

Current Affairs 21st January 2024 by Saurabh Pandey

Antibody-dependent enhancement (ADE)

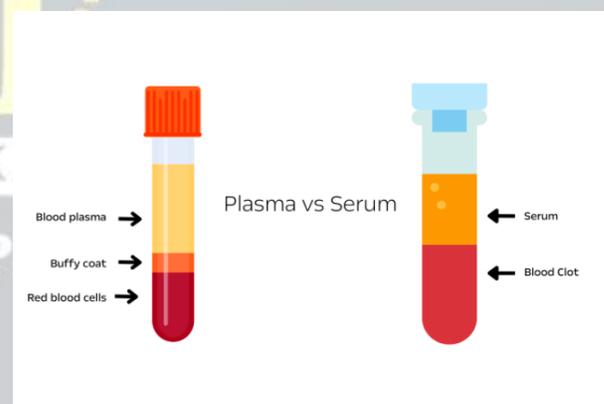
- Antiviral antibodies constitute an important component of the host immune response against viral infections and serve to neutralize and reduce the infectivity of the virus.
- However, these antibodies, intended to protect the host, may sometimes prove beneficial to the virus, by facilitating viral entry and replication in the target cell.
- This phenomenon, known as antibody-dependent enhancement (ADE) of infection, is a result of the interaction of virus-antibody immune complexes with Fcγ and/or complement receptors on certain types of host cells and promotes viral entry into the host cells.

SERUM PROTEIN

- Analysis of blood samples from patients with Long Covid a debilitating condition with unknown causes has revealed serum protein changes as the likely culprit.
- The findings highlight potential biomarkers for Long Covid diagnosis and could yield insights into treating the condition.

SERUM PROTEIN

- Serum is the fluid and solvent component of blood which does not play a role in clotting. It may be defined as blood plasma without the clotting factors, or as blood with all cells and clotting factors removed
- Serum proteins are classified as albumin or globulins. Albumin is the most abundant protein in the serum.
- It carries many small molecules. It is also important for keeping fluid from leaking out from the blood vessels into the tissues.
- Serum total protein, also known as total protein, is a clinical chemistry parameter representing the concentration of protein in serum. The serum contains many proteins including serum albumin, a variety of globulins, and many others.



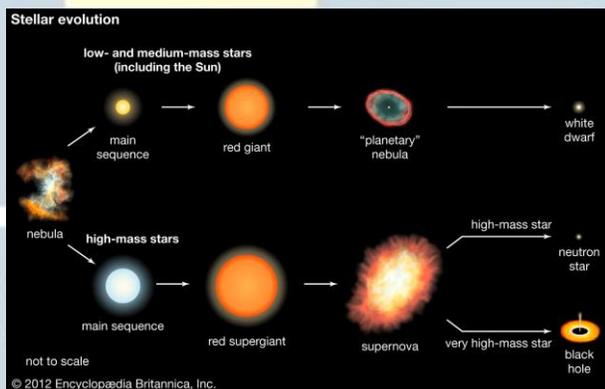
Evolution of stars

- Researchers who used a telescope in South Africa report discovery of an object in the Milky Way that could

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either be the most massive mass between 2.09 and 2.71 solar masses neutron star ever observed, or the least massive black hole.

- There is a substantial gap between the masses of the heaviest measured neutron star and the lightest measured black hole the most massive neutron stars generally range between 2.2 to 2.5 solar masses, while black holes of less than 5 solar masses are rare.



Simian human immunodeficiency virus

- Three different antibodies have been isolated and tested, which can each shield large animals from infections with simian-human immunodeficiency virus (SHIV), a chimera of SIV and HIV.
- The antibodies directed against the HIV fusion peptide provided almost complete protection against challenges with SHIV, adding further evidence that the fusion peptide can

be targeted with neutralizing antibodies for HIV.

- The simian immunodeficiency viruses (SIVs) are a genetically diverse group of viruses that naturally infect a wide range of African nonhuman primates and are the source of the human immunodeficiency viruses (HIV-1 and HIV-2).
- The Hindu

Urbanization and climate change

- More than half of the world's population now resides in the cities and are thus vulnerable to urban climate change such as increased heat stress and extremes.
- Globally, cities contribute to more than 80% of the global GDP and 75% of all greenhouse gases/carbon emissions.
- Thus, they are both contributors to climate change and also potential agents for tackling it.
- However, their representation in Nationally Determined Contributions (NDCs) and National Adaptation Plans is inadequate.
- Nevertheless, in recent times, the inclusion of the 11th sustainable development goal (SDG) exclusively focusing on cities and the formation of groups like the U20 under the G20

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umbrella have acknowledged the need for city level action plans.

- The ministerial meeting on urbanisation and climate change at COP 28 stressed the importance and role of cities in achieving climate change mitigation and adaptation targets.
- These initiatives show the importance attached to cities and their role in global affairs including climate change mitigation and adaptation.
- Bhubaneswar, a tier II city in the eastern State of Odisha, is rapidly urbanizing in recent times.

IMPACT

- It was quantified that almost 60% of the overall warming observed over the city is due to local activities/changes.
- In addition to the warming due to climate change, there is additional warming due to the trapping of heat by the concrete and asphalt materials used to build the city.
- The decreased evapotranspiration due to the replacement of natural surfaces with artificial impervious surfaces is also contributing to the observed warming.

- Reduction in the wind speeds by about 0.2 meters per second, in the eastern fringes of the city, limiting dispersion of heat.
- Microclimate plays a significant role in shaping winter urban surface temperatures, highlighting the complex interplay between urbanization and climate.
- Urban planning to mitigate or adapt to these changes require systematic scientific explorations

Steps needed

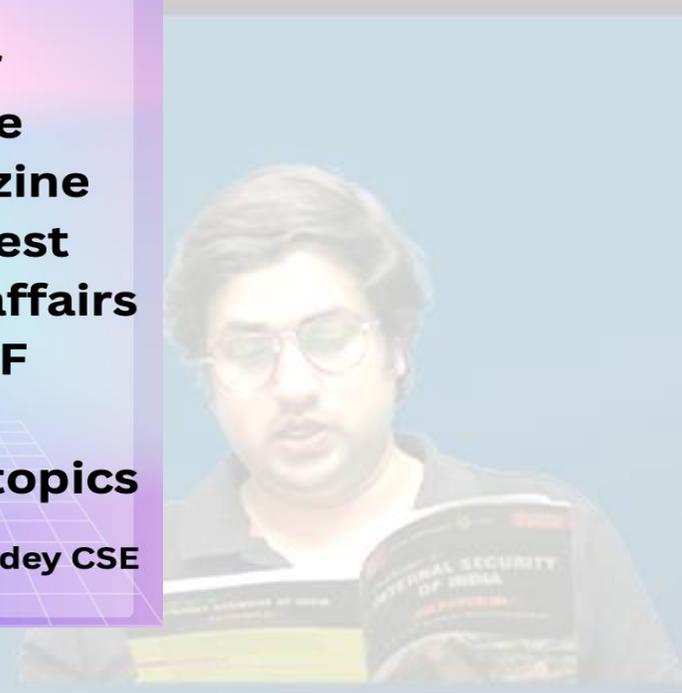
- Different mitigation strategies like cool roofs, highly reflective pavements, and blue green infrastructure (water bodies and green spaces).
- Building climate resilient smart cities is important to ensure the health, safety, and comfort of the ever-increasing urban population.

The Hindu

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