1. **Synthetic Genome :** Recently, researchers in the United Kingdom have embarked on a groundbreaking and controversial initiative to synthetically construct segments of the human genome. Known as the **Synthetic Human Genome Project,** this ambitious endeavor is being spearheaded by leading scientists from renowned institutions.
   - **About Synthetic Genome :** Refers to DNA that is artificially designed and constructed in a laboratory, rather than naturally occurring.
     - **Lab-Based Construction:** Scientists build DNA sequences from chemical components to mimic or modify natural genetic codes.
     - **Used for Genetic Engineering:** This technology allows researchers to manipulate or redesign an organism's genetic makeup for specific purposes.
     - **Example:** A notable example is the creation of a synthetic genome for the bacterium **Mycoplasma mycoides**, resulting in a living organism capable of self-replication.
     - **Applications in Science and Medicine:** Used in studying gene functions, developing new drugs, creating vaccines, and advancing synthetic biology.
2. **Botrytis Fungus** : Recently, scientists from Sichuan University (China) and the University of British Columbia (Canada) discovered that the well-known **botrytis fungus**, also known as "noble rot," cannot be cloned.
     - Their study, published in Science, reveals that the fungus distributes its chromosomes among multiple nuclei—defying a core principle of cellular biology.
   - **About Botrytis Cinerea** : A beneficial fungus celebrated in winemaking. It infects and dehydrates grapes, concentrating sugars and flavors.
     - This process produces some of the world's most prized sweet wines, such as: **Sauternes** (France), **Tokaji** (Hungary) and **Trockenbeerenauslese** (Germany/Austria)
   - **Cloning Challenge:** Typically, every **nucleus** in a cell contains a **complete set of chromosomes**, enabling cloning and genetic engineering. However, in both **Botrytis cinerea** and its relative **Sclerotinia sclerotiorum**, no single nucleus holds the full genome.
     - Instead, the **genetic material is split across multiple nuclei** within one cell.
     - Each nucleus contains only a **partial set of chromosomes**, making **cloning impossible**. This discovery challenges long-held principles of cellular and fungal biology.

3. **K-6 Missile:** Recently, India has made a significant advancement in strengthening its strategic capabilities with the development of the **K-6 hypersonic submarine-launched ballistic missile (SLBM)**—a vital addition to its nuclear deterrence program.
   - **About K-6 Missile :** A **nuclear-capable SLBM** currently under development at **DRDO's Advanced Naval Systems Laboratory** in Hyderabad.
     - It is being specifically designed for deployment on the upcoming **S-5 class SSBNs** (nuclear-powered ballistic missile submarines), which will be larger and more advanced than the current Arihant-class.
     - **Hypersonic Speed:** Capable of reaching speeds up to **Mach 7.5** (~9,261 km/h), significantly reducing enemy reaction time and rendering traditional missile defence systems nearly ineffective.
     - **Extended Range:** The K-6 is expected to have a **range of 8,000 kilometers**, far exceeding previous iterations in India's K-series SLBM program: **K-3:** 1,000–2,000 km, **K-4:** 3,500 km (inducted) and **K-5:** 5,000–6,000 km (inducted)
     - **Dual Warhead Capability:** It will be capable of carrying both **nuclear and conventional warheads**, enhancing India's operational flexibility across various conflict scenarios.
   - **MIRV Technology:** The K-6 is being developed with **MIRV (Multiple Independently Targetable Reentry Vehicle)** capability, enabling a single missile to deliver multiple warheads to different targets simultaneously—greatly enhancing its strike potential.
4. **GoIStats App:** Recently, to mark Statistics Day 2025, the Ministry of Statistics and Programme Implementation (MoSPI) launched a new mobile application called **GoIStats**, developed by the **National Sample Survey Office (NSO)**.
   - **About GoIStats App:** Underscores the government's commitment to a **digitally empowered data ecosystem**, ensuring that **citizens, researchers, policymakers, and analysts** have **real-time, mobile access** to authentic and official statistical data.
     - Provides dynamic visualizations of major socio-economic indicators such as GDP growth, inflation, and employment.
     - Features **interactive charts**, infographics, and clear explanations to simplify statistical information for the general public.

- Includes a **social sharing feature** to promote data literacy and civic engagement.
- Offers access to NSO's latest **reports and publications**, searchable and downloadable within the app.
- All documents are regularly updated in sync with the **NSO's publication calendar**.

