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Immune Archetypes

Researchers have found '12 immune archetypes' that will help in identifying cancers & developing precision immunotherapies.

- Researchers have categorized the tumour specimens into 12 groups called immune archetypes, based on their immune microenvironment.
- [This microenvironment-based categorization was done by looking at which immune cells were present and which genes were expressed.]
- Their findings offer a new way of looking at cancer immunotherapy that matches the immune environment around the tumour and points the way to personalized immunotherapies.
- This work will help clinicians find the right biology to target and avoid targeting cells that aren't present in the tumour.
- The researchers have found that the tumors and their environments inform each other.
- The tumours contained a range of immune cells, such as macrophages, NK and B cells - beyond the T cells (which are the focus of current immunotherapies).
- Immune archetype of a tumor is not necessarily tied to a type of cancer.
- Some archetypes are largely drawn from just a few kinds of cancer. Others draw from many.

Tumors

- Tumors are more than just out-of-control cells. They are also filled with immune cells which are supposed to kill the cancer cells.
- But in cancer, malignant cells are able to overcome the body's immune response and continue to multiply.

Immunotherapy

- Immunotherapy for cancer treatment harnesses the body's immune system to fight cancer.
- It has held great promise since it was first developed as a biological therapy used to treat a variety of cancers.
- While it has proven successful for some patients, immunotherapy does not work for all patients. This is where immune archetypes come into help.

Reference

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Gateway to Hell

Turkmenistan President has ordered experts to find a way to extinguish the 50-year-old fire in the Darvaza natural gas crater.

- Also known as the 'Gateway to Hell' or the 'Door to Hell', this crater is located in the Karakum desert, 260 kms away from Ashgabat (Turkmenistan's capital).
- In 2018, the crater was officially renamed as the "Shining of Karakum".
- While the details of the origin of the crater are contested, it has been said that the crater was created in 1971 during a Soviet drilling operation.
- The drilling operation had hit a pocket of natural gas, containing methane, by mistake.
- To stop that methane from leaking into the atmosphere, the scientists lit it with fire, assuming the gas present in the pit would burn out within a few weeks. But it is burning till now.
- According to local geologists, the huge crater formed in the 1960s but was only lit in the 1980s.
- The recent order to extinguish this human-made crater was because of its negative effects both on the environment and the health of the people living nearby.
- Inside the "coliseum of fire", a bacteria living amidst the burning crater that was not found in any of the surrounding soil outside of the crater.

Reference

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2. https://www.bbc.com/news/world-asia-59920221
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Light Combat Aircraft Programme

Hindustan Aeronautics Limited (HAL), expects to deliver all Final Operational Clearance (FOC) variant aircraft to the Indian Air Force (IAF) in 2022, while the LCA-MK1A is expected to take flight in June 2022.

- In 2021, Ministry of Defence signed a deal with HAL to supply 73 LCA Tejas Mk-1A fighter aircraft and 10 LCA Mk-1 trainer aircraft to the IAF.
- The MK-1A will have over 40 modifications over the MK1 variant.
- **Twin objectives** of the LCA programme are,
    1. To develop LCA for the IAF and
    2. To reduce the gap in the field of aeronautical technology available in India and the advanced nations of the West.
- LCA is designed by Aeronautical Development Agency (ADA) under the Department of Defence Research and Development (DRDO).
- The first LCA squadron No. 45 'Flying Daggers' in the IAF was formed in 2016.
- The second LCA squadron No. 18 'Flying Bullets' was operationalised in 2020.

Light Combat Aircraft

- Light Combat Aircraft (LCA)-Tejas was conceptualised in 1984.
- LCA are the lightest, smallest and tailless multi-role supersonic fighter aircraft in its class.
- It is designed to carry precision-guided air-to-air and air-to-surface, weapons.
- Since the first flight of the LCA technology demonstrator in 2001, the indigenous single engine 4.5 generation multi-role fighter jet christened as 'Tejas' by then Prime Minister in 2003.

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‘Developing Country’ Status

China’s status as a ‘developing country’ at the World Trade Organization (WTO) has become a issue with many countries as China being an upper middle-income nation derive bsenefits reserved for developing countries.

> Concerns have been raised over the ‘least developed country’ (LDC) status, with Bangladesh potentially losing this tag after surpassing India in terms of GDP per capita.

- **Classification** - The WTO has not defined ‘developed’ and ‘developing’ countries.
- So, the member countries are free to announce whether they are ‘developed’ or ‘developing’.
- **Benefits -** Certain WTO agreements give developing countries special rights through ‘special and differential treatment’ (S&DT) provisions.
- S&DT provisions can grant developing countries longer timeframes to implement the agreements and even commitments to raise trading opportunities for such countries.
- WTO pacts are often aimed at
    1. Reduction in government support to certain industries over time and
    2. Set more lenient target for developing nations and grant them more time to achieve these targets compared to developed ones.
- The classification allows other countries to offer preferential treatment.
- **Related Links** - Bangladesh - LDC to a Developing Country, Least Developed Countries Report 2021

Reference

https://indianexpress.com/article/explained/at-wto-china-a-developing-country-why-many-nations-are-raising-concerns-7716778/

Collective Security Treaty Organisation

The Collective Security Treaty Organisation (CSTO) is the organisation helping Kazakhstan President deal with protesters.

- When the Cold War drew to a close in 1991, the Warsaw Pact, an alliance of 8 socialist states, and the Soviet Union’s answer to NATO, dissolved.
- Less than a year later, Russia and five of its allies in the Commonwealth of Independent States, which was a loose club of post-Soviet countries, signed a new Collective Security Treaty, which came into force in 1994.
- In 2002, as Central Asia loomed larger in geopolitics, it declared itself the Collective Security Treaty Organisation, a full-blown **intergovernmental** military alliance.
- Also known as the “Tashkent Pact” or “Tashkent Treaty”, today, it has 6 members - Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russia and Tajikistan. Uzbekistan had quit the alliance in 2012.
- Headquartered in the Russian capital of Moscow, it aims
    1. To strengthen peace, international and regional security including cybersecurity and stability, and
    2. To protect on a collective basis of the independence, territorial integrity and sovereignty

of the member states.

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