

COVID-19 Vaccines

Background: How does the body fight virus infections?

The body mounts an immune response against viruses in two main ways:

1. Antibodies block the virus to prevent infection.
2. T cells help control the infection by attacking the proteins from the virus.

How do COVID-19 vaccines work?

- The 3 vaccines awaiting approval (as of 11/30/2020) all **teach the body to mount an immune response against the virus' spike protein**. The virus uses this protein on its surface to enter human cells.
- When you get vaccinated, there will be spike proteins in your body. The immune system will then produce antibodies that bind to the spike protein.
- Vaccination also generates a T-cell response against the spike protein. People with antibody deficiencies still benefit through the T-cell response.
- After getting the vaccine, if you are exposed to the real virus, your body will recognize the spike protein and battle the virus more efficiently.

What are the differences between the vaccines?

- **RNA vaccines** (Pfizer-BioNTech, Moderna)
 - The RNA tells your body how to make a part of the virus' spike protein, and your immune system respond against it.
 - This new type of vaccine requires very cold storage: -75C (-103F) for Pfizer-BioNTech's version, and -20C (-4F) for Moderna's
- **Adenoviral vaccine** (Astra Zeneca Oxford)
 - The vaccine virus in this vaccine carries the DNA that makes the spike protein.
 - The vaccine virus here cannot replicate and is safe for people with immune deficiencies.
 - The vaccine can be stored at 2 to 8C (36 to 46F), making it easier to ship and distribute.

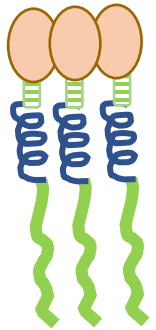
When can I get vaccinated against COVID-19?

- **Adults:** Each state has different plans. Healthcare workers, first responders, and high risk individuals will likely be vaccinated before the vaccine is available to everyone else.
- **Children:** No studies have tested whether the vaccines are safe and effective in children. These studies must be done before the vaccines can be approved for use in children.

Are the vaccines safe for people with immune deficiencies?

- These three vaccines contain no virus capable of causing disease, so they are safe for people with immune deficiencies.

For more info about the immune system and vaccines, please watch the [July 17](#) and [November 25](#) videos from the [Immune Deficiency Foundation](#).



The spike protein.

To see how the virus uses the spike protein to enter human cells, check out Figure 1 of [Structural and functional properties of SARS-CoV-2 spike protein: potential antiviral drug development for COVID-19](#)