



Scientists Uncover First 1-Centimetre Fossil in Gobi Desert

Description

A small fossil found in Mongolia's Gobi Desert has unveiled a new species of early mammal, believed to have existed approximately 90 million years ago. This discovery is significant as it enhances understanding of the earliest relatives of placental mammals.

The specimen was extracted in 2019 from the Bayanshiree Formation, a site known for its scarcity of mammalian fossils compared to other locations in the region. Its rarity makes this find particularly noteworthy, occurring in a field largely dominated by more extensively documented fossil layers.

Called *Ravjaa ishiii*, this species is classified within the Zhelestidae family, an early group of eutherian mammals, which are ancestors to modern placental mammals. These small, mouse-sized creatures coexisted with dinosaurs and occupied ecological spaces that researchers are still working to comprehend.

The fossil itself comprises a mere 1-centimetre jaw fragment, including the tip of a premolar and three molars. Despite its size, this fragment contains enough anatomical detail to classify it as a new genus and species. Researchers, including Tsukasa Okoshi, highlighted that the well-preserved fossils from this era in Mongolia have been crucial to understanding mammalian evolution during the Mesozoic era.

Notably, the dental features of *Ravjaa ishiii* are distinctive; its molars are unusually tall and robust, setting it apart from known relatives. This suggests that early eutherians began to exploit resources linked to the rise of flowering plants during the Cretaceous period, indicating a shift in dietary habits even as dinosaurs maintained ecological dominance.

Beyond its anatomy, *Ravjaa ishiii* holds evolutionary significance as the first identified zhelestid specimen from the Bayanshiree Formation, representing a potential ancestral link that may date back to the transition between Early and Late Cretaceous periods. Experts like Professor Mototaka Saneyoshi remarked on the remarkable chance of discovering such a tiny fossil within the vast desert landscape.

Vocabulary List:

1. **fossil** //ˈfɒsəl// (noun): the preserved remains of an ancient animal or plant
2. **specimen** //ˈspɛsəməŋ// (noun): one example taken for study or research
3. **scarcity** //ˈskærəti// (noun): only a small amount available; short supply
4. **eutherian** //juːˈθiəriən// (adjective): relating to placental mammals and their ancestors
5. **molars** //ˈmoʊlərz// (noun): back teeth used for crushing and grinding food
6. **exploit** //ɪkˈsplɔɪt// (verb): use something for benefit or gain



Comprehension Questions

Multiple Choice

1. Where was the new species of early mammal found?
Option: Amazon Rainforest
Option: Gobi Desert
Option: Sahara Desert
Option: Himalayas
2. How long ago is it believed that Ravjaa ishiii existed?
Option: 45 million years
Option: 90 million years
Option: 120 million years
Option: 60 million years
3. What family is Ravjaa ishiii classified under?
Option: Cretaceousidae
Option: Zhelestidae
Option: Mammalia
Option: Dinoceratidae
4. What part of the fossil was found?
Option: Skull
Option: Jaw fragment
Option: Spine
Option: Foot
5. What is the significance of the dental features of Ravjaa ishiii?
Option: They are unique and robust
Option: They are weak and small
Option: They are identical to modern mammals
Option: They are not significant
6. Who highlighted the importance of well-preserved fossils from Mongolia?
Option: Tsukasa Okoshi



- Option: Mototaka Saneyoshi
- Option: Charles Darwin
- Option: Richard Leakey

True-False

- 7. Ravjaa ishiii is a large mammal that lived alongside dinosaurs.
- 8. The fossil of Ravjaa ishiii was found in a region with many mammalian fossils.
- 9. The discovery of Ravjaa ishiii adds to the understanding of the evolution of placental mammals.
- 10. Ravjaa ishiii lived during the Jurassic period.
- 11. The fossil consists of a 1-centimeter jaw fragment.
- 12. Mototaka Saneyoshi commented on the rarity of finding such fossils in deserts.

Gap-Fill

- 13. Ravjaa ishiii is believed to have existed approximately 90 million years _____ .
- 14. The specimen was extracted from the Bayanshiree Formation in _____ .
- 15. The fossil includes the tip of a premolar and _____ molars.
- 16. Ravjaa ishiii is the first identified zhelestid specimen from the _____ Formation.
- 17. Ravjaa ishiii provided insights into early eutherian mammals and their _____ habits.
- 18. The fossil discovery occurred in a field dominated by well-documented fossil _____ .

