

# NEWS TODAY

## Gene editing can be performed in a gentler way using Epigenome editing: Studies

**Epigenome editing** is genetic engineering technology that adjusts gene transcription through **modifying epigenome** by directly **targeting root of dysregulation** while leaving **primary DNA sequence intact**.

- Epigenome refers to all chemical compounds and modifications (like **methyl groups** or **histone modifications**) that regulate gene expression without changing DNA sequence.
- **Unlike traditional gene editing methods** that involve cutting DNA, epigenome editing allows for precise control over gene expression (**With Reversible Changes**), making it a **safer alternative**.
- **Epigenetic processes** predominantly regulate gene expression **at level of transcription**.
  - ⊕ Transcription is the process of **copying a gene's DNA sequence into an RNA molecule**.

### Epigenetic processes/markers to Regulate Gene Expression

- **DNA Methylation:** Addition of a methyl group to DNA, **which can silence** genes by preventing transcription factors from binding.
- **Histone Modification:** Alters histone proteins (**basic proteins that DNA wraps around**) with chemical changes affecting gene expression.
- **RNA-Mediated Processes:** Uses non-coding RNAs to regulate genes.

### Key Application of Epigenome Editing

- **Treatment of Complex Diseases:** Effective for conditions like cancer, neurological disorders, and metabolic syndromes caused by multiple genetic factors.
- **Regenerative Medicine:** Enhances **stem cell therapies** by controlling differentiation and **promoting tissue repair**.
- **Immune System Engineering:** Optimizes **immune cell functions for advanced cancer immunotherapies**.
- **Safe and Reversible Gene Therapies:** Reduces risks of permanent genetic modifications, offering precise and controlled treatments.

Methods to Achieve Epigenome Editing		
 <p><b>CRISPR-Based Epigenetic Editing:</b> Uses modified CRISPR-Cas systems to recruit epigenetic modifiers, altering gene expression without cutting DNA</p>	 <p><b>Zinc Finger Proteins (ZFPs):</b> Engineered proteins that bind specific DNA sequences and recruit enzymes to modify epigenetic markers, enabling targeted gene activation or repression.</p>	 <p><b>Transcription Activator-Like Effectors (TALEs):</b> Customizable DNA-binding proteins that, like ZFPs, influence gene expression by modifying epigenetic markers.</p>

## Speaker Condemns Deliberate Parliamentary Disruptions as Undemocratic

Parliament's productivity has **declined sharply** due to **frequent disruptions**, with the **17<sup>th</sup> Lok Sabha** functioning at **88%** and **Rajya Sabha** at **73%** of the scheduled time.

- In the **18<sup>th</sup> Lok Sabha (Winter 2024)**, productivity dropped further to **54.5%** and **40%**, respectively, of the scheduled time.

### Reasons for Parliamentary Disruption:

- **Substantive Reasons:**
  - ⊕ **Disruptions arise from controversial national or regional issues** dominating **public attention**. E.g., Hindenburg controversy.
  - ⊕ **Opposition Grandstanding:** Opposition disrupts proceedings to delay or block proposals, shifting focus from debate to publicity.
  - ⊕ **Anti-defection law** (10<sup>th</sup> Schedule, introduced by the 52nd Constitutional Amendment) forces MPs to follow party whips, restricting debate and pressuring them to join disruptions.
- **Structural Reasons:**
  - ⊕ **Increasing number of political parties** reduce debate time, causing disruptions over unlisted issues.
  - ⊕ **Parliamentary framework** lacks defined time limits for various business, like **Question Hour**, leading to delays

### Implications of Parliamentary Disruption

- **Disruptions reduce debate time**, undermining Parliament's ability to hold the government accountable and pass laws, resulting in hasty decisions.
- **Continuous disruptions lower public trust** in Parliament, as MPs focus on blocking proceedings instead of solving key issues.
- **Each minute of Parliament costs ₹2.5 lakh**. The 2021 logjam alone cost taxpayers ₹133 crore.

