How Did the COVID-19 Vaccine Get Developed So Quickly?



ct.gov/covidvaccine

These mRNA vaccines are a result of decades of work.

- · Lessons learned from earlier vaccine research informed strategies for developing COVID-19 vaccines.
- Severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) are two diseases caused by coronaviruses closely related to the virus that causes COVID-19. Researchers began working on developing vaccines for these diseases after they were discovered in 2003 and 2012, respectively.
- · None of the SARS vaccines ever made it past the first stages of development and testing, in large part because the virus disappeared. One MERS vaccine (MVA-MERS-S) successfully completed a phase 1 clinical trial in 2019.
- mRNA vaccines have been studied before for flu. Zika, rabies, and cytomegalovirus (CMV).
- As soon as the genetic code became available for SARS-CoV-2 (the virus that causes COVID-19), scientists began designing the mRNA for the vaccine, which provides instructions for cells to build the unique spike protein for SARS-CoV-2,

The typical FDA process for vaccine development was followed:

Research and **Discovery Stage**

Scientists conduct laboratory research to test their idea for a vaccine candidate. Started before COVID-19.

Pre-Clinical

Laboratory research and testing in animals to obtain information about how the vaccine works and whether it's likely to be safe and work well in humans, Started before COVID-19.

Phase 1 Trial

Emphasis on safety. Generally includes 20-100 volunteers who haven't been exposed to the disease.

Phase 2 Trial

Randomized controlled studies with more people. Various dosages are tested on 100s of people, typically with varying health statuses and from different demographic groups.

Phase 3 Trial

Vaccine is administered to thousands of people, generating critical information on effectiveness and additional safety data.

License **Application** to the FDA

After its evaluation, FDA decides whether to approve/ authorize the vaccine for use in the United States.

Learn more, read the COVID-19 vaccine's path to authorization: www.fda.gov/media/143890/download

Getting vaccinated is one of many steps you can take to protect yourself and others from COVID-19.

For some people, COVID-19 can cause severe illness or death. Getting vaccinated not only protects you from COVID-19, it also protects those around you by preventing its spread. Stopping a pandemic requires using all the prevention tools available. Vaccines work with your immune system so your body will be ready to fight the virus. Other steps, like masks and social distancing, help reduce your chance of being exposed to the virus and spreading it to others. Together, COVID-19 vaccination and following CDC's recommendations to protect yourself and others will offer the best protection from COVID-19.

- www.cdc.gov/coronavirus/2019-ncov/vaccines/faq.html
- www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/mRNA.html
- www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/how-they-work.html
- www.fda.gov/vaccines-blood-biologics/development-approval-process-cber/vaccine-development-101



