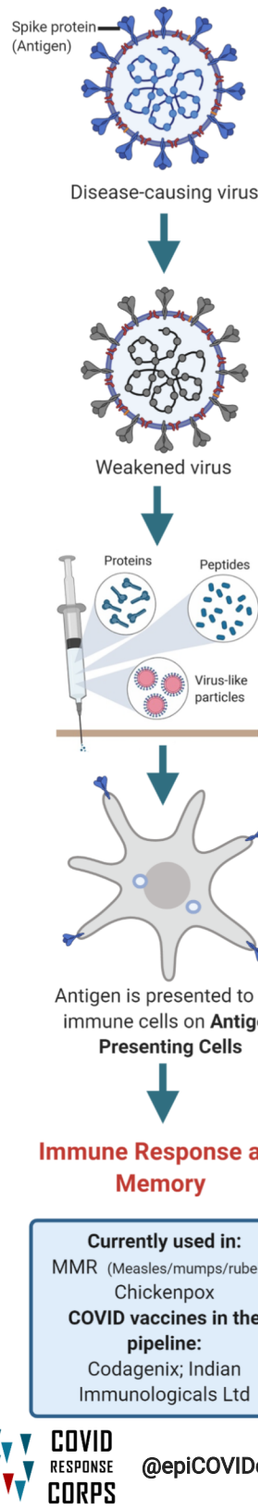
TYPES OF VACCINES

Live Attenuated Vaccine

These vaccines contain **live virus** particles that have been **weakened** to keep them from causing disease.

They create a strong immune response

Some attenuated vaccines might not be suitable for people with compromised immune systems



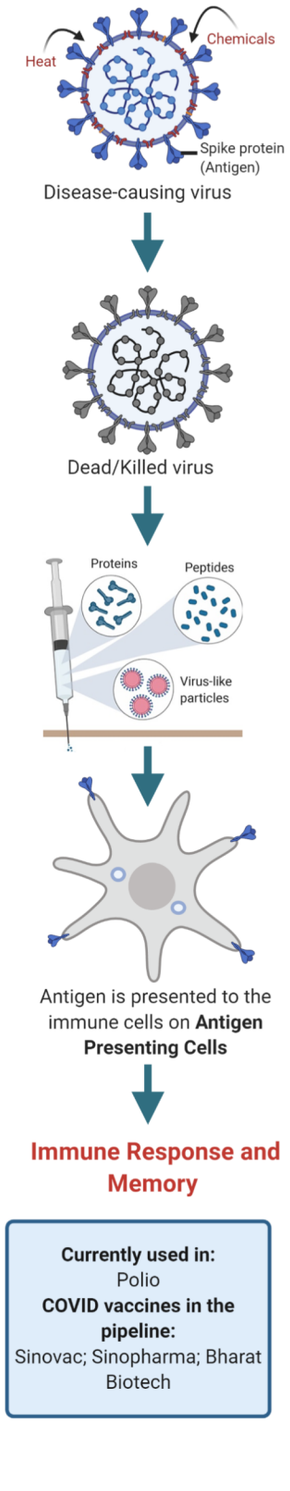
Currently used in:
MMR (Measles/mumps/rubella)
Chickenpox
COVID vaccines in the pipeline:
Codagenix; Indian Immunologicals Ltd

Inactivated Vaccine

These vaccines contain **whole virus particles**, that have been **killed or inactivated** to keep them from causing disease.

They are safer as the virus is already dead

Inactivated vaccines require booster doses as the immunity conferred by these vaccines is weaker than live vaccines

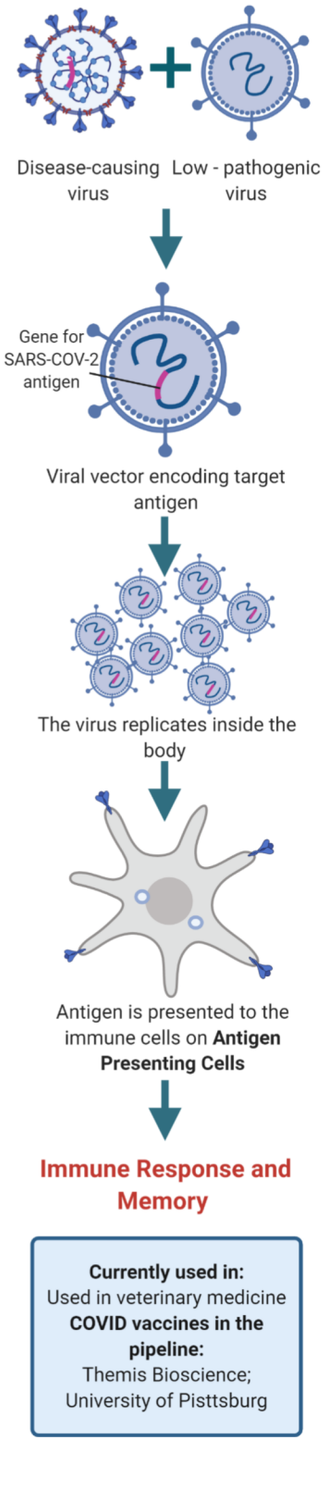


Currently used in:
Polio
COVID vaccines in the pipeline:
Sinovac; Sinopharma; Bharat Biotech

