

Measurements of earthquake reverberations have revealed that our planet's inner core — a solid ball of iron nickel — has two distinct layers made of differently structured iron crystals. The way the earthquake wave oscillations are distorted as they bounce back and forth through the centre of the planet allowed researchers to figure out the core's structure. The finding will help to understand how the core formed millions of years ago and what role it might have had in shaping the magnetic field.

Observations by the James Webb Space Telescope (JWST) offer insights into early galaxy formation. The telescope made observations of a population of candidate massive galaxies that formed around 500-700 million years after the Big Bang (Nature). These galaxies are more massive than have been expected for this early point in time. If verified with spectroscopy, these findings provide evidence to suggest that galaxies grew quicker than expected early in the history of the Universe.

The average height of people living in Milan has remained unchanged over the past 2,000 years, suggests an analysis of the remains of more than 500 individuals buried in the city from the Roman Era (Scientific Reports). The study found that although height varied in individuals from across different eras, the average height for both males and females did not significantly differ across time. Human height is determined by genetics and environmental influences.

In a bid to understand why mosquitoes may be more attracted to one human than another, researchers have mapped specialised receptors on the insects' nerve cells that are able to fine tune their ability to detect particularly 'welcoming' odours in human skin (Cell Reports). Receptors on mosquito neurons have an important role in the insects' ability to identify people who present an attractive source of a blood meal.

Mosquitoes detect odours mostly through their antennae, and scientists have long observed that variations in odours, heat, humidity and carbon dioxide are factors in attracting mosquitoes to some individuals more than others. For example, *Anopheles gambiae*, which causes malaria, has three types of receptors that study the surface of neurons in their organs that sense odour: odorant, gustatory and ionotropic receptors. It is thought that different levels of acids on human skin might be a reason for some people to be more attractive to mosquitoes than others, says a release.

Huitzilin — a "ray of the sun" — was the name given by the Aztecs to the hummingbird. Natives of the American continent, the iridescent colours of the 350 species of this bird has often fired the imagination of poets and jewellery designers. They are small: the bee hummingbird is barely 5 cm long and weighs 2 grams. They can beat their wings up to 50 times per second, creating a hum that defines them. They can hover majestically as they sip nectar from a

### INTERNATIONAL MONETARY FUND (IMF) ROLLS OUT NINE-POINT CRYPTO ASSETS ACTION PLAN

1. IMF plan provides guidance for an appropriate policy response to crypto assets and operationalizes principles outlined in Bali Fintech Agenda. Agenda was launched, by IMF and World Bank in 2018, to harness opportunities of rapid advances in financial technology. Cryptocurrency is a type of digital currency (For ex: Bitcoin, Ethereum) that uses cryptography for security and anticounterfeiting measures. Control of each cryptocurrency works through distributed ledger technology called blockchain.
2. **Concerns related to crypto assets**-Recent failure of various exchanges within crypto ecosystem, as well as collapse of certain crypto assets. Lack of regulation increases risk to macroeconomic and financial stability. Unregulated crypto markets can facilitate money laundering and terror financing. Status of cryptocurrency in India Currently, cryptocurrencies are not regulated in India. In 2020, Supreme Court declared a RBI circular (that prevented banks from dealing in cryptocurrencies) as unconstitutional.
3. In Budget 2022-23, Government proposed to levy tax of 30% on transfer of virtual assets including NFTs and cryptocurrencies. Government also floated Cryptocurrency and Regulation of Official Digital Currency Bill, 2021 to facilitate a framework for creation of official digital currency and to prohibit all private cryptocurrencies in India.
4. **IMF's 9 points action plan**-Do not grant crypto assets official currency or legal tender status. Maintain effectiveness of capital flow management measures. Adopt unambiguous tax treatment of crypto assets. Establish legal certainty of crypto assets. Enforce oversight requirements to all crypto market actors. Joint monitoring framework across different domestic agencies and authorities. Establish international collaborative arrangements. Monitor impact of crypto assets on stability of international monetary system. Global cooperation to develop digital infrastructures for cross-border payments and finance.

