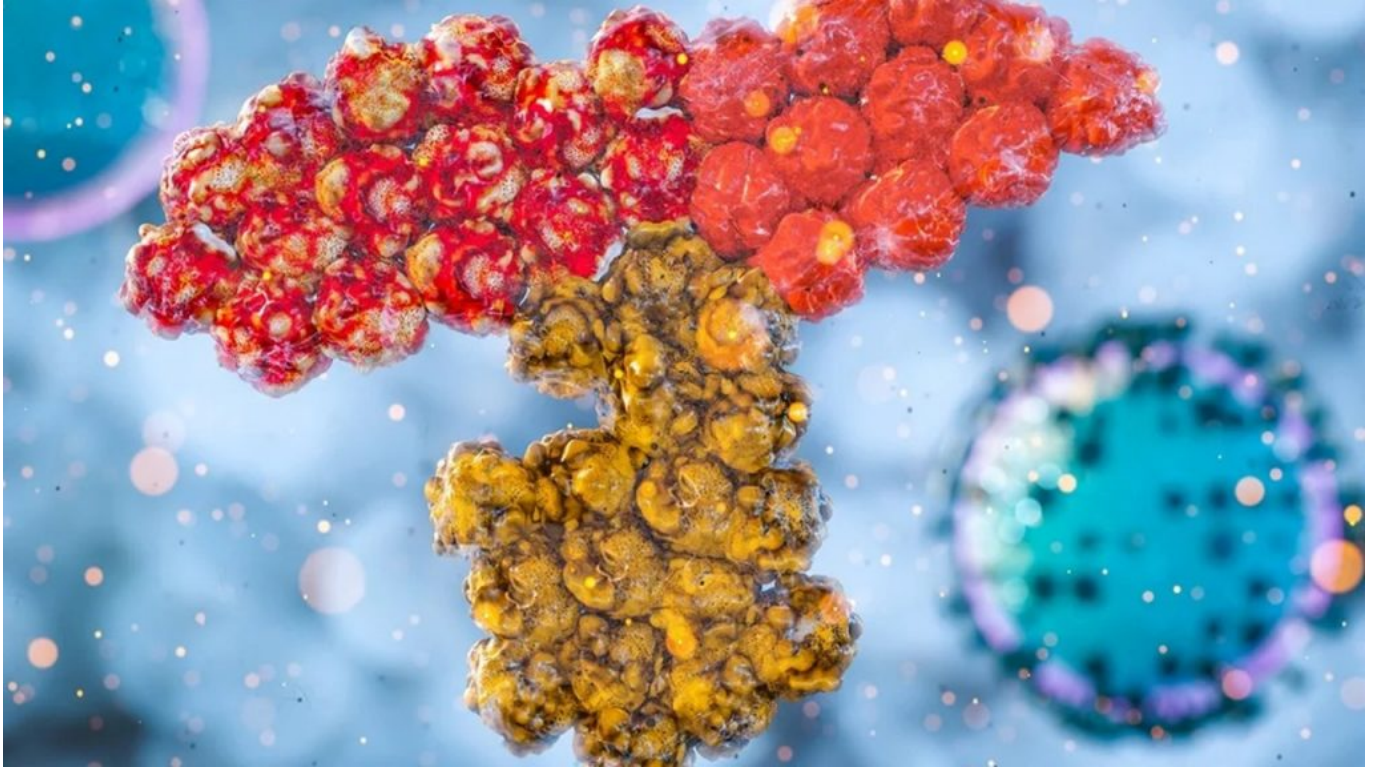


Immune Imprinting

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Context- Recent studies state that ‘immune imprinting’ might be making bivalent boosters less effective.

Key Highlights

- The bivalent booster is the most recent version of the vaccine which develops better immunity against coronavirus.

Immune Imprinting

- This is a tendency of the body to repeat its immune response based on the first variant it encountered through infection or vaccination.
- Imprinting acts as a database for the immune system, helping it put up a better response in order to repeat infections.
- The concept was for the first time observed in 1947.

Issues with with Immune Imprinting

- After our body is exposed to a virus for the first time, it produces memory B cells which circulate in the bloodstream and quickly produce antibodies.
- When a similar or variant of virus enters the body, the immune system, rather than generating new B cells, activates memory B cells, which in turn produce antibodies which bind to features found in both the old and new strains, known as cross-reactive antibodies.
- Although the cross-reactive antibodies do offer some protection against the new strain,

they aren't as effective as the ones produced by the B cells when the body first came across the original virus.

Adaptive Immune System

- Adaptive immune responses are carried out by white blood cells also called lymphocytes.
- There are two broad classes of such responses: antibody responses and cell-mediated immune responses, and they are carried out by certain different classes of lymphocytes, called B cells and T cells, respectively.
- B cells mature in the bone marrow (therefore the name "B cell").
- Cells which eventually become T cells travel from the bone marrow to the thymus by way of our bloodstream where they mature (hence the name "T cell").
- The thymus is present just above the heart behind the sternum, or breastbone.