DAILY CURRENT AFFAIRS 12-12-2024

GS-1

1. **Abathsahayeshwarar Temple Wins UNESCO Award for Heritage Restoration**
2. **India Achieves Total Fertility Rate of 2.0**

GS-3

3. **SheSTEM 2024**
4. **Heat Shock Protein 70 (HSP70)**
5. **Homo Juluensis**

Abathsahayeshwarar Temple Wins UNESCO Award for Heritage Restoration

Syllabus: GS-1: Art and Culture.

Context:

- The **Abathsahayeshwarar Temple** in Thukkatchi, a remarkable 1,300-year-old structure from the Chola dynasty in Tamil Nadu's Thanjavur district, recently earned the **UNESCO 2023 Award of Distinction** for its outstanding restoration efforts.
- This recognition highlights its historical, cultural, and architectural significance, as well as the effective conservation work.

Historical Significance

- Constructed by **Vikrama Chola** and **Kulothunga Chola**, the temple is a testimony to the architectural prowess of the Chola dynasty.
- The temple features **five prakarams** (enclosures) and was historically referred to as **Vikrama Chozheeswaram** and **Kulothunga Chola Nallur**.
- Notable deities housed in the temple include **SoundaryanayakiAmbal**, **Aadhi Sarabeshwarar**, and **Ashtabhuja Durga Parameshwari**, making it a revered spiritual site.

Restoration Process

- Prior to restoration, the temple was in a deteriorated state, with overgrown vegetation and structural damage.
- Efforts focused on repairing two prakarams, removing invasive plant growth, reinforcing structural elements, and repainting the **gopurams**.
- The restoration combined **modern conservation techniques** with **traditional methods**.
- Skilled local craftsmen, or **sthapathis**, ensured authenticity and aesthetics were retained.
- The temple's last **consecration ceremony** took place in **September 2023**, marking the culmination of the restoration.

UNESCO's Recognition

- UNESCO praised the restoration for revitalizing the temple while maintaining its historical integrity.
- The project is seen as a model for the conservation of other historic temples, blending modern approaches with traditional craftsmanship.

Government Support

- The restoration received robust backing from Tamil Nadu's **Hindu Religious and Charitable Endowments (HR&CE) department**.
- Minister **P.K. Sekarbabu** highlighted the government's commitment to preserving heritage, as exemplified by Chief Minister **M.K. Stalin's ₹100 crore annual allocation** for temple restorations.
- More temples have been earmarked for similar renovations, ensuring the continued preservation of Tamil Nadu's rich cultural heritage.

India Achieves Total Fertility Rate of 2.0

Syllabus: GS-1: Population Geography.

Context:

India achieving a Total Fertility Rate (TFR) of 2.0 is a significant milestone, aligning with the objectives of the **National Population Policy 2000** and the **National Health Policy 2017**, which targeted a TFR of 2.1.

Key Family Planning Programme Initiatives

The government's Family Planning Programme emphasizes providing a variety of contraceptive options to meet the diverse needs of individuals and families. These include:

- **Contraceptive Methods**:
  - **Traditional options**: Condoms, oral contraceptive pills, emergency contraceptives, and intrauterine devices (IUCDs).
  - **Permanent methods**: Sterilisation for men and women.
- **Recent Additions**:
  - **Antara**: Injectable contraceptive providing long-term protection.

- **Chhaya**: Centchroman pill offering a non-hormonal oral contraceptive option.

These additions expand choices and increase accessibility for users across demographics.

Mission Parivar Vikas

This flagship program targets states and regions with high fertility rates, focusing on providing accessible and high-quality family planning services.

- **Geographic Focus**:
  - Seven priority states, including Uttar Pradesh, Bihar, Madhya Pradesh, and others.
  - Six Northeastern states.
- **Incentives**:
  - Financial support is provided for individuals undergoing sterilisation, encouraging permanent family planning methods.
- **Key Goals**:
  - Address unmet family planning needs.
  - Increase awareness and service uptake in underserved areas.

Post-Pregnancy Contraceptive Options

To address fertility management after childbirth or abortion, the program offers:

- **Post-Partum IUCDs**: Inserted immediately after delivery.
- **Post-Abortion IUCDs**: For fertility regulation after an abortion.
- **Post-Partum Sterilisation**: A permanent option provided post-delivery.

Annual campaigns such as **World Population Day** and **Vasectomy Fortnight** are integral to spreading awareness and educating the population about these options.

Quality Assurance in Healthcare

The government has focused on enhancing the quality of public healthcare through the **National Quality Assurance Standards (NQAS)**, certifying over **16,586 health facilities**. This certification ensures that:

- Health facilities maintain high standards in providing reproductive and family planning services.

- Recent inclusion of **Integrated Public Health Laboratories (IPHLs)** expands the scope of quality healthcare services.

SheSTEM 2024

Syllabus: GS-3: Science and Technology – Innovation.

Context:

The **SheSTEM 2024** initiative by the Atal Innovation Mission (AIM) and the Swedish Embassy, in partnership with Nordic collaborators such as Innovation Norway, Innovation Centre Denmark, and Business Finland, stands as a testament to the power of youth-driven innovation and international cooperation in addressing critical global challenges. Here's a breakdown of the key aspects of the initiative:

SheSTEM 2024 aimed to:

- **Inspire young innovators** across India, with a focus on women in STEM fields.
- Encourage creative solutions in **Battery Technology and Energy Storage (BEST)** systems.
- Foster sustainability through advancements in energy storage technologies as part of the **India-Nordic BEST project**.

