

## Daily News Decode

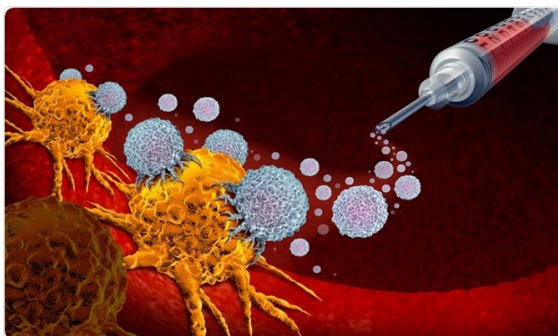
04.06.21

### DBT-NII Receives Trademark for India's First Indigenous Tumour Antigen SPAG9



- As per World Health Organization (WHO), one in 10 Indians will develop cancer during their lifetime, and one in 15 will die of cancer.
- Therefore, it is all the more critical to make extraordinary breakthroughs and innovations for this deadly disease.
- To successfully implement innovation newer modalities for cancer treatment, researchers at the New Delhi-based National Institute of Immunology (NII), an Autonomous Institute of Department of Biotechnology (DBT), and clinicians at Cancer Institute, Adyar, Chennai have been working together to translate new scientific discoveries into improved care for cancer patients.
- Over the past twodecades, this team has been engaged in translating breakthrough that promises to add a highly potent weapon to the armoury against cancer especially employing targeted cancer Immunotherapy.
- India's first indigenous tumour antigen SPAG9 was discovered by Dr Anil Suri in 1998 who is heading the Cancer Research Program at NII.
- In a recent development, the SPAG9 antigen has received the trademark ASPAGNIITM.
- Currently, ASPAGNIITM is being used in dendritic cell (DC) based immunotherapy in cervical, ovarian cancer and will also be used in breast cancer.

### Immunotherapy



- Immunotherapy is a new approach that exploits the body's inner capability to put up a fight against cancer.
- With this approach, either the immune system is given a boost, or the T cells are "trained" to identify recalcitrant cancer cells and kill them.
- In this personalised intervention, those patients expressing SPAG9 protein can be treated with DC-based vaccine approach.
- In DC-based vaccine, patient's cells called monocytes from their blood are collected and modified into what are called dendritic cells.

- These dendritic cells are primed with ASPAGNIITM and are injected back to the patient to help the 'fighter' cells, or T-cells, in the body to kill the cancer cells.
- DC-based immunotherapy is safe, affordable and can promote antitumor immune responses and prolonged survival of cancer patients.

## International Day of Innocent Children Victims of Aggression observed globally on June 4: History & significance



- International Day of Innocent Children Victims of Aggression is observed globally on 4th June every year.
- This day affirms the United Nations' commitment to guard the rights of children.
- This day is to acknowledge the pain suffered by children who are the victims of physical, mental and emotional abuse.
- The main aim of celebrating today is to spread the notice about the pain and sufferings faced by the victims as children.
- On 19th August 1982, the United Nations, at its emergency special session decided to commemorate this day of each year as the International Day of Innocent Children Victims of Aggression.

## WOMEN IN SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS (STEM)



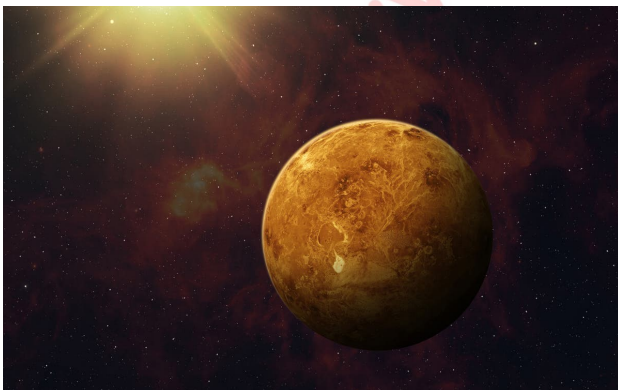
- Bihar Chief Minister Nitish Kumar announced 33.3 % reservation for girl students in engineering & medical colleges of the state.
- The 33.3% quota for girls would be introduced in all engineering and medical colleges across the state from the coming academic session (2021-22).
- With this, Bihar will become the first state in the country to provide 33.3% quota to girls in the technical colleges.
- This will increase the number of girl students in the field of engineering and medical areas.

