

mRNA Vaccine Information

What you should know

Understanding how our immune system works when fighting an infection.

- A virus enters your body, attaches to a cell, and inserts its DNA/RNA.
- The infected cell begins to create copies of the virus's RNA and dispersing them throughout your body.
- Our defense system (Immune System) attacks any protein, virus, bacteria that doesn't belong. This takes the immune system a few days to learn how to attack the body's virus, leading to symptoms being experienced.
- Eventually the immune system learns how to fight the virus and produces necessary antibodies.

The immune system is extraordinary at fighting illness but slow to respond to an attack; therefore, leading to the development of **VACCINES!**

Vaccines train your immune system to recognize and fight an infection/virus before it occurs.

How COVID-19 mRNA vaccines were developed

Researchers took the COVID-19 virus's design (or its DNA/RNA) and isolated the portion that produced the S (spike) protein. From the isolated S (spike) protein, they were able to create messenger RNA (mRNA).

How Pfizer and Moderna's mRNA vaccines work

Messenger RNA (mRNA) is a type of vaccine that uses genetically engineered material that provides your body's cells with instructions on how to make the S (spike) protein, that are found on the surface of the COVID-19 virus.

- Once protected/packaged mRNA is delivered to your body by way of vaccine, your immune cells begin making the S (spike) protein and exposing them on cell surfaces.
- After your immune system learns how to make the S (spike) protein, it begins to immediately break down the mRNA vaccine.
 - **The mRNA vaccine is quickly destroyed and never enters the nucleus of your cells where your DNA is kept.**
- S (spike) proteins on the surface of cells causes your body to create antibodies ("B cells" or memory cells) that can linger in your body for months to years. These antibodies teach your immune system how to attack the COVID-19 virus in the future if you become infected.

Benefits

- **SAFETY:** RNA vaccines are **not** made with pathogen particles; therefore, making them non-infectious. RNA **does not** become part of the host genome and the RNA strand within the vaccine is destroyed once the protein is made.
- **EFFICACY:** early clinical trial results indicate that these vaccines produce a reliable immune response and are well-tolerated by healthy individuals, with few side effects.
- **PRODUCTION:** vaccines can be produced more rapidly in the laboratory in a process that can be standardized, improving responsiveness to developing outbreaks.

Promise for the future

Currently, the most active areas of research involving the RNA vaccine platform are infectious diseases and cancer. Beyond COVID-19 and its variants, researchers are developing mRNA vaccines for other infectious diseases.

- Clinical trials have been carried out or are ongoing on mRNA vaccines for influenza, cytomegalovirus, HIV-1, rabies and Zika virus. Of the 44 current clinical trials utilizing mRNA vaccines, 23 are specifically targeted to infectious diseases.
- Cancer vaccines using the mRNA platform are a form of immunotherapy, where the vaccine triggers the immune system into targeting the cancer. Prior to developing mRNA vaccines for infectious diseases, researchers and pharmaceutical companies contemplated mRNA's potential to treat a whole host of cancers.

What is certain is that mRNA is poised to greatly impact public health and precision medicine in the very near future.

Contact

For questions or concerns about your vaccine options, or for assistance needed to further evaluate care options regarding illness, please email the Executive Health and Wellness Department: Executive_Health_Department@discounttire.com