### FINANCIAL ACTION TASK FORCE (FATF) SUSPENDED RUSSIA'S MEMBERSHIP OVER UKRAINE WAR

1. Although suspended, Russia remains a FATF member. However, it will be barred from attending meetings and accessing documents. Also, FATF updated its list for Jurisdictions Under Increased Monitoring (i.e., Grey list) and High-Risk Jurisdictions (i.e. Black List). Myanmar along with Iran and North Korea continue to be in Black list.
2. UAE, Turkiye, Jordan, South Africa and 20 other nations are in Grey List. FATF is an inter-governmental body (India a member) that leads global action to tackle money laundering, terrorist, and proliferation financing.
3. FATF was established in 1989 and is based in Paris FATF sets international standards, that aim to prevent these illegal activities and harm they cause to society, recognised as: Global anti-money laundering (AML) and Counter-terrorist financing (CFT) standards. About FATF lists.
4. **Grey List**- Countries that are actively working with FATF to address strategic deficiencies in their regimes to counter money laundering, terrorist financing, and proliferation financing. Countries in grey list may face: Economic sanctions (from IMF, World Bank etc); Problem in getting loans from IMF, World Bank etc.; Reduction in international trade; International boycott etc.
5. **Black List**- Countries that FATF considers non-cooperative in global effort to combat money laundering terrorist financing, and financing of proliferation. Countries are removed from grey list based on their progress on effectiveness of its AML/CFT regime.

### SECOND EDITION OF FOUNDATIONAL LITERACY AND NUMERACY (FLN) REPORT RELEASED BY ECONOMIC ADVISORY COUNCIL TO PRIME MINISTER

1. Report, prepared by Institute for Competitiveness (IFC), focuses on language as a critical foundational skill and its importance in acquiring early literacy. FLN refers to basic skills in reading, writing, and mathematics. It is the ability to read and understand a basic text and perform simple mathematical calculations by end of grade 3. Some FLN related initiatives:
2. NIPUN (Ministry of Education), Ennum Ezhuthum (TN), Kalika Chetarika (Karnataka), Mission Prerna (UP) etc.
3. **Key Findings**-Report presented an index on overall state of FLN across children aged below ten years. Index includes five pillars: educational infrastructure, access to education, basic health, learning outcomes and governance.

flower, and even fly backward. Tubular flowers that are bright red or orange (such as lantana and rhododendron) are preferred.

Researchers have, for the first time, demonstrated in mice the underlying neural mechanism that allows mice to feel empathy. In mice, observational fear, a form of emotional contagion, provokes an emotional response in the form of empathy. The findings about empathy in mice may turn out to be true in the case of humans too, but further studies are needed in humans to conclusively prove this. The capacity to sense the feelings of others is not unique to humans, and its biological mechanisms are shared with other mammals, including rodents. Observational fear, which is a rodent model for emotional contagion, is the basic form of affective empathy.

The International Monetary Fund (IMF) and the Financial Stability Board (FSB) will formulate a technical paper in a bid to gain a coordinated global approach for regulation of crypto assets as proposed by the Indian Presidency of the G20. The paper will be presented for consideration at the next meeting of G20 Finance Ministers and Central Bank Governors scheduled in October.

India ranks 42<sup>nd</sup> among 55 leading global economies on the International IP Index released by the U.S. Chambers of Commerce. "As India's size and economic influence grows on the world stage, India is ripe to become a leader for emerging markets seeking to transform their economy through IP driven innovation," Patrick Kilbride, senior vice president of the U.S. Chamber of Commerce Global Innovation Policy Center, who publishes the annual report, said on Friday.