## CAVES OF TRIRASHMI HILL



- The Archaeological Survey of India (ASI) has found three more caves in Trirashmi hill in Nashik where the Trirashmi Buddhist caves — also known as Pandav Leni — are located.
- The antiquity of the caves is yet to be established; archaeologists studying them, however, believe they could be older than the Trirashmi caves.
- These caves may have been dwellings of Buddhist monks.
- All the caves have verandahs and the characteristic square stone platform for monks.
- There are special arrangements for monks to meditate, similar to the Kanheri and Wai caves.
- The Trirashmi or Pandav Leni caves are a group of 25 caves that were carved out of Trirashmi Hill between the 2nd century BC and 6th century AD.
- The caves complex was documented in 1823.
- It is now an ASI protected site and a tourist destination.
- The Buddhist sculptures and caves (in Nashik) are an early example of Indian rock-cut architecture representing the Hinayana tradition of Buddhism.

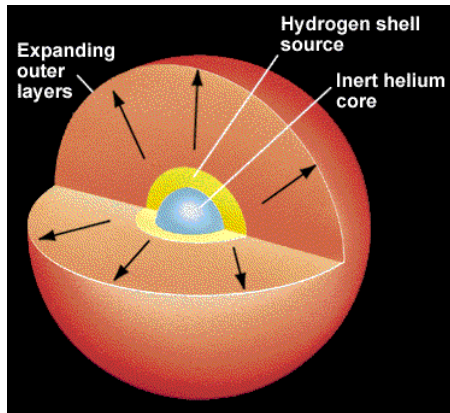
## NASA has selected two missions to the planet Venus, Earth's nearest neighbour.



- The missions are called DAVINCI+ and VERITAS and will be launched between 2028-2030.
- DAVINCI+ is short for 'Deep Atmosphere Venus Investigation of Noble gases, Chemistry, and Imaging' and is the first US-led mission to the planet's atmosphere since 1978.
- It will try to understand Venus' composition to see how the planet formed and evolved.
- This mission also consists of a descent sphere that will pass through the planet's thick atmosphere and make observations and take measurements of noble gases and other elements.
- Significantly, this mission will also try to return the first high resolution photographs of a geological feature that is unique to Venus.
- This feature, which is called "tesserae" may be comparable to Earth's continents.

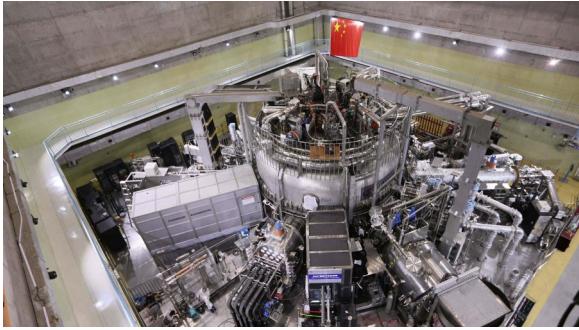
- The presence of tesserae may suggest that Venus has tectonic plates like Earth.
- The second mission called VERITAS is short for 'Venus Emissivity, Radio Science, InSAR, Topography, and Spectroscopy' and will map the planet's surface to determine its geologic history and understand the reasons why it developed so differently from Earth

