

## Vaccine for Cancer & Neoantigens

### Why in News?

Recent reports in Russia's state-run news agency claimed that Russian scientists have developed an mRNA vaccine that has shown the ability to suppress tumour development and metastasis in pre-clinical trials.

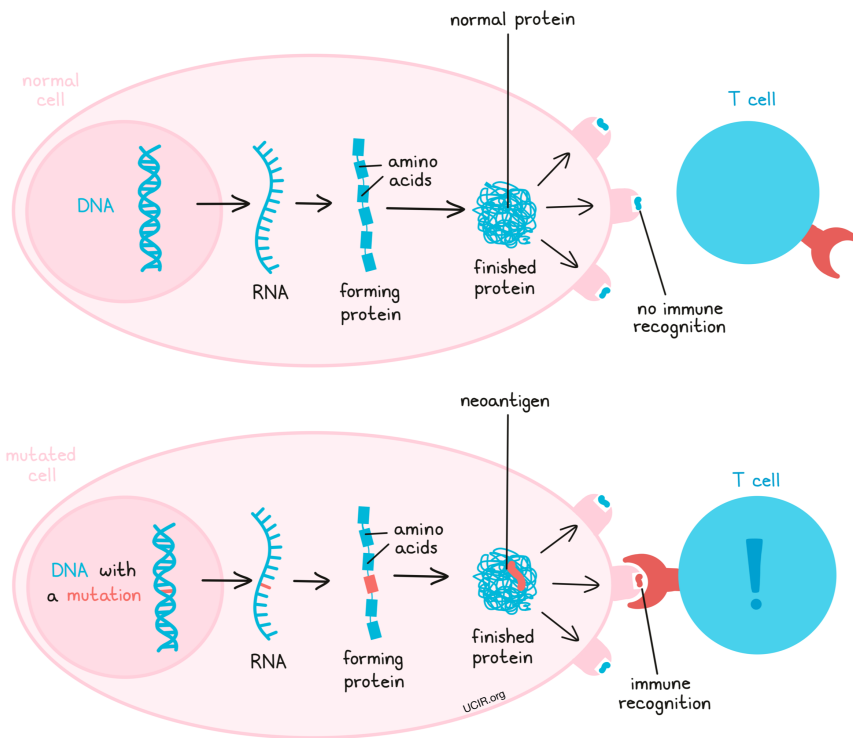
- **Vaccine** - A substance or group of substances meant to cause the immune system to respond to harmful pathogenic microorganisms.
- **Vaccination** - The process of using a vaccine to stimulate the immune system to provide protection against a disease.
- **Cancer vaccine** - Unlike vaccines for infections that are given to healthy individuals to protect them from disease, cancer vaccines are given to those who already have certain types of cancers.

**Cancer** is a disease in which some of the body's cells grow uncontrollably and spread to other parts of the body.

- **Approach** — They can be given in combination with other treatments for better outcomes or they can be given for maintenance to prevent relapse.
- The personalised vaccine was developed by collecting the patients' immune cells, exposing it to a protein found in high levels in prostate cancer cells, and then giving it back to patients.
- However, it extended the patient's survival by only 4 months.
- **Vaccine preventable Cancers** - There are at least 2 cancers whose incidence can be reduced by vaccinating against 2 pathogens
- Preventing chronic hepatitis B infection with vaccination can bring down the incidence
  - Cervical Cancer
  - Liver Cancer

**Cervavac** is India's 1<sup>st</sup> indigenous quadrivalent human papillomavirus vaccine (qHPV) vaccine, and intended to protect women against cervical cancer.

- **Existing vaccines** - The only cancer vaccine approved by the US Food and Drug Administration is Sipuleucel-T, for the treatment of prostate cancer.
- **Russian mRNA vaccine** - It can be "personalised" based on the genetic analysis of each person's tumour to identify mutations called neoantigens.
- **Neoantigens** - A new protein that forms on cancer cells when certain mutations occur in tumor DNA.
- **Significance** - They may play an important role in helping the body make an immune response against cancer cells.



## Reference

[The Indian Express | Russian vaccine for Cancer](#)