



# HGCO19: mRNA Vaccine Candidate

## Why in News

India's **mRNA-based Covid-19 vaccine candidate-HGCO19** has received additional government funding for its clinical studies.

- This funding has been awarded under the '[Mission Covid Suraksha](#)'.

## Key Points

### ▪ HGCO19:

- The novel **mRNA vaccine candidate, HGCO19** has been developed by **Pune-based biotechnology company Gennova Biopharmaceuticals Ltd.** in collaboration with **HDT Biotech Corporation, USA.**
- HGCO19 has already demonstrated safety, immunogenicity, neutralization antibody activity in the rodent and non-human primate models.
- Gennova has initiated the enrolment of volunteers for [Phase 1/2 clinical trials](#) for its vaccine candidate HGCO19.

### ▪ mRNA Vaccine vs Traditional Vaccines:

- Vaccines work by training the body to recognise and respond to the proteins produced by disease-causing organisms, such as a virus or bacteria.
- **Traditional vaccines** are made up of small or inactivated doses of the whole disease-causing organism, or the proteins that it produces, which are introduced into the body to provoke the immune system into mounting a response.
- **mRNA vaccines** tricks the body into producing some of the viral proteins itself.
  - They work by using mRNA, or messenger RNA, which is the molecule that essentially puts DNA instructions into action. Inside a cell, mRNA is used as a template to build a protein.

### ▪ Functioning of mRNA Vaccines:

- To produce a mRNA vaccine, scientists produce a synthetic version of the mRNA that a virus uses to build its infectious proteins.
- This mRNA is delivered into the human body, whose cells read it as instructions to build that viral protein, and therefore create some of the virus's molecules themselves.
- These proteins are solitary, so they do not assemble to form a virus.
- The immune system then detects these viral proteins and starts to produce a defensive response to them.

### ▪ Advantages of Using mRNA based Vaccines:

- mRNA vaccines **are considered safe** as mRNA is non-infectious, non-integrating in nature, and degraded by standard cellular mechanisms.
- They **are highly efficacious** because of their inherent capability of being translatable into the protein structure inside the cell cytoplasm.
- Additionally, **mRNA vaccines are fully synthetic** and do not require a host for growth,

e.g., eggs or bacteria. Therefore, they can be quickly manufactured inexpensively to ensure their "availability" and "accessibility" for mass vaccination on a sustainable basis.

### **Mission Covid Suraksha**

- Mission Covid Suraksha is India's targeted effort to enable the development of indigenous, affordable and accessible vaccines for the country.
- The Centre had announced this package during the [third economic stimulus](#).
- The Mission with its end-to-end focus from preclinical development through clinical development and manufacturing and regulatory facilitation for deployment consolidate all available and funded resources towards accelerated product development.
- It is led by the Department of Biotechnology and implemented by a dedicated Mission Implementation Unit at **Biotechnology Industry Research Assistance Council (BIRAC)**.

### **BIRAC**

- Biotechnology Industry Research Assistance Council (BIRAC) is a not-for-profit [Section 8](#), Schedule B, [Public Sector Enterprise](#).
- It has been set up by the Department of Biotechnology (DBT) as an Interface Agency to strengthen and empower the emerging Biotech enterprise to undertake strategic research and innovation, addressing nationally relevant product development needs.

### **[SOURCE: PIB](#)**

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