Engagement with Youth

- Targeted students from **grades 6–12** across India, fostering early exposure to real-world challenges.
- Participants submitted their innovative concepts or prototypes in a **two-minute video format**.
- Received **over 1,000 submissions**, showcasing exceptional creativity, problem-solving, and a commitment to global sustainability.

Collaboration and Global Impact

- Highlighted international cooperation to address shared challenges:
    - Swedish Ambassador Jan Thesleff emphasized **inspiring future innovators**.
    - Dr. Chintan Vaishnav of AIM stressed the importance of engaging students in tackling pressing issues like energy storage and sustainability.

Platform for Future STEM Leaders

- Beyond competition, SheSTEM 2024 provided a **learning and engagement platform** for students to delve into critical STEM topics.
- Encouraged the development of leadership qualities among participants to drive **technology and sustainability** solutions.

AIM's Role in Fostering Innovation

- AIM continues to lead initiatives that:
  - Build a **culture of innovation** and entrepreneurship in India.
  - Support young talent to become future leaders, innovators, and creators.
- Events like SheSTEM 2024 reinforce AIM's commitment to advancing **India's innovation ecosystem** and fostering **youth-driven solutions** for global challenges.

Heat Shock Protein 70 (HSP70)

Syllabus: GS-3: Science and Technology – Biology.

Context:

- A collaborative study by Jawaharlal Nehru University (JNU), in partnership with Russian researchers, has shed light on the pivotal role of the human protein Hsp70 (Heat Shock Protein 70) in the spread of diseases like malaria and COVID-19. The research opens new avenues for innovative therapeutic strategies targeting infectious diseases.

About Hsp70

Hsp70 is a crucial molecular chaperone involved in:

- **Protein Folding**: Prevents protein misfolding, ensuring proper cellular function.
- **Stress Response**: Plays a key role in cellular health under stress conditions, such as fever or heat shock.

Hsp70's Role in Infections

- **SARS-CoV-2 and Hsp70**: The study reveals that Hsp70 interacts with:
  - The **spike protein** of the SARS-CoV-2 virus.
  - The **ACE2 receptor** on human cells, aiding viral entry.

- **Fever and Infectivity**: Elevated Hsp70 levels during fever may inadvertently boost viral infectivity, emphasizing its dual role in cellular stress response and disease progression.

Development of Hsp70 Inhibitors

The researchers developed a small molecule inhibitor called **PES-Cl**, which demonstrated:

- **Complete Viral Inhibition**: In laboratory tests on SARS-CoV-2-infected cells, even low doses of PES-Cl successfully blocked the virus.
- **Therapeutic Potential**: The findings suggest PES-Cl could be a promising candidate for treating infections, including COVID-19.

Advantages of Targeting Host Proteins

- **Reduced Drug Resistance**: Targeting a host protein like Hsp70, rather than the virus directly, minimizes the chance of resistance arising from viral mutations.
- **Broad Spectrum Impact**: Blocking Hsp70 not only impedes SARS-CoV-2 replication but could also disrupt the lifecycle of other pathogens, such as malaria-causing parasites.

Implications for Disease Management

The research underscores the need for:

- **Pandemic Preparedness**: Innovative solutions like Hsp70 inhibitors could bolster global health responses to emerging infectious diseases.
- **Holistic Therapies**: A focus on host-targeted treatments may enhance efficacy and adaptability against fast-evolving pathogens.

Homo Juluensis

Syllabus: GS-3: General Science – Human evolution.

Context:

- Recent research has **uncovered Homo juluensis,** a previously unknown human species that lived **approximately 300,000 years ago in eastern Asia**.
- Thriving in small groups, these "**big-head people"** earned their nickname due to their distinctively large skulls. They disappeared around 50,000 years ago, leaving behind intriguing clues about human diversity and adaptation.

Coexistence with Other Human Species

- Eastern Asia was home to at least four human species during the era of Homo juluensis:
- Homo floresiensis – Known for their small stature and compact build.
- Homo luzonensis – Another diminutive species adapted to local environments.
- Homo longi – Possessed larger skulls, similar to Homo juluensis.
- Homo juluensis – Distinguished by their large craniums and unique characteristics.
- These species coexisted and likely interacted, exchanging genetic and cultural traits. This paints a picture of human evolution as a complex web rather than a linear trajectory, challenging earlier perceptions of isolated development.

Implications for Human Evolutionary Studies

- The discovery of Homo juluensis enriches our **understanding of ancient human diversity**, particularly in Asia, a region historically underexplored compared to Europe and Africa.
- The findings highlight the **dynamic interactions among different human species** and provide a more nuanced framework for **interpreting Asian hominin fossils.**
- Christopher Bae, a leading researcher, emphasized the significance of this discovery, urging further exploration of Asia's evolutionary history.

Limitations and Future Directions

Despite its groundbreaking nature, the research faces challenges:

- **Many fossil remains are incomplete**, complicating efforts to reconstruct the full morphology of Homo juluensis.
- **Genetic connections** among these species remain unclear, necessitating further DNA analysis and fossil discoveries.
- While this breakthrough **reshapes our understanding**, it is a stepping stone that calls for continued exploration to fully uncover the complexities of human evolution.
- This discovery of Homo juluensis is not only a testament to the diversity of ancient humans but also a reminder of how much remains to be learned about our past.