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Current affairs summary for prelims

17 July, 2024

Classification of Castes as SC

Context: *The Supreme Court ruled that states cannot alter the Scheduled Caste list under Article 341 of the Constitution, quashing Bihar's 2015 notification categorizing the Tanti-Tantwa community as Scheduled Caste.*

Concept

- Article 341(1) of the Indian Constitution gives the President the power to notify which castes come under the category of Scheduled Castes.
- Article 341(2) gives the Parliament, not state legislatures, the power to make changes to the SC and ST list, requiring a constitutional amendment.
- Only proposals agreed upon by both the Registrar General of India and the National Commission for Scheduled Castes are introduced as a Bill in Parliament.
- Criteria for inclusion in the SC list are extreme social, educational, and economic backwardness due to traditional untouchability.
- Scheduled Castes are those named in the Scheduled Castes order of the Government of India, promulgated in August 1950.

Constitution Order of 1950

- Initially recognized only Hindus (with exceptions) as SCs to address untouchability.
- Included Ramdasi, Kabirpanthi, Mazhabi, or Sikligar caste residents in Punjab or the Patiala and East Punjab as SCs, regardless of religion.
- Amended in 1956 to include Dalits converted to Sikhism and in 1990 to include Dalits converted to Buddhism, based on reports from the Kaka Kalelkar Commission (1955) and the High-Powered Panel (1983).
- In 2019, the Union government rejected the inclusion of Dalit Christians as SCs, based on an Imperial Order of 1936 excluding “Indian Christians.”

Criteria

- Scheduled Castes (SCs): - Extreme social, educational, and economic backwardness due to untouchability.
- Scheduled Tribes (STs): - Primitive traits, distinctive culture, geographical isolation, shyness of contact with the larger community, and backwardness.
- Other Backward Classes (OBCs): - Social, educational, economic backwardness, and inadequate representation in Central Government posts and services.

Procedure

- SCs and STs are specified under Articles 341 & 342 of the Constitution.
- Modalities for modifications in SCs and STs lists established in June 1999, amended in June 2002.
- Proposals from state governments must be agreed to by the Registrar General of India (RGI) and National Commission for Scheduled Castes (NCSC) for SCs, and RGI & National Commission for Scheduled Tribes (NCST) for STs.
- Inclusion in the Central List of OBCs is advised by the National Commission for Backward Classes (NCBC).

Proposals processed according to Modalities:

- Some proposals not supported by RGI returned to state governments for review or justification.
- Proposals sent to RGI and NCSC for comments.
- No time frame for amendments in SC list as they require an Act of Parliament per Article 341(2).

Chandipura vesiculovirus (CHPV)

Context*: Six children have died in Gujarat from a suspected Chandipura virus infection.*

Overview:

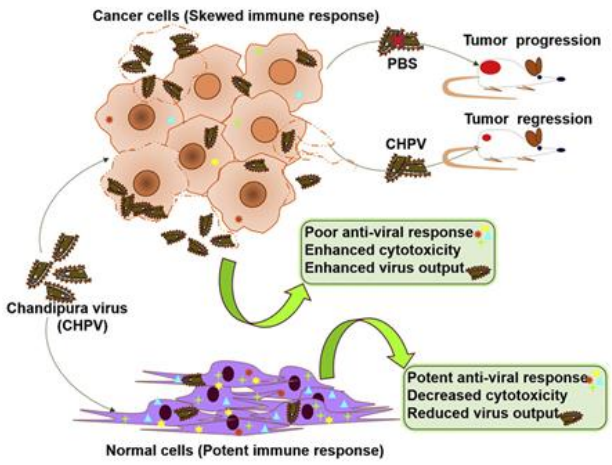
- CHPV is a member of the Rhabdoviridae family, linked with encephalitic illness in humans.
- Identified in 1965 from patients in Chandipura village, Maharashtra, India.
- Notable outbreaks in central India, especially in Andhra Pradesh and Maharashtra in 2003 (329 affected, 183 died) and sporadic cases in Gujarat in 2004.
- Isolated from sandflies in India and West Africa, possibly spread through bites.

Virology:

- Enveloped RNA virus, ~11 kb genome.
- Genome codes for five polypeptides: nucleocapsid protein (N), phosphoprotein (P), matrix protein (M), glycoprotein (G), and large protein (L).
- Viral life cycle is cytosolic, involving transcription, replication, and packaging of progeny genome RNA into mature virus particles.

Transmission:

- Spread by sandflies (Phlebotomine sandflies, Phlebotomus papatasi) and some mosquitoes (Aedes aegypti).
- Virus resides in salivary glands of these insects, transmitted to humans or animals through bites.
- Infection can reach the central nervous system, causing encephalitis.