## Red Giant star- He flashing



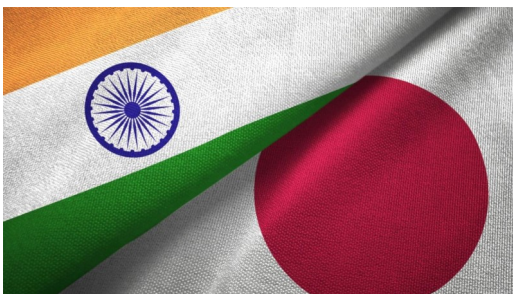
- Anomalously large abundance of lithium in low mass red giants traced to He-flashing phase of 2 million years
- Scientists from the Indian Institute of astrophysics have pinned down the mechanism behind the Lithium production in low mass red clump stars.
- Having found lithium excess to be common among the low mass red clump giants, they have now traced Helium (He)-flashing phase of the star's evolution as the site for high lithium production.
- This transition phase lasts for about 2 million, during which RGB giants with inert He-core at the centre become red clump giants of He-core burning.
- Recently, a group of Astronomers at the Indian Institute of Astrophysics (IIA), Bengaluru, an autonomous institute of the Department of Science & Technology, found observational evidence for Li enhancement during the helium-flashing phase of 2 million years, followed by a rapid decrease in Li abundances of such stars.
- According to their work, it seems Li excess in giants is a transient phenomenon.
- The researchers led by Mr. Raghubar Singh and Prof. Eswar Reddy of IIA used asteroseismology (seismic study of stars using time-resolved photometry from Kepler space telescope) combined with spectroscopic abundances of elements to track the evolution of lithium in a sample of giant stars.
- In addition to the evidence for Li production site, a first-of-its-kind correlation between the two independent observed quantities Li abundance and stellar oscillations (gravity mode period spacing) will serve to track the He-flashing phase of converting RGB giant of an inert, electron-degenerate He-core into a fully convective He-burning core by a series of core He-flashes, a theory developed in the 1960s.
- These results will be of great interest to a larger community of theoreticians and observers.
- This is because of lithium's broader implications to cosmological models, which predict Big Bang lithium abundance, which is a factor of four less than the presently observed values in the interstellar medium or very young stars, indicating lithium is increasing.
- Identification of production sites is important for accounting for Li enhancement in the Universe and provides excellent insights into the internal working of stars

## Experimental Advanced Superconducting Tokamak (EAST)



- China's Experimental Advanced Superconducting Tokamak (EAST), an advanced nuclear fusion experimental research device, set a new record after it ran at 216 million degrees Fahrenheit (120 million degrees Celsius) for 101 seconds.
- For another 20 seconds, the "artificial sun" also achieved a peak temperature of 288 million degrees Fahrenheit (160 million degrees Celsius) for another 20 seconds.
- The sun's core only reaches about 15 million degrees Celsius, which means the reactor was able to touch temperatures that are 10 times hotter than that.
- The reactor is located at the Institute of Plasma Physics of the Chinese Academy of Sciences (ASIPP) in Hefei, China.
- Its purpose is to replicate the process of nuclear fusion, which is the same reaction that powers the sun.
- It is one of three major domestic tokamaks that are presently being operated across the country, the other two China is currently operating are the HL-2A reactor as well as J-TEXT.
- EAST first became operational in 2006.
- It is part of the International Thermonuclear Experimental Reactor (ITER) facility, which will become the world's largest nuclear fusion reactor when it becomes operational in 2035.
- The project includes the contributions of several countries, including India, South Korea, Japan, Russia and the United States.
- The next goal for the scientists behind the experimental reactor is to maintain the high temperature for a long period of time.
- China is not the only country that has achieved high plasma temperatures as, in 2020, South Korea's KSTAR reactor set a new record by maintaining a plasma temperature of over 100 million degrees Celsius for 20 seconds.

## Union Cabinet approves MoC between India-Japan on urban development



- The Union Cabinet has approved a memorandum of cooperation between India-Japan in the field of sustainable urban development.
- A Memorandum of Cooperation (MoC) on Sustainable Urban Development has been signed between the Ministry of Housing & Urban Affairs, Government of India and the Ministry of Land, Infrastructure, Transport and Tourism, Government of Japan.

