

# What Ingredients are in the COVID-19 Vaccine?

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## Pfizer-BioNTech Vaccine

- **95% effective**
- Number of shots: **2 shots, 21 days apart**
- Approved for use in people aged **16 years and older**
- **Ingredients:** messenger ribonucleic acid (mRNA), lipids (((4-hydroxybutyl)azanediyl)bis(hexane-6,1-diyl)bis(2-hexyldecanoate), 2 [(polyethylene glycol)-2000]-N,N-ditetradecylacetamide, 1,2-distearoyl-sn-glycero-3-phosphocholine, and cholesterol), potassium chloride, monobasic potassium phosphate, sodium chloride, dibasic sodium phosphate dihydrate, and sucrose
- **Explanation** of ingredients:
  - Lipids: Nanolipids, or tiny fat molecules, protect the mRNA and provide a “greasy” exterior that helps the mRNA slide inside cells. Nanolipid components in the Pfizer-BioNTech vaccine include: ((4-hydroxybutyl)azanediyl)bis(hexane-6,1-diyl)bis(2-hexyldecanoate), 2 [(polyethylene glycol)-2000]-N,N-ditetradecylacetamide, 1,2-distearoyl-sn-glycero-3-phosphocholine, and cholesterol
  - Salts: Helping to balance the acidity in your body, the following salts are included in the Pfizer-BioNTech vaccine: potassium chloride, monobasic potassium phosphate, sodium chloride, and dibasic sodium phosphate dihydrate
  - Sugar: Basic table sugar, also known as sucrose, can also be found in the Pfizer-BioNTech vaccine. This ingredient helps the molecules maintain their shape during freezing.
- **Does NOT contain: Eggs, Preservatives, Latex**

**Learn more, read the FDA full Pfizer-BioNTech Fact Sheet:**  
[www.fda.gov/media/144414/download](https://www.fda.gov/media/144414/download)

## Moderna Vaccine

- **94% effective**
- Number of shots: **2 shots, 28 days apart**
- Approved for use in people aged **18 years and older**
- **Ingredients:** messenger ribonucleic acid (mRNA), lipids (SM-102, polyethylene glycol [PEG] 2000 dimyristoyl glycerol [DMG], cholesterol, and 1,2-distearoyl-sn-glycero-3-phosphocholine [DSPC]), tromethamine, tromethamine hydrochloride, acetic acid, sodium acetate, and sucrose
- **Explanation** of ingredients:
  - mRNA: Like the Pfizer BioNTech vaccine, Moderna’s also uses mRNA technology to build antibodies against COVID-19.
  - Lipids: Nanolipids help deliver the mRNA to the vaccine recipient’s cells. Nanolipid components of the Moderna vaccine include: (SM-102, 1,2-dimyristoyl-rac-glycero3-methoxypolyethylene glycol-2000 [PEG2000-DMG], cholesterol, and 1,2-distearoyl-snglycero-3-phosphocholine [DSPC])
  - The remaining ingredients, including acids (acetic acid), acid stabilizers (tromethamine and tromethamine hydrochloride), salt (sodium acetate), and sugar (sucrose) all work together to maintain the stability of the vaccine after it’s produced.
- **Does NOT contain: Eggs, Preservatives, Latex**

**Learn more, read the FDA full Moderna Fact Sheet:**  
[www.fda.gov/media/144638/download](https://www.fda.gov/media/144638/download)



## Getting vaccinated is one of many steps you can take to protect yourself and others from COVID-19.

For some people, COVID-19 can cause severe illness or death. Getting vaccinated not only protects you from COVID-19, it also protects those around you by preventing its spread. Stopping a pandemic requires using all the prevention tools available. Vaccines work with your immune system so your body will be ready to fight the virus. Other steps, like masks and social distancing, help reduce your chance of being exposed to the virus and spreading it to others. **Together, COVID-19 vaccination and following CDC’s recommendations to protect yourself and others will offer the best protection from COVID-19.**

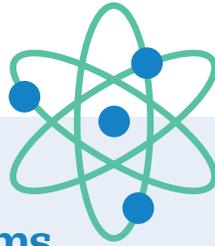
### SOURCES

- [www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/Pfizer-BioNTech.html](https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/Pfizer-BioNTech.html)
- [www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/Moderna.html](https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/Moderna.html)
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- [www.hackensackmeridianhealth.org/HealthU/2021/01/11/a-simple-breakdown-of-the-ingredients-in-the-covid-vaccines](https://www.hackensackmeridianhealth.org/HealthU/2021/01/11/a-simple-breakdown-of-the-ingredients-in-the-covid-vaccines)



# How Does the COVID-19 Vaccine Work?

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## COVID-19 mRNA vaccines prepare our immune systems to protect us from COVID-19.

- **COVID-19 mRNA vaccines provide instructions to cells in our upper arms to make a harmless protein found on the surface of the virus that causes COVID-19.** Once this “spike protein” is made, the cell breaks down the instructions and gets rid of them.
- **Our immune systems recognize that this spike protein doesn't belong in our bodies and makes antibodies to bind onto the protein,** signaling our immune cells to attack. This is called an immune response. mRNA vaccines provide instructions for our immune system to make antibodies without ever having to risk the serious consequences of getting sick with COVID-19 and passing it on to others.
- **It typically takes a couple weeks,** but once an immune response to the spike protein is produced, our bodies can recognize the COVID-19 virus. Our immune system will automatically fight the virus to protect us from getting sick. Because it takes time to build this immune memory, it is possible to get COVID-19 just before or after vaccination when the vaccine is still working to provide protection.

## Facts about COVID-19 mRNA Vaccines

**They cannot give someone COVID-19.** mRNA vaccines do not use the live virus that causes COVID-19.

**They do not affect or interact with our DNA in any way.** mRNA never enters the nucleus of the cell, which is where our DNA (genetic material) is kept. Cells break down and get rid of the mRNA soon after they are finished using the instructions.

**The two authorized vaccines require more than one shot.** You must receive 2 doses of the vaccine 3–4 weeks apart for maximum protection against COVID-19. The vaccine begins to protect you 1–2 weeks after your second dose.



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### SOURCES

- [www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/mrna.html](https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/mrna.html)
- [www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/how-they-work.html](https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/how-they-work.html)

