

Chinese Scientists created first Pangenome of Asian rice

Scientists created it by stitching together key parts of genomes from 144 varieties of wild and cultivated varieties of rice from Asia using '**PacBio high-fidelity' (HiFi) sequencing technology**.

- Scientist also supported the hypothesis that **all Asian cultivated rice** had an evolutionary origin from a wild variety called **Or-IIIa**.
- **Asian cultivated rice** (*Oryza sativa* L.) was domesticated from its wild progenitor *O. rufipogon*.
 - ⊕ Or-IIIa is a variant of *O. rufipogon*.

What is a Pangenome?

- It is a collection of **genome sequences** from many individuals of the **same species**.
 - ⊕ A **genome** is the complete set of genetic information in an organism.
- It is a kind of **reference genome**.
 - ⊕ **Pangenome** has the **common genes as well as maps out the unique genes** found in the individual varieties while, **reference genomes** generally confine themselves to identifying the characteristic genes that make up a species.

'high-fidelity' (HiFi) Sequencing Technology

- It is a **single-molecule, real-time sequencing technology (SMRT)** that provides incredible single-molecule read accuracy across long reads.
- It is a kind of **Long-read sequencing** method of **genome sequencing**.
 - ⊕ **Long-read sequencing** is a **DNA (Deoxyribonucleic acid)** sequencing approach that enables the sequencing of much longer **DNA fragments** than traditional short-read sequencing methods.

Key Applications of Pangenome

- **Agriculture:** Helps in introducing new traits for **disease-tolerance** as well as **resilience in crops against climate shocks**.
 - ⊕ Provides useful wild resources for developing superior and more productive food grain varieties.
- **Precision Medicine:** In humans, helps in identifying population-specific genetic markers for diseases. E.g. **Human Pangenome Project**.

CoPs of BRS Conventions concluded at Geneva

Recently the **Conferences of the Parties (CoPs) to the Basel, Rotterdam, and Stockholm Conventions (BRS COPs)**, concluded at Geneva, Switzerland.

- The theme for this year's conference was "**Make visible the invisible: sound management of chemicals and wastes**".

About BRS CoPs

- The BRS CoPs occur **every two years** and aim to advance global action on hazardous chemicals and waste management.
- **India is a party** to all three conventions.

About the Conventions

- **Basel Convention on Control of Transboundary Movements of Hazardous Wastes and their Disposal**
 - ⊕ Adopted in **1989 in Switzerland**; came into force in **1992**.
 - ⊕ Aims to reduce **hazardous waste generation** and **promote environmentally sound management**.
 - ⊕ Establishes a regulatory system for permissible cross-border waste transfers while **restricting movements that don't align with environmental principles**.
- **Rotterdam Convention on prior informed consent procedure for certain hazardous chemicals and pesticides in international trade**
 - ⊕ Adopted in **1998 in Rotterdam, Netherlands**; entered into force in **2004**.
 - ⊕ Promotes **shared responsibility and cooperation in international trade of hazardous chemicals** to protect health and environment.
- **Stockholm Convention on Persistent Organic Pollutants (POPs)**
 - ⊕ Adopted in **2001 in Stockholm, Sweden**; entered into force in **2004**.
 - ⊕ It is a **global treaty to protect human health and the environment from POPs**.
 - ⊕ The convention aims to: **Eliminate dangerous POPs (Dirty Dozens), Support the transition to safer alternatives, Target additional POPs for action, etc.**

India's sovereign credit rating upgraded to 'BBB' with stable outlook by Morningstar DBRS

India's sovereign credit rating has been **upgraded to 'BBB' with a stable outlook, up from 'BBB (low)'**, citing structural reforms, infrastructure investments, and fiscal consolidation as key drivers by agency.

Key findings of report

- **Strong growth prospects for India:** A 'BBB' rating denotes adequate credit quality, suggesting a capacity to meet financial obligations despite potential vulnerabilities.
- **Macroeconomic framework as a key strength:** Well-regulated financial system, credible inflation-targeting regime and flexible exchange rate enhance the economy's resilience.

What is Sovereign credit rating?

- It is an **assessment of a country's creditworthiness** showing the level of risk associated with lending to a particular country since it is applied to all bonds issued by the government.
- It broadly rates countries as **either investment grade or speculative grade**, with the latter projected to have a higher likelihood of default on borrowings.
- **Standard & Poor's, Moody's, and Fitch Ratings** are the three most influential agencies.

