

## Prelim Bits 14-12-2022 | UPSC Daily Current Affairs

### Geminids Meteor Shower

*Geminids Meteor Shower, the annual celestial show peaks around December 13-14 in 2022.*

- The meteor shower is named after the constellation Gemini.
- The constellation is not the source of the meteors but the meteor shower appears to originate from the constellation in the sky.

*The Geminids meteor shower and the Quadrantids meteor shower are the only major showers not caused by a comet.*

- Most meteor showers originate from comets but the Geminids meteor shower originate from an asteroid, the 3200 Phaethon.
- The 3200 Phaethon is 3.6-mile (5.8-kilometer) wide space rock which comes closer to the sun than any other named asteroid.
- The 3200 Phaethon takes 1.4 years to complete one round of the Sun.
- As it moves close to the Sun while orbiting it, the rocks on its surface heat up and break off.
- When the Earth passes through the trail of this debris, the Geminids are caused.
- The Geminids is one of the best and most reliable annual meteor showers.
- If their peak coincides with the new moon and clear sky, the Geminids can produce approximately 100-150 meteors per hour for viewing.

*The 3200 Phaethon, discovered on October 11, 1983, is named after the Greek mythology character Phaethon, son of the Sun God Helios.*

### References

1. [Indian Express - What is the Geminids meteor shower?](#)
2. [Live Mint - Bengaluru to witness dazzling Geminids showers](#)
3. [Economic Times - Bengaluru to witness Geminids meteor shower](#)

### Base Editing

*For the first time, Base editing technology used in CAR-T therapy defeated a seemingly incurable cancer.*

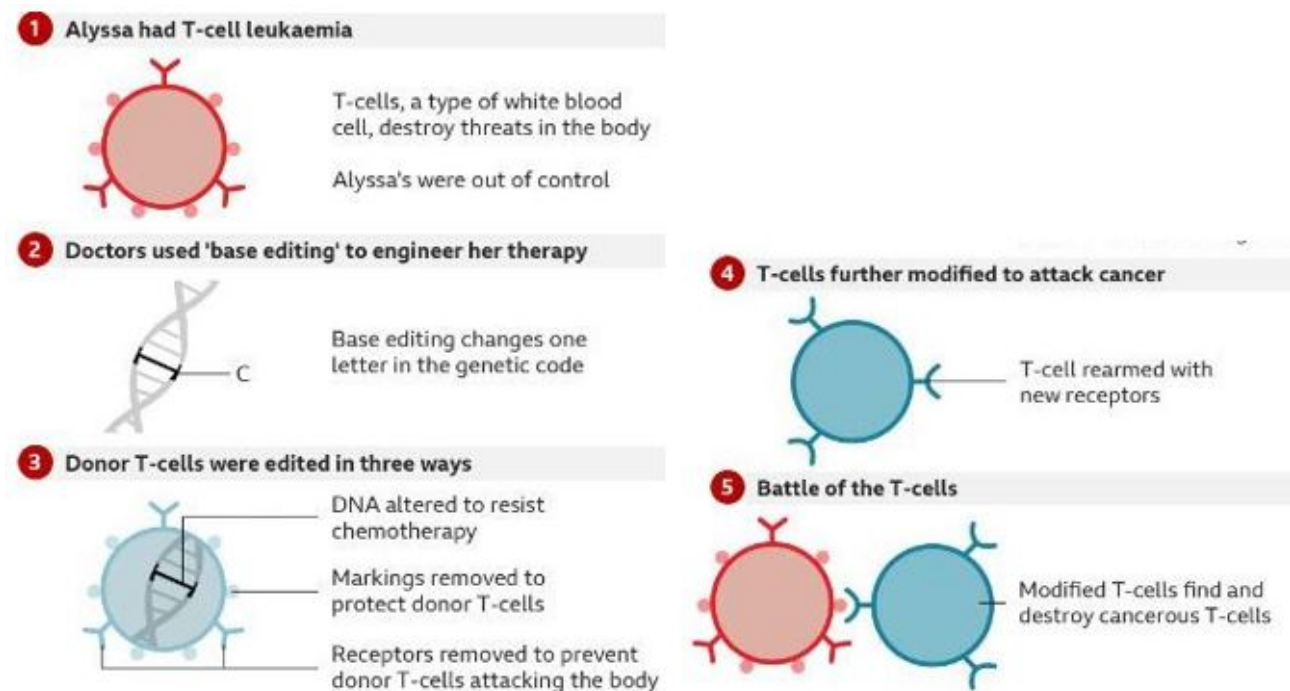
- Base editing is a newer genome editing approach that allows scientists to zoom to a precise part of the genetic code and then alter the molecular structure of just one

base.

- There are 4 types of bases in the DNA - adenine (A), cytosine (C), guanine (G) and thymine (T).
- These bases in our DNA spell out the genetic code and instructions for our body.
- Base editing uses components from [CRISPR](#) systems together with other enzymes to directly install point mutations into cellular DNA or RNA.
- Base editing makes point mutations in the DNA possible without generating double strand breaks (DSBs).
- Base editors directly convert one base or base pair into another and changes the genetic instructions.

