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1. 2023 Breakthrough Prize winners announced (Sept. 23, 2022)

On September 22, the winners of the 2023 Breakthrough Prize, called the Oscars of Science, totaling more than \$15 million, were announced.

IMPORTANT FACTS -

- This year three awards were given in the Life Science category while one award each for Mathematics and Physics.
- Daniel Spielman of Yale University was awarded the Breakthrough Prize in Mathematics for his many discoveries in theoretical computer science and mathematics.
- Clifford Brangwyn and Anthony Hyman (British scientist) won the Life Science Prize for their discovery of a new mechanism of cellular organisation.
- Other life science prizes were awarded to Demis Hassabis (British scientist) and John Jumper (USA) for developing AlphaFold, which predicts the structure of proteins, and Emmanuel Mignot (France) and Masashi Yanagisawa (USA) for discovering the causes of narcolepsy.

ADDITIONAL INFORMATION -

About Breakthrough Prizes :

- The Breakthrough Prizes were started in 2010 by a group of Silicon Valley entrepreneurs.
- These Prizes were founded by Sergey Brin, Priscilla Chan and Mark Zuckerberg, Yuri and Julia Milner, and Anne Wojcicki.
- These prizes are the most richly endowed prizes in science, the prize money of which exceeds that of the Nobel Prizes.
- Breakthrough has an amount of \$3 million in each prize, which is more than \$1 million in prizes awarded to the winner of the Nobel Prize.
- The awards are presented in the fields of life sciences, fundamental physics and mathematics.

2. Lumpy skin disease virus different from 2019 version (Sept. 20, 2022)

The Lumpy Skin Disease (LSD) virus that has killed nearly 50,000 cattle in India this year may be structurally different from the version of the virus prevalent in India in 2019.

A new vaccine is being developed to protect cattle from this disease.

IMPORTANT FACTS -***What is Lumpy Skin Disease ?***

- It is caused by infection of **cattle or buffalo** with the poxvirus Lumpy skin disease virus (LSDV).
- The virus is one of three closely related species of the genus **Capripoxavirus**.
- The other two species are **Sheeppox virus** and **Goatpox virus**.
- Due to its infectious nature and its impact on the economy, the World Organization for Animal Health (WOIE) has declared it a notable disease.

Symptoms of disease :

- The main symptoms are fever in animals, discharge from eyes and nose, saliva from the mouth, lump-like soft blisters all over the body, decreased milk production, difficulty in eating, which sometimes leads to the death of the cattles.

Transmission of disease :

- The virus is easily transmitted through blood-sucking insects such as mosquitoes, flies and ticks, and through saliva and contaminated water and food.
- The virus was first reported in Asia and the Pacific region in 2019 in north west China, Bangladesh and India.
- There is no treatment available for the disease.

Vaccine for disease :

- The vaccine **Lumpi-ProVacInd**, jointly developed by **ICAR's National Research Centre on Equines (NRCE)** and **the Indian Veterinary Research Institute (IVRI)**.
- Experimental trials with the vaccine on animals afflicted by the ongoing 2022 outbreak have yielded encouraging results.

3. Union Minister Jitendra Singh to lead Indian delegation at the Global Clean Energy Action Forum meeting in America (Sept. 18, 2022)

Union Minister of State (Independent Charge) Science and Technology Dr Jitendra Singh will lead a Joint Indian Ministerial official delegation of Ministry of Power, New & Renewable Energy and the Ministry of Science & Technology on a 5-day (19-23 September) visit to USA, to participate in Global Clean Energy Action Forum. The delegation includes Minister for Power and New and Renewable Energy R K Singh.

IMPORTANT FACTS -

Meeting in the United States of America :

- They will take part in the joint convening of the Clean Energy Ministerial (CEM13) and Mission Innovation (MI-7) which will take place from 21st to 23rd September at **Pittsburgh, Pennsylvania, United States of America.**
- They will also participate in the **1st Roundtable on Sustainable Bioenergy and Bio-refineries** and the **2nd Roundtable on Net Zero Built Environment with Connected Communities.**
- At the Clean Energy Action Forum the ministers are likely to underline India's commitment to a low-carbon future that aims to transform the energy landscape of the country by accelerating clean energy innovations.

