



Humans Carry Neanderthal DNA, but a Key Fragment is Unaccounted for: ScienceAlert

Description

Neanderthals, our ancient relatives who roamed parts of Europe and Asia until their extinction around 30,000 years ago, continue to intrigue scientists. Recent genetic studies have uncovered a surprising revelation - around 47,000 years ago, there was a surge of **interbreeding** between **Neanderthals** and modern humans that left traces of **Neanderthal DNA** in the **Homo sapiens genome**.

While most parts of the **Neanderthal genome** have been found in modern humans, one significant exception stands out - the **Y sex chromosome** responsible for male development. The absence of the **Neanderthal Y chromosome** in modern humans has puzzled researchers, leading to various theories on its disappearance.

Some speculate that the **Neanderthal Y chromosome** may have been lost due to accidental factors or mating patterns. Another compelling theory suggests that the chromosome might have been incompatible with human genes, potentially leading to **reproductive barriers** between the two species.

Haldane's rule, a concept in genetics, proposes that **hybrids** between species often exhibit **infertility** or health issues, particularly in the sex with unlike sex chromosomes. This rule may shed light on the absence of the **Neanderthal Y chromosome** in modern humans, hinting at possible **genetic incompatibility**.

The mystery of the missing **Neanderthal Y chromosome** continues to intrigue scientists, offering insights into the complex interplay between different human species. As researchers delve deeper into our shared genetic history, new discoveries may unravel the enigmatic fate of this crucial piece of the **Neanderthal genome**.

Embrace the richness of our evolutionary past as we uncover the secrets hidden within our DNA, bridging the gap between modern humans and our ancient relatives in a quest for knowledge and understanding.

Vocabulary Insights

1. **Neanderthals** /ni?ænd?r????lz/ (noun): An extinct species of human that was widely distributed in ice-age Europe between 120,000-35,000 years ago, with a receding forehead and prominent brow ridges.
2. **Genome** /?d?i?no?m/ (noun): The complete set of genes or genetic material present in a cell or organism.
3. **Interbreeding** /??nt?r?bri?d??/ (noun): The breeding of two different species or varieties to produce hybrid offspring.
4. **Y sex chromosome** /wa? s?ks ?kro?m??so?m/ (noun): The sex chromosome typically associated with male development in mammals.
5. **Homo sapiens** /?ho?mo? ?se?pi?nz/ (noun): The species to which all modern human beings belong.
6. **Reproductive barriers** /?ripr??d?kt?v ?bæri?rz/ (noun): Biological features that prevent different species from interbreeding.
7. **Haldane's rule** /?hælden?z ru?l/ (noun): A principle in genetics that suggests that if one sex of a



hybrid offspring is absent, rare, or sterile, that sex is the heterogametic sex (the sex with two different sex chromosomes, e.g., males in mammals).

8. **Hybrid** /'ha?br?d/ (noun): The offspring of two plants or animals of different species or varieties.
9. **Infertility** /'nf?r?l?ti/ (noun): The inability to reproduce.
10. **Genetic incompatibility** /d??n?t?k ?n?k?mp??t?b?l?ti/ (noun): When the genetic material from two different species is unable to combine successfully to produce viable offspring.

Vocabulary List:

1. **Neanderthals** /ni'ændər,θalz/ (noun): An extinct species of human that was widely distributed in ice-age Europe.
2. **Genome** /'dʒi:nəʊm/ (noun): The complete set of genes or genetic material present in a cell or organism.
3. **Interbreeding** /,ɪn.tə'brɪ:.dɪŋ/ (noun): The breeding of two different species or varieties to produce hybrid offspring.
4. **Reproductive barriers** /,ri:prə'dʌktɪv 'bærɪz/ (noun): Biological features that prevent different species from interbreeding.
5. **Genetic incompatibility** /dʒə'nɛtɪk ,ɪnkəm'pæɪtɪbɪlɪti/ (noun): When the genetic material from two different species is unable to combine successfully.
6. **Infertility** /,ɪn.fɜ:r'tɪl.ɪ.ti/ (noun): The inability to reproduce.

Comprehension Questions

Multiple Choice

1. What event occurred around 47,000 years ago between Neanderthals and modern humans?
Option: Migration patterns
Option: Interbreeding
Option: Extinction event
Option: Cultural exchange
2. Which part of the Neanderthal genome is noticeably missing in modern humans?
Option: Mitochondrial DNA
Option: Y sex chromosome
Option: Ribosomal RNA
Option: Non-coding sequences
3. What principle in genetics suggests that hybrids often exhibit infertility or health issues?