## Base editing in CAR-T therapy

- [CAR-T therapy](#) is an immunotherapy that uses T-cells for the treatment of cancer.
- The base editing tool is used to engineer a new type of T-cell from a healthy T-cell (own or from donor).
- This engineered T-cell is used in CAR-T therapy for treating cancerous cells.
- Through this gene editing technique, the patient (Alyssa) received genetically modified cells that were programmed to specifically attack her cancer while leaving the rest of her body alone.



## References

1. [Indian Express - What is base editing?](#)
2. [CNN - Gene editing technology for treatment-resistant cancer](#)
3. [BBC - Base editing: Revolutionary therapy](#)

## Threatened Species

*A list of threatened species was released at the 15<sup>th</sup> Conference of Parties (COP15) to the UN Convention on Biological Diversity in Montreal.*

- Several marine species like Abalone, dugong and pillar coral are threatened with extinction.

## Abalone Shellfish

- Abalone is a shellfish species threatened with extinction.
- Abalone species are among the world's most expensive seafood.
- 20 of the world's 54 (44%) abalone shellfish species at risk of extinction, according to IUCN.

Species of Abalone	IUCN status
Black abalone ( <i>H. cracherodii</i> ) Found in California and Mexico	Critically Endangered
Green ormer ( <i>H. tuberculata</i> ) Found from the English Channel to Northwest Africa and the Mediterranean	Vulnerable
Omani abalone ( <i>H. mariae</i> ), a commercial species Found in the Arabian Peninsula	Endangered

- **Threats** - Marine heatwaves have exacerbated abalone diseases worldwide.
- Unsustainable extraction and poaching along with climate change, disease, algal blooms and pollution.

## Dugong

- The [Dugong](#) is an herbivorous marine mammal species.
- **IUCN Status** - Remains Vulnerable globally but
  - In East Africa - Critically Endangered
  - In New Caledonia - Endangered
- **Threats** - Unintentional capture in fishing gear.
- Destruction of their food (sea grass) due to chemical pollution, bottom trawling and oil and gas exploration and production.

## Pillar Coral

- The pillar coral is a hard coral found throughout the Caribbean from the Yucatan Peninsula and Florida to Trinidad and Tobago.
- They are affected by the contagious Stony Coral Tissue Loss Disease.
- Its population shrunk by over 80% across most of its range since 1990.
- **IUCN status** - Critically Endangered (moved from Vulnerable)

## References

1. [Down To Earth - Marine species threatened with extinction](#)

## Meitei Script of Manipuri

Newspapers in Manipur are working to replace the Bengali script that's currently in use with Meitei Mayek or the Manipuri script.

- The script, once patronised by Meitei rulers but which fell into disuse with the advent of Hinduism and eventually disappeared is revived now.
- The Meiteilon (Manipuri language) script is fairly old and proofs dates back till the 6<sup>th</sup> century.
- **Different Meitei scripts** -The inscriptions on the coins of the 7<sup>th</sup> and 8<sup>th</sup> Century had 18-letter Meitei script.
- It expanded to the 36-letter script in the 17<sup>th</sup> century during the reign of Meidingu Pamheiba (1709-1748).
- **Usage of Bengali Script** - With the advent of Hinduism, the popular Bengali script was used in the 18<sup>th</sup> and 19<sup>th</sup> century inscriptions.
- Bengali script became more popular when formal education was started by Sir James Johnstone in 1885.
- During the reign of Maharaja Sir Churachand (1891-1941), the Bengali script of Manipuri was adopted.
- **Revival of Meitei Script** - A movement to revive the Meitei Mayek started in the 1930s and gathered strength in the 1950s.
- In 1977, the 27-letter script for Meiteilon was approved by the State Government.

### Definition of Manipuri language

- The Manipur Official Language Act, 1979, was enacted with the definition of Manipuri language as 'Meiteilon written in Bengali script and spoken by the majority of Manipuri population'.
- The Manipur Official Language (Amendment) Act of 2021, modified the definition of 'Manipuri language' as 'Meiteilon in Meetei Mayek and spoken by the majority of Manipur population' with a proviso that for 10 years, both the Bengali and Meitei Mayek scripts shall be allowed.

### References

1. [Indian Express The story of Meitei script](#)
2. [IUCN - Human activity devastating marine species](#)

### Pandoravirus

*Scientists have revived several large viruses that had been buried in the frozen Siberian ground (permafrost) for tens of thousands of years.*

- A group of scientists from France, Germany and Russia managed to reanimate 13 viruses from samples of Siberian permafrost.
- These revived viruses are called [zombie virus](#).
- All the viruses cultured so far are giant DNA viruses that only affect amoebae.
- Viable viruses have been detected in permafrost samples earlier as well like Pithovirus and Mollivirus.
- Out of the 13 ancient viruses, the youngest virus to be revived was 27,000 years old.
- The oldest of them is a 48,500-year-old amoeba virus called Pandoravirus Yedoma.
- Pandoravirus Yedoma is the oldest virus ever to have been revived.
- The Pandoravirus Yedoma was found in the bodies of permafrost-preserved

mammoths, woolly rhinoceros, and prehistoric horses.

- The virus was named after Pandora's Box - an artefact in Greek mythology connected with the myth of Pandora in Hesiod's poem.

## References

1. [Business Line - Buried danger: Pandoravirus](#)
2. [Latestly - What Is Zombie Virus and Pandoravirus Yedoma?](#)