There is a pressing need to rediscover and reclaim public places in these uncertain and deeply polarised times, Supreme Court Justice Sanjay Kishan Kaul said on Saturday. Delivering the inaugural address virtually at The Hindu Lit for Life event, he also said that it was important to facilitate principled conversations about the most contentious issues. Referring to the event's motto of reflecting the spirit of the times and celebrating freedom of speech and expression, one of the most cherished rights in the Constitution, he exuded confidence that such literary festivals were the most suitable spaces for such an endeavour.

4. Punjab and West Bengal are top scoring in Small and Large States category, respectively. Puducherry and Sikkim are top scoring in UT and NE States category. Around 42% of students surveyed across India achieved global minimum proficiency while 37% partially met it in mathematics. Between 2020 to 2022, only 41.3% of schools had access to computers and 24.5% to the internet.

### 5<sup>TH</sup> ANNUAL PERIODIC LABOUR FORCE SURVEY (PLFS) REPORT RELEASED BY THE NATIONAL STATISTICAL OFFICE (NSO)

1. It covers July 2021 to June 2022 period. Key Findings All India Labour Force Participation Rate (LFPR) increased to 55.2% (Rural-57.5%, Urban-49.7%; Male-77.2%, Female-32.8%) from 54.9% in 2020-21. Worker Population Ratio (WPR) increased to 52.9% (Rural-55.6%, Urban-46.6%; Male-73.8%, Female-31.7%) from 52.6% in 2020-21. Unemployment Rate (UR) decreased to 4.1% (Rural-3.2%, Urban-6.3%; Male-4.4%, Female-3.3%) from 4.2% in 2020-21.
2. Objective of PLFS is to estimate Key employment and unemployment indicators (viz. WPR, LFPR, UR) in short time interval of three months for urban areas only in 'Current Weekly Status' (CWS). Estimate employment and unemployment indicators in both 'Usual Status' (principal activity status + subsidiary economic activity status) and CWS in both rural and urban areas annually.
3. PLFS categorises workforce into self-employed (which includes own account workers, employers, and unpaid helpers in family enterprises); regular wage/salaried workers and casual labourers. Own account workers run small enterprises without hiring any labour but may take help from family members, while employers hire workers.

### THIRD PATIENT CURED OF HIV (HUMAN IMMUNODEFICIENCY VIRUS) AFTER STEM CELL TRANSPLANT (SCT)

1. This was achieved with a bone-marrow transplant (also called SCT) from people carrying a specific HIV-resistant genetic mutation called CCR5-delta 32 genetic mutation. A bone marrow transplant is a procedure that infuses healthy blood-forming stem cells into body to replace bone marrow that is not producing enough healthy blood cells.
2. Bone marrow transplants may use cells from your own body (autologous transplant) or from a donor (allogeneic transplant). HIV mainly attacks CD4 immune cells (type of white blood cell) in human body, thereby reducing a person's ability to fight off secondary infections. CCR5 receptors on surface of CD4 immune cells act as a doorway for HIV virus. However, CCR5-delta 32 mutation prevents these receptors used by HIV virus from forming on the surface, effectively removing the doorway.
3. About Stem Cells-Stem cells are special human cells that are able to develop into many different cell types. Stem cells provide new cells and replaces specialized cells that are damaged or lost. Based on the cell type/tissue of origin, stem cells are classified as Somatic Stem Cells (also known as adult stem cells) and Embryonic Stem Cells.

### BOR THEKERA (GARCINIA PEDUNCULATE)

1. Medicinal plant commonly called Borthekera in Assamese found to have cardioprotective potential. It is an evergreen tree endemic to South Eastern Asia. Traditionally it is forbidden for raw consumption.
2. Sun-dried slices of ripe fruit are used for culinary and medicinal purposes and are known to have therapeutic properties like anti-inflammatory, antibacterial, antidiabetic, hypolipidemic, nephroprotective, and even neuroprotective activity. It is also a rich source of antioxidants.



"Focus on winning the argument only if the person is not important."

**DR. KHAN**  
(KSG)