# Prelim Bits 08-01-2024 | UPSC Daily Current Affairs

## Bio-Imaging Bank

*AI can help detect cancer and India's biggest cancer treatment hospital is utilizing it.*

## Bio imaging

- It is an optical form of biosensing used to create non-invasive, visual representations of biological processes in cells, tissues, and anatomy for more accurate diagnosis and treatment of diseases.

  *Biosensing is a detection of target molecules based on the principles used by a living system such as an immune system.*

- **Aim -** Bioimaging aims to interfere as little as possible with life processes.
- **Uses -** Moreover, it is often used to gain information on the 3-D structure of the observed specimen from the outside, i.e. without physical interference.
- Bioimaging also includes methods visualizing biological material that has been fixed for observation.

## The Bank

- **Background -** By established a 'Bio-Imaging Bank' for cancer, hospitals are utilizing deep learning to craft a cancer-specific tailored algorithm that aids in early-stage cancer detection.
- **Goal -** To create a robust repository encompassing radiology and pathology images, intricately linked with clinical information, outcome data, treatment specifics, and additional metadata.
- **Design -** This comprehensive resource is strategically designed for the training, validation, and rigorous testing of AI algorithms.
- **Fund -** The project is funded by the Department of Biotechnology, in collaboration with IIT-Bombay, RGCIRC-New Delhi, AIIMS-New Delhi, and PGIMER-Chandigarh.
- **Method -** Segmenting and annotating images, outlining tumours, identifying different features, and annotating them as malignant, inflammatory, or edematous.
- Biopsy results, histopathology, immunohistochemistry reports, and genomic sequences are correlated with images and clinical data to develop diverse algorithms.

  *Tata Memorial Hospital (TMH) has already added the data of 60,000 patients into the biobank over the previous year, started using AI to reduce radiation exposure for paediatric patients undergoing CT scans.*

**References**

1. The Indian Express – AI can help detect cancer
2. The Indian Express – Tata Cancer Hospital teaches AI to detect cancer
3. Center for Advanced Bioimaging – What is Bioimaging?

## Survey of Villages and Mapping with Improvised Technology in Village Areas (SVAMITVA) Scheme

*SVAMITVA Scheme wins Best Innovation Award for Innovation Sandbox presentation during Public Policy Dialogues–2024 at Indian School of Business, Hyderabad.*

- **Initiative by -** It is a collaborative effort of the Ministry of Panchayati Raj, State Panchayati Raj Departments, State Revenue Departments and Survey of India.
- **Launch -** It is a Central Sector Scheme, launched in the year 2021.
- **Aim -** It is a scheme for mapping the land parcels in rural inhabited areas using drone technology and Continuously Operating Reference Station (CORS).
- To provide an integrated property validation solution for rural India.
- **SVAMITVA Property Cards -** They facilitate monetization of properties, enabling bank loans and comprehensive village-level planning.
- **Purpose -** The SVAMITVA Scheme stands out as a groundbreaking initiative that harnesses innovation and new technologies to transform the landscape of land ownership in rural India.
- **Target -** The scheme has target year of completion of its implementation as 2024–25.
- **Coverage Area -** The scheme has been saturated with generation of property cards of all inhabited villages of Haryana, Uttarakhand, Puducherry, Andaman and Nicobar Islands and Goa.

**References**

1. PIB – SVAMITVA Scheme wins Award
2. SVAMITVA – About Scheme
3. Business Standard – Giving property ownership rights to villagers

## Elasmobranch Species

*Shark & ray meat (elasmobranch meat) consumption no longer restricted to India's tribal & coastal peoples.*

- Elasmobranch is a subclass of the Class Chondrichthyes: Cartilaginous Fishes, which consists of sharks, rays, skates, and chimaeras.

  *The rise in demand for elasmobranch meat could lead to more unsustainable fishing of shark species.*

- **Difference -** The other subclass of cartilaginous fish, the Holocephali, consists of Chimaeras, ratfish (Genus Chimaera) and elephantfish (Genus Callorhynchus).

