How the New mRNA COVID-19 Vaccines Work

The Food and Drug Administration's (FDA) Emergency Use Authorization of two new COVID-19 vaccines has prompted many questions. We want to help by sharing the latest information available and by addressing some common vaccine myths. **The good news in all of this: The COVID-19 vaccine is safe and effective.** Getting at least 75% of the population vaccinated is crucial to containing the virus. Share this with any friends or family that may still have questions about these new vaccines. The only way through this is together.

How does the mRNA COVID-19 vaccine work?

The mRNA COVID-19 vaccines contain strands of a genetic material called mRNA. mRNA stands for Messenger RNA. It tells your DNA how to make specific proteins. The mRNA contains instructions that your body can read to create a special type of protein. This protein triggers your immune system, which then creates antibodies specific to COVID-19. This is how the vaccines protect your body from the virus.

Once the mRNA does its job, your body destroys it and it's flushed from your system.

Want to learn more about the vaccines? Check out our FAQ.

This is the first-ever mRNA vaccine. Can I trust a vaccine this new?

While the Pfizer/BioNTech and Moderna vaccines are the first mRNA vaccines approved for human use, the science goes back almost 30 years. mRNA vaccines offer immunity that's more targeted than traditional vaccines. And they're easier to produce at scale once developed.

The COVID-19 pandemic presented a unique opportunity for the science community, private companies and international governments to work toward a shared goal: COVID immunity. With the right funding and focus, these vaccines were developed at record speed.

Are you allergic?

If you've had a severe allergic reaction to vaccines or other injectables in the past, do not get the COVID-19 vaccine.

If you have other allergies and want to be sure before getting the vaccine, review the ingredients. Ingredient lists often contain unfamiliar chemicals, but that doesn't mean they're harmful. **Be sure to discuss any concerns with your doctor.**

- Pfizer vaccine ingredients (see page 2)
- Moderna vaccine ingredients (see page 2)

Is the COVID-19 vaccine effective?

Yes. Both FDA-authorized mRNA vaccines are effective. The Pfizer/BioNTech vaccine showed 95% percent protection during a clinical trial of 44,000 participants. And the Moderna vaccine showed 94% protection during a clinical trial of 30,000 people. Compare that to the common flu vaccine, which shows between 40% and 60% protection.

Can I get COVID-19 from the vaccine?

No. You can't get COVID-19 from the mRNA vaccines. The two COVID-19 vaccines do not contain any trace of the virus, living or dead.

I've heard that the vaccines have side effects. Are they serious?

You may experience side effects, but the vast majority aren't severe. Like other vaccines, you may feel a little tired, have a headache, be sore at the injection site, have joint pain or muscle aches or short-term fever. That's a sign that your body is reacting to the vaccine, boosting your immune system to fight COVID-19.

Can the COVID-19 vaccine alter my DNA?

No. The Pfizer and Moderna COVID-19 vaccines contain strands of genetic material called mRNA. mRNA stands for Messenger RNA. The mRNA does not interact with or change your DNA, rather it instructs our cells to create a harmless protein from the virus. The harmless protein is presented on the cell surface triggering an immune response, making antibodies specific to COVID-19. These antibodies will give us the ability to resist future COVID-19 infections.

Why does this vaccine require two injections?

The first shot prepares your immune system. The mRNA in the vaccine is showing your body how to fight COVID-19. You'll begin producing antibodies in about 14 days. The second shot strengthens your immune response, helping you make even more antibodies. The antibodies are what protects you from the virus. It's important that you get both shots. It ensures you're getting the maximum protection possible.

Why is the vaccine kept in cold storage?

mRNA is a sensitive material. To keep these new vaccines stable and effective, they must be transported and stored in extremely cold temperatures.

Sources

CDC—**https://www.cdc.gov/vaccines/covid-19/hcp/mrna-vaccine-basics.html**

CDC—**https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/mrna.html**

Harvard Medical School— **https://www.health.harvard.edu/blog/why-are-mrna-vaccines-so-exciting-2020121021599**

GAVI— **https://www.gavi.org/vaccineswork/will-mrna-vaccine-alter-my-dna**

Johns Hopkins—**https://www.jhsph.edu/covid-19/articles/side-effects-and-covid-19-vaccines-what-to-expect.html**

NPR—**https://www.npr.org/sections/health-shots/2020/11/17/935563377/why-does-pfizers-covid-19-vaccine-need-to-be-kept-colder-than-antarctica**