

Current Affairs search results for tag: science-and-technology

1. SpaceX launches first Falcon Heavy mission after three years (Nov. 2, 2022)

SpaceX launches

SpaceX's Falcon Heavy, the **world's most powerful active rocket**, was launched for the first time after nearly three years on November 1, 2022, from **Cape Canaveral, Florida**.

Important facts

- Under this mission, satellites of the US Space Force have been sent into space from the **Falcon Heavy rocket**.
- This mission was delayed for years by the Space Force.
- Earlier in **2018**, **Elon Musk** sent a **red sports car** of his second company Tesla into space as a test payload on a **Falcon Heavy rocket**.
- The weight of this rocket is equal to the weight of **two space shuttles**, which **weigh 63.8 tonnes**.
- The **230-foot-long rocket** has **27 Merlin engines**, which makes it the world's most powerful rocket.
- **Saturn-5** was the most powerful rocket ever. Which was used by **NASA** for the search on the moon.

About SpaceX

- It is a private spaceflight company that sends satellites and people to space, including NASA crews to the **International Space Station (ISS)**.
- The company sent its first two astronauts to the ISS on May 30, 2020, aboard the SpaceX Crew Dragon, and several more on behalf of NASA and other organizations.
- As of mid-2022, it is the only commercial spaceflight company capable of sending astronauts into space.
- SpaceX was founded by **Alan Musk**, a South African-born businessman and entrepreneur.

2. CDFD launches study to develop treatments for rare genetic diseases in children (Nov. 2, 2022)

treatments for rare genetic diseases in children

Hyderabad-based Centre for DNA Fingerprinting and Diagnostics (CDFD) on November 1, 2022 launched a nationwide study to decode the **genetic mutation that** causes **Paediatric Rare Genetic Disorder (PRaGeD)** in children.

Important facts

- The PRaGeD mission is a pan-India initiative funded by the **Department of Biotechnology (DBT)**.
- The initiative will discover genes that cause rare diseases, develop suitable treatments, provide counselling and create awareness among people.
- About 15 research and health institutions from across the country are participating in the study.
- Under this initiative, 5,600 families will be screened over a period of five years to identify the genetic causes of undiagnosed paediatric rare genetic diseases.
- Once the genetic mutation is detected in these children, the researchers will conduct studies in animals and cell models to understand how the genetic mutations are causing the rare disease.

What is a rare genetic disease?

- A rare disease is any disease that affects a small percentage of the population.
- Most rare diseases are genetic, therefore these are called **rare genetic diseases**.
- These diseases are present throughout a person's entire life, even if symptoms do not immediately appear.
- Common rare diseases found in India are haemophilia, thalassemia, sickle cell anaemia and primary immune deficiency in children, auto-immune diseases, lysosomal storage disorders like Pompe disease, Hirschsprung disease etc.
- The burden of rare genetic diseases in India is close to **70 million** and about 30 percent of children suffering from such diseases are below the age of five years.

3. Kalanamak Rice (Nov. 1, 2022)

Indian Agricultural Research Institute has successfully tested two new dwarf varieties of **Kalanamak rice** (Pusa Narendra Kalanamak 1638 and Pusa Narendra Kalanamak 1652) in Uttar Pradesh which give double yield.

About Kalanamak Rice

- It is a traditional variety of paddy with black husk and **strong aroma**.
- It is a non-basmati rice with medium slender grain length.
- It is believed to be a gift from **Lord Buddha** to the people of **Shravasti** when he visited the region after attaining enlightenment.
- This variety has been in cultivation since the original **Buddhist period (600 BCE)**.
- It is popular in the **Himalayan Terai (Kapilvastu)** of Nepal and eastern Uttar Pradesh, where it is known as the fragrant black pearl.

- Kalanamak rice was granted a **Geographical Indication (GI) tag** by the Government of India in **2012**.

Two dwarf varieties of Kalanamak rice

- Pusa Narendra Kalanamak 1638
- Pusa Narendra Kalanamak 1652

Health Benefits of Kalanamak

- It is rich in **micronutrients** such as Iron and Zinc.
- Therefore it is said to prevent diseases borne out of nutrient deficiencies.
- Regular consumption of Kalanamak rice is believed to prevent **Alzheimer's disease**.
- It contains **11% protein**, which is almost twice that of common rice varieties.
- It has a **low glycemic index** (49% to 52%) which makes it relatively sugar free and suitable for diabetics.
- It also contains antioxidants like **anthocyanins** which are useful in preventing heart disease.