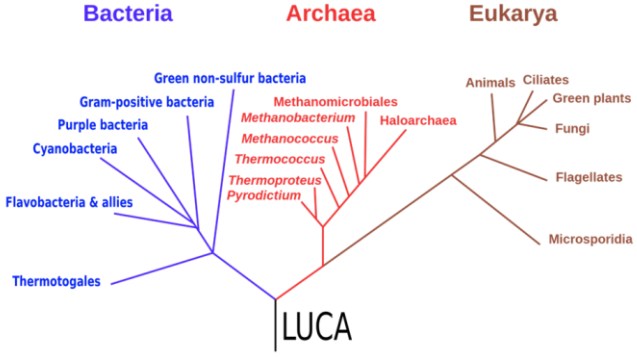


- **Symptoms**:
  - Initial flu-like symptoms: acute fever, body ache, headache.
  - Progresses to altered sensorium, seizures, encephalitis.
  - Other symptoms: respiratory distress, bleeding tendencies, anemia.
  - Rapid progression: high mortality within 24-48 hours of hospitalization, mainly affects children below 15 years.
- **Management**:
  - Symptomatic management only, no specific antiretroviral therapy or vaccine.
  - Critical to manage brain inflammation to prevent mortality.
  - Rapid disease progression complicates symptom management.
- **Affected Regions in India:**
  - First isolated in Maharashtra during a 1965 dengue/chikungunya outbreak.
  - Significant outbreaks in 2003-04 in Maharashtra, northern Gujarat, Andhra Pradesh.
  - Endemic to central India, higher population of CHPV-spreading sandflies and mosquitoes.
  - Outbreaks often in rural, tribal, peripheral areas; seasonal aspect tied to sandfly population increase during monsoon.
- **Disease Pattern Changes:**
  - New manifestations: brain hemorrhages in some cases.
  - Vector behavior changes: sandflies found at higher heights.
  - New outbreak centers: cases in Gujarat's tribal areas like Pavagadh, Khedbrahma, Godhra.
- **Influencing Factors:**
  - Rural housing practices (e.g., cowdung paint, cakes) attract sandflies.
  - Outbreaks more pronounced during monsoon due to increased sandfly multiplication.

Last Universal Common Ancestor

Context: *In a new study, scientists suggest that the last universal common ancestor (LUCA) might have emerged just 300 million years after the Earth formed.*

- **Definition and Characteristics**
  - LUCA is the hypothesized common ancestral cell from which the domains of Bacteria, Archaea, and Eukarya originated.
  - It is suggested to have been a cellular organism with a lipid bilayer, using DNA, RNA, and protein.
  - LUCA is believed to have had complex mechanisms for transcription and translation to convert genetic information from DNA to mRNA to proteins.
- **Evolutionary Significance**
  - LUCA represents the point at which the three domains of life diverged from preexisting forms, approximately 3.5–3.8 billion years ago.
  - Earlier forms of life preceding LUCA and all extant organisms share a common ancestry, supported by formal statistical tests.
  - The first universal common ancestor (FUCA) is a hypothetical non-cellular ancestor to LUCA and other now-extinct lineages.
  - Insights into LUCA's evolution could aid in synthetic biology, including engineering synthetic organisms.
  - Understanding LUCA's evolution provides a foundation for potential life forms on other planets and moderating extraterrestrial ecosystems.



Research and Evidence

- **Biochemical and Genomic Similarities**
  - No fossil evidence of LUCA exists, but modern genomes' biochemical similarities make its existence plausible.
  - Shared features of modern genomes help infer LUCA's characteristics, indicating it had many co-adapted features.
- **Molecular Clock Theory**
  - Proposed by Emile Zuckerkandl, Linus Pauling, and improved by Motoo Kimura, it allows reconstruction of the 'tree of life.'
  - The rate of mutations in genomes is used to estimate the time between evolutionary events, providing a timeline for LUCA's existence.
- **Recent Study Findings**
  - A study in Nature Ecology and Evolution estimated LUCA originated around 4.2 billion years ago.
  - Researchers constructed a phylogenetic tree of 350 bacterial and 350 archaeal genomes and used a molecular clock for this estimation.
  - LUCA may have had a small genome with around 2,600 proteins, enough for survival in its unique environmental niche.

➢ **Theories on the Origin of Life**

- **Geological and Chemical Origins -** Life is believed to have arisen from a combination of geological, climatic, and chemical processes.
- **Oparin-Haldane Hypothesis -** In the 1920s, Alexander Oparin and J.B.S. Haldane independently proposed that life formed from a "primordial soup" of inorganic compounds.
- **Miller-Urey Experiment -** Conducted in 1952, demonstrating that amino acids could form from inorganic compounds under certain conditions, simulating early Earth's environment.
- **Panspermia Hypothesis**
  - Proposes that life's building blocks could have arrived on Earth via meteorites.
  - Supported by findings of extraterrestrial organic material and amino acids on asteroids.

➢ **LUCA's Environment**

- **Likely lived in high-temperature water near deep-sea vents, where conditions could support early life forms.**
- **This environment could have facilitated the chemical reactions necessary for life.**

➢ **Implications for Modern Science**

- The study of LUCA informs current scientific understanding of life's biochemical and genetic foundations.
- Advances in genome sequencing and computational power enable more detailed reconstructions of evolutionary histories.