India's commitment on clean energy :

- The government of India has committed itself to reach **500 GW of renewable energy capacity by 2030** and increase the contribution of **renewable energy in total energy to 50%.**
- It has also committed to **reduce carbon emissions by one billion tons**, reduce carbon intensity of the economy **by 45 per cent** over 2005 levels and finally achieve **net zero emissions by 2070.**

4. AN-32 Transport Aircraft (Sept. 17, 2022)

To reduce its carbon footprint, the Indian Air Force (IAF) is planning to fly a modified AN-32 transport aircraft operating on 10% blended biodiesel for 200 flight hours in the next six months.

IMPORTANT FACTS -

- The aircraft flew on biodiesel mixed with **aviation turbine fuel (ATF)** for the first time in December **2018.**
- So far, one **AN-32** has flown 65 hours with **10% biofuel** mixture and the performance has been quite satisfactory.
- Another aircraft, the **Dornier**, is undergoing ground testing after being approved by the engine's original manufacturer Honeywell to use **50% biofuel.**
- The global aviation industry is one of the largest emitters of greenhouse gases that cause global warming.
- The **indigenous bio-jet fuel was first produced in 2013** by the CSIR-IIP laboratory in Dehradun, but could not be tested for commercial use on aircraft.
- This fuel is made from **Jatropha oil** procured from **Chhattisgarh Biodiesel Development Authority (CBDA)** and then processed at **CSIR-IIP, Dehradun.**

About AN-32 :

- It is a twin-engine, tactical light transport aircraft designed and manufactured by Antonov Design Bureau of Ukraine for the Indian **Air Force (IAF)**.
- The AN-32 is derived from the **AN-26 transport aircraft**.
- The current total number of AN-32 transport aircraft operating around the world is **240**.
- It can fly at a maximum speed of **530km/h** and its cruise speed is **470km/h**.
- It has **ten variants**.

5. 9th Session of governing body of the ITPGRFA to be held in New Delhi (Sept. 16, 2022)

The 9th Session of the Governing Body (GB9) of the 'International Treaty on Plant Genetic Resources for Food and Agriculture' (ITPGRFA) will be held in New Delhi from 19-24th September, 2022.

IMPORTANT FACTS -

- **ITPGRFA** is a legally binding comprehensive agreement adopted in November, 2001 at Rome during the 31st session of the Food and Agriculture Organization of the United Nations, which entered into force on June 29, 2004 and currently has 149 Contracting Parties, including India.
- The treaty provides solutions to achieve food and nutritional security as well as climate resilient agriculture. Countries are interdependent for PGRFA (Plant Genetic Resources for Food and Agriculture) and consequently a global order is essential to facilitate access and benefit sharing.

Theme of the GB9 :

- The GB9 is being held under the theme **“Celebrating the Guardians of Crop Diversity: Towards an Inclusive Post-2020 Global Biodiversity Framework”**.

6. India's first Lithium- ion cell manufacturing plant to start its trial run (Sept. 15, 2022)

India's first Lithium -cell -ion cell manufacturing plant will start its trial run on 16 September 2022. It will be inaugurated by Union minister of state for electronics and IT, Rajeev Chandrasekhar.

IMPORTANT FACTS -

- The lithium cell -ion cell manufacturing plant has been set up by the Chennai based **Munoth Industries limited (MIL)** at **Tirupathi in Andhra Pradesh**.
- MIL has tied up with China-based Tianjin Lishen, BPI and Amprius for technology and the end product for its Lithium cell manufacturing plant.
- MIL will invest Rs 799 crore in three phases.
- In the first phase it will produce lithium-ion cells for the consumer electronics segment such as mobile phones, hearable and wearable devices, followed by an energy storage system and two-and-three wheel electric vehicles.
- According to the company India imports Rs 15,000 crore-Rs 20,000 crore of lithium-ion cells from China, South Korea, Vietnam and Hong Kong. With the establishment of the new facility, it would take care of 60% of India's requirements.

7. Health Minister Dr Mansukh Mandaviya to launch Raktdaan Amrit Mahotsav (Sept. 14, 2022)

The Union Ministry of Health and Family Welfare will launch Raktdaan Amrit Mahotsav, a countrywide mega drive for voluntary blood donation from 17th September to 1st October this year. 1st October is observed as the National Voluntary Blood Donation Day.

According to the Union Health Minister **Dr Mansukh Mandaviya**, Government plans to set up a database of eligible voluntary blood donors in the country through the nationwide voluntary blood donation drive.

