

## COVID-19 Vaccination



By now, a lot of you have already received your COVID-19 vaccination and we are so thankful you chose to get it. Thank you for protecting:

- Yourself
- Your family
- Our patients
- UAMS
- Arkansas
- America

For those of you who have not taken the shot and are skeptical, please read on.

### **Key Points about the COVID-19 Vaccine**

- Like all vaccines, COVID-19 mRNA vaccines have been rigorously tested for safety before being authorized for use in the United States.
- mRNA technology is new, but not unknown. They have been studied for more than a decade.
- mRNA vaccines do not contain a live virus and do not carry a risk of causing disease in the vaccinated person.
- mRNA from the vaccine never enters the nucleus of the cell and does not affect or interact with the person's DNA.
- The cell breaks down and gets rid of the mRNA soon after it is finished using the instructions.

## A New Approach to Vaccines

mRNA vaccines take advantage of the process that cells use to make proteins in order to trigger an immune response and build immunity to SARS-CoV-2, the virus that causes COVID-19.

### Mechanism for Action

mRNA vaccines have strands of genetic material called mRNA inside a special coating. That coating protects the mRNA from enzymes in the body that would otherwise break it down. It also helps the mRNA enter the dendritic cells and macrophages in the lymph node near the vaccination site.

mRNA can most easily be described as instructions for the cell on how to make a piece of the “spike protein” that is unique to SARS-CoV-2. Since only part of the protein is made, it does not do any harm to the person vaccinated but it is antigenic.

After the piece of the spike protein is made, the cell breaks down the mRNA strand and disposes of them using enzymes in the cell. It is important to note that the mRNA strand never enters the cell’s nucleus or affects genetic material. mRNA vaccines **DO NOT** alter or modify someone’s genetic makeup.

Once displayed on the cell surface, the protein or antigen causes the immune system to begin producing antibodies and activating T-cells to fight off what it thinks is an infection. These antibodies are specific to the SARS-CoV-2 virus, which means the immune system is primed to protect against future infection.

### Benefits of mRNA Vaccines

mRNA vaccines have several benefits compared to other types of vaccines including use of a non-infectious element, shorter manufacturing times, and potential for targeting of multiple diseases. mRNA vaccines can be developed in a laboratory using a DNA template and readily available materials. This means the process can be standardized and scaled up, making vaccine development faster than traditional methods. In addition, DNA and RNA vaccines typically can be moved most rapidly into the clinic for initial testing. In the future, mRNA vaccine technology may allow for one vaccine to target multiple diseases.



# Don't miss your shot

## #UAMShot