Artemis II May Reveal Key Hazards of Space Travel

Description

Before the Artemis II astronauts boarded their Orion capsule for a lunar mission, a small part of each astronaut was already on board. Inside the spacecraft, four USB-sized "avatars" accompanied the crew on this historic journey. Their mission, however, is only beginning.

These avatars, known as organ chips, contain bone marrow tissue from the astronauts: NASA's Reid Wiseman, Victor Glover, Christina Koch, and Canadian astronaut Jeremy Hansen. Researchers believe this experiment could provide crucial insights into how space affects human health.

The study, called AVATAR (A Virtual Astronaut Tissue Analog Response), enables scientists to simulate organ responses in deep space. According to Lisa Carnell, Director of NASA’s Biological and Physical Sciences Division, this approach allows for a detailed understanding of body changes, unlike traditional medical tests conducted after flights.

By focusing on bone marrow, researchers aim to gather data about immune responses to radiation and the challenges of deep space travel. These findings could lead to personalised treatments, making long missions safer for astronauts.

Before the mission, Carnell noted the potential for different responses to radiation among astronauts. This insight could help create tailored medical supplies for extended missions to Mars or other destinations.

Ultimately, the goal is to send avatars of astronauts ahead of deep-space missions to identify potential health risks. As the current mission progresses, the astronauts will also gather vital data on the effects of space on the human body, contributing to advancements in human spaceflight.

Vocabulary List:

1. **avatar** //ˈævəˌtɑr// (noun): small device or image that represents a person
2. **tissue** //ˈtɪʃuː// (noun): material that makes up parts of living bodies
3. **simulate** //ˈsɪmjəˌleɪt// (verb): make a model to copy how something works
4. **radiation** //ˌreɪdiˈeɪʃən// (noun): energy that can harm people or living things
5. **immune** //ɪˈmjun// (adjective): protected from a disease or infection
6. **personalised** //ˈpɝsənəˌlaɪzd// (adjective): made to fit one person's needs

Comprehension Questions

Multiple Choice

1. What is the name of the study involving avatars in the Orion capsule?

   Option: AVATAR
   Option: ASTRO
   Option: COSMOS
   Option: AURORA

2. Which astronaut is not part of the AVATAR study?

   Option: Reid Wiseman
   Option: Victor Glover
   Option: Christina Koch
   Option: Mark Vande Hei

3. What type of tissue do the organ chips in the avatars contain?

   Option: Heart tissue
   Option: Liver tissue
   Option: Bone marrow tissue
   Option: Lung tissue

4. Who is the Director of NASA's Biological and Physical Sciences Division?

   Option: Lisa Carnell
   Option: Jim Bridenstine
   Option: Charles Bolden
   Option: Eileen Collins

5. What do researchers aim to understand by focusing on bone marrow?

   Option: Gravity effects
   Option: Immune responses to radiation
   Option: Psychological effects
   Option: Nutritional needs

6. Which astronaut is Canadian?

   Option: Reid Wiseman
   Option: Victor Glover
   Option: Christina Koch
   Option: Jeremy Hansen

True-False

7. The avatars are designed to respond to deep space conditions.

8. Avatars will provide insights into the social dynamics of astronauts.

9. NASA's AVATAR study can help in creating personalized treatments for astronauts.

10. The mission involves sending astronauts to Mars immediately.

11. The organ chips are larger than traditional medical test equipment.

12. The current mission will not involve gathering data on the effects of space on human health.

Gap-Fill

13. The study called AVATAR aims to simulate organ responses in deep space and gather information about _____ immune responses.

14. Before the Artemis II astronauts boarded their Orion capsule, a small part of each astronaut was already _____ on board.

15. The insights from this study could help design tailored _____ supplies for extended missions.

16. NASA aims to send avatars ahead of deep-space missions to identify potential _____ risks.

17. Researchers believe this experiment could provide crucial insights into how space affects _____ health.

18. The approach allows for a detailed understanding of body changes, unlike traditional medical tests

conducted after _____

Answer

Multiple Choice: 1. AVATAR 2. Mark Vande Hei 3. Bone marrow tissue 4. Lisa Carnell 5. Immune responses to radiation 6. Jeremy Hansen
True-False: 7. True 8. False 9. True 10. False 11. False 12. False
Gap-Fill: 13. bone marrow 14. on board 15. medical 16. health 17. human 18. flights

CATEGORY

1. Sci/Tech - LEVEL5

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