

Third State Beyond Life and Death

Why in News?

Recent research suggests the existence of a "third state" that challenges conventional definitions of life and death, proposing that some cells and tissues can function after an organism's death, opening up new questions about cellular capabilities and their implications for biology and medicine.

What is the Proposed 'Third State'?

- About: The concept of a "third state" refers to a condition where cells and tissues exhibit characteristics that challenge the traditional definitions of life and death. Instead of viewing death as a complete cessation of biological functions, research indicates that certain cells can continue to operate and adapt after the organism's death.
- Key Features:
 - Xenobots: Skin cells from deceased frog embryos were observed to spontaneously form new multicellular structures, known as xenobots.
 - These xenobots displayed behaviours beyond their original biological functions, using their cilia (tiny hair-like projections) to navigate and move, unlike in living frog embryos where cilia are used to propel mucus.
 - Xenobots can undergo kinematic self-replication, allowing them to duplicate their form and functions without traditional growth. This process differs from familiar replication methods, which involve growth within or on the organism.
 - Anthrobots: Studies have shown that individual human lung cells can spontaneously form tiny, multicellular entities called anthrobots.
 - Anthrobots made from human tracheal (part of the respiratory system) cells, these bio-robots exhibit unique behaviours, allowing them to move, self-repair, and restore nearby damaged neuron cells.
- Implications of the Third State: The notion of a third state prompts a re-evaluation of life and death, suggesting biological systems may not be bound to linear life cycles.
 - Understanding how cells function after death could lead to breakthroughs in organ preservation and transplantation, improving the viability of donor organs and patient outcomes.

How Do Cells Survive After Death?

- Cellular Longevity: Various cells exhibit different survival durations after an organism's death.
 - White Blood Cells: Typically perish within 60 to 86 hours post-mortem.
 - Skeletal Muscle Cells: In mice, these can be regenerated for up to 14 days.
 - **Fibroblast Cells:** Sheep and goat cells can be cultured for approximately one month after death.
- **Influencing Factors:** Several factors influence the survival of cells and tissues post-mortem:
 - **Environmental Conditions:** Temperature, oxygen levels, and preservation methods impact cellular viability.
 - Metabolic Activity: Cells with lower energy demands tend to survive longer than those needing constant energy supplies.
 - Preservation Techniques: Cryopreservation(storing biological samples at low temperatures) can maintain functionality in tissue samples, such as bone marrow.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims

- Q. Which one of the following statements best describes the role of B cells and T cells in the human body?(2022)
- (a) They protect the environmental allergens. body
- **(b)** They alleviate the body's pain and inflammation.
- (c) They act as immunosuppressants in the body.
- (d) They protect the body from diseases caused by pathogens.

Ans: (d)

14-day Timeline under UAPA

Source: HT

Recently, the <u>Supreme Court</u> ruled that the **14-day timeline** for granting **sanction for prosecution** under the <u>Unlawful Activities (Prevention) Act (UAPA)</u>, <u>1967</u> is **mandatory** and not discretionary.

- Both central and state governments are required to act within this timeline in matters of national security.
- <u>UAPA Rules 2008</u> use the term "shall," indicating a clear legislative intent to complete the sanctioning process within the stipulated 14 days.
 - This includes both the independent review (7 days) and government decision (7 days).

The Vision

- Non-compliance with the 14-day timeline could result in severe legal consequences, such as the quashing of criminal proceedings.
- This ruling would apply prospectively, meaning it would not affect previous cases but must be followed strictly in all future instances.
- Bombay and Jharkhand High Courts had earlier considered the 14-day timeline as merely discretionary.
- The UAPA serves as a critical tool for the Indian government to combat terrorism effectively.

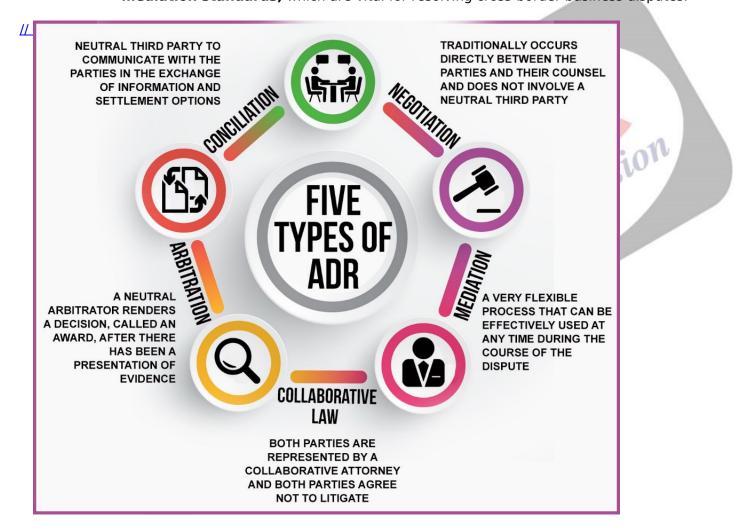
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India's Mediation Act Lies Unused

Source: LM

The delay in implementing the <u>Mediation Act. 2023</u> is hindering India's <u>alternative dispute redressal</u> (ADR) framework.

- A working committee chaired by **P.K. Malhotra** to draft the rules for the <u>Mediation Council of India</u> submitted its report. However, the government is yet to notify these rules.
- Significance of Mediation Act, 2023:
 - Reducing Judicial Overload: Nearly 76.98 million civil dispute cases are pending in Indian courts. Of this, commercial suits account for 0.36% and arbitration contributes 0.77% which can be dealt under the Mediation Act, 2023.
 - Family Matters: It can help curb the "third-generation curse," where less than 10% of family businesses survive beyond the third generation due to disputes.
 - **Banking:** Helpful in resolving loan defaults and non-performing assets (NPAs) related disputes.
 - Real Estate Sector: Quicker resolution of disputes over project delays and buyer-developer contracts.
 - Aligning with Global Standards: It will help India aligning with international mediation standards, which are vital for resolving cross-border business disputes.



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