

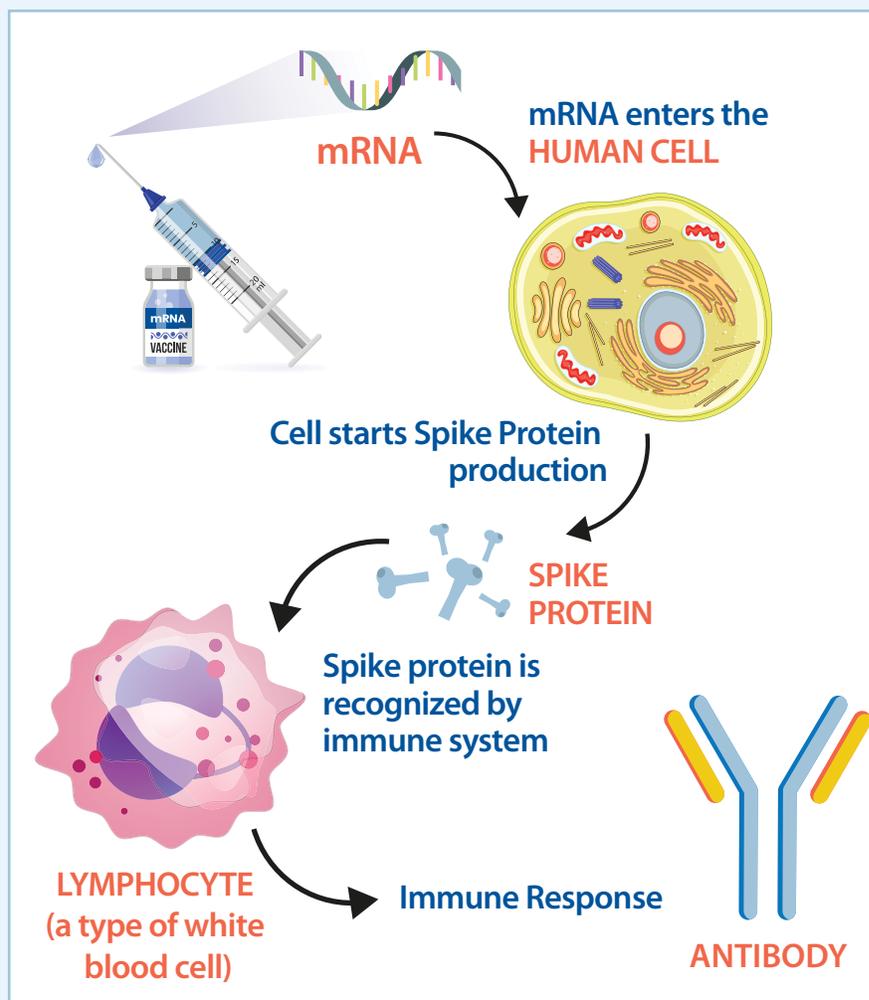
# What are mRNA COVID-19 Vaccines?

**Messenger RNA (mRNA) vaccines are a new type of vaccine that teaches our cells how to make a protein that triggers an immune response inside our bodies.**

mRNA is genetic material that tells our bodies how to make proteins. The mRNA vaccine is made of mRNA wrapped in a coating that makes delivery easy and keeps the body from damaging it. The immune response to the vaccine produces antibodies that protect us from getting infected if the real virus enters our system.

## How the mRNA Vaccines Work Against COVID-19

1. COVID-19 mRNA vaccines give instructions for our cells to make a harmless piece of "spike protein." After the protein piece is made, the cells break down the instructions and remove them.
2. The cells display the protein piece on their surface. Our immune systems recognize the protein should not be there and begin building a response and making antibodies. This is similar to what happens if we are infected with the COVID-19 virus.
3. At the end of this process, our bodies have learned how to protect against future infection. The benefit of mRNA vaccines is that when we are vaccinated, we gain protection without ever having to risk getting sick from the actual virus.



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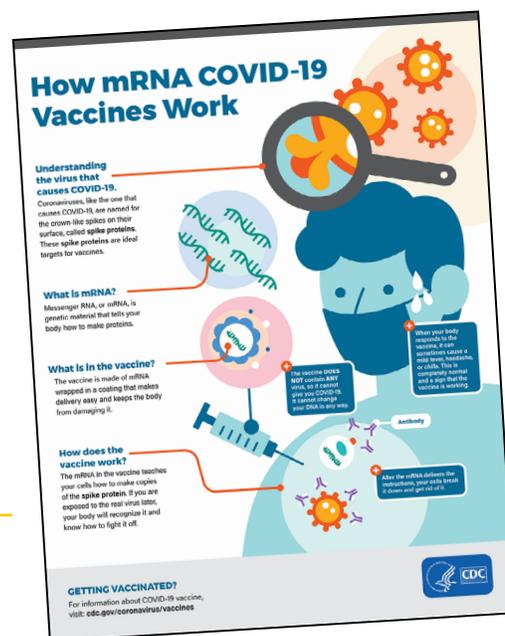
Tom Frieden, MD, an infectious disease and public health physician and former Director of the Centers for Disease Control and Prevention (CDC), shared the following on how the mRNA vaccines work:

“ An mRNA vaccine doesn’t actually contain the virus itself. Think of it as an email sent to your immune system that shows what the virus looks like, instructions to kill it, and then – like a Snapchat\* message – it disappears. Amazing technology. ”

The COVID-19 virus—called SARS-CoV-2 by scientists—is similar to other coronaviruses called SARS and MERS. Scientists had already worked on vaccines for those coronaviruses. That previous research gave scientists a head start on developing COVID-19 vaccines. Because COVID-19 caused a pandemic, many countries dedicated a large amount of resources toward finding a vaccine. Also, many private citizens wanted to help, so enrollment in COVID-19 vaccine trials happened rapidly. These factors allowed for rapid but safe development and approval of the COVID-19 vaccines.

This [infographic](#)<sup>1</sup> from the Centers from Disease Control and Prevention (CDC) is also helpful in understanding how the mRNA vaccines work.

You can find additional information and resources on the [\(CDC\) website](#).<sup>2</sup>



\*SnapChat is a mobile application that people use to share pictures and message that are only available for a short time before they disappear.

1. [https://www.cdc.gov/coronavirus/2019-ncov/downloads/vaccines/COVID-19-mRNA-infographic\\_G\\_508.pdf](https://www.cdc.gov/coronavirus/2019-ncov/downloads/vaccines/COVID-19-mRNA-infographic_G_508.pdf)
2. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/index.html>