- The main differences between these two subclasses are the structure of their gills and how they grow in the embryo.
- Holocephali has four-gill slits with a gill cover (an operculum); while Elasmobranchs have five to seven, external gill slits with no gill cover.
- The term Elasmobranch actually means naked gill.
- In addition, in the Holocephali the upper jaw is fused to the skull, unlike in the Elasmobranchii.
- **Features -** A skeleton made of cartilage; No swim bladders; Five to seven pairs of gills opening individually to the exterior; Rigid dorsal fins; Rough skin made up of small dermal denticles.
- Elasmobranch skin is made of tiny, hard, tooth-like placoid scales called denticles.
- Elasmobranchs are renowned for their highly tuned senses, which make them incredibly successful in their environment.
- Many Elasmobranchs can sense electrical impulses of other animals but not generate their own special fields, as they possess sensory organs called the Ampullae of Lorenzini.
- Females have no obvious external reproductive structures, whilst males have two extensions of the pelvic fin known as claspers.

*India has banned the live finning of sharks and the export of fins of all shark and ray species and ten species are completely protected from any fishing and trade.*

**References**


1. Down To Earth – Shark & ray meat consumption
2. Research Gate – Elasmobranch
3. Irish Elasmobranch Group – Elasmobranchs


## Nathapodytes nimmoniana

*Researchers at the Indian Institutes of Technology Madras and Mandi have metabolically engineered plant cells to increase production of anti-cancer drug camptothecin (CPT).*

## Nathapodytes nimmoniana

- Nathapodytes nimmoniana is an endangered medicinal plant widely distributed throughout the Western Ghats of India.
- The plant contains camptothecin (CPT) which is renowned anticancer drugs.
- Though, CPT found in many plant species but maximum amount of CPT has been reported from N. nimmoniana.
- Due to very good source of CPT, this plant has been explored for its Phytochemical, Biotechnological and Pharmacological aspects.
- The plant has been overharvested, pushing it to the endangered list.
- The International Union for Conservation of Nature has red-listed the plant as in the past decade alone there has been a 20% decline in the plant's population.

*The Chinese variety of the plant used to extract the cell is listed as critically endangered.*

## Camptothecin (CPT)

- Camptothecin (CPT) was discovered from plant extracts more than 60 years ago.
- Since then, only two CPT analogs (irinotecan and topotecan) have been approved for cancer treatment.
- Camptothecin (CPT) class of compounds has been demonstrated to be effective against a broad spectrum of tumors.
- The allopathic medicine is produced using Nathapodytes nimmoniana.
- Camptothecin is majorly produced in southeast Asian region, with the plant being largely found only in China and India.

### References


1. The Hindu – Plant cells to produce drug for cancer
2. NCBI – Evaluating Nathapodytes nimmoniana population


## Gol Gumbaz

*Bomb threat e-mail to Gol Gumbaz museum turns out to be hoax.*

- It is the located in the state of Karnataka, built in Indo-Islamic style of architecture.
- It is the tomb of Mohammed Adil Shah (ruled 1627–1657).
- It is the second largest dome ever built, next in size only to St Peter's Basilica in Rome.
- A particular attraction in this monument is the central chamber, where every sound is echoed seven times.
- Another attraction at the Gol Gumbaz is the Whispering Gallery, where even minute sounds can be hear clearly 37 metres away.
- Gol Gumbaz complex includes a mosque, a Naqqar Khana (a hall for the trumpeters) (now it is used as museum) and the ruins of guesthouses.
- In the surrounding ornamental gardens is an archeological museum.
- It is a protected monument administered by the Archeological Survey of India.

