

HeLa at 70: on honouring the legacy of Henrietta Lacks

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The 4th of October 2021 signified 70 years since the untimely death of Henrietta Lacks, a daughter, wife and mother. On the same day, the University of Bristol unveiled a statue of Henrietta that sits in the heart of its campus in Royal Fort Gardens, by local artist Helen Wilson-Roe. The unveiling came amidst a year of celebratory events for the legacy of a woman whose contribution to science is, in many ways, unrivalled. To many cell biologists, Henrietta Lacks is a household name; however, to the general public her name remains largely unknown. So, who is Henrietta Lacks? And why are the Lacks family and their family-led HELA100 initiative working in collaboration with the University of Bristol to honour her legacy?

Who is Henrietta Lacks?

Henrietta was a family-oriented woman, hard working, loving, generous and kind. A woman who didn't have a lot, but always shared what she did have. Henrietta was born Loretta Pleasant as one of 10 children and went on to have 5 children: Lawrence, Elsie, David, Deborah and Joseph (Zakariyya), with her husband, David 'Day' Lacks. To her loved ones she was 'Hennie', a woman who loved her children, dancing, cooking, horse riding and fashion. Originally from Roanoke, Virginia, Henrietta and Day moved to Baltimore in 1941, so that Day could work at Bethlehem Steel, Maryland. A few months after the birth of Zakariyya, Henrietta was diagnosed with a rare aggressive form of cervical cancer in Johns Hopkins Hospital, in the one ward in the one hospital in the region that would treat African American patients. On 8 February 1951, with informed consent not yet established, unbeknown to Henrietta or her family, two biopsies were removed within the hospital: one of

healthy tissue and one from the tumour. The tumour cells were the first human cell line to survive and multiply indefinitely in a laboratory setting. The cancer killed Henrietta a mere 8 months later, aged just 31. On 4 October 1951, the same day as Henrietta's death, Johns Hopkins held a press conference to announce to the world that they had the first human immortal cell line, named HeLa, the Lacks family remaining unaware of this cell line, and its use, until 1975.

The impact of HeLa cells

In cell biology, it is advantageous to have minimal genetic variability, allowing experiments to be repeated and results shared and compared with findings from other laboratories. Human cells tended to last for a finite time in a laboratory culture, before dying. The discovery of a human cell line that could grow, divide and multiply indefinitely in laboratory conditions changed the course of biomedical research, opening the door to numerous studies, experiments and investigations. Within a few years, the cell line had been distributed world-wide for testing and treatment.

Over the past 70 years, the cells have been used extensively in research, responsible for some of the most significant discoveries, from the development of the polio vaccine by Dr Jonas Salk in 1953, to chemotherapy, *in vitro* fertilization, the HPV vaccine, research into HIV/AIDS and, more recently, studies on SARS-CoV-2, the virus responsible for the COVID-19 pandemic. HeLa cells were also sent into space twice in the 1960s, to determine the effects of zero gravity on human cells, have been used to deduce the effects of radiation and toxins and in gene mapping. Several Nobel Prizes awarded are for studies that have used HeLa cells, the most recent of these being jointly awarded in 2021 for Physiology



Figure 1. *More than a cell*, statue of Henrietta Lacks (1920–1951) by Helen Wilson-Roe, 2021, in Royal Fort Garden, Bristol, UK. Image credit: University of Bristol

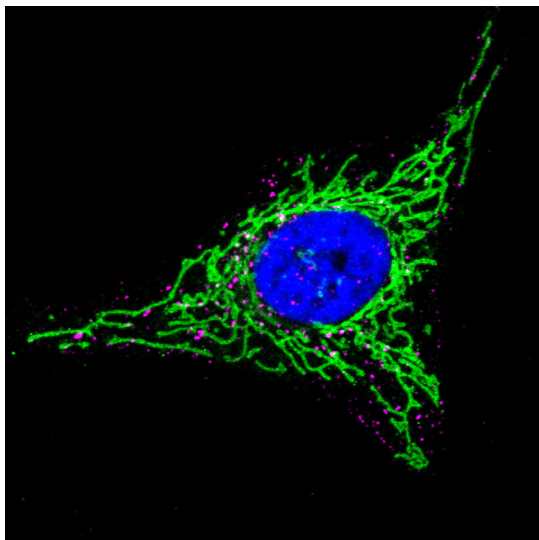


Figure 2. HeLa cell stained for mitochondria and endosomes. *Image credit: Dr James Daly, School of Biochemistry, University of Bristol*