Answer

- Multiple Choice:** 1. Gobi Desert 2. 90 million years 3. Zhelestidae 4. Jaw fragment 5. They are unique and robust 6. Tsukasa Okoshi
- True-False:** 7. False 8. False 9. True 10. False 11. True 12. True
- Gap-Fill:** 13. ago 14. 2019 15. three 16. Bayanshiree 17. dietary 18. layers



Vocabulary quizzes

Multiple Choice (Select the Correct answer for each question.)

1. What term describes materials that can be broken down by natural processes?
Option: Invasive
Option: Biodegradable
Option: Reconstructed
Option: Synthetic
2. What device is used to increase an engine's efficiency and power by forcing more air into the combustion chamber?
Option: Supercharger
Option: Turbocharger
Option: Compressor
Option: Exhaust
3. Which word describes something that has never been done or experienced before?
Option: Commonplace
Option: Routine
Option: Unprecedented
Option: Mundane
4. What term refers to the complete set of genes or genetic material present in a cell or organism?
Option: Phenotype
Option: Genotype
Option: Genome
Option: Chromosome
5. What type of vehicle is typically associated with luxury and often used for special occasions?
Option: Sedan
Option: Limousine
Option: Coupe
Option: Hatchback
6. What word describes the remains or impression of a prehistoric organism preserved in petrified form?
Option: Fossil
Option: Specimen
Option: Artifact
Option: Relic



7. Which term is used to classify mammals that give birth to live young rather than laying eggs?

- Option: Eutherian
- Option: Marsupial
- Option: Monotreme
- Option: Ovoviviparous

8. What is the term used to measure the power output of engines?

- Option: Torque
- Option: Kilowatt
- Option: Horsepower
- Option: RPM

9. What does the acronym CRT stand for in display technology?

- Option: Cathode Ray Tube
- Option: Crystal Red Technology
- Option: Color Ratio Technique
- Option: Current Response Time

10. What term refers to the detail an image holds and is often measured in pixels?

- Option: Clarity
- Option: Resolution
- Option: Aspect Ratio
- Option: Contrast

Gap-Fill (Fill in the blanks with the correct word from the vocabulary list.)

11. The _____ of resources has led to increased competition and innovation.

12. Companies often seek to _____ new technologies to enhance their products.

13. The archaeologists _____ the ancient structure based on the remnants found at the site.

14. The _____ is the ratio of the width to the height of an image or screen.

15. Certain species are considered _____ because they can disrupt local ecosystems.

16. The _____ between different species is crucial for maintaining ecological balance.



17. The flight training included a _____ environment for pilots to practice safely.
18. Engineers often consider _____ to improve the performance of vehicles.
19. Humans usually have a total of twelve _____ in their permanent dentition.
20. The team focused on the _____ of processes to increase efficiency and reduce costs.

Matching Sentences (Match each definition to the correct word from the vocabulary list.)

21. The scientists made a significant breakthrough in renewable energy technology.
22. The new packaging materials are fully biodegradable and environmentally friendly.
23. The theory introduced a new paradigm in the field of physics.
24. Invasive species can cause significant harm to local ecosystems.
25. The biologist collected a specimen for further study and analysis.
26. The changes in climate are leading to unprecedented challenges for communities worldwide.
27. Eutherian mammals are characterized by their live births and complex placental structures.
28. The turbocharger significantly improved the engine's performance and efficiency.
29. The outdated CRT technology has been largely replaced by LCD and LED displays.
30. The car's horsepower is a key factor in its speed and acceleration capabilities.

Answer

Multiple Choice: 1. Biodegradable 2. Turbocharger 3. Unprecedented 4. Genome 5. Limousine 6. Fossil
7. Eutherian 8. Horsepower 9. Cathode Ray Tube 10. Resolution

Gap-Fill: 11. scarcity 12. exploit 13. reconstructed 14. aspect ratio 15. invasive 16. interplay 17. simulated
18. modification 19. molars 20. optimization

Matching sentence: 1. breakthrough 2. biodegradable 3. paradigm 4. invasive 5. specimen 6. unprecedented
7. eutherian 8. turbocharger 9. CRT 10. horsepower

CATEGORY

1. Sci/Tech - LEVEL6



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