

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

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