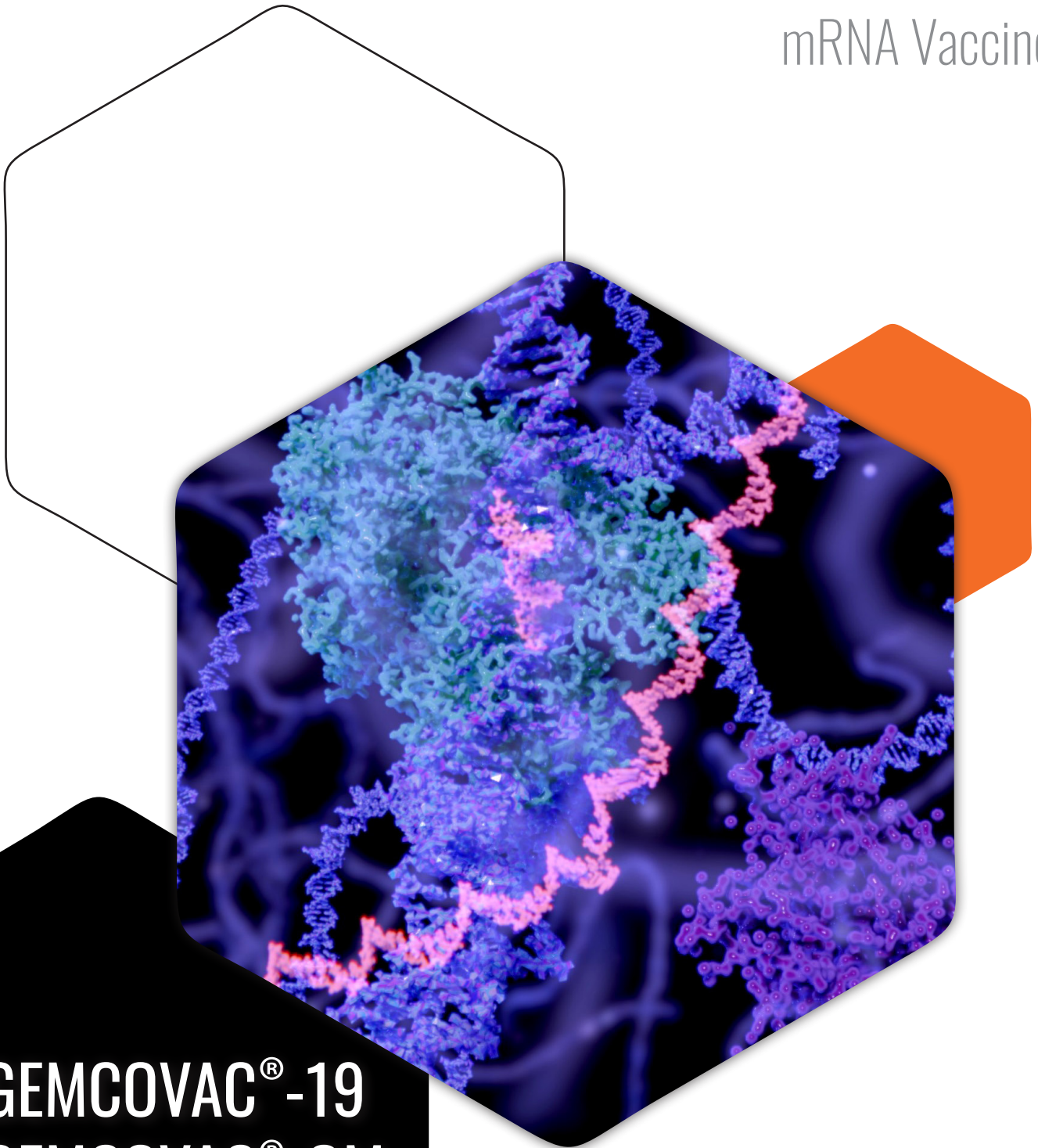


GENNOVA

COVID-19
mRNA Vaccines



GEMCOVAC[®]-19
GEMCOVAC[®]-OM

GEMCOVAC[®]-OM is indicated as a booster for active immunization for the prevention of COVID-19 in individuals 18 years of age and older who have received either COVAXIN[®] or COVISHIELD[™] as primary vaccination.

