

04/10/23

UPSC

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कृपया इस स्थान में प्रश्न संख्या के अतिरिक्त कुछ न लिखें।

Answer Questions in NOT MORE THAN the Word Limit specified for each in the Parenthesis.
Content of the Question is more important than length.
(Specimen Answer Booklet - For Practice Purpose Only)

उम्मीदवारों को इस हाथिए में नहीं लिखना चाहिए
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What are mRNA Vaccines? How are mRNA Vaccines different from traditional Vaccines? Highlight the examples of mRNA Vaccines used in India. (150 words)

In human cells, genetic information in DNA is transferred to messenger RNA (mRNA). This is then used as a template for protein production, which is the fundamental structural component of cells.

mRNA Vaccines were in the developmental stage for a long time due to the fundamental hindrance wherein the ease of delivery was not there due to inflammatory reactions. This hindrance was eliminated by the scientists by base modifications of mRNA which eased the delivery paths.

mRNA Vaccines are different from traditional Vaccines in the following ways:-

- (a) Traditional Vaccines inject the antigens and stimulates the antibody response, whereas, mRNA Vaccines instruct the human cell to produce the S protein (antigen) found on the surface of the COVID-19 virus and results in the creation of antibodies to fight the virus.
- (b) mRNA Vaccines stimulate cellular immunity.
- (c) mRNA Vaccines require cold conditions for

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storage, whereas traditional vaccines does not demand so.

India's first indigenous mRNA vaccine GEMCOVAC-OM was developed against omicron variant by Gennova Biopharmaceuticals Ltd. under the COVID suraksha mission. It is used as a booster dose & it showed greater immune responses.

Dr. Katalin Karikó, a Hungarian biochemist and Dr. Drew Weissman, an immunologist were awarded the Nobel prize for their work in developing mRNA vaccines against COVID-19. Dr. Karikó is the 13th woman to have won the Nobel prize for medicine. This indicates the increase in women participation in the field of STEM (Science, Technology, Engineering, Mathematics). Encouraging women by recognising their exceptional work will result in a productive cycle of women empowerment and women participation in diverse fields.