



Reverse Vaccinology

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Why in News

The Tamil Nadu Dr. MGR Medical University has **developed a vaccine candidate** (i.e. potential vaccine) against **SARS-CoV-2** (Covid-19) through '**reverse vaccinology**'.

Key Points

- The **use of genomic information with the aid of computers** for the preparation of vaccines **without culturing microorganism** is known as reverse vaccinology.
- **Reverse vaccinology** helps in the **examination of the genome** of an organism in order to identify novel antigens and epitopes that might constitute vaccine candidates.
 - Antigen is a **toxin or other foreign substance** which induces an immune response in the body,
 - Epitope is a **portion of a foreign protein, or antigen**, that is capable of stimulating an immune response.
- With the unwrapping of the entire **genomic sequence**, it is possible to know what molecules make the genomic sequence.
- Reverse vaccinology has been used for developing vaccinations for **meningococcal and staphylococcal infections** all through the world.
 - Meningococcal meningitis is caused by **Neisseria meningitidis** bacteria. It is a serious **infection of the thin lining that surrounds the brain and spinal cord**.
 - Staphylococcal infections are caused by **staphylococcus bacteria** commonly **found on the skin or in the nose** of even healthy individuals.
- The technique has been available for the last **10 to 15 years**.
- In reverse vaccinology identification of candidate antigens (potential target for vaccine preparation) is possible without the need to grow the pathogen in a shorter time.

Earlier, a viral culture had to be done in the laboratory to develop a vaccine which was **time-consuming**. It would take time to find out the protein in the virus.

Source: TH