Measures to Address Parliamentary Disruption	
 <p><b>1. Raise Motion Thresholds</b> Require 20-30% of MPs' support to trigger motions, focusing on significant issues</p>	 <p><b>2. Opposition Time</b> Dedicate specific days for opposition-led debates, like the UK's "Opposition Days"</p>
 <p><b>3. More Sitting Days</b> Increase sittings from 60-70 to 120-140 days annually for better debate and legislation</p>	 <p><b>4. Consensus-Building</b> Foster government-opposition cooperation for effective policy making</p>
 <p><b>5. Define Disruptions</b> Clarify "disruptions" and "interruptions" in rules for clear behavioral standards</p>	 <p><b>6. Strengthen Ethics Committees</b> Empower committees to monitor and report disruptions, ensuring accountability</p>

## New SDG indicator on Minimum Dietary Diversity (MDD) adopted by UN Statistical Commission

This indicator adds to nearly 250 indicators tracked under Sustainable Development Goals (SDGs) framework adopted in 2017.

- **FAO and UNICEF jointly manage** this new indicator, addressing absence of an SDG measure for healthy diets.
- This indicator captures a crucial aspect previously lacking in tracking progress toward ending malnutrition and **achieving SDG 2 (Zero Hunger)** and broader 2030 Agenda.

### About MDD

- According to WHO, MDD is achieved when a diet includes **five or more of following eight food groups**: breast milk, grains, legumes, dairy products, flesh foods, eggs, fruits, and vegetables.

### Significance of MDD Indicator

- **Improved Nutritional Assessment**: It specifically tracks nutritional needs of women (MDD-W) and children (MDD-C), who are most vulnerable to malnutrition.
- **Tracking Global Health Targets**: Supports SDG 2, aimed at eliminating hunger and improving nutrition..
- **Policy Tool**: Aids policymakers in developing strategies to combat malnutrition by addressing health risks linked to poor dietary habits.
- **Evaluating Program Impact**: Helps evaluate nutrition programs.

### Status of MDDF (minimum dietary diversity failure) in India (For Year 2019-21):

- **Regional Disparities**: Central region of India, particularly Uttar Pradesh, Rajasthan, Gujarat, Maharashtra, and Madhya Pradesh, has over 80% of children with MDDF.
- **Age Impact on MDDF**: 77% children in India aged 6-23 months lacking minimum dietary diversity.
- **Vulnerable Sections**: Children from Other Backward Classes have the highest MDDF (79%), followed by Scheduled Castes (77.2%) and Scheduled Tribes (76%).



## Chief of Defence Staff (CDS) highlights need for holistic Counter-UAS System (C-UAS) for Armed Forces

The CDS emphasized the need for **comprehensive counter-** Unmanned Aerial Systems (UAS) **development** to address the growing threat of unmanned aerial systems in modern warfare.

- **Definition**: A C-UAS is a system that detects, tracks, and neutralizes drones and other UAS.

### Threats due to Unmanned Aerial Systems (UAS)

- **Tactical Threat**: Small drones used for swarm attacks on personnel and equipment. **E.g.**, In 2025, a swarm of Ukrainian drones targeted Russia's Black Sea port of Tuapse.
- **Strategic Threat**: UAS targets and destroys key infrastructure, including power grids and communication networks. **E.g.**, Houthis used drones to attack Saudi oil facilities, causing significant damage.
- **Operational Threat**: **UAS Proliferation allows** terrorist groups to conduct strikes, surveillance, etc.

### Countermeasures against Unmanned Aircraft Systems (UAS)

- **Remote ID**: Mandatory identification for all commercial UAS to provide in-flight identification.
- **No-Fly Firmware**: Firmware to restrict UAS in no-fly zones and limit carrying capacity.
- **Detection**: Early and farthest detection of UAS using a variety of sensor technologies, **e.g.**, radar, radio frequency sensor.
- **Neutralization**: Non-kinetic (**e.g.**, RF jamming, spoofing) and kinetic (**e.g.**, missiles, nets, projectiles) methods to neutralize UAS threats.
- **Adopting Global best practices**: **E.g.**, Israel's 'Drone Dome System,' a counter-UAV system.

### Steps Taken by India

- **Drone Detect, Deter and Destroy (D4S) system**: DRDO has developed a system to detect and jam micro drones up to 3 kms and uses lasers to bring down a target up to 1–2.5 kms.
- **Drone Guard System**: Bharat Electronics has developed Drone Guard System that has been configured to detect, track and neutralise intruding drones.
- **Pilotless Target Aircraft – LAKSHYA**: Reusable high subsonic aerial target system powered by a gas turbine engine and launched either from land or ship.

## Second Report of the Standing Committee on Railways (2024-25) Presented in the Lok Sabha

The **Second Report** evaluates the Government's response to **recommendations** contained in the **First Report** on 'Demands for Grants (2024-25) of the Ministry of Railways.

