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## **mRNA vaccines: Mode of delivery and therapeutic potential**

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mRNA vaccines use a copy of a molecule called messenger RNA (mRNA) to produce an immune response. For SARS-CoV-2 virus, the vaccine delivers molecules of mRNA that code for the Viral Spike Protein to Antigen Presenting Cells (APC). These protein molecules create an adaptive immune response that teaches the body to identify and destroy the attacking pathogen. The mRNA vaccine is delivered as a co-formulation in lipid nanoparticles that protect the mRNA strands and help their absorption into the cells. For the mRNA vaccine to be successful, sufficient mRNA must enter the host cell cytoplasm to stimulate production of specific antigens. But mRNA molecules are too large to cross the cell membrane by simple diffusion and they are also negatively charged like the cell membrane, which causes mutual electrostatic repulsion. However, Dendritic cells can readily absorb the mRNA molecules via Phagocytosis.

### **Recent Publications**

1. Ambreen, J., Khachfe, H.M. & Kizilbash, N. "A Review of Synthetic Approaches and Biological Activity of Substituted Hydrazones" Anal. Chem. Ind. J. 21(5):170-175, 2021.

### **Biography**

Nadeem Kizilbash is a Head of Biochemistry in Northern border university. He has completed his PhD in Boston University.

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