### References


1. The Hindu – Hoax bomb scare at Gol Gumbaz
2. Vijayapura – Gol Gumbaz
3. ASI – Gol Gumbaz Bijapur

## Other Important News

### PRASADAM

• Union Minister of Health & Family Welfare inaugurates the country's ***1st Healthy & Hygienic Food Street, 'PRASADAM,'*** in Ujjain, Madhya Pradesh.
• The street will serve ***traditional dishes*** made of coarse grains like rajgira, sanwa, kuttu, ragi, dal-baffle, and more.

### Bilateral Haj Agreement 2024

• India signs Bilateral Haj Agreement 2024 with Kingdom of Saudi Arabia (KSA) recently.
• The Hajj is an ***annual Islamic pilgrimage*** to Mecca, Saudi Arabia, the holiest city for Muslims. It is one of the 'five pillars' of Islam.

### MV Vasiliy Golovnin

• MV Vasiliy Golovnin, an expedition vessel chartered by India, commenced its journey recently.
• The journey is from ***Cape Town to Antarctica*** for the 43rd Indian Scientific Expedition to Antarctica (ISEA) Voyage.
• The expedition includes 21 members from ***India***, two from ***Mauritius***, and one from ***Bangladesh***.

### Moradabad brass

• Moradabad brass is a small-scale, low-technology industry that has been growing since the early 19th century.
• Moradabad city is known as the ***"City of Brass" or Pital Nagri*** for its large-scale brass works.
• It was established in 1600 by Murad, ***the son of the Mughal Emperor Shahjahan***, as a result the city came to known as Moradabad.
• The British took the art to foreign markets in the early 19th century.

### Krizna Jama Cave

• Krizna Jama, also known as Cross Cave or Cold Cave under Cross Mountain, is a cave in ***Slovenia***.
• It's located in the Loz Valley, between the Loz Karst Field, Cerknica Karst Field, and Bloke Plateau.
• Krizna Jama is the 4th biggest known underground ecosystem in the world in terms of biodiversity.

## Maori Haka

• New Zealand's youngest MP, ***Hana-Rawhiti Maipi-Clarke***, performed the 'Maori haka' to honour her indigenous people in Parliament recently.
• Haka is ***a ceremonial dance*** in Māori culture.
• It's a type of ancient war dance that's traditionally performed by both ***men and women*** for a variety of social functions.
• It is a fierce display of a tribe's pride, strength, and unity. Haka is also known as a ***"war challenge" or "war cry"*** in Māori culture.

## The DART Book & Food Safety on Wheels (FSW)

• ***Food Safety and Standards Authority of India (FSSAI)*** has recently released "The Detect Adulteration with Rapid Test (DART) Book" & Food Safety on Wheels (FSW).
• DART booklet is a compilation of common quick tests for detection of food adulterants by the citizens themselves so as to induce awareness among the consumers about food safety.
• A mobile food testing van called ***Food Safety on Wheels (FSW)*** was launched to reach remote areas and conduct training and awareness activities & to promote awareness campaigns.

## Mannhit App

• The Union Health Minister and the Chief Minister of Madhya Pradesh jointly launched the Mannhit app recently.
• It is an initiative facilitating ***screening for mental health***.

## 16th Century Telugu Inscriptions

• 2 Telugu inscriptions of 16th century found in Nallamala forest in Andhra Pradesh recently.
• One of the inscriptions records the construction of cradle pillars (uyyala-kambalu) to Goddess Poleramma.
• The other inscription seems to refer to a hero fighting with a tiger.

## Chandubi Festival

• The Chandubi Festival takes place near the ***Chandubi Lake in Kamrup district, Assam.***
• The festival celebrates Assamese culture and traditions, and aims to promote and ***preserve the cultural heritage*** of the area's tribal communities.
• The Chandubi Festival is organized by the people of Rajapara village in the Kamrup district, under the Rabha Hasong Autonomous Council (RHAC).
• The festival has been providing an opportunity to generate livelihood to different tribes like ***Rabhas, Garos, Gorkhas and tea tribes.***



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