

## Early Origins of Water: Surprising Discovery Challenges Understanding

### **Description**

New research suggests that water, essential for life, may have formed just 100 million years after the Big Bang. Scientists recreated explosions of early stars and found that the means to make water were already present. The first stars were made of hydrogen and helium, and their explosive deaths released oxygen into the Universe. These early stars were hard to detect, but new data may have revealed evidence of them. In the aftermath of the star explosions, gases cooled and oxygen collided with hydrogen, creating water. These denser regions of supernova leftovers could also be the birthplaces of future stars and planets. Scientists believe that these early galaxies may have produced almost as much water as our galaxy today, showing that this crucial ingredient for life was abundant in the past. The research was published in Nature Astronomy.

# **Vocabulary List:**

- s.coM Essential /r'sεnfəl/ (adjective): Absolutely necessary; extremely important.
- 2. Explosions /ɪk'sploʊʒənz/ (noun): Sudden and violent releases of energy and matter.
- 3. Abundant /ə'bʌndənt/ (adjective): Existing or available in large quantities; plentiful.
- 4. Evidence /'evidens/ (noun): The available body of facts or information indicating whether a belief or proposition is true or valid.
- 5. Supernova /'suːpərˌnoʊvə/ (noun): A star that explodes at the end of its life cycle resulting in a sudden increase in brightness.
- 6. Aftermath /'æftər,mæθ/ (noun): The period immediately following a significant event especially a destructive

# **Comprehension Questions**

#### **Multiple Choice**

1. What is the estimated time frame for when water, essential for life, may have formed according to the new research?

Option: 500 million years after the Big Bang Option: 100 million years after the Big Bang Option: 1 billion years after the Big Bang



Option: 200 million years after the Big Bang

2. What were the first stars made of according to the text?

Option: Oxygen and Carbon Option: Nitrogen and Oxygen Option: Hydrogen and Helium

Option: Iron and Nickel

3. Which scientific journal published the research on the formation of water after the Big Bang?

Option: Science

Option: Nature Astronomy
Option: Journal of Astrophysics
Option: Scientific American

4. What is believed to have happened in the aftermath of the explosions of early stars?

Option: Formation of new galaxies

Option: Collision of oxygen with hydrogen to create water Option: Decrease in overall temperature of the Universe

Option: Formation of new planets

5. What is proposed to be the potential birthplaces of future stars and planets in the text?

Option: Supernova explosions

Option: Denser regions of supernova leftovers

Option: Black holes

Option: Interstellar dust clouds

6. How abundant is the research suggesting water was in early galaxies compared to our galaxy today?

Option: More abundant in early galaxies
Option: Less abundant in early galaxies
Option: Equally abundant in early galaxies
Option: Abundance was not compared

#### **True-False**

- 7. Water may have formed just 100 million years after the Big Bang according to the text.
- 8. The first stars were primarily composed of oxygen and nitrogen according to the text.



- 9. New data has not yet revealed evidence of the early stars mentioned in the text.
- 10. The explosive deaths of the first stars released oxygen into the Universe.
- 11. Supernova leftovers could serve as potential birthplaces for future stars and planets according to the text.
- 12. The research suggests that early galaxies may have produced significantly less water than our galaxy today.

#### **Gap-Fill**

13. According to the text, the	first stars were made of	hydrogen and helium, a	and their explosive deaths
released	into the Universe.		
14. Scientists believe that the	denser regions of super-	nova leftovers could be	the potential birthplaces of
future stars and	TSL-NEV		
15. Water, essential for life, m	ay have formed just	у	ears after the Big Bang
according to new research.			
16. The early galaxies may ha	ve produced almost as r	nuch water as our galax	y today, showing that this
crucial ingredient for life was a	abundant in the		
17. In the aftermath of the sta	r explosions, oxygen col	lided with hydrogen, cre	eating
·			
18. The research on the forma	ition of water after the B	ig Bang was published i	n
Astronomy.			

#### **Answer**

**Multiple Choice:** 1. 100 million years after the Big Bang 2. Hydrogen and Helium 3. Nature Astronomy 4. Collision of oxygen with hydrogen to create water 5. Denser regions of supernova leftovers 6. Equally abundant in early galaxies



True-False: 7. True 8. False 9. False 10. True 11. True 12. False

Gap-Fill: 13. oxygen 14. planets 15. 100 million 16. past 17. water 18. Nature

# 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?

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

TEWS.COM 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 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 ma	aintaining 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

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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