Replicating Viral Vector Vaccine

These vaccines use **low-pathogenic viruses**, which are largely harmless, and alter them into **viral vectors** that will produce some of the same proteins as the disease-causing virus.

This creates a **strong immune response**, but may not work for people who are already immune to the low pathogenic virus.

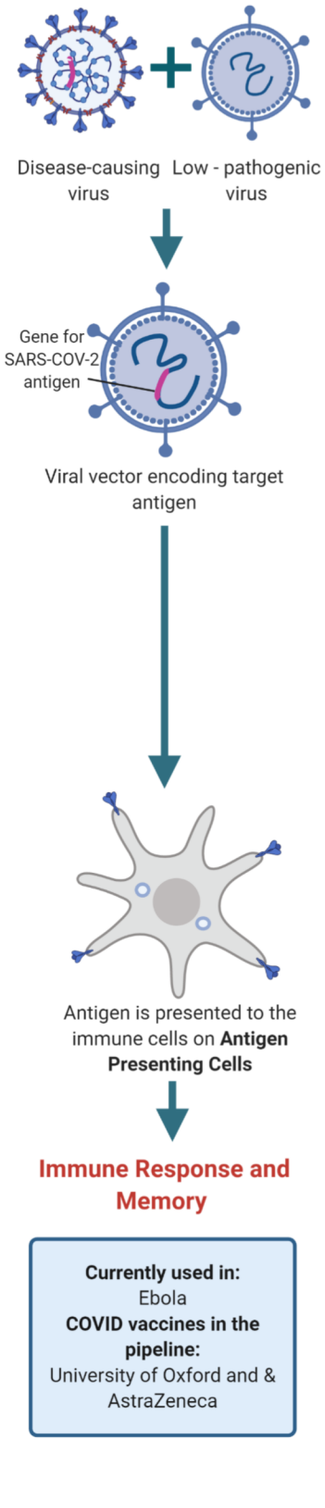


Currently used in:
Used in veterinary medicine
COVID vaccines in the pipeline:
Themis Bioscience; University of Pisttsburg

Non-Replicating Viral Vector Vaccine

These vaccines are **similar** to **replicating viral vector** vaccines except that they **cannot replicate** inside the body as the key viral replication genes is deleted from the low pathogenic vector virus.

Improved **efficacy and safety,** but require high doses to confer immunity.

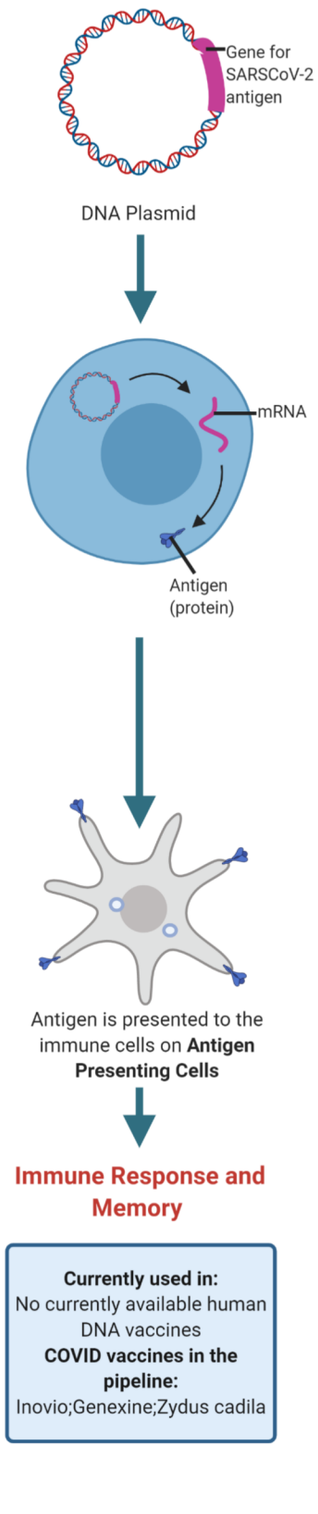


Currently used in:
Ebola
COVID vaccines in the pipeline:
University of Oxford and & AstraZeneca

DNA Vaccine

These vaccines use **DNA plasmids** containing a **gene for SARSCoV-2** along with additional genetic elements that will produce some of the same **antigenic proteins** as the disease-causing virus.