### Key Issues Highlighted in the Report

- **Net Revenue remains low:** Due to high subsidies on passenger fares. E.g., Passenger revenue (**₹80,000 crores**) is significantly lower than freight revenue (**₹1,80,000 crores**).
- **Insufficient Capital Expenditure:** Indian Railway dependent on government budgetary support, with limited contributions from extra-budgetary resources (EBR). E.g., EBR contribution in the 2024-25 is **only ₹10,000 crores**.
- **Freight trains Average Speed remains low (only 25.14 km/h):** This affects efficiency in transporting freight.
- **Land acquisition delays** are affecting the timely completion of critical infrastructure projects. E.g., Laying of new lines.
- **Modernization of railway stations is progressing slowly**, and many stations still lack basic amenities.
- **Other Issues:** Insufficient non-fare revenue generation; Slow progress in electrification and energy efficiency, etc.

### Recommendations

- **Implement dynamic pricing models**, explore non-fare revenue sources. E.g., advertising & station leasing, etc.
- **Set higher Public-Private Partnership (PPP) targets** to reduce dependency on government funds.
- Accelerate **Kavach** implementation across all high-density routes., upgrade signaling systems etc.

- **Accelerate construction of Dedicated Freight Corridors (DFCs).**
- **Engage with state governments and local MPs to expedite land acquisition processes.**

### Steps Taken by the Government

 <b>Flexi-Fare Rationalization</b> Adjusting fare schemes to optimize revenue and passenger flow.	 <b>e-Auction Policy</b> For commercial earning and contracts.	 <b>New Train Launches</b> Launched Vande Bharat and Amrit Bharat trains for passenger comfort.	 <b>Alternate Accommodation</b> Providing flexible travel options through the VIKALP scheme.	 <b>Freight Connectivity Through Gati Shakti Cargo Terminal Policy.</b>
---	--	---	--	--

### Also In News



#### Preventive Detention

SC recently quashed a preventive detention order by Nagaland's home department, stressing that authorities must independently assess the need for detention.

#### About Preventive Detention (PD):

- It involves detaining a person without trial, based on a **reasonable belief** that their actions could harm **public order**.
- Parliament has **exclusive authority** to make laws on preventive detention (PD) related to **defense, foreign affairs, and security of India**.
- **Both Parliament and state legislatures** can legislate on matters related to state security and public order.
- **Constitutional Provisions**
  - ⊕ **Article 22(3)** allows authorities to detain individuals for preventive reasons, such as maintenance of public order or national security.
  - ⊕ **Article 22(4)** limits preventive detention to **three months unless an Advisory Board justifies an extension**.



#### Trends in International Arms Transfers, 2024

**Stockholm International Peace Research Institute (SIPRI)** has released new data indicating significant shifts in global arms transfers between 2020 and 2024.

- SIPRI is an **independent international institute** dedicated to research into conflict, armaments, arms control, and disarmament.

#### Key Findings:

- **Ukraine's** arms imports surged nearly 100-fold, making it the world's **largest importer (2020-24)**.
- **U.S. increased** its global arms export share to **43%**.
- **Russia's arms exports fell 64%**, dropping it to **third place behind France**.
- **India:**
  - ⊕ India is **now second-largest arms importer**, overtaken by Ukraine.
  - ⊕ **Arms imports fell 9.3%** between 2015-19 and 2020-24, driven by **domestic production growth**.
  - ⊕ **Russia remains a key supplier**, but India is diversifying with France, Israel, and the U.S.



**North Sea**

A fuel tanker carrying fuel for the U.S. military collided with a cargo ship and caught fire in the North Sea off Britain.

**About the North Sea**

- **Location:** A shallow, enclosed sea in Northwestern Europe.
- **The Kiel Canal** is one of the **world's busiest artificial waterways** which connects **North Sea with Baltic Sea**.
- **Bordering Countries:** United Kingdom, Norway, Denmark, Germany, the Netherlands, Belgium, and France.
- **Rivers: Elbe, Weser, Rhine, Thames, etc.**
- **Major Ports: Hamburg and Rotterdam**
- **Brent crude** is a type of North Sea oil that's used as a global oil price benchmark.



**Vizhinjam Port**

Recently, **Vizhinjam Port** has received environment nod for **phase II, III development**.