or Medicine to professors David Julius and Ardem Patapoutian, with Patapoutian using HeLa cells in his work researching biological receptors for temperature

and touch.¹ To this day, they are used extensively around the world, playing a vital role in the study of diseases such as meningitis, Parkinson’s disease and many more, with a PubMed search showing that, since 1953, there have been over 116,000 published papers that use HeLa cells.² It is likely that many more exist without citation.

Although undeniably impactful, the use of HeLa cells raises important ethical debates about the use of cell lines for research. Henrietta Lacks’ story has certainly contributed to the introduction of informed consent for the use of tissue from patients, but it also adds to the mistrust many black patients have with healthcare systems, following years of racial segregation, bias, racism and mistreatment – a healthcare inequity that still exists today. For example, in the UK, maternal deaths are five times higher for black mothers than mothers from white ethnic backgrounds.³

The importance of representation

The lack of diversity within higher education in the UK, particularly in Science, Technology, Engineering and Maths (STEM) subjects, remains an issue. Latest statistics show that, within UK universities, only 6.2% of UK-domiciled

Henrietta Lacks: The Mother of Modern Medicine

- TREATMENTS
- VACCINES
- RESEARCH ADVANCEMENTS

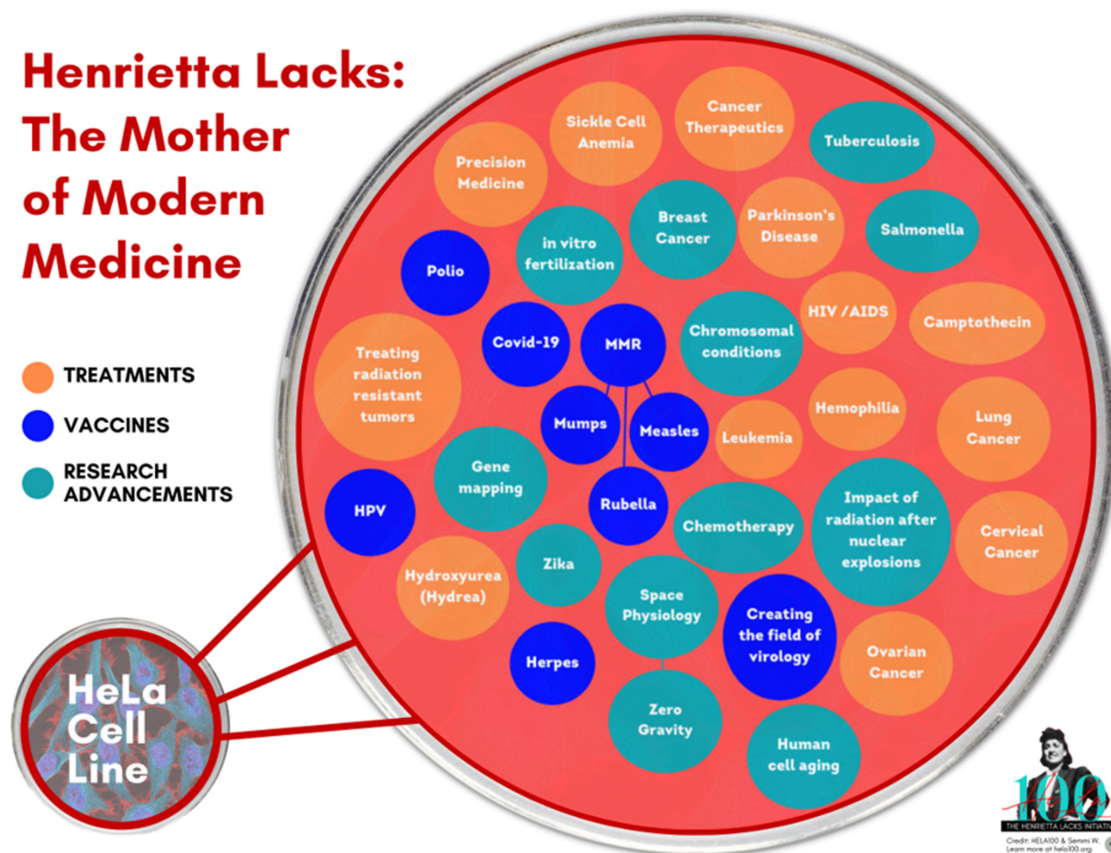


Figure 3. Henrietta Lacks: the mother of modern medicine – HeLa cell line impact. Credit: HELA100 and Semmi W.

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CELEBRATING THE MOTHER OF MODERN MEDICINE

HELA100 HONOURS HENRIETTA LACKS' LEGACY THROUGH 4 OBJECTIVES

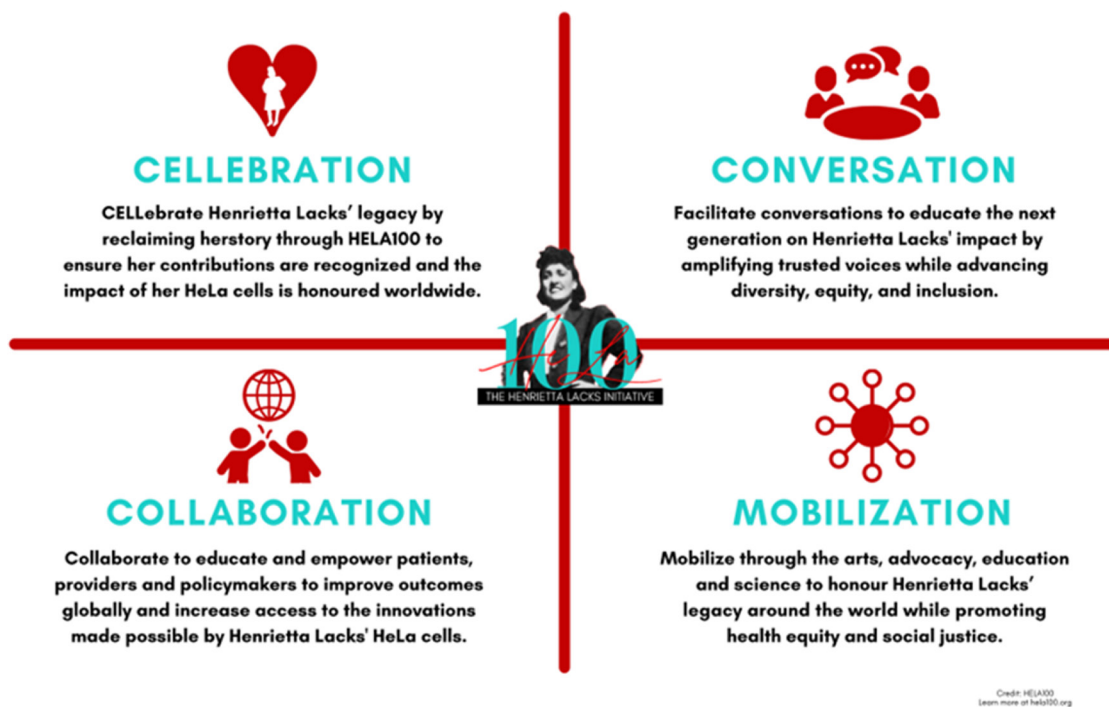


Figure 4. CELEbrating the mother of modern medicine – HELA100 honours Henrietta Lacks' legacy through four objectives.