IMPORTANT FACTS -

Aim of the Raktdaan Amrit Mahotsav :

- According to the Minister the campaign is aimed at increasing awareness about the need for regular non-remunerated voluntary blood donations.
- It would also ensure that different components of blood including packed red cells, plasma and platelets are available, accessible, affordable and safe.
- Along with filling the current capacity of blood banks in the country, the campaign would also help create a repository of blood donors in the country,
- As per the government, in the year 2021, India had 1.25 crore units of blood against the demand of 1.46 crore units. One unit comprises 350 millilitre of blood.

8. Honda motorcycle to launch fully ethanol run two wheelers in 2025 (Sept. 14, 2022)

World's largest motorcycle manufacturer company Honda has announced that it will introduce ethanol-only motorcycles in India in the year 2025.

The Japanese company is the **first company** in the world to introduce a bike powered by an eco-friendly fuel mixed with bio-ethanol and petrol. It was first introduced in **Brazil in March 2022**.

IMPORTANT FACTS -***Ethanol fuel based Bike :***

- Initially Honda will introduce E 20 fuel bikes having a fuel content of 20 percent ethanol mixed with petrol in 2023.
- It will introduce an E100 fuel bike having a fuel content of 100 percent ethanol in 2025.

Biofuels in India :

- Bio fuel is the fuel obtained by mixing hydrocarbon based fuel with agricultural produce. In India, Ethanol obtained from molasses (produced during the production of sugar from sugarcane) is mixed with Petrol.

Target set by government of India :

- Under the national Biofuel policy 2018 as amended in 2022, the government of India has set a target of:
- 10% blending of petrol with ethanol by **2022**
- 20% blending of petrol with ethanol by **2025-26**
- 10% blending of ethanol with diesel or biodiesel by **2030**.

9. Gaganyaan first test flight in 2022: Dr Jitendra Singh (Sept. 14, 2022)

Union Minister of State (Independent Charge) for Science and Technology Dr Jitendra Singh has said that India's first human space-flight mission Gaganyaan is expected to be launched in 2024.

He said that the government had planned the human space flight in 2022 itself to commemorate the 75 years of Independence but due to Covid it couldn't be completed.

The first test flight of the mission is expected this year. The first test-flight will be followed by sending a female-looking spacefaring humanoid robot '**Vyom Mitra**' in outer space likely next year,

IMPORTANT FACTS -***Gaganyaan Mission :***

- The Gaganyaan mission was announced by the Prime Minister in his Independence Day speech in 2018 with a budget of Rs 10,000 crore.
- Four Indian Air Force pilots have been identified as crew for the mission who are undergoing training in **Russia**.
- Indian Space research Organisation (ISRO) intends to send at least 2 astronauts in low earth orbit in 2024.

Human Space Flight :

- At present only three countries, the **United States, Russia** and **China** have the capability to launch manned space missions.
- The **first person** to go into space was **Yury Gagarin** of the Soviet Union on 12 April 1961 onboard the Vostok Rocket.
- The first **woman** to go into space was **Valentina Tereshkova** of the Soviet Union on 16 June 1963 onboard the Vostok 6 Rocket.
- Wing Commander **Rakesh Sharma** is the only Indian to go into space. He was part of the Soviet mission aboard Soyuz T-11 on 3 April 1984.
- Humans who travel in space are called astronauts. The Chinese call them **Taikonauts** and the Russians call them **Cosmonauts**.

ADDITIONAL INFORMATION -***Indian Space Research Organisation (ISRO) :***

- It was set up on 15 August 1969
- It is India's national space agency.
- Headquarters: **Bengaluru**
- Chairman: **S.Somanath**

10. India's biggest telecom flagship event DIPA Annual 2022 to be held in New Delhi (Sept. 13, 2022)

Digital Infrastructure Providers Association (DIPA), an apex industry body of digital infrastructure providers will host its Annual Flagship Event on 14 September 2022 at the New Delhi .The event is said to be the biggest event of Telecom industry of the year 2022.

IMPORTANT FACTS -

- The event is being organised by DIPA with the support of the **Department of Telecommunications**.
- The Minister for Communications, Electronics & Information Technology and Railways, Shri **Ashwini Vaishnaw** will be the Chief Guest and the Minister of State for Communications, Shri Devusinh Chauhan will be the Guest of Honour.

Theme of the Event 2022 :

The theme of the event is: "**Gati Shakti vision for 5G & Beyond**".