



# How Vesuvius Eruption Transformed Victim's Brain into Glass

## Description

A man who died in a volcanic eruption nearly 2,000 years ago had his brain turned into glass. This rare event happened in Herculaneum in 79 CE. Scientists studied his remains and found evidence of human brain remains transformed into organic glass at high temperatures. This has never been seen before. They used different techniques like scanning electron microscopy to study the glass samples. The brain had to be heated to at least 510 degrees Celsius and then cooled quickly. This happened when a super-heated ash cloud spread out from the volcano and caught the man. The ash cloud reached temperatures higher than 510 degrees, vitrifying his brain without destroying it completely. This unique event has left evidence buried under the ash in Herculaneum. The researchers published their findings in *Scientific Reports*.

## Vocabulary List:

1. **Eruption** /ɪˈrʌp.jən/ (noun): The act of erupting or bursting forth especially of a volcano.
2. **Vitrifying** /ˈvɪt.rɪ.fai.ɪŋ/ (verb): The process of turning into glass or a glass-like substance.
3. **Organic** /ɔːrˈɡæ.n.ɪk/ (adjective): Relating to or derived from living matter.
4. **Microscopy** /maɪˈkrɒs.kə.pi/ (noun): The use of a microscope to view small objects.
5. **Evident** /ˈeɪdɪdənt/ (adjective): Clear to the sight or mind; obvious.
6. **Transform** /trænsˈfɔːrm/ (verb): To change in form appearance or structure.

## Comprehension Questions

### Multiple Choice

1. Where did the rare event of turning a man's brain into glass occur nearly 2,000 years ago?  
Option: Pompeii  
Option: Herculaneum  
Option: Athens  
Option: Rome
2. What temperature did the brain have to be heated to in order to turn into glass?  
Option: 300 degrees Celsius



- Option: 400 degrees Celsius
- Option: 510 degrees Celsius
- Option: 600 degrees Celsius

3. Which scientific technique was used to study the glass samples of the brain?

- Option: X-ray imaging
- Option: MRI
- Option: Scanning electron microscopy
- Option: Ultrasound

4. In what year did the volcanic eruption that caused this unique event occur?

- Option: 79 BCE
- Option: 79 CE
- Option: 100 CE
- Option: 150 CE

5. Where did the researchers publish their findings about the glass-brain?

- Option: Nature
- Option: Scientific Reports
- Option: New Scientist
- Option: The Lancet

6. What caused the brain to turn into glass?

- Option: Acid rain
- Option: Super-heated ash cloud
- Option: Lava flow
- Option: Freezing temperatures

### **True-False**

- 7. Scientists found evidence of human brain remains transformed into glass at low temperatures.
- 8. The man who had his brain turned into glass was caught in a super-heated ash cloud.
- 9. The volcanic eruption that caused this event happened in Pompeii.
- 10. The brain was completely destroyed during the vitrification process.



11. This unique event happened in 79 BCE.
12. The brain turning into glass is a common occurrence in volcanic eruptions.

### Gap-Fill

13. The brain had to be heated to at least \_\_\_\_\_ degrees Celsius to turn into glass.
14. The volcanic eruption that caused this event occurred in the year \_\_\_\_\_.
15. The researchers used scanning electron microscopy to study the brain turned into glass at \_\_\_\_\_ temperatures.
16. The researchers published their findings in the journal \_\_\_\_\_.
17. The ash cloud that vitrified the man's brain reached temperatures higher than \_\_\_\_\_ degrees.
18. The unique event of brain vitrification occurred in the ancient city of \_\_\_\_\_.

### Answer

**Multiple Choice:** 1. Herculaneum 2. 510 degrees Celsius 3. Scanning electron microscopy 4. 79 CE 5. Scientific Reports 6. Super-heated ash cloud  
**True-False:** 7. False 8. True 9. False 10. False 11. False 12. False  
**Gap-Fill:** 13. 510 14. 79 15. high 16. Scientific Reports 18. Herculaneum

### Vocabulary quizzes

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

1. What is a compulsive need for and use of a habit-forming substance called?



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- Option: Dependency  
Option: Leisure  
Option: Excitement  
Option: Responsibility
2. Which term describes the act of unfairly branding someone as disgraceful or unworthy?  
Option: Celebratory  
Option: Supportive  
Option: Discriminatory  
Option: Genuine
3. What word best describes something that is plentiful or in large quantities?  
Option: Thirsty  
Option: Sparse  
Option: Rare  
Option: Plentiful
4. Which term describes something that is clearly seen or understood?  
Option: Hidden  
Option: Suspected  
Option: Concealed  
Option: Clear
5. What is the chemical process that involves the loss of electrons?  
Option: Reduction  
Option: Distillation  
Option: Filtration  
Option: Oxidation
6. What is the explosive death of a massive star called?  
Option: Black Hole  
Option: Nova  
Option: Supernova  
Option: Pulsar
7. What scientific technique is used to view objects that are too small to be seen by the naked eye?  
Option: X-ray  
Option: Sonar  
Option: Microscopy  
Option: Spectroscopy
8. Which term describes substances that contain carbon and are found in living organisms?  
Option: Artificial
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- Option: Inorganic
- Option: Chemical
- Option: Organic

9. What refers to a relationship in which a person thing or idea is linked or associated with something else?

- Option: Division
- Option: Isolation
- Option: Connection
- Option: Fragmentation

10. Which term refers to the ability to comprehend or have an awareness of something?

- Option: Confusion
- Option: Ignorance
- Option: Understanding
- Option: Indifference

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

11. In the study \_\_\_\_\_ were asked to provide feedback on the new program.

12. Regular exercise is important for maintaining good \_\_\_\_\_ .

13. She enjoys \_\_\_\_\_ with friends on the weekends.

14. The volcanic \_\_\_\_\_ was visible from miles away.

15. The \_\_\_\_\_ of the situation made it difficult to make a decision.

16. As the team leader she was \_\_\_\_\_ for the project's success.

17. The development of new technology has the power to \_\_\_\_\_ industries.

18. The community came together to help in the \_\_\_\_\_ of the natural disaster.

19. Always be \_\_\_\_\_ when handling chemicals in the laboratory.

20. The team spent hours \_\_\_\_\_ the data to draw meaningful conclusions.

21. The artist specializes in \_\_\_\_\_ glass to create unique sculptures.



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

22. The fireworks display was accompanied by colorful bursts of light and loud bangs.
23. Water is for all forms of life to survive.
24. The fingerprints found at the crime scene provided crucial for the investigation.
25. is a mineral that can trap contaminants in water.
26. Turning 18 years old is often seen as the beginning of .
27. The study included various from different age groups.
28. Meaningful can enhance relationships and foster understanding.
29. DNA analysis provided compelling linking the suspect to the crime.
30. The volcanic caused disruptions to air travel in the region.
31. The sunset painted the sky in a beautiful hue.

**Answer**

**Multiple Choice:** 1. Dependency 2. Discriminatory 3. Plentiful 4. Clear 5. Oxidation 6. Supernova 7. Microscopy 8. Organic 9. Connection 10. Understanding

**Gap-Fill:** 11. participants 12. wellbeing 13. socializing 14. eruption 15. uncertainty 16. responsible 17. transform 18. aftermath 19. cautious 20. analyzing 21. vitrifying

**Matching sentence:** 1. explosions 2. essential 3. evidence 4. Ferrihydrite 5. adulthood 6. participants 7. conversations 8. evidence 9. eruption 10. reddish

**CATEGORY**

1. Health - LEVEL2

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