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Letter to Editor

Role of MRNA in Nucleic Acids Function - MRNA Vaccine

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Letter to Editor

Protect mRNA for protein: transcription and translation Genes encode a protein structure. When the cell needs to produce a specific protein, the gene must be transcribed for that protein. During transcription, the molecule called RNA polymerase reads the DNA sequence of the gene and forms a complementary mRNA molecule. This molecule consists of only one negative and serves as a temporary copy of the gene.

Immediately after the transcript, what we get is pre-mRNA. This molecule contains two parts: axons and introns. This molecule must be edited to cleave the introns, which do not contribute to the final protein. The final mRNA strand contains only the coding regions, the axons.

Once this is done, mRNA can be used to make a protein. First, it must move from the nucleus into the cytoplasm of the cell. Here, it can be translated. In this process, an organelle called a ribosome reads the messenger's RNA strand sequence, three bases at a time. As it happens, another type of RNA, tRNA, puts in amino acids that match the sequence. Each codon, a group of three bases, in the mRNA strand corresponds to one amino acid.

As the process continues, the amino acids bind to each other for long chains. Once the translation is complete, the chains change and fold until they produce a fully functional protein.

The RNA or ribonucleic acid is a biopolymer of nucleotides composed of ribose sugar, phosphate and bases such as adenine, guanine, cytosine and uracil. It plays a crucial role in gene expression by acting as the intermediate between the genetic information encoded by DNA and proteins (Figure 1) [1].

In every cell of a living organism, DNA is the molecule that contains the genetic information of the organism. It consists of a series of four building blocks, the sequence of which gives the instructions for protein production. This process requires a transient mediator called RNA messenger which carries the genetic information to the cell machines responsible for protein synthesis. As an analogy, DNA can be seen as a cookbook in a library: the recipe is stored here but cannot be used. The comedian, or assistant chef, first prepares a copy (RNA) of a specific recipe and brings it to the "kitchen". The information is now ready for use by the "chef", who can add the ingredients in the order specified in the recipe and create a cake (the protein) (Figure 2) [2].

The immune response [3] is a very complicated process that involved many acting agents. It has to function in harmony, which needs sometimes assistance from a vaccine or another medical agent like drugs (Figures 3 and 4).

However, vaccines to protect against viral diseases like the flu need better integrity. Advocating for significant improvements, such vaccine production - and availability - remained sub-optimal. Useful vaccines based on mRNA may offer a solution as a clinically grade material can be produced sequentially and reliably in a gradual process, allowing a rapid response to the emergence of varietal strains. Here we show that mRNA vaccines induce balanced, long-lasting immunity and protect against viral illnesses. A virus infection even in very young and very old mice and that the vaccine remains protective against thermal stress. This vaccine format elicits B- and T-cell-dependent protection and targets multiple antigens, including highly conserved viral nucleoprotein, indicating its benefit as a cross-protection vaccine. In ferrets and pigs, mRNA vaccines cause a protective coordination of protection and protective effects similar to those of an authorized antiviral vaccine in pigs. Thus, mRNA vaccines may address a significant medical need in the field of viral diseases. Prevention and the wider spread of viral diseases.

The modern vaccine: Principles and steps in getting protection from SARS-COV-2 virus: at it does not need a virus to cause a vaccine. Instead, by injecting MRNA into a person, the person himself produces the waxin and the supportive training system can function better by this assistance from the RNA-based mRNA from infected patients in China (Figures 5-7).

The use of mRNA as a drug is a fundamentally different approach than treating diseases with other drug rates.

It plays an essential role in human biology. mRNA is the set of instructions by which cells produce all the proteins and send them to different areas of the body.

MRNAs utilize normal biological processes to express proteins and create a desirable therapeutic effect. This enables potential treatment for a wide range of diseases, many of which cannot be treated using state-of-the-art technologies.

