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HOW MRNA VACCINES REVOLUTIONIZED MEDICINE?

Vaccines prevent many millions of illnesses and save numerous lives every year. As a result of widespread vaccine use, the smallpox virus has been completely eradicated and the incidence of polio, measles and other childhood diseases has been drastically reduced around the world. Conventional vaccine approaches, such as live attenuated and inactivated pathogens and subunit vaccines, provide durable protection against a variety of dangerous diseases. Despite this success, there remain major hurdles to vaccine development against a variety of infectious pathogens, especially those better able to evade the adaptive immune response. Moreover, for most emerging virus vaccines, the main obstacle is not the effectiveness of conventional approaches but the need for more rapid development and large-scale deployment. Finally, conventional vaccine approaches may not be applicable to non-infectious diseases, such as cancer. The development of more potent and versatile vaccine platforms is therefore urgently needed.

In connection with the Covid-19 pandemic, the term "mRNA vaccine" has become known to the public. Many received just such a vaccine from Pfizer-BioNTech and Moderna. The technology, which was almost ignored a few years ago, is now considered revolutionary.

Scientists are raising important questions: Are mRNA vaccines being evaluated for cancer, HIV and severe tropical diseases, and perhaps they will even give us superhuman immunity? Messenger ribonucleic acid, or mRNA for short, is a single-stranded molecule that carries the genetic code from DNA to the cell's protein-making machinery.

Without mRNA, your genetic code would not be used, proteins would not be produced, and your body would not be able to function. If DNA is a bank card, then mRNA is a card reader.

mRNA vaccine is safe, quick to produce and cheaper than traditional vaccines. There is no longer a need for huge bio-protected laboratories that grow deadly viruses from millions of chicken eggs. Instead, only one laboratory can sequence the proteins of the antigen and send it around the world. If we now see an mRNA vaccine for Covid-19, then the vaccine will fight other types of diseases: Sars, HIV, Zika virus, herpes and malaria parasites.

Scientists are currently developing mRNA-based vaccines and treatments for diseases such as cystic fibrosis and multiple sclerosis, HIV, heart and severe lung disease, and asthma. Methods of combating tropical diseases are also being studied. Current is close to the second of three phases of clinical trials of mRNA vaccines against Zika virus and Chikungunya disease. The speed of production and cheapness of an mRNA vaccine could change this situation forever, putting an end to severe tropical diseases. mRNA technology can also be developed to solve many other health problems, such as lactose intolerance. It is developed by the majority of people of Asian descent, and perhaps one day it may affect about 68% of the world's population.

Currently, research is being conducted on how mRNA can be used to destroy high cholesterol, which causes heart disease. All of this research raises the question whether mRNA technology could endow us with practical superhuman immunity?

In addition, mRNA vaccines against Covid-19 have allowed some people to develop such high levels of antibody that it is able to neutralize several variants of Covid-19. There is potential and potential for mixing different mRNA vaccines to simultaneously protect a person against cancer and viruses. Currently, both Moderna and Novavax are already developing combination vaccines against Covid-19 and influenza. Nevertheless, the most questions remain about the mRNA vaccine. Currently, the technology requires regular revaccination quite often with unpleasant side effects and the need to go to the hospital.

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