Issues with credit rating agencies

- **Heavy reliance on qualitative indicators:** Methodologies often depend on the opinions of a small group of experts, which can lead to **subjective judgments**, bandwagon effects.
- **Lack of transparency:** These are private agencies without independent funding and can affect institutional quality, as measured by the **World Bank's Worldwide Governance Indicators (WGIs)**.
- **Biased against developing nations:** It often neglects GDP growth rate, inflation, general government debt, etc. (Economic Survey 2020-21)

Centre has empowered Chief of Army Staff to call personnel of Territorial Army (TA)

Rule 33 of the Territorial Army Rule 1948 allows Central Government to empower Chief of Army Staff to take support of TA.

About Territorial Army

- It is a part of Regular Army.
 - ⊕ Unlike full-time soldiers, **TA members are civilians who take time out of their regular jobs to train and serve the country in times of need.**
 - ⊕ They are often referred as Terriers.
- It acts as a **second line of defence** after the regular army.
- **Primary Responsibilities:** To relieve the Regular Army from static duties and assist Civil Administration in dealing with natural calamities and maintenance of essential services in critical situations.
 - ⊕ Also provides units for Regular Army as and when required.
- **Eligibility:** It includes **Indian citizenship**, graduation from a recognised university, **gainfully employed**, etc.
- **Significant Role Played in Earlier wars:** TA has actively participated in operations during **1962, 1965, and 1971 wars, OP PAWAN in Sri Lanka, OP RAKSHAK in Punjab and J&K, etc.**

Evolution of Territorial Army

- In 1917, **Indian Defence Force Act** was enacted. (Leaders like **Netaji Subhash Chandra Bose** joined the University Corps)
- In 1920, **Indian Territorial Force Bill** was passed.
- After Independence, the **TA Act was passed in 1948 and TA was formally inaugurated on October 9, 1949, by C. Rajagopalachari (celebrated as TA Day).**



Three Jan Suraksha (Social Security) Schemes complete 10 Years

These schemes namely, **Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY)**, **Pradhan Mantri Suraksha Bima Yojana (PMSBY)**, and **Atal Pension Yojana (APY)** aim to broaden the insurance and pension landscape by shielding citizens against life's uncertainties and **fostering long-term financial resilience**.

Features	PMSBY	PMJJBY	APY
Objective	Provides accidental death or disability insurance of up to ₹2 lakh.	Provides life insurance cover of ₹2 lakh for death due to any reason.	Provides guaranteed monthly pension to unorganised sector workers.
Coverage amount	₹2 lakh	₹2 lakh	₹1,000 to ₹5,000 per month
Age eligibility	18–70 years	18–50 years	18–40 years
Premium/contribution	₹20 per annum	₹436 per annum	Monthly / Quarterly / Half-yearly
Enrollment method	Through bank/post office accounts with auto-debit facility	Through bank/post office accounts with auto-debit facility	Through bank/post office accounts
Benefit structure	Death / Total Disability: ₹2 lakh	Death: ₹2 lakh	▶ Pension to subscriber after age 60 ▶ Then to spouse, and later corpus to nominee ▶ In case of death before 60, spouse can continue contributions
Administrator	Multiple agencies	LIC or any other approved life insurer	Pension Fund Regulatory and Development Authority (PFRDA) under NPS architecture

Also In News



Schuman Declaration

The External Affairs Minister attended the **Europe Day** celebration in New Delhi that marked the 75th anniversary of the Schuman Declaration.

About Schuman Declaration

- ▶ Proposed the creation of **European Coal and Steel Community (ECSC)**, where members would pool their **coal and steel production**.
- ⊕ Presented in 1950 by French Foreign Minister **Robert Schuman**.
- ▶ This marked the first step in the development of **supranational European institutions** that later evolved into the **European Union**.



Vembanad lake

Recent expert committee report on Vembanad Lake Rejuvenation Project, highlighted that Vembanad lake's surface area has shrunk by 27% between 1917 and 1990.

About Vembanad Lake

- ▶ It is **largest brackish, humid tropical wetland ecosystem** on the **southwest coast of India in Kerala**.
- ▶ Supports the **third largest waterfowl population in India** during the winter months.
- ▶ It forms part of the Vembanad-Kol wetland system, a **Ramsar site**, and contributes 30% of Kerala's surface water resources.
- ▶ **Pathiramanal Island** is a picturesque island in Vembanad Lake, also known as **Midnight Sands**.