Transforming
Healthcare
www.gennova.bio

INDIA'S 1st mRNA Vaccine and World's 1st Thermostable mRNA Vaccine



mRNA is used as a bio therapeutic, where it gets translated in the cells of the human body to the corresponding protein antigen it codes for, against which antibodies can be developed. The use of mRNA as a therapeutic agent was made possible by the development of various delivery agents and modifications to the mRNA which increased its stability, efficacy, delivery efficiency and immunogenicity. Gennova has developed two mRNA vaccines, GEMCOVAC[®]-19 and GEMCOVAC[®]-OM, which have been approved by Central Drugs Standard Control Organisation for Restricted Use in Emergency Situation.

SARS-CoV-2 is constantly evolving, resulting in variants causing successive waves of new infections and hospitalizations. These variants are more infective, transmissible, and are able to evade immunity. The early vaccines for COVID-19 were all developed against the Wuhan strain and were rendered ineffective against the emerging variants. The most recent variant, Omicron spreads much faster and is also the most antibody-resistant variant to date which necessitates the development of an advanced vaccine that will be effective against the new Omicron strain.

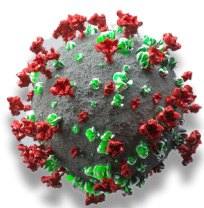
Gennova's mRNA vaccine platform is modular and can rapidly develop vaccines against the virus's new variants. The 'mRNA-based platform technology' is an important tool for developing **variant-proof, safe and effective vaccines.** mRNA vaccines do

not contain live virus and carry no risk of causing disease in the vaccinated person thus, making it suitable for immunocompromised individuals.

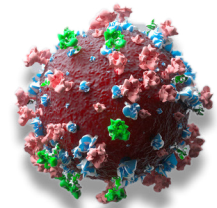
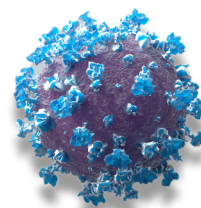
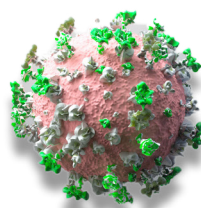
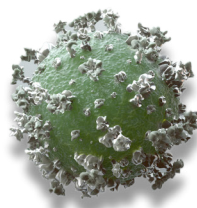
mRNA-based vaccines are the ideal choice because of their **rapid development** and **production timeline.**

mRNA vaccines are considered safe as mRNA is **non-infectious, non-integrating** in nature, and is degraded by standard cellular mechanisms.

They are **highly efficacious** as seen with the vaccines developed for COVID19. Additionally, mRNA vaccines are **fully synthetic** and do not require a host for growth. Therefore, they can be quickly manufactured in a **cost effective** manner which ensures their "**availability**" and "**accessibility**" for mass vaccination on a sustainable basis.



Wuhan
Ancestral
Strain



EVOLUTION OF THE VIRUS

Omicron
Variant

Omicron Specific Single-Dose Booster Vaccine

Thermostable at 2-8°C

Administered Intradermally via needle-free device

GEMCOVAC®-OM

Genova developed an **Omicron-specific booster vaccine**, GEMCOVAC®-OM, approved for individuals who are 18 years and above. GEMCOVAC®-OM is a single dose vaccine which is safe and generates a protective immunogenic response against the virus.

GEMCOVAC®-OM produces neutralizing antibodies against the Omicron (sublineage BA.1) spike protein which prevents infection and generates the cellular response leading to a long-term immunity. This significantly reduces the disease severity leading to decreased hospitalizations.

