THE IMMUNE SYSTEM—THE BODY’S DEFENSE AGAINST INFECTION

To understand how COVID-19 vaccines work, it helps to first look at how our bodies fight illness. When germs, such as COVID-19, invade our bodies, they attack and multiply. This invasion, called an infection, is what causes illness. Our immune system fights the infection with white or immune cells found in our blood. Different types of white blood cells fight infection in different ways:

- Macrophages are white blood cells that swallow up and digest germs and dead or dying cells. The macrophages leave behind parts of the invading germs called antigens. The body identifies antigens as dangerous and stimulates antibodies to attack them.
- B-lymphocytes are defensive white blood cells. They produce antibodies that attack the pieces of the virus left behind by the macrophages.
- T-lymphocytes, called memory cells, are another type of defensive white blood cell. They attack cells in the body that have already been infected.

The first time a person is infected with the virus that causes COVID-19, it can take several days or weeks for their body to make and use all the germ-fighting tools needed to get over the infection. After the infection, the person’s immune system remembers what it learned about how to protect the body against that disease. The body keeps a few T-lymphocytes that go into action quickly if the body encounters the same virus again. When the familiar antigens are detected, B-lymphocytes produce antibodies to attack them. Experts are still learning how long these cells protect a person against COVID-19.

HOW COVID-19 VACCINES WORK

COVID-19 vaccines help our bodies develop immunity to the virus that causes COVID-19 without us having to get the illness. Different types of vaccines work in different ways, but all types of vaccines equip the body with a supply of T- and B-lymphocytes that remember how to fight the virus in the future.

After vaccination, it can take several weeks for the body to produce these lymphocytes. It is still possible to become infected with COVID-19 just before or just after vaccination because the vaccine did not have enough time to build up protection.

Some people experience fever or other symptoms after receiving the vaccination. These symptoms are normal and are a sign that the body is building immunity.

There are three vaccines currently available in the U.S. Pfizer-BioNTech and Moderna require two shots. Johnson and Johnson requires only one shot.

TYPES OF VACCINES

Currently, there are three vaccines that have received approval in the U.S. None of these vaccines can give you COVID-19.

- mRNA vaccines: The Pfizer-BioNTech and Moderna vaccines are this type. It gives cells instructions to make a harmless protein that is unique to the virus. Our bodies recognize the protein should not be there and build T- and B-lymphocytes that remember how to fight the virus in the future.
- Viral Vector vaccine: The Johnson and Johnson vaccine is this type. It contains a weakened version of a live virus – different from the one that causes COVID-19 – with genetic material from the COVID-19 virus inserted in it. Once the viral vector is inside our cells, it gives instructions to make a harmless protein that is unique to the virus. Our bodies recognize the protein should not be there and build T- and B-lymphocytes that remember how to fight the virus in the future.

This information is intended to provide a general overview of COVID-19 information. The coronavirus pandemic is an ongoing and rapidly developing situation, information will be updated as more information becomes available. To do additional research, please use trusted and verified sources like www.COVID-19.Alaska.gov, COVIDvax.alaska.gov, or www.cdc.gov or email COVID19Vaccine@Alaska.gov.

Effective March 2, 2021. Information is subject to change.