

Emergency Management Office



COVID-19 mRNA vaccines will go through the same rigorous safety assessment as all vaccines before they are given **Emergency Use Authorization (EUA)**

by the **Food and Drug Administration (FDA)**.

This includes large clinical trials and data review by a safety monitoring board.

mRNA vaccines are not live vaccines and do not use an infectious element, so they carry no risk of causing

**COVID-19 Vaccines Will Be Safe!**



**"We are committed to expediting the development of COVID-19 vaccines, but not at the expense of sound science and decision making. We will not jeopardize the public's trust in our science-based, independent review of these or any vaccines. There's too much at stake."**

Stephen M. Hahn, M.D.,  
FDA Commissioner, and  
Peter Marks, M.D., Ph.D.,  
Director, Center for  
Biologics Evaluation and  
Research

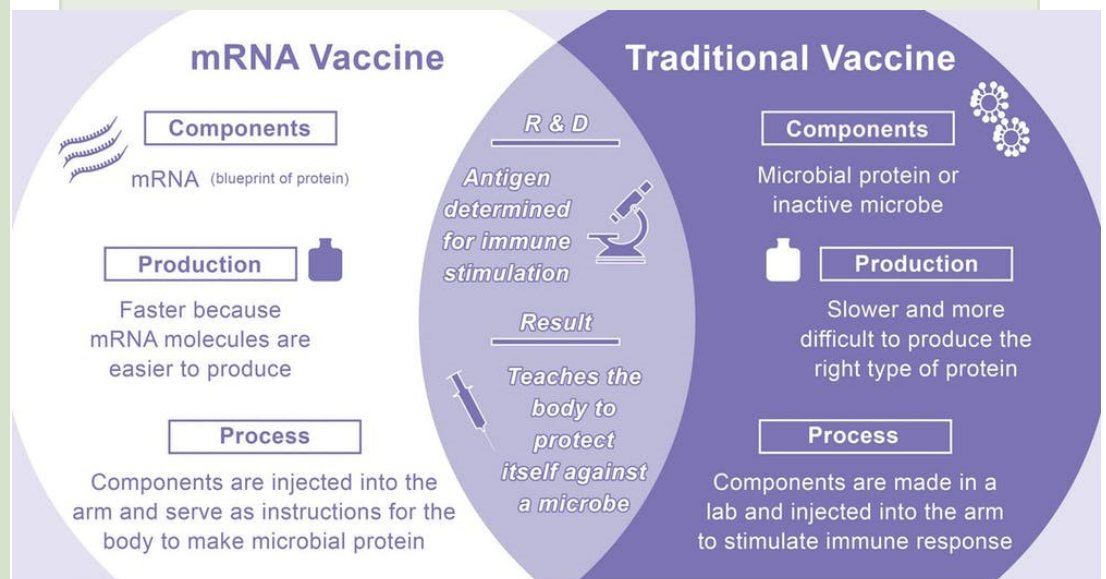
## How COVID-19 Vaccines Work

Vaccines train the immune system to recognize the disease-causing part of a virus. Vaccines traditionally contain either weakened viruses or purified signature proteins of the virus.

But an mRNA vaccine is different, because rather than having the viral protein injected, a person receives genetic material – mRNA – that encodes the viral protein. When these genetic instructions are injected into the upper arm, the muscle cells translate them to make the viral protein directly in the body.

This approach mimics what the SARS-CoV-2 does in nature – but the vaccine mRNA codes only for the critical fragment of the viral protein. This gives the immune system a preview of what the real virus looks like without causing disease. This preview gives the immune system time to design powerful antibodies that can neutralize the real virus if the individual is ever infected.

While this synthetic mRNA is genetic material, it cannot be transmitted to the next generation. After an mRNA injection, this molecule guides the protein production inside the muscle cells, which reaches peak levels for 24 to 48 hours and can last for a few more days.



Vanderbilt Vaccine Research Program | Vanderbilt Institute for Infection, Immunology and Inflammation

## Why is making an mRNA vaccine so fast?

Traditional vaccine development, although well studied, is very time-consuming and cannot respond instantaneously against novel pandemics such as COVID-19. For example, for seasonal flu, it takes roughly six months from identification of the circulating influenza virus strain to produce a vaccine.

mRNA molecules are far simpler than Microbial proteins used for traditional vaccines.. For vaccines, mRNA is manufactured by chemical rather than biological synthesis, so it is much quicker than conventional vaccines to be redesigned, scaled up and mass-produced.

In fact, within days of the genetic code of the SARS-CoV-2 virus becoming available, the mRNA code for a candidate vaccine testing was ready. What's most attractive is that once the mRNA vaccine tools become viable, mRNA can be quickly tailored for other future pandemics.