GEMCOVAC®-OM was found to be safe and well-tolerated in approximately 3000 subjects and generated a robust immune response with no incidence of death or vaccine related serious adverse events.

GENNOVA'S INNOVATION

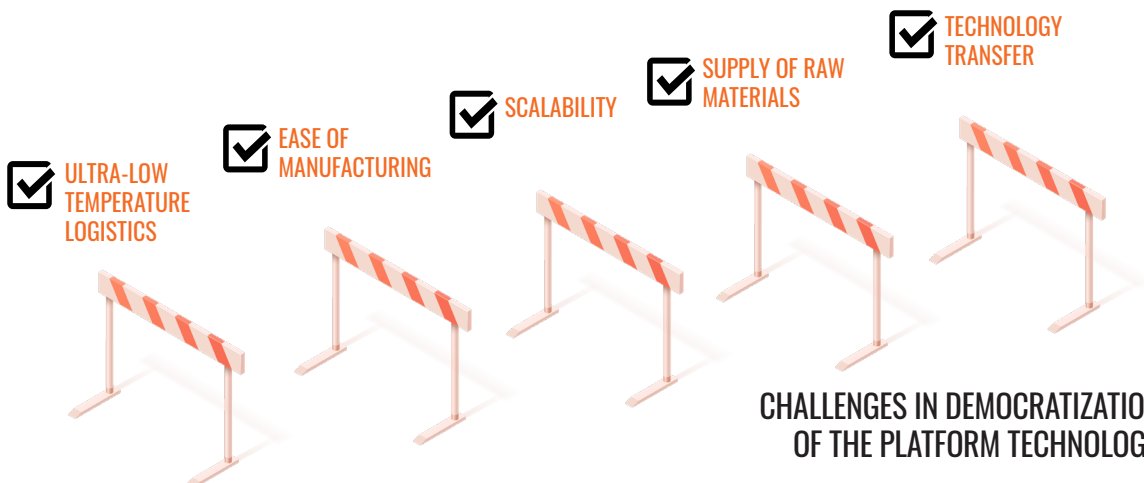
Genova's disease-agnostic rapid development platform utilises mRNA technology to create a formidable line of defence against emerging diseases.

By seamlessly integrating efficacy, safety, and scalability, Genova offers the **world's first thermostable mRNA vaccine that redefines accessibility and equitability in healthcare**, ensuring the benefits of its cutting-edge technology reach far and wide.

NEEDLE-FREE ADMINISTRATION

GEMCOVAC®-OM is administered intradermally via a needle-free device called Tropis®, developed by PharmaJet. Hence, there are no needle injuries, risk of cross-contamination or needle-phobia and no disposal hazards. It further improves the patient's and caregiver's experience and mass vaccination can be achieved in a very short time.

GEMCOVAC®-OM is lyophilized and stable at 2-8°C, and the process is scalable and amenable for technology transfer – a must for the democratization of the mRNA-based technology globally to eliminate the inequitable vaccine distribution globally.



ADDRESSING FUTURE OUTBREAKS

With the ability to adapt and create vaccines against a wide range of diseases, Gennova's mRNA platform ushers in a future where emerging diseases can be met with speed, precision, and unparalleled efficacy.



The development of GEMCOVAC®-OM was supported under the Mission COVID Suraksha, implemented by Biotechnology Industry Research Assistance Council (BIRAC), and by DBT's Ind-CEPI and Mission COVID Suraksha.

Gennova Biopharmaceuticals Limited, headquartered in Pune, India, is a biotechnology company dedicated to the development, production and commercialization of bio-therapeutics to address life-threatening diseases across various indications. Incorporating recombinant DNA technologies together with innovative bio-manufacturing practices, Gennova has created cost effective solutions for manufacturing and successfully commercializing bio-therapeutics across cardiovascular, neurology, nephrology and oncology markets. Gennova has developed an mRNA-based platform technology for a COVID-19 vaccine.

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