

COVID-19 (Novel Coronavirus) Pandemic - Understanding Vaccines

December 9, 2020. With all the talk about vaccines in the battle against COVID-19, I came to realize that I know what vaccines do (i.e., immunize the body against a disease), but I didn't know what vaccines really were? And why does it take so long for vaccines to be developed? So it was time for me to gain a better understanding of something (vaccine) that is so important to the general well-being of the entire country. Here is what I discovered.

With traditional vaccines, such as the flu vaccine, a weakened form of a virus is entered into your bloodstream. As your body detects this foreign invader, your immune system is triggered to develop antibodies (antigens) against it. It is as though you have already had a mild case of the virus. So when your body becomes exposed to the real virus, your immune system is ready to attack the virus before it can infect.

This traditional method for developing vaccines involves growing the virus in a lab environment and then inactivating the virus or its protein. This type of vaccine development can take years. But with COVID-19 shorting the development cycle has become paramount. So modern researchers have turned to the use of new technology to develop coronavirus vaccines called mRNA vaccines. Upon approval these types of vaccines will be the first to get to market.

Unlike traditional vaccines the mRNA vaccines don't deliver the antigen to the body. Instead, mRNA is a genetic molecule that instructs cells how to make the antigen. mRNA vaccines provide instructions to create a type of protein that is part of sars-cov-2, the coronavirus that causes COVID-19. The immune system recognizes the created protein or antigen and is then prepared to fight when the virus enters the body.

There are currently no mRNA vaccines in the market but this is not a new exploration; scientists have been working on this type of solution for decades. COVID-19 has served as an accelerant and the successful use of new mRNA technology should have significant long term benefits. It will become possible for scientists in the future to create the protein sequence of the coronavirus in a lab setting in a matter of days instead of years, which has been the case with traditional vaccines.