Indian Agricultural Research Institute (IARI)

- It is also known as the **Pusa Institute**, India's national institute for agricultural research, education and extension.
- The institute was originally located in **Pusa, Bihar** as the Imperial Institute of Agricultural Research in **1911**.
- In 1919 it was renamed as Imperial Agricultural Research Institute and after a major earthquake in Pusa, it was shifted to Delhi in **1936**.
- It is financed and administered by the **Indian Council of Agricultural Research (ICAR)**.

4. Rashtrapati Bhavan and other historical monuments in Delhi illuminated in Red to raise awareness of Dyslexia (Oct. 30, 2022)

Rashtrapati Bhavan

Rashtrapati Bhavan, India Gate and other important central government monuments and buildings like North block and South block were illuminated with red light on 30 October to raise awareness of the people about dyslexia.

Every year **October month** is observed as the International Dyslexia awareness month in the world. Since 2019, Go Red for Dyslexia has helped spread awareness for dyslexia across the globe by encouraging people to turn anything and everything red.

Go Red for Dyslexia is a global campaign supported by Succeed with Dyslexia organisation.

What is Dyslexia ?

Dyslexia is a brain-based type of learning disability that specifically impairs a person's ability to read. People with dyslexia have trouble matching the letters they see on the page with the sounds those letters and combinations of letters make.

While people with dyslexia are slow readers, they are often, paradoxically, very fast and creative thinkers with strong reasoning abilities.

Dyslexia can be inherited in some families, and recent studies have identified a number of genes that may predispose an individual to developing dyslexia.

5. Yogi Adityanath inaugurates Asia's first pathogen reduction machine at KGMU in Lucknow (Oct. 30, 2022)

pathogen reduction machine

Uttar Pradesh Chief Minister Yogi Adityanath inaugurated Asia's first **pathogen reduction machine** at the King George's Medical University (KGMU) in **Lucknow**. He was accompanied by Deputy Chief Minister **Brajesh Pathak**, State minister Mayankeshwar Sharan and Professor Bipin Puri, Vice Chancellor of King George's Medical University. The Chief Minister also inaugurated the KGMU's Department of Thoracic Surgery and Vascular Surgery.

What is a Pathogen?

- The pathogen is an organism which can cause disease to its host body. It could be viruses, bacteria, fungi, protozoa, parasites.
- Pathogens cause illness to their hosts through a variety of ways. It directly damages the tissues or cells of the host during replication,
- However, sometimes due to a strong or excessive immune response from the host body, the body itself kills infected and uninfected cells and damages host tissues.

Need of cleaning transfused blood of pathogens

- Blood transfusions are needed in procedures ranging from surgery to delivery and transplant. Blood transfusion is always done after all the necessary blood tests are done. But despite this, some impurities like pathogens remain in the blood, due to which reactions or side effects can be seen in recipient patients.
- This machine helps in eliminating any type of pathogens in the donor's blood which will prove to be very beneficial for organ transplant or patients with weak immunity.
- The machine is capable of completely purifying the blood unit by removing all types of bacteria from the blood within 10-15 minutes through the ultraviolet immunometer.

6. Kerala to cull 20,000 birds after Avian flu outbreak in Alappuzha (Oct. 29, 2022)

Avian flu

The Alappuzha district administration in Kerala has started the culling of around 20,000 birds in the Haripad municipality area to control the spread of the Avian flu outbreak.

The district administration started the operation from 27 October 2022 after the sample of dead birds from the area was sent to the National **Institute of High Security Animal Diseases (NIHSAD), Bhopal** tested positive for **H5N1 virus**.

Birds within one kilometer of the infection area will be killed and the authorities have already imposed a ban on the transportation of birds within 1 kilometer area.

Center sends a high level delegation

The Union Ministry of Health has already sent a high-level team headed by **Dr Rajesh Kedamani** to Kerala to investigate the outbreak in detail and submit a report with immediate recommendations for prevention and control.

The seven-member team comprises experts drawn from the **National Institute of Tuberculosis and Respiratory Diseases**, New Delhi; the **National Centre for Disease Control**, New Delhi; the **National Institute of Epidemiology**, Chennai; and the **All India Institute of Medical Sciences**, New Delhi.

