



## Mutated Novel Coronavirus

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### Why in News

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A **mutated variant** of the **novel Coronavirus** has been associated with recent infections in England.

The virus has undergone **several mutations** since it first infected humans.

### Key Points

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- **The New Mutant Coronavirus:**
  - The mutant virus has been identified as **N501Y** and is likely to be a mutation in the **spike protein**.
    - It is the **coronavirus spike protein that binds to a human protein to initiate the process of infection**.
    - Changes here could possibly affect how the virus behaves in terms of its **ability to infect, or cause severe disease, or escape the immune response made by vaccines**.
  - There has been a single nucleotide change in one portion of the spike protein, so there would be **no bearing on the disease biology or even diagnostics**.

- **Effect on Infection and Vaccination:**
  - Several coronavirus vaccines are **designed to create antibodies targeting the spike protein.**
  - The vaccines **target multiple regions on the spike**, while a mutation refers to a change in a single point. If there is **one mutation, it does not mean vaccines would not work.**
  - All **SARS-CoV-2** strains are **genetically similar to one another**, and scientists do **not expect** these mutations to have a **significant impact** on their ability to cause more severe disease than what has been observed so far.
  - Many mutations mean nothing at all, or at least are more successful for reasons not known.
    - For instance a different **strain may be more transmissible, but cause less disease.**
  - Researchers need to monitor the mutations as there is **no evidence that the new strain in the UK is more transmissible or more severe/resistant to treatment or vaccination.**
- **Mutant Variant in India:** Researchers have **not seen this variant in India.**
- **Earlier Mutation:**

**D614G Mutation:** This particular mutation aided the virus in attaching more efficiently with the ACE2 receptor in the human host, thereby making it more successful in entering a human body than its predecessors.

**D614G** showed increased infectivity but it also displayed greater ability at attaching itself to the cell walls inside an individual's nose and throat, increasing the viral load.

## Mutation

- A mutation means a change in the genetic sequence of the virus.
- In the case of **SARS-CoV-2**, which is an **Ribonucleic acid (RNA)** virus, a mutation means a **change in the sequence in which its molecules are arranged.**
  - **SARS-CoV-2** is the virus that causes **Covid-19.**
  - **RNA** is an **important biological macromolecule** that is **present in all biological cells.**

Principally **involved in the synthesis of proteins, carrying the messenger instructions from Deoxyribonucleic Acid (DNA)**, which itself contains the genetic instructions required for the development and maintenance of life.
  - **DNA** is an **organic chemical that contains genetic information and instructions for protein synthesis.** It is found in most cells of every organism.

- A mutation in an RNA virus often happens when the virus makes a **mistake while it is making copies of itself**.  
Only if the mutation results in a **significant change in the protein structure** can the course of a disease be altered.

**Source:IE**