- A Joint Working Group (JWG) will be also formed to implement the programmes on cooperation under the Memorandum of Cooperation (MoC).
- The JWG will meet once a year.
- The MoC will strengthen the technical cooperation in the field of Urban Planning, Smart Cities Development, Affordable Housing (including rental housing), Urban Flood Management, Sewerage and Waste Water Management, etc.
- The best practices and key learnings will be exchanged between India and Japan in the field of Sustainable Urban Development.

## Navy's Hydrographic Survey Ship Sandhayak To Be Decommissioned



- Indian Navy's hydrographic survey ship, Sandhayak would be decommissioned after serving the nation for 40 years.
- The decommissioning ceremony of INS Sandhayak will be held at naval dockyard Visakhapatnam and will be a low-key event attended only by in-station officers and sailors with strict observance of COVID-19 protocols.
- The ship, during its commissioned service, undertook approximately 200 major hydrographic surveys and numerous minor surveys in both east and west coasts of the country, the Andaman seas as well as in the neighbouring countries.
- The ship has been an active participant in many significant operations such as Operation Pawan (assisting the Indian Peace Keeping Force in Sri Lanka in 1987) and Operation Rainbow (rendering humanitarian assistance post Tsunami of 2004).
- The ship was commissioned to the Indian Navy on February 26, 1981.
- Since that day, the ship has been the alma-mater nurturing the hydrographers of the Indian Navy thereby laying the foundation of complete hydrographic coverage of the peninsular waters.

## ADB and India signed an agreement for road upgradation project in Sikkim



- The Asian Development Bank and the Government of India signed an agreement for financing road up-gradation project in Sikkim.
- ADB will give a \$2.5 million project readiness financing (PRF) loan to support projects related to upgradation of major district roads in Sikkim.
- It will improve the connectivity and also boost the economic activities in the state.

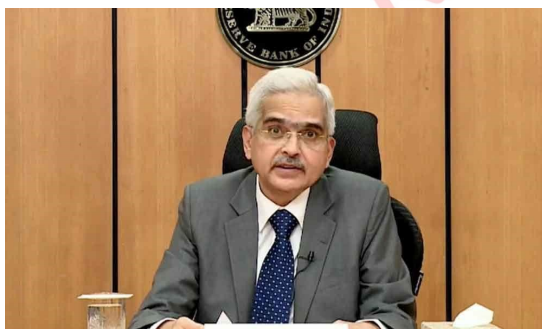
- The project readiness financing (PRF) will help in connecting the major district and other roads with the national and state highway network.
- In 2011, the ADB-funded North Eastern State Roads Investment Program was launched to improve road connectivity in Sikkim.
- The state agencies will prepare detailed engineering designs of selected sub-projects and do feasibility studies.
- Sikkim's road network requires regular up-gradation due to frequent landslides and erosion.

## Indus Best MegaFood Park



- Union Minister for Food Processing Industries, virtually inaugurated the Indus Best MegaFood Park along Chief Minister, Chhattisgarh, and in presence of Rameswar Teli, Union Minister of State for Food Processing Industries.
- The Mega Food Park will ensure value addition, a longer shelf life for farm produce, better price realization for farmers, excellent storage facility and will provide an alternate market for farmers in the region.
- The Park will also provide direct and indirect employment to about 5,000 persons and benefit about 25,000 farmers in the CPC and PPC catchment areas.
- The modern infrastructure for food processing created at Park will benefit the processors and consumers of Chhattisgarh and adjoining areas immensely and prove to be a big boost to the growth of the food processing sector in the State of Chhattisgarh.

