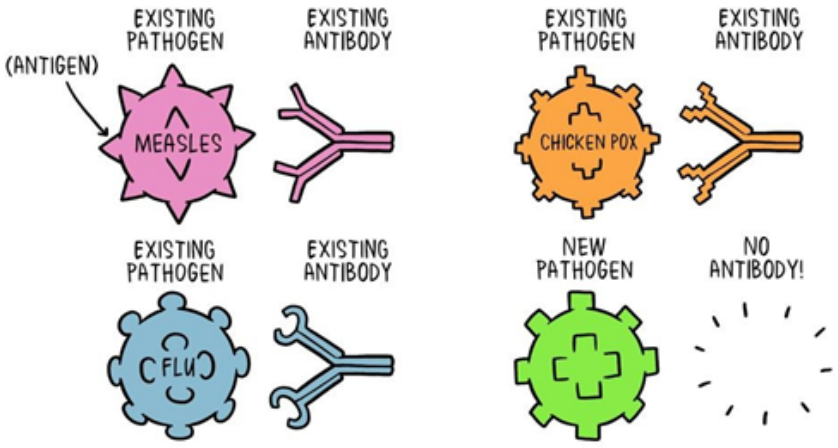
Understanding Our Body's Immune Response

A **pathogen** is a bacterium, virus, parasite or fungus that can cause disease within the body. When a pathogen infects the body, our body's defenses, called the immune system, are triggered and the pathogen is attacked and destroyed or overcome.

Each pathogen is made up of several subparts, usually unique to that specific pathogen and the disease it causes. One subpart is called an antigen. An **antigen** is a molecular structure on the outside of a pathogen.

For each antigen our body produces an **antibody.** Antibodies are the soldiers in your body's immune system. Each antibody, or soldier, in our system is trained to recognize one specific antigen and attack it to help destroy the pathogen.



When a new pathogen or disease enters our body, it introduces a new antigen.

For every new antigen, our body needs to build a specific antibody that can grab onto the antigen and defeat the pathogen.

Our body also creates memory of this immune response, so if the body is exposed to the same pathogen in the future, the antibody response is much faster and more effective than the first time. That's because we have built an army of antibodies that remember the pathogen and are ready to fight!

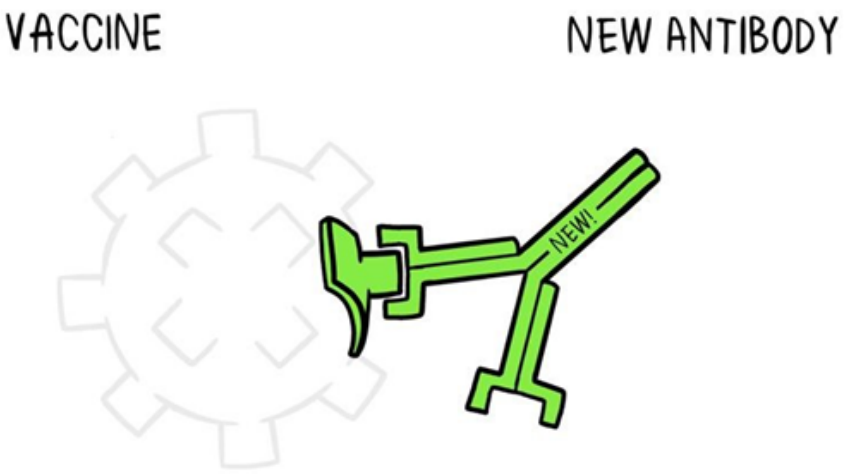
How Vaccines Help

Vaccines contain either weakened or inactive parts of a pathogen or a blueprint of the pathogen's antigen. When you are vaccinated this triggers an immune response to that specific antigen in a similar way to how our body naturally does. Regardless of whether the vaccine is made up of the antigen itself or the blueprint, the vaccine will not cause the disease in the person receiving the vaccine. You cannot get COVID-19 from the vaccine.

The benefit of a vaccine is that it trains your body to fight a specific antigen without the risk of becoming seriously ill or possible death. In other words, we have the same benefit of natural immunity without the risk of illness.

A vaccine is a tiny weakened non-dangerous fragment of the organism and includes parts of the antigen. It's enough that our body can learn to build the specific antibody.

Then if the body encounters the real antigen later, as part of the real organism, it already knows how to defeat it.



For more detail, read the full How Vaccines Work explainer here.

Source: Adapted from WHO materials