

Transcript Details

This is a transcript of an educational program. Details about the program and additional media formats for the program are accessible by visiting: <https://reachmd.com/programs/innovations-in-medicine/the-future-of-mrna-medicine-in-immuno-oncology/14002/>

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The Future of mRNA Medicine in Immuno-Oncology

Announcer:

Welcome to *Innovations in Medicine* on ReachMD, sponsored by Moderna. This is a non-certified educational series produced and controlled by ReachMD and is intended for healthcare professionals only. On this episode, we'll examine the emerging role of mRNA therapeutics in immuno-oncology with Dr. Jim Song. Dr. Song is an Associate Professor in the Department of Microbial Pathogenesis and Immunology at Texas A&M University Health Science Center. Let's hear from Dr. Song now.

Dr. Song:

Currently, there are around fifty mRNA vaccine or drugs in clinical trials. In oncology, in these research areas, people focus on melanoma, lung cancer, breast cancer, and colon cancer. So this mRNA technology activates antigen-specific T cells. So that's that goal of mRNA medicine or drugs. So mRNA has been discovered more than 50 years. However, mRNA became a drug or medicine just in the past 20 years. People spend a lot of efforts, I think around 1999, so more than 20 years, people think that this should be a good medicine to boost the immune system in the antigen-specific T cells. So lots of people in the laboratory focus on these tumor vaccines. So we use this mRNA vaccine to boost a stronger tumor-specific T cell response. Even though the immune cells, the T cells and the B cells, both are very important for adaptive immunity.

When people found mRNA, people first think about the disease - cancer. So they just think about the use of mRNA. So they inject the mRNA in the body, this mRNA will translate it into protein. The protein can boost immune system, especially if it has T cells. So people think about if we know that tumor-associated antigen or tumor-specific antigen, for example, melanoma, tyrosine, this protein is highly expressed in melanoma these cells or tissue. So if we generate an mRNA tyrosine-specific mRNA drug, inject it in the bodies, so this mRNA will translate, will produce a large amount of tyrosine. This tyrosine can boost T cell-generated tyrosine-specific T cell response. This T cell will accumulate in the tumor tissue. Well, tyrosine highly expressed, the T cell can kill the tumor cells.

So that's the strategy. So people already thought about this strategy for more than 20 years. However, this is the majority in clinical trials. FDA didn't approve this kind of mRNA-based medicine for cancers. Luckily, in the past two years, everybody knows COVID-19. So the FDA and also the government involved with it, approved these mRNA COVID-19 vaccines. Then people know that all of the mRNA works very well in viral infections. However, they didn't realize scientists have already spent more than 20 years for mRNA drugs against cancer. So I would like to say, so the mRNA drug for cancer should be approved earlier than COVID-19. So in that case, this drug will soon be used in cancer immunotherapy.

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