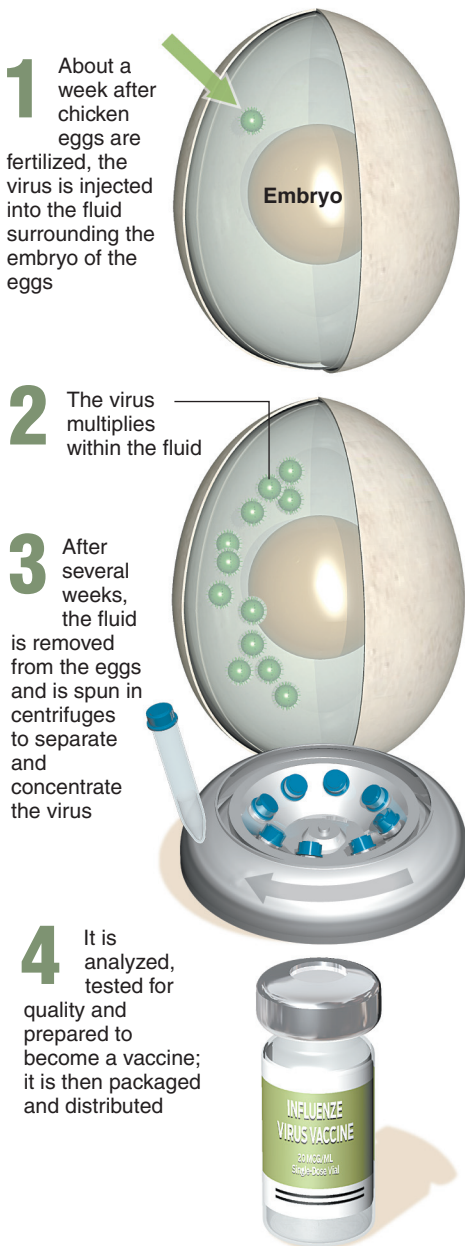


Expediting production of a vaccine

Drugmakers around the world have received or are awaiting strains of the H1N1 swine flu virus to begin making a vaccine. The urgency of the situation provides an opportunity for companies to further develop a relatively new cell-based method of creating vaccines, which can potentially reduce the amount of time it takes to bring the product to market.

Egg-based

Production time: 20-28 weeks



1 About a week after chicken eggs are fertilized, the virus is injected into the fluid surrounding the embryo of the eggs

2 The virus multiplies within the fluid

3 After several weeks, the fluid is removed from the eggs and is spun in centrifuges to separate and concentrate the virus

4 It is analyzed, tested for quality and prepared to become a vaccine; it is then packaged and distributed

Advantages

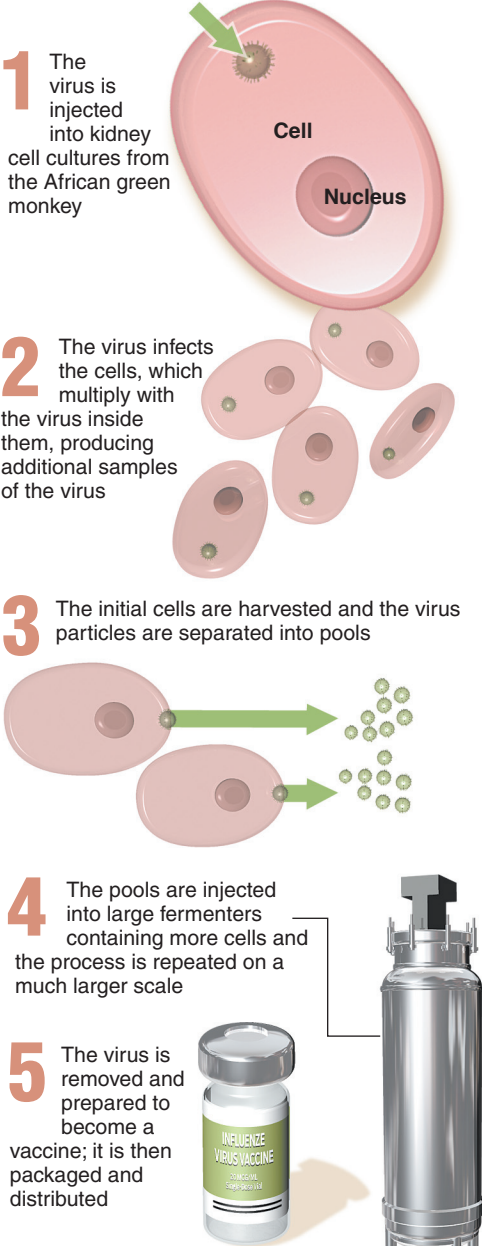
- A well-established method for vaccine production
- Relatively inexpensive

Disadvantages

- Requires large amounts of eggs that are not produced on demand (a single vaccine dose requires 1-2 eggs)
- Extensive planning and preparation can limit the effectiveness on quickly-developing viruses

Cell-based

Production time: 12-15 weeks



1 The virus is injected into kidney cell cultures from the African green monkey

2 The virus infects the cells, which multiply with the virus inside them, producing additional samples of the virus

3 The initial cells are harvested and the virus particles are separated into pools

4 The pools are injected into large fermenters containing more cells and the process is repeated on a much larger scale

5 The virus is removed and prepared to become a vaccine; it is then packaged and distributed

Advantages

- Faster method, which could result in creating vaccines in time to prevent the spread of the virus
- Avoids potential impurities that can occur in the egg-based method

Disadvantages:

- High initial costs to set up the process
- Still unestablished; no cell-based vaccine has been approved by U.S. regulators for commercial use