

Reasons human cells are used in vaccine research and development:

- To develop a vaccine that can be produced on a large scale, researchers must **grow viruses or bacteria in large quantities** and with great consistency.
- Bacteria can be grown in a laboratory, but **viruses need living cells to infect so they can make copies of themselves**.
- Viruses tend to grow **better in cells from humans** than those of other animals.
- Human cells can be maintained for long periods of time at low temperatures, enabling scientists to use the same **cell lines from many decades ago**.



No additional or “new” human tissue or cells are needed to produce life-saving vaccines.

- Once cells are prepared from their original source, they **can be maintained indefinitely in the laboratory** through a process referred to as “cell culture” or “cell passage.”
- Human cells obtained from the early 1960s and 1970s **have grown in the laboratory and are used to make some vaccines today**.



Two main human cell lines have been used to develop some currently available vaccines.

- The “WI-38” cell line was developed in 1962 in the United States.
- The “MRC-5” cell line was developed in 1970 at the Medical Research Center in the United Kingdom.
- **Two fetuses obtained** from abortions that occurred by maternal choice – one in England, one in Sweden – **are the source of the human cell lines** used in vaccine development. Neither abortion was performed for the purpose of vaccine development.



Vaccines do not contain aborted fetal tissue.¹

- **Laboratory-grown cells** from cell cultures are used in the manufacturing process, not human tissue.
- During the purification process, the **vaccine material is carefully separated** from the cells in which it was grown.



Human cell DNA is not contained in final vaccine preparations (the vaccine in the vials or syringes given to vaccine recipients).²

- Vaccine viruses are **purified during vaccine production**, leaving only highly fragmented and minimal components of DNA (only present in picogram quantities).
 - A picogram is one-trillionth of a gram (0.000000000001).
- The small amount of fragmented material is **not able to cause damage or interact with our own DNA**.



Vaccines developed using the WI-38 or MRC-5 human cell lines.³

- **Hepatitis A** vaccines
- **Rubella** (also known as German measles) vaccine
- **Varicella** (chickenpox) vaccine
- **Zoster** (shingles) vaccine
- One of the **COVID-19** vaccines (viral vector vaccine)
- **Adenovirus** Type 4 and Type 7 oral vaccine*
- **Rabies** vaccine*

* Vaccine not routinely given



The use of human cell lines is not limited to certain vaccines.⁴

- Human cell lines are used to test and develop many common over-the-counter and prescribed medications, including antacids and cold medications:
 - Over-the-counter pain relievers like **Tylenol (acetaminophen)**, **Advil/Motrin (ibuprofen)**, and **Aleve (naproxen)**
 - Prescription drugs like **Lipitor**, **albuterol**, **Prilosec OTC**, **azithromycin**, **hydroxychloroquine** and **ivermectin**



¹ Children's Hospital of Philadelphia, Vaccine Education Center. Q&A Vol 1, Summer 2022 DNA, Fetal Cells & Vaccines: What You Should Know

² Ibid.

³ History of Vaccines. Human Cell Strains in Vaccine Development. How Cell Cultures Work. <https://historyofvaccines.org/vaccines-101/how-are-vaccines-made/human-cell-strains-vaccine-development>

⁴ https://www.health.nd.gov/sites/www/files/documents/COVID%20Vaccine%20Page/COVID-19_Vaccine_Fetal_Cell_Handout.pdf