**About Vizhinjam Port**

- **Location:** Kerala.
- **Significance of Location:** Strategically located just **10 nautical miles** from the **busy international shipping route** connecting **Europe, the Persian Gulf and the Far East**.
- **Characteristics:**
  - ⊕ It is India's **First Deep-Water Container Transshipment Port**.
    - ◆ **Transshipment** is the transfer of cargo or containers from one vessel to another during transit to the final port of destination.
  - ⊕ It's being developed on a **DBFOT** (design, build, finance, operate, and transfer) basis, using a public-private partnership and a **landlord approach**.



**Cassava**

A new study shows cassava survival depends on indigenous farming knowledge based in ancient cultural traditions.

**About Cassava (Also known as 'Yuca' or 'Manioc')**

- It is a **root vegetable** that feeds around a **billion people worldwide**. Often known as '**bread of the tropics**'.
- **Characteristics**
  - ⊕ Cassava is a **tall semi-woody perennial** shrub or tree.
  - ⊕ **Native:** South America
  - ⊕ Cassava is one of the **most efficient producers of carbohydrates and energy** among all food crops.
  - ⊕ Rich in **carbohydrates, calcium, vitamins B and C, etc.**
- **National Policy on Biofuels, 2018**, allows cassava to be used as a raw material for ethanol production.



**Anti-Dumping Duty**

India has recently imposed an anti-dumping duty on water treatment chemicals from China and Japan.

**About Anti-Dumping Duty (ADD)**

- **Dumping** is exporting at below national market cost to gain market share on the world market.
- **Definition:** ADD are taxes on imported goods to counteract unfair pricing (dumping), protecting local producers from harm caused by goods sold below their normal market value.
- **Anti-dumping duties** are enabled by **Article VI of the General Agreement on Tariffs and Trade (GATT), 1994**.
- **The Directorate General of Trade Remedies (DGTR) (Ministry of Commerce)** recommends the duty, while the **Ministry of Finance** imposes it.



**Tuberculosis (TB)**

According to Ministry of Health, Over **6.1 lakh TB patients** were notified under the **100-day intensified TB elimination campaign** launched in **2024**.

**About TB**

- It is a **contagious bacterial infection** caused by **Mycobacterium tuberculosis**.
- **Spread:** Through air via coughs, sneezes, or close contact with an infected person.
- **Drug-Resistant TB:** TB bacteria mutate, becoming resistant to first-line antibiotics.
  - ⊕ **Multi-Drug Resistant TB (MDR-TB):** Resistant to Isoniazid (INH) and Rifampicin (RIF), the two key first-line drugs.
  - ⊕ **Extensively Drug-Resistant TB (XDR-TB):** A severe MDR-TB form, resistant to first-line drugs, fluoroquinolones, and at least one second-line injectable drug.
- **India has highest TB burden** globally, accounting for **over 27% of global cases**.



**Exercise Dharma Guardian**

The 6<sup>th</sup> edition of India-Japan joint military exercise "Dharma Guardian" concluded successfully at the East Fuji Training Area in Japan.

- **Primary focus:** On counter-terrorism operations in urban terrain.
- Also included activities related to **United Nations peacekeeping operations**, such as Humanitarian Assistance and Disaster Relief.
- The first **Dharma Guardian exercise** was held in **November 2018** at the Counter-Insurgency and Jungle Warfare School (CIJWS) in **Vairengte, Mizoram in northeast India**.

**Place in News**



**Vanuatu (Capital: Port Vila)**

Vanuatu has been in spotlight due to its Prime Minister's decision to cancel a passport issued to an Indian fugitive, following an Interpol alert.

**Political Features:**

- **Location:** Vanuatu is an **archipelago (Part of Melanesia)** in **South Pacific Ocean**, situated east of northern Australia and west of Fiji.
- **Land Boundaries:** Vanuatu comprises over **80 islands**, with no land borders.
- **Maritime Boundaries:** Surrounded by the **South Pacific Ocean**, with an extensive **Exclusive Economic Zone (EEZ)**.
- **Colonization:** Formerly the **jointly administered Anglo-French condominium of New Hebrides**, Vanuatu achieved independence in 1980.

**Geographical Features:**

- **Physical Regions:** Vanuatu's islands are of volcanic origin, featuring mountainous terrains and coastal plains.
- **Major Islands:** Notable islands include **Espiritu Santo, Malakula, and Efate**.
- **Highest Point:** **Mount Tabwemasana** on Espiritu Santo.