Credit: HELA100



Figure 5. Members of the Lacks family at the launch of the HELA100 Worldwide Tour – the unveiling of the statue of Henrietta Lacks, by Helen Wilson-Roe, Bristol, UK (L–R Alan Wilks, Pam Wilks, Jeri Lacks-Whye, Lawrence Lacks, Sr, Veronica Robinson, Victoria Baptiste). Image credit: The Lacks family

students enrolled in STEM subjects are black (4.8% black African, 1.2% black Caribbean, 0.2% black Other).⁴ Within the Faculty of Life Sciences at the University of Bristol, the intake of black UK-domiciled undergraduate students for academic year 2020–2021 was 2.6%, which does not reflect the population within the city, where the 2021

census calculated the population to be 6% black (2.8% black African, 1.6% black Caribbean, 1.6% black Other).⁵ For students who do go on to higher education, disparities exist between black and white students with respect to degree outcome, known as the awarding gap. In 2020, Advance HE found the awarding gap of students qualifying with a first/2:1 degree was particularly pronounced for qualifiers from a black African (23.3 percentage points), black Caribbean (19.2 percentage points) and other black background (24.4 percentage points) compared to white qualifiers. Reasons for this include the lack of representation on campus, with only 0.6% of UK professors being black, resulting in an absence of a sense of belonging.⁶ Black students are less likely to continue to post-graduate study, or progress through the academic pipeline. The problem of a lack of diversity doesn't start with higher education, but within schools. In 2017, the Runnymede Trust published a report highlighting the chronic shortage of black and minoritized ethnic (BME) teachers in relation to the BME pupil population, with the most pronounced difference being in Newcastle-Upon-Tyne and South Tyneside, where the proportion of BME pupils was up to eight times more than BME teachers in the area.⁷ It is imperative that we redress the observed imbalances within education, healthcare inequity and society.

The future

On 1 August 2020, in honour of Henrietta Lacks' 100th birthday, the Lacks family launched the HELA100 Centennial CELLebration. This year HELA100: The Henrietta Lacks Initiative commemorates 70 years since Henrietta Lacks' HeLa cells changed the world and her untimely death on 4 October 1951. To advance their objectives, the Lacks family has mobilized the HELA100 Worldwide Tour to educate the next generation on Henrietta Lacks' contributions and to honour her impact through collaboration, as reflected in Figure 4.

Henrietta Lacks' eldest son, Lawrence Lacks, Sr, and his family proudly began their HELA100 Worldwide Tour with the historic statue unveiling at the University of Bristol. Diverse Bristolian dignitaries, campus leaders, students, artists and community members gathered to celebrate the first public sculpture of a black woman made by a black woman in the UK. This statue of Henrietta Lacks embodies a way forward – demonstrating the acknowledgement and representation of black people's invaluable contributions to science, medicine, the arts and beyond.

The Lacks family, HELA100 team and the University of Bristol aim to continue this project with a collaborative focus on the education of younger generations, focusing on the positive aspects of Henrietta's scientific contribution to the world, while also advancing health equity.⁸ Within the university there will be free in-person science visits for Key Stage 4 and 5 pupils, visits to schools and further education resources for all Key Stages created, to be distributed to both primary and secondary schools. The university's Faculty of Life Sciences has been working with students and staff to look at how it can diversify its teaching curriculum with one focus being to highlight previously overlooked figures, which will include Henrietta Lacks and the important ethical issues and debates that are part of her story. The university has also announced the launch of the Henrietta Lacks Studentship, a 6-week paid summer internship for an undergraduate student of black heritage to work in its laboratories on cell biology, to start tackling the loss of diversity between undergraduate and postgraduate study. Continuing to spread the positive message from the Lacks family worldwide will ensure that the role of the HeLa cell line within some of the greatest scientific

advancements of the century, their continued benefit to humanity and the name of their wife, mother and grandmother will never be forgotten – Henrietta Lacks.

Authors

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