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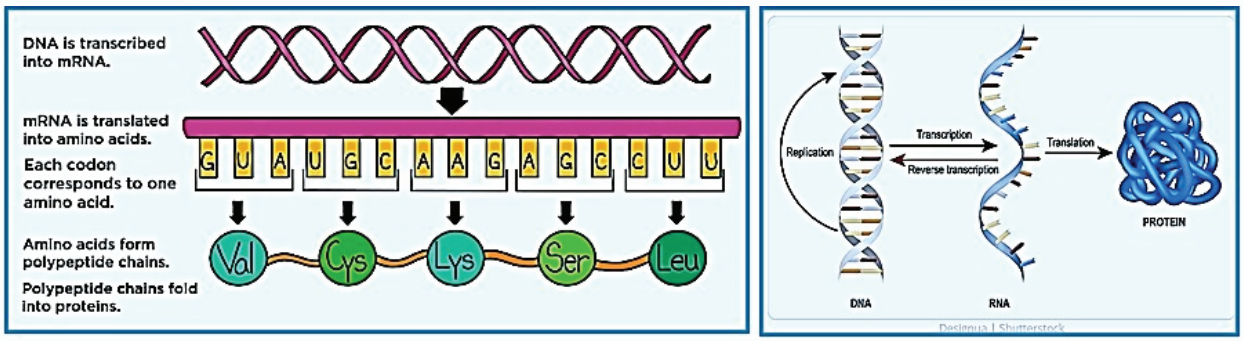

Figure 1: From Genes to mRNA to protein: Transcription and Translation [1].

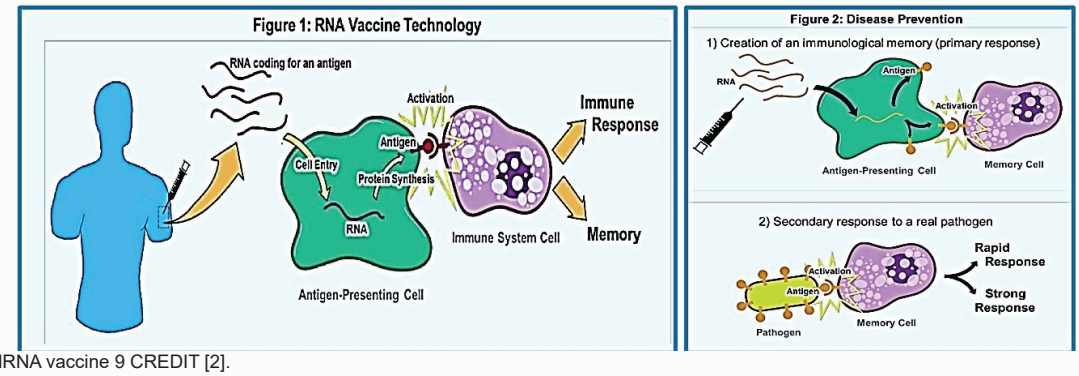

Figure 2: Use of MRNA vaccine 9 CREDIT [2].

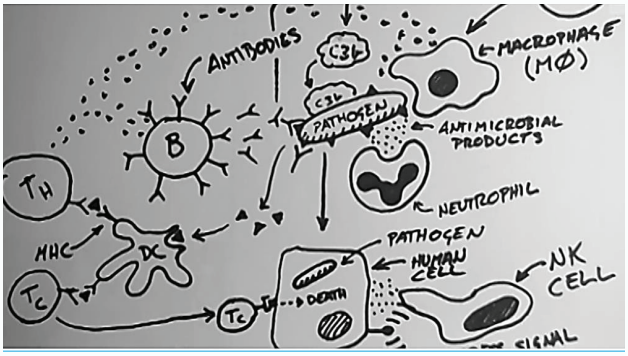

Figure 3: An overview of the acting immune system [4].

Moderna believes that mRNA has the potential to change the way drugs are discovered, developed and manufactured - in breadth, speed and scale that are not common in our industry.

References

1. https://www.expii.com/t/messenger-rna-mrna-overview-role-in-translation-10218.
2. Hubaud A, Maurer A. RNA Vaccines: A novel technology to prevent and treat disease. 2015.
3. https://www.youtube.com/watch?v=RN81h85V6D4&t=72s.
4. https://www.youtube.com/watch?v=Nw27_jMWw10.
5. Petsch B, Schnee M, Vogel AB, Lange E, Hoffmann B, Voss D, et al. Protective efficacy of *in vitro* synthesized, specific mRNA Vaccines Against influenza A virus infection. Nat Biotech. 2012;30(12):1210-6.
6. https://www.modernatx.com/modernas-work-potential-vaccine-against-covid-19.
7. https://www.youtube.com/watch?v=Atrx1P2EkiQ&feature=emb_rel_end.