Bird Flu and its Impact on Human

- Avian influenza or bird flu refers to the disease caused by infection with avian (bird) influenza (flu) Type A viruses. These viruses naturally spread among wild aquatic birds worldwide and can infect domestic poultry and other bird and animal species.
- Infected birds shed virus through saliva, mucus and feces. The virus can affect human beings through eyes, nose or mouth.
- Bird flu viruses do not normally infect humans. However, sporadic human infections with bird flu viruses have occurred. According to the World Health Organisation , **Humans can be infected with avian influenza virus subtypes A(H5N1), A(H7N9), and A(H9N2) .**

7. Number of TB patients increases worldwide after 20 years: WHO (Oct. 28, 2022)

TB patients increases worldwide

According to a World Health Organisation (WHO) report **“Global Tuberculosis Report 2022”** released on 27 October 2022, the incidence of Tuberculosis (TB) patients worldwide has shown an increasing trend reversing a 20 year trend of decline due to covid pandemic.

According to the WHO a total of **16 lakh people died** from TB in 2021 which is an increase of 14% as compared to 2019. In 2019 14 lakh people died due to TB while in 2020 it was 15 lakhs.

The WHO says that due to the ongoing war in different parts of the world, the global energy crisis and the food crisis, the situation of TB may worsen in the coming times. “The first priority should be to restore patient access to TB related services so that the detection and treatment of TB cases can be brought back to 2019 levels,” the report says.

Main Highlights of the WHO Report

- TB is the 13th leading cause of death and the **second leading infectious killer after COVID-19**.
- About 10 million people became ill with TB in 2021, which is 4.5 percent more than in 2020.

- An estimated 66 million lives were saved through TB diagnosis and treatment between 2000 and 2020.
- Globally, TB incidence is falling at about 2% per year and between 2015 and 2020 the cumulative reduction was 11%.
- Ending the **TB epidemic by 2030** is among the health targets of the United Nations Sustainable Development Goals (SDGs).
- In 2021, the largest number of new TB cases occurred in the **South-East Asian Region**, with 46% of new cases, followed by the WHO African Region, with 23% of new cases and the WHO Western Pacific with 18%.

India leads the New TB cases

According to the WHO, in 2020, 87% of new TB cases occurred in the 30 high TB burden countries. Eight countries accounted for more than two thirds of the global total.

Maximum new cases were reported from **India** and followed by, Indonesia, China, the Philippines, Pakistan, Nigeria, Bangladesh and the Democratic Republic of the Congo.

TB related Deaths

India ranks first among the four countries that have the highest number of TB related deaths. It is followed by Indonesia, Myanmar and the Philippines.

The report says that it is possible that TB will once again be the number one cause of death in the world. Last year it was covid -19.

What is TB?

Tuberculosis (TB) is caused by **bacteria (Mycobacterium tuberculosis)** that most often affect the lungs. Tuberculosis is curable and preventable.

TB is spread from person to person through the air. When people with lung TB cough, sneeze or spit, they propel the TB germs into the air. A person needs to inhale only a few of these germs to become infected.

India and TB

The government has set a target to eliminate TB from [India](#) **by 2025**.

Every year **March 24** is observed as World Tuberculosis Day in the world.

World Health Organisation (WHO)

- The World Health Organisation is a specialised agency of the United Nations which was founded on 7 April, 1948.
- Headquarters of WHO : **Geneva, Switzerland**
- Members : **194 countries**
- Director General of WHO: **Tedros Adhanom Ghebreyesus** of Ethiopia .

8. ISRO successfully launches its heaviest rocket LVM3-M2 (Oct. 23, 2022)

ISRO launches

The Indian Space Research Organisation (ISRO) has successfully launched its heaviest rocket LVM3-M2, from the Satish Dhawan Space Centre in **Sriharikota** spaceport, Andhra Pradesh on 23 October 2022. The **mission**, which was named **LVM3-M2/OneWeb India-1**, carried 36 broadband communication satellites of OneWeb Company.

It was the first commercial launch of the GSLV Mk3 now called **LVM3 (Launch Vehicle Mark 3)**. M2 means that it is the second mission of the rocket.

The launch was part of the contract between OneWeb, a London-based company, and NewSpace India Limited (NSIL), a central public sector enterprise under the Department of Space, to launch One Web LEO satellite launches on board ISRO's LVM3.

Satellite carried by the Rocket

It carried 36 broadband communication satellites of the United Kingdom based company OneWeb. OneWeb is a private satellite communications company, in which India's Bharti Enterprises (Airtel) is a major investor and shareholder.

The satellites were later successfully placed in the Low Earth Orbit (LEO).

The company's constellation of satellites will be used to beam internet connectivity to terrestrial regions, in a service that will compete with Elon Musk-backed **Starlink** by SpaceX, Jeff Bezos-backed **Project Kuiper**.