NEWS IN BETWEEN THE LINES

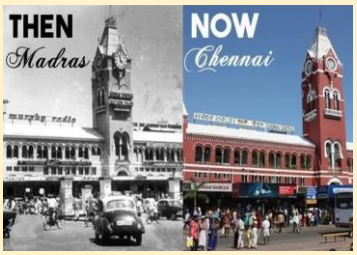
THINQ2024

The Indian Navy launched its flagship national level quiz competition, THINQ2024 on July 16, 2024.

About THINQ2024:

- THINQ 2024 is a **national-level quiz competition** organized by the Indian Navy.
- The **theme** for this year's competition is **'Viksit Bharat'** (Developed India).
- The theme aligns with the government's vision to transform India into a developed nation by **2047**, marking 100 years of independence.
- The Indian Navy has previously conducted two successful editions of the quiz, namely **THINQ-22** and **G20 THINQ,** with the latter featuring participation from G20 countries.
- The competition **aims to nurture intellectual growth** and inspire young minds while promoting pride and patriotism in India's cultural heritage.
- The competition is open to students from **Class 9 to 12** across the country.

Madras to Chennai

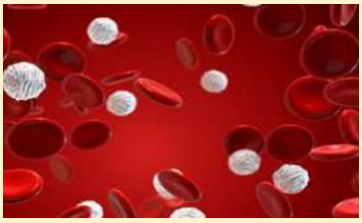


On July 17, 1996, Madras was officially renamed Chennai.

About:

- Formerly called **Madras Province**, it had been **renamed Madras State** on **January 26, 1950.**
- The capital of the state of Tamil Nadu, formerly known as **Madras State, was officially renamed Chennai on July 17, 1996.**
- The name Chennai comes from Chennapatnam.
- The state of Madras was renamed Tamil Nadu on **January 14, 1969** by former chief minister C.N. Annadurai.
- The state's borders were reorganized in **1956** based on linguistic lines as a result of the States Reorganization Act.
- Chennai is **located on the Coromandel Coast** in southeast India and is a cultural, commercial and educational hub.
- It is also known as the "Detroit of India" for its thriving automobile manufacturing industry and is an important center for **Carnatic music** and **Bharathanatyam**.

The ABO Classification System



About the ABO Classification System:

- Human blood consists of **red blood corpuscles** (RBCs), which contain **antigens** (proteins) on their surfaces determining blood type and giving it its red color.
- The serum, a **straw-colored liquid** after removing blood cells, contains antibodies crucial for blood classification.
- The ABO blood group system **classifies blood based** on the presence or absence of A and B antigens on red blood cells (RBCs) and antibodies in the plasma.
- This blood group system categorizes human **blood into four types**: A (A antigens on RBCs, anti-B antibodies in plasma), B (B antigens on RBCs, anti-A antibodies in plasma), O (no antigens, both anti-A and anti-B antibodies in plasma) and AB (both A and B antigens, no antibodies).
- The ABO blood group system is **used to match blood types for transfusions**.

	▪ People with type **O blood are called universal donors** because they can donate blood to anyone, while people with type **AB blood are called universal recipients** because they can receive blood from anyone. ▪ People with type **A or B blood can receive matching blood or type O blood**.
Place in News **Mauritius**	*Recently, India reaffirmed its continued support to Mauritius, with External Affairs Minister S. Jaishankar meeting Prime Minister Pravind Jugnauth of the island nation.* **Mauritius (Capital: Port Louis)** **Location:** Mauritius is an **island** of Africa's southeast coast located in the **Indian Ocean**, east of Madagascar. **Boundaries:** Mauritius shares maritime borders with **Seychelles** (North-East), **Madagascar** (West) and **French overseas** territories including Réunion (Southwest). **Physical Features:** ▪ The highest point in Mauritius is **Piton de la Petite Rivière Noire**. ▪ Mauritius has a **tropical maritime climate** influenced by the southeast trade winds. **Language:** The official languages of Mauritius are English and French, with Mauritian Creole widely spoken as a vernacular language. **Membership:** Mauritius is a member of several international organizations including the **United Nations** (UN), **Commonwealth of Nations** and the **African Union** (AU). **Indepen** **Relation with India:** Mauritius and India established diplomatic relations in **1948**, before **Mauritius became independent in 1968**.

POINTS TO PONDER

- What is the recently discovered species 'Squalus hima'? **– A new species of dogfish shark found off the southwest coast of India.**
- Which state was awarded the 'Best State in Horticulture Award 2024'? **– Nagaland.**
- What is a 'Bacteriophage'? **– A type of virus that infects bacteria.**
- Which mosquitoes transmit Dengue (break-bone fever)? **– Aedes mosquitoes.**
- Which ministry oversees the Technology Development Fund scheme? **– Ministry of Defence.**