Messenger RNA vaccines against SARS-CoV-2

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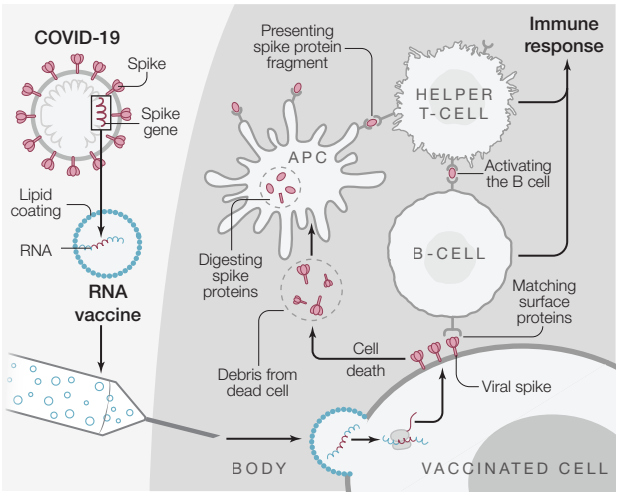


The first two vaccines proven to be effective for inhibiting COVID-19 illness were both mRNA, achieving 95% efficacy (and safety) among 74,000 participants (half receiving placebo) after intramuscular delivery of two shots, 3–4 weeks apart.

NAME
Pfizer-BioNTech and Moderna SARS-CoV-2 mRNA vaccines

APPROVED FOR
Emergency authorization, ages 16 and older, vaccination against SARS-CoV-2 infection

TYPE
mRNA in lipid nanoparticles

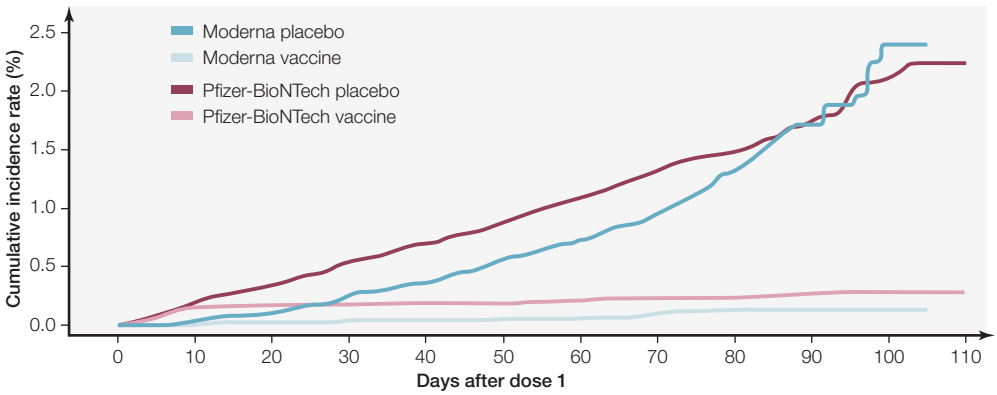
MOLECULAR TARGETS
The viral spike (S) glycoprotein

CELLULAR TARGETS
The vaccine induces B cell production of antibodies to the virus's spike protein. T cells are also elicited, particularly CD4+ and CD8+ against the SARS-CoV-2 spike protein.

EFFECTS ON TARGETS
Antibodies bind to target sites on the SARS-CoV-2 surface glycoprotein and either neutralize it or inactivte virions for destruction and clearance by the immune system.

DEVELOPED BY
BioNTech/Pfizer and Moderna/NIH VRC

Vaccine efficacy



Global impact of COVID-19

(as of Dec. 16, 2020)

>73M infected

>1.6M deaths

References for further reading are available with this article online: www.cell.com/cell/fulltext/S0092-8674(20)31761-X