to justify using the body tissues of poor people without offering payment.

(41) According to the author of the passage, what is one reason “informed consent” is such a complex issue?

 

1. It may be impossible for scientists to foresee all of the uses to which a particular tissue sample taken from a patient will be put.
2. Attempts to explain medical information can indirectly harm patients as a lack of understanding may discourage them from seeking further treatment.
3. Over the past 50 years, there had been an increase in cases where tissue samples have been taken from patients in a way that damages their health.
4. Some patients in need of money may take advantage of the principle in order to profit from allowing researchers to take and use their body tissues.

## Further Questions

7) What principle was not recognized in the 1950s, but is recognized today?
*The principle of "informed consent" has become widely recognized.*
8) Why is the argument that donors of body tissues and genetic material not due compensation because they benefit from the common good?
*Henrietta's family is so poor that many cannot even afford medical insurance.*

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