Global Methane Tracker 2025

Global Methane Tracker 2025 has been released by the International Energy Agency (IEA).

Key findings

- Methane (**greenhouse gas**) is **responsible for around 30 % of the rise in global temperatures** since the Industrial Revolution.
- **The three main sources** of methane include agriculture, energy and waste sectors.
- The energy sector including **oil, natural gas, coal, bioenergy accounts for more than 35 per cent of methane emissions** from human activity.
- Methane emissions could be cut by 50 per cent by effectively utilising methane in mines, or by **deploying flaring or oxidation technologies**.
 - ⊕ Gas flaring is the burning of the natural gas associated with oil extraction.



Bulbul v2

Startup Sarvam AI launches Bulbul v2 Text-to-Speech Model.

About Bulbul v2

- It supports **11 Indian languages**.
- The voices generated by the model are designed to sound natural and authentic, without sounding robotic or rehearsed.
- It allows users to fine-tune the voice characteristics by adjusting pitch, pace, and loudness.



Schilka Systems

Army's Air Defence units deployed a **range of advanced weaponry to counter Pakistani drone attacks** including L-70 anti aircraft guns, Zu-23mm systems and Schilka systems.

About Schilka systems

- It is a self-propelled, **radar-guided anti-aircraft weapon system mounted on a tracked chassis**.
- This Russian origin mobile air defense **fire control system is designed to defend exposed ground forces and armed vehicles against air attacks**.
- It uses **3rd generation electro-optical system, phased array 3D tracking radar** and an accurate navigation system that generates a 360 degrees full coverage against any air attack day or night.
- It uses **solid state, hydraulic controlled turret with anti-aircraft guns and short-range air defense missiles**.



United Nations Forum on Forests

India participated in the **20th session of the United Nations Forum on Forests (UNFF)** held in New York, reaffirming its commitment to the **United Nations Strategic Plan for Forests 2017–2030**.

About United Nations Forum on Forests

- **Established by:** UN Economic and Social Council of the United Nations (ECOSOC) Resolution in October 2000.
- **Main Objective:** To promote the **management, conservation, and sustainable development** of all types of forests and reinforce long-term political commitment.
- **Membership:** Includes all UN member states and specialized agencies.



Extended Fund Facility (EFF)

India has raised concerns over the **efficacy of IMF programs** such as **Extended Fund Facility (EFF), Resilience and Sustainability Facility (RSF)** to Pakistan.

Extended Fund Facility (EFF)

- **Objective:** To provide **assistance to countries experiencing serious payment imbalances** because of structural impediments or inherently weak balance-of-payments position.
- **Eligibility:** All member countries facing actual or potential external financing needs.

Resilience and Sustainability Facility (RSF)

- **Objective:** Strengthen macroeconomic resilience and sustainability.
 - **Eligibility:** low-income and vulnerable middle-income countries
- Other Key Lending facilities of IMF:** Extended credit facility, Rapid Credit Facility, etc.



FaceAge

FaceAge, a **deep learning algorithm**, described in The Lancet Digital Health can help doctors make informed decisions about treatment plans, especially for cancer patients.

- **Deep learning algorithms** are a modern approach to machine learning that uses artificial neural networks, specifically multi-layer neural networks, to learn from large volumes of unstructured data without human intervention.

About FaceAge

- **Database:** It is trained on tens of thousands of photographs.
- **Method:** Uses a patient's selfies to determine their biological age.
- It can be used as a **biomarker** in cancer care to quantify a patient's biological age and help a doctor make decisions about treatments.

Personality in News



Maharana Pratap

Prime Minister pays tributes to **Maharana Pratap on his Jayanti**.

About Maharana Pratap (1540 -1597)

- He was a renowned **Rajput warrior and the king of Mewar, Rajasthan**.
- He was born in **Kumbhalgarh Fort** to **Jaiwanta Bai and Udai Singh II**.
- He refused to **submit to the Mughals** (during the reign of Akbar).
 - ⊕ This led to **Battle of Haldighati** (1576), Mughal army was under the command of Asaf Khan I and Man Singh.
- **Successor:** Maharana Amar Singh I.

Values: Bravery, compassion, leadership, etc.



AHMEDABAD



BENGALURU



BHOPAL



CHANDIGARH



DELHI



GUWAHATI



HYDERABAD



JAIPUR



JODHPUR



LUCKNOW



PRAYAGRAJ



PUNE



RANCHI