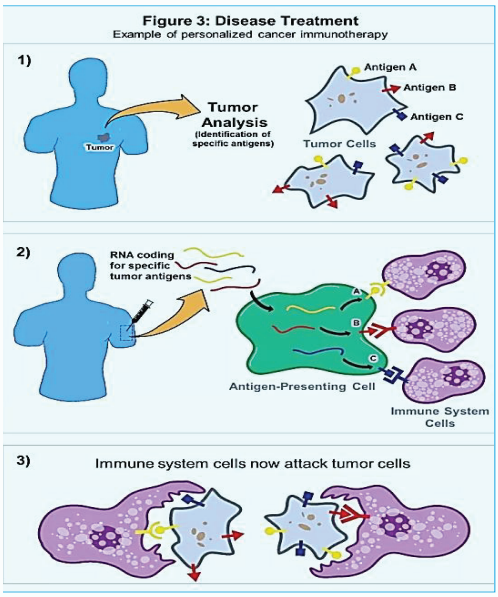

Figure 4: The vaccine or other remedy can assist when this complex process stalls [5].

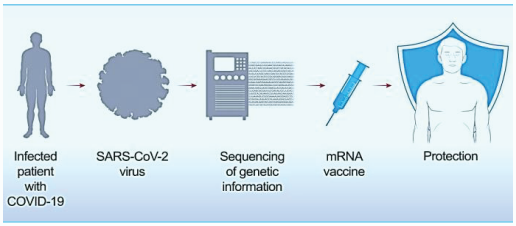

Figure 5: The way MODERNA took to achieve protection from the COV 19 virus [6].

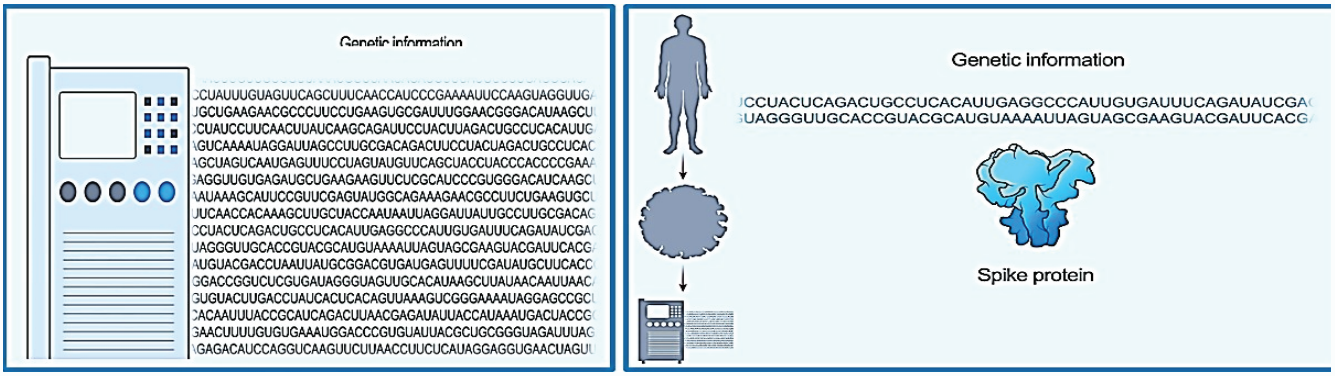

Figure 6:

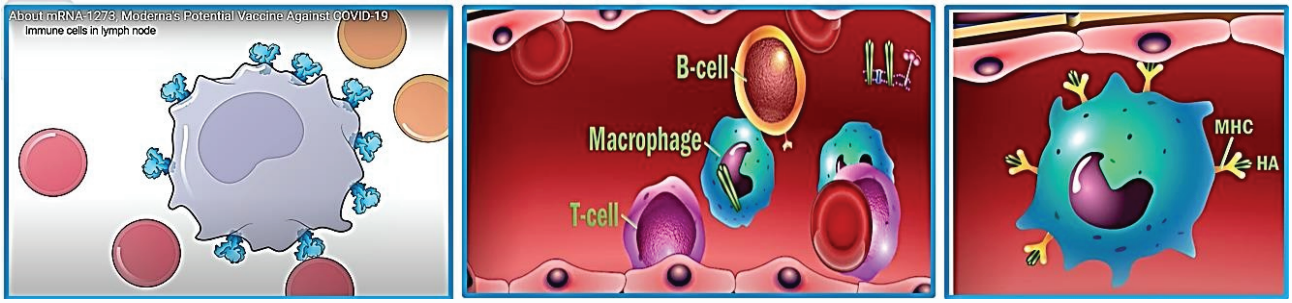

Figure 7: Various protecting units that attack a virus [7].