5. **UN Women :** Recently, at the Fourth International Conference on Financing for Development (FfD4) in Seville, Spain, the United Nations agency **UN Women** voiced serious concerns over the widening funding gap for gender equality efforts.
   - **Key highlights** : An annual funding gap of **$420 billion** is severely hindering global progress toward achieving gender equality, especially in developing nations.
     - The gap represents the annual amount required to meet **gender equality targets** under the **2030 Agenda for Sustainable Development**.
     - It reflects **chronic underfunding**, **ineffective budget tracking**, and **inequitable global financial systems**.
     - Only **25% of countries** currently track public spending dedicated to gender equality.
   - **About UN Women: United Nations entity** dedicated to **gender equality** and the **empowerment of women**. A **global champion** for the rights and advancement of women & girls. It was established in **July 2010** by the **UN General Assembly**.
     - Formed as part of the **UN reform agenda**, it unified several UN efforts to enhance efficiency and impact in promoting women's rights globally.
     - **Functions :** Assists **inter-governmental bodies** like the **Commission on the Status of Women (CSW)** in formulating global gender equality policies, standards, and norms.
       - ✓ Helps **member states implement gender policies**, offering **technical and financial support** when requested.
       - ✓ Builds effective **partnerships with civil society organizations**.
     - Provides financial support to **high-impact gender programmes** through:
       - ✓ The **Fund for Gender Equality**
       - ✓ The **UN Trust Fund to End Violence against Women**
     - Regularly reports on **women's rights issues** to key UN bodies including: The **General Assembly** , The **Economic and Social Council (ECOSOC)** and The **UN Security Council.**

6. **Aneurysm :** Recently, increased attention has been drawn to the medical condition known as an **aneurysm**—a serious and potentially life-threatening health issue that often goes unnoticed until it becomes critical.
   - **About Aneurysm :** A **balloon-like bulge** in the wall of a blood vessel, most commonly an **artery**.
     - **Cause:** It occurs when a section of the vessel wall becomes **weak**, and the constant pressure of blood flow causes it to **stretch and bulge** outward.
     - **Common Location:** Aneurysms typically develop in **arteries**, which carry **oxygen-rich blood** from the heart to the rest of the body.
     - **Silent Threat:** Most aneurysms are **painless** and may go **unnoticed** for years.
     - **Health Risk:** If an aneurysm **ruptures**, it can cause **severe internal bleeding**, which may be **life-threatening** or **fatal** if not treated immediately.
   - **Where Do Aneurysms Occur :** Aneurysms can form in almost **any artery**, but some areas are more prone than others:
     - **Aortic Aneurysm**: Occurs in the **aorta**, the largest artery in the body.
       - ✓ Abdominal Aortic Aneurysm (AAA): Found in the abdomen
       - ✓ Thoracic Aortic Aneurysm (TAA): Found in the chest
     - **Cerebral Aneurysm**: Located in the **brain** and can lead to a **stroke** if it ruptures
     - **Peripheral Aneurysms**: Occur in arteries of the **legs, neck, or groin**
     - **Visceral Aneurysms**: Affect arteries supplying organs like the **spleen** or **intestines**
   - Treatment depends on the aneurysm's **size, location, and risk of rupture**, as well as the patient's **age** and **overall health**.
7. **Salkhan Fossil Park: Recently**, Salkhan Fossil Park in Uttar Pradesh has been included in **UNESCO's Tentative List** for World Heritage Sites—a step toward gaining global recognition for its unique fossil heritage.
   - **About Salkhan Fossil Park:** Also called **Sonbhadra Fossils Park**, it is located in **Uttar Pradesh**, within the **Kaimoor Wildlife Sanctuary** and the **Vindhyan mountain range**.
     - The park holds **fossils that are about 1.4 billion years old**, making it one of the **oldest and best-preserved fossil sites** in the world.

- It is especially known for its **stromatolites**—rock-like structures formed by **cyanobacteria (blue-green algae)**, which are among the **earliest forms of life on Earth**.
- The park contains **prehistoric stromatolites**, dating back to the **Mesoproterozoic Era** (over a billion years ago).
- It is **older** than other famous fossil sites like **Shark Bay in Australia** and **Yellowstone in the USA**.
- These fossils are linked to the **Great Oxidation Event**, a major shift in Earth's atmosphere that allowed complex life to evolve.

- **Geological Importance:** The park shows a wide variety of **stromatolite shapes**—from **dome-like to column-like structures**. These formations reveal important details about the **environmental conditions** at the time, such as water depth, sediment flow, and wave patterns.
  - It is recognized under the **IUCN's key geo-heritage category** of **"Evolution of Life"** in its 2020 geo-conservation guidelines.

8. **Registrar General of India (RGI) :** Recently, the **Registrar General of India (RGI)** informed all States that the first phase of the **Population Census 2027**, called the **House Listing and Housing Schedule (HLO)**, is tentatively set to commence on **April 1, 2026**.

- **About RGI :** It was established in **1949** as a permanent organization under the **Ministry of Home Affairs**.
  - The office is headed by the **Registrar General and Ex-Officio Census Commissioner of India**, typically a **Joint Secretary-level civil servant**.
  - It was created to ensure the **systematic collection of population statistics** across the country.
- **Key Responsibilities:** Conducts the decennial Census of India to gather key demographic, socio-economic, and geographic data.
  - It manages the Civil Registration System (CRS) for recording births and deaths under the Registration of Births and Deaths (RBD) Act, 1969.
  - It conducts the Linguistic Survey of India (LSI) to map the country's linguistic diversity.
  - Also carries out various demographic & social surveys to support policymaking & planning.