## RBI Governor Addressed On RBI Monetary Policy 2021



- The six-member monetary policy committee of the Reserve Bank of India (RBI) headed by Governor Shaktikanta Das, has decided to keep key lending rates unchanged for the sixth consecutive time, in its June 2021 policy review meeting held between June 2 to 4, 2021.
- The RBI's Monetary Policy Committee (MPC) has decided to continue with an accommodative stance until necessary to mitigate the impact of COVID-19.
- The next meeting of the MPC is scheduled from August 4 to 6, 2021.
- The Marginal Standing Facility (MSF) rate and bank rates remain unchanged:
- Policy Repo Rate: 4.00%
- Reverse Repo Rate: 3.35%
- Marginal Standing Facility Rate: 4.25%
- Bank Rate: 4.25%

- CRR: 4%
- SLR: 18.00%

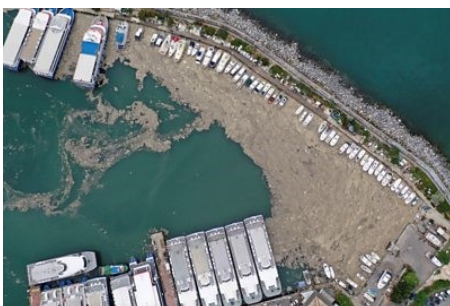
RBI Monetary Policy Highlights & Key Decisions:

- The RBI also downgraded the GDP growth forecast for FY22 to 9.5 per cent compared with 10.5 per cent earlier.
- On the other hand, growth is a bigger concern. The Gross Domestic Product (GDP) contracted 7.3 per cent in FY21.
- Recently, SBI economists had sharply cut their FY22 GDP growth estimates to 7.9 per cent from what was 10.4 per cent earlier.
- The Reserve Bank of India Governor Shaktikanta Das announced a projection for Consumer Price Index (CPI) inflation at 5.1 per cent for FY 2021-22.
- G-SAP 2.0 worth ₹1.2 lakh crore will be taken in the second quarter of FY22 to support the market.
- The rupee snapped its three-day losing streak and closed 18 paise higher at 72.91 against the US dollar.

The composition of the Monetary Policy Committee is as follows:

- Governor of the Reserve Bank of India – Chairperson, ex officio: Shri Shaktikanta Das.
- Deputy Governor of the Reserve Bank of India, in charge of Monetary Policy– Member, ex officio: Dr Michael Debabrata Patra.
- One officer of the Reserve Bank of India to be nominated by the Central Board – Member, ex officio: Dr Mridul K. Sagar.
- A professor at the Mumbai-based Indira Gandhi Institute of Developmental Research: Prof. Ashima Goyal.
- A professor of finance at the Indian Institute of Management in Ahmedabad: Prof. Jayanth R Varma.
- An agricultural economist and a senior adviser with the National Council of Applied Economic Research in New Delhi: Dr Shashanka Bhide.

## What is the thick layer of 'sea snot' spreading across Turkey's Sea of Marmara?



- A thick layer of "sea snot" is spreading across Turkey's Sea of Marmara, posing a threat to marine life and the fishing industry.
- "Sea snot" is the overgrowth of microscopic algae called phytoplankton.
- The mucus-like slimy layer contains a variety of microorganisms and is caused by increase in seawater temperature due to global warming, stillness at sea and pollution.



## WHO joins the UN Decade on Ecosystem Restoration on World Environment Day



- On the occasion of World Environment Day 2021, WHO has joined the UN Decade on Ecosystem Restoration, a partnership aimed at preventing, halting and reversing the degradation of our ecosystems and the diversity of life they sustain.
- WHO has joined the partnership as a collaborating agency, along with the United Nations Environment Programme (UNEP), the Food and Agriculture Organization of the United Nations (FAO) and a large number of partners.
- Ecosystem restoration can significantly contribute to supporting health and well-being by helping to regulate infectious diseases, supporting food and nutrition security, and contributing to climate mitigation and adaptation.
- Restoration also reduces the risk of disasters, while supporting livelihoods and healthy societies.
- Safeguarding and restoring ecosystems globally will contribute to long-term social wellbeing and ecological resilience, while boosting green recovery efforts from the pandemic.
- The UN Decade on Ecosystem Restoration is part of a series of collaborative efforts led by WHO that seek to strengthen cross-sectoral collaboration and engagement at the human, animal, plant and ecosystem interface, also known as One Health.

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