They are easy to develop and produce. There is no risk of infection but there is a possibility that the immune system does not fight against the antigen (tolerance to the antigen).

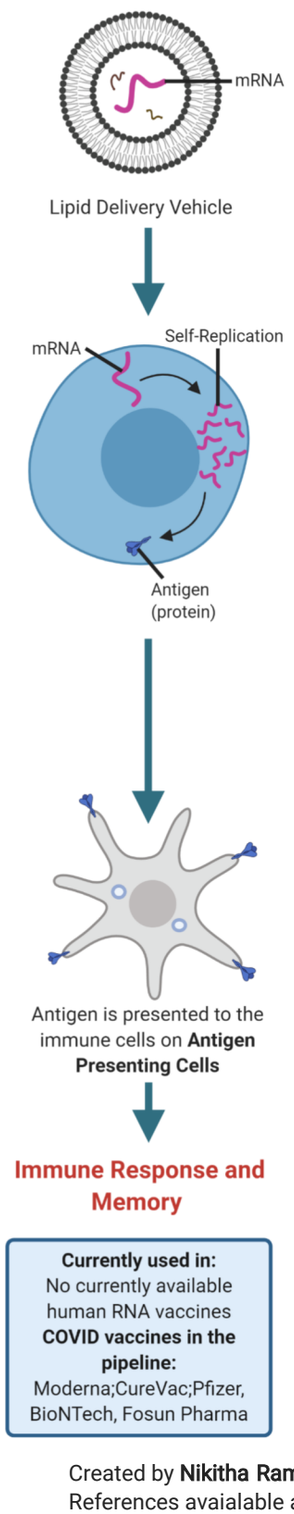


Currently used in:
No currently available human DNA vaccines
COVID vaccines in the pipeline:
Inovio;Genexine;Zydus cadila

RNA Vaccine

These vaccines use a piece of **messenger RNA (mRNA)** that will produce some of the same **antigenic proteins** as the disease-causing virus.

Risk of being integrated to the host genome is averted but, sometimes the RNA molecules may trigger an unintended immune response in the body



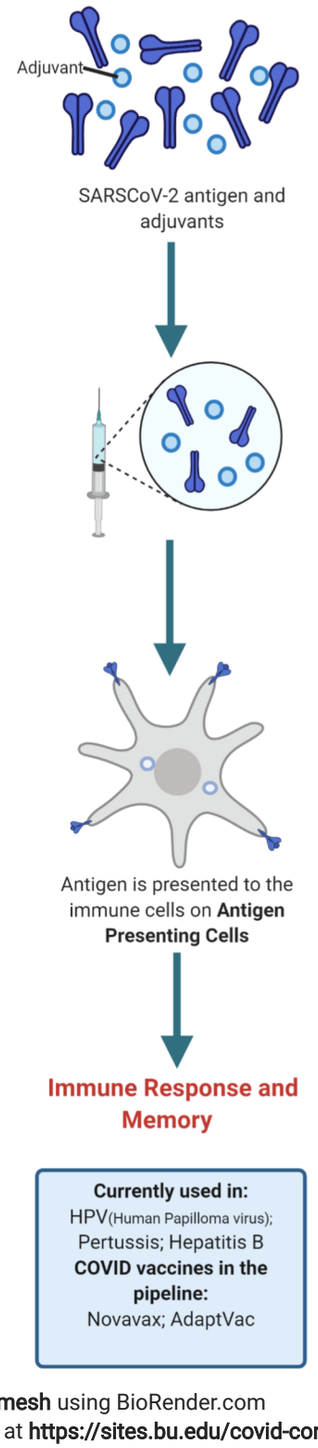
Currently used in:
No currently available human RNA vaccines
COVID vaccines in the pipeline:
Moderna;CureVac;Pfizer, BioNTech, Fosun Pharma

Subunit Vaccine

These vaccines use **antigenic protein** from the disease causing virus **without** any **genetic material**.

They are relatively safer as there is no genetic material and they cannot replicate inside the body. They focus the immune response on the most important part of the virus for protection.

These vaccines require multiple doses for long term immunity. They require adjuvants which are ingredients that help create a stronger immune response.



Currently used in:
HPV(Human Papilloma virus); Pertussis; Hepatitis B
COVID vaccines in the pipeline:
Novavax; AdaptVac

COVID RESPONSE CORPS @epiCOVIDcorps

Created by **Nikitha Ramesh** using BioRender.com
References avaialable at **https://sites.bu.edu/covid-corps**