- Option: Mendel's law
- Option: Darwin's theory
- Option: Haldane's rule
- Option: Lamarckism

4. What could be a reason for the absence of the Neanderthal Y chromosome in modern humans?

- Option: Accidental loss
- Option: Genetic modification
- Option: Chromosomal translocation
- Option: Deletion mutation

5. Which term describes biological features that prevent different species from interbreeding?

- Option: Reproductive barriers
- Option: Genetic drift
- Option: Isolation mechanism
- Option: Ecological niche

6. What does Haldane's rule suggest about hybrids and the sex with unlike sex chromosomes?

- Option: Increased fertility
- Option: Decreased genetic diversity
- Option: Infertility or health issues
- Option: Enhanced adaptability

Answer

Multiple Choice: 1. Interbreeding 2. Y sex chromosome 3. Haldane's rule 4. Genetic modification
5. Reproductive barriers 6. Infertility or health issues

Vocabulary quizzes

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

1. Which term is used to describe objects related to the sky or outer space?

- Option: Celestial
- Option: Energetics
- Option: Genome
- Option: Torque

2. What term refers to the study of energy and its transformation?



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- Option: Cancellation
Option: Energetics
Option: Replicative barriers
Option: Hybrid powertrains
3. If a purchase is reversed and the money is given back what term describes this action?
Option: Transparency
Option: Refunded
Option: Turbocharged
Option: Neanderthals
4. What is the term for mating or breeding between different species or populations?
Option: Luminosity
Option: Refunded
Option: Interbreeding
Option: Infertility
5. What term is used to describe a state of being puzzled or unable to proceed?
Option: Enigmatic
Option: Stumped
Option: Replicative barriers
Option: Hybrid powertrains
6. What concept refers to the inability of genetic material to combine and produce fertile offspring?
Option: Genetic incompatibility
Option: Infotainment system
Option: Torque
Option: Intriguing
7. What technology combines two or more types of power sources for propulsion?
Option: Neanderthals
Option: Cancellation
Option: Hybrid powertrains
Option: Transparency
8. Which word puzzle usually consists of black and white squares arranged in a grid pattern?
Option: Perplexing
Option: Crossword
Option: Infotainment system
Option: Steptonic automatic transmission
9. What term describes something that is fascinating or captivating?
Option: Intriguing



- Option: Neanderthals
- Option: Revamped
- Option: Luminosity

10. Which term refers to an engine equipped with a turbocharger for increased power output?

- Option: Energetics
- Option: Turbocharged
- Option: Infertility
- Option: Celestial

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

11. _____ is essential in building trust between individuals and organizations.
12. _____ were an ancient human species that existed in Eurasia.
13. The company _____ its marketing strategy to appeal to a younger audience.
14. The new car model comes with an advanced _____ that includes navigation and media features.
15. High _____ is essential for powerful acceleration in vehicles.
16. The artist's work was so _____ leaving critics debating its true meaning.
17. The math problem was so _____ that even the advanced students struggled with it.
18. The concert was postponed due to bad weather and ticket holders were offered a _____.
19. The star's _____ or brightness depends on its size and age.
20. Some pesticides can affect soil quality and lead to _____ in plants.

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

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| 21. Astronomers study objects in the realm such as stars and planets. |
| 22. The field of focuses on how energy is transferred and utilized in different systems. |



23. The travel agency announced the of the flight due to logistical issues.
24. The engine produces high allowing the car to accelerate quickly.
25. The concept of is common in animals leading to new and varied offspring.
26. were ancient hominids with distinct physical features.
27. The of an organism contains all of its hereditary information.
28. Issues with fertility can lead to and challenges in conception.
29. The company its entire product line to attract a younger demographic.
30. combine traditional internal combustion engines with electric power for improved efficiency.

Answer

Multiple Choice: 1. Celestial 2. Energetics 3. Refunded 4. Interbreeding 5. Stumped 6. Genetic incompatibility 7. Hybrid powertrains 8. Crossword 9. Intriguing 10. Turbocharged

Gap-Fill: 11. Transparency 12. Neanderthals 13. Revamped 14. Infotainment system 15. Torque 16. Enigmatic 17. Perplexing 18. Cancellation 19. Luminosity 20. Infertility

Matching sentence: 1. Celestial 2. Energetics 3. Cancellation 4. Torque 5. Interbreeding 6. Neanderthals 7. Genome 8. Infertility 9. Revamped 10. Hybrid powertrains

CATEGORY

1. Sci/Tech - LEVEL6

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