LVM3-M2 Rocket

The LVM3-M2 is a three-stage launch vehicle that has two strap-on solid propellant stages (S200) on its sides and a core stage that consists of an L110 liquid stage and a C25 cryogenic stage.

The rocket was earlier called GSLV (Geosynchronous Satellite Launch Vehicle) MkIII and ISRO had successfully carried out four missions.

The current rocket has the ability to launch 8 tonnes satellite into the LEO and satellites weighing up to 4,000 kg into Geosynchronous Transfer Orbit (GTO)

What is LEO?

A low Earth orbit (LEO) is an orbit that is relatively close to Earth's surface. It is normally at an altitude of 2000 km but could be as low as 160 km above Earth. The satellite placed in this orbit is used for communication, spying, remote sensing etc.

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**

9. Chandrayaan-3 launch in June next year : ISRO chairman (Oct. 21, 2022)

Chandrayaan-3 launch in June next year

The **Indian Space Research Organisation** is planning to launch **Chandrayaan-3**, its third mission to the Moon, in **June next year**.

Important facts

- It has a more robust lunar rover on board which is vital for future inter-planetary explorations.
- The space agency has also planned the first test flight of the 'abort mission' for the country's first manned spacecraft Gaganyaan early next year.
- **Chandrayaan-3 (C-3)** launch will be in June next year onboard the **Launch Vehicle Mark-3 (LVM3)**.
- ISRO plans to send Indian astronauts into orbit by the end of 2024 after carrying out abort missions and unmanned test flights.
- India's first attempt to land a rover on the Moon had failed after the Vikram lander on the Chandrayaan-2 mission crashed on the lunar surface in September 2019.

ISRO's Moon Exploration Mission

- Chandrayaan 1
- Chandrayaan-2
- The Indian Space Research Organization (ISRO) recently announced India's third lunar mission Chandrayaan-3, which will consist of a lander and a rover.

About ISRO

- It is India's leading space exploration agency, headquartered in **Bangalore**.
- ISRO was formed in the year 1969 with a view to develop and exploit space technology while pursuing planetary exploration and space science research.
- The first Indian satellite Aryabhata was built by ISRO which was launched on 19 April 1975 with the help of the Soviet Union.
- Chairman - **S Somnath**

10. Union Home Minister Amit Shah launches Hindi version of MBBS book in Bhopal (Oct. 16, 2022)

Union Minister for Home Affairs and Cooperation Home Minister **Amit Shah**, who is on a day-long visit to Madhya Pradesh launched India's first Hindi version of MBBS course books in Bhopal, Madhya Pradesh on 16 October 2022. The Chief Minister of Madhya Pradesh, **Shivraj Singh Chouhan**, was also present during the launch event.

First medical college to offer bilingual MBBS course

Gandhi Medical College Bhopal became the first medical college in Madhya Pradesh and India to offer MBBS courses in both Hindi as well as in English medium, starting 2022-23 session. The book which has been launched in will be first used in the Gandhi Medical College.

Initially, three subjects have been selected to be studied in Hindi which includes **anatomy**, **physiology**, and **biochemistry**.

First State to offer bilingual MBBS course

Madhya Pradesh is the first state in the country to start the MBBS course in Hindi language. The state government intends to extend the bilingual medium of education in the medical field to all the medical colleges in the state.

In 2021 on a visit to Assam Prime Minister Modi has called to establish at least one medical college and one technical college in every Indian state which would impart higher education in regional languages.

Madhya Pradesh State

- Madhya Pradesh, with an area of 3, 08, 000 sq.km. Is the **second largest state** in India after Rajasthan.
- After Independence 25 princely states were merged to create a Madhya Bharat State on May 28, 1948.
- After the reorganization of states in 1956 it was renamed as **Madhya Pradesh on 1 November 1956**.
- On 1 November 2000, Chhattisgarh state was formed by dividing the state of Madhya Pradesh
- It is bounded by the states of **Uttar Pradesh** to the northeast, **Chhattisgarh** to the southeast, **Maharashtra** to the south, **Gujarat** to the southwest, and **Rajasthan** to the northwest.

Capital: Bhopal

- **State Symbol of the Madhya Pradesh**
- The State bird of Madhya Pradesh is "**Dhudraj**" the Asian Paradise Flycatcher.
- The State tree of Madhya Pradesh is the "**Banyan**".
- The State animal of Madhya Pradesh is the "**Barasingha**" also called swamp deer.
- The State fish of Madhya Pradesh is "**Mahasheer**", locally known as Mahasheer Baudas.