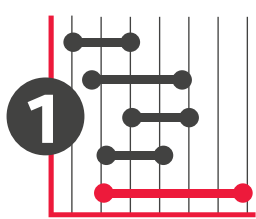


5 Things You Need to Know about mRNA Technology

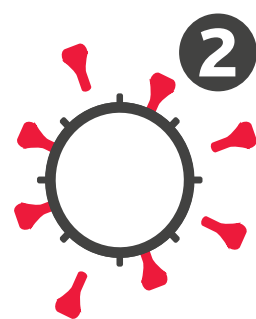
The search for an answer to the COVID-19 pandemic led life sciences companies to explore an emerging technology: messenger ribonucleic acid (mRNA). Now, with several mRNA vaccines helping in the fight against SARS-CoV-2, the virus causing the COVID-19 pandemic, many people are wondering: What is mRNA, anyway? And where is it headed in the future?

Here are 5 things you need to know about the past, present and future of mRNA:



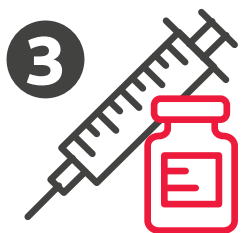
COVID-19 showed us what mRNA can do.

mRNA technology has been researched for decades, but the pandemic marked the first time it was approved for use in a vaccine. In the past, mRNA was manufactured in relatively small quantities for research and clinical trials. Now, there is a need to manufacture large quantities to deliver hundreds of millions, if not billions, of vaccine doses. Life sciences companies have significantly scaled up their manufacturing of mRNA—like filling a swimming pool instead of a teacup. The pandemic showed us what we can do with mRNA on a large scale.



mRNA vaccines cut out the middleman.

All vaccines work by exposing the body to pieces from the target pathogen to trigger an immune response—but the method of exposure varies. Older vaccines, like flu vaccines, introduced a dead or weakened virus into the body. Newer subunit vaccines, like Hepatitis B and HPV vaccines, present an isolated viral protein for the body's B and T cells to respond to. mRNA vaccines avoid the use of the virus entirely by introducing the genetic code for one or more viral proteins and directing the recipient's own cells to "manufacture" these viral proteins which the immune system rapidly responds to, thus cutting out the middleman. The B cells produce antibody proteins that can attack future viral infections.



Vaccines aren't the end of the story.

Vaccines are prophylactic in the sense that they are administered to healthy individuals to prevent a disease. We've seen what mRNA can do in COVID-19 vaccines, and many other vaccines in development, but there's another area where mRNA shows promise: therapeutics. mRNA is under study to treat diseases like cancer and cardiovascular disease. Additionally, therapeutics typically command a higher price point than vaccines. That means we can expect to see more investments in mRNA therapeutics soon.



mRNA can be used to treat genetic diseases.

mRNA is one of the key ingredients used for gene editing, one of the new platforms that cures genetic diseases. Right now, many genetic diseases have no known cure, and people who live with these illnesses are limited to managing their own symptoms. With gene editing, there could be permanent cures in sight.



Production and distribution challenges remain.

Government funding and an urgent need for COVID-19 vaccines helped companies address many of the hurdles associated with mRNA vaccine production and distribution. However, supply chain challenges remain in providing vaccines to the entire world. We also expect increased demand associated with the ever-increasing application of mRNA in combating human disease.

The Road Ahead

The successful creation of multiple mRNA vaccines during the pandemic illustrates the potential for the technology to prevent infections. We anticipate exciting innovations in cost reduction, development of new vaccines and discovery of new clinical uses. Throughout 2021 we have seen a boom in the mRNA space with investors and life sciences companies alike turning their attention to the technology. We expect to see strong growth in this area for several years to come.



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mRNA caught your eye?

No matter what drug you're developing, if you're planning on using mRNA to get there, then your success hinges on access to the right resources. BDO offers support throughout all stages of the drug—and business—development lifecycle, from product definition, to development of the manufacturing process, to navigating the regulatory approval process to bringing the drug to market. We provide customized services you can use to achieve key business and technical milestones. Let us help you get your project off on the right foot.

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