Starving Could Impact Immune System: Shocking Science Finds

Description

When you feel hungry, your body might change. A study in mice showed that just thinking you're hungry can affect your immune system. This happens even if you haven't skipped a meal. Your brain's idea of hunger can influence how your immune system works.

The study, published in Science Immunology, suggests that your brain, not just changes in food levels, can shape your immunity. Special brain cells called AgRP neurons and POMC neurons control feelings of hunger and fullness. When hunger neurons were turned on in well-fed mice, they wanted to eat more.

Surprisingly, this artificial hunger also decreased certain immune cells in the blood. The brain communicates with the liver to control energy levels, affecting immune cells. Hunger signals cause a stress hormone release, amplifying immune changes. The brain might help prepare for food shortages by adjusting energy and immune responses early on.

This research could impact diseases like heart disease, multiple sclerosis, and cancer. It also sheds light on obesity and eating disorders, showing how the brain can influence the immune system.

Vocabulary List:

1. **Immunity** /ɪˈmjuː.nɪ.ti/ (noun): The ability of an organism to resist disease or infection.
2. **Neurons** /ˈnjʊə.rɒnz/ (noun): Specialized cells that transmit nerve impulses; fundamental units of the brain and nervous system.
3. **Amplifying** /ˈæmplɪfaɪɪŋ/ (verb): Increasing or making something stronger.
4. **Influence** /ˈɪnfluəns/ (verb): To have an effect on the development or behavior of someone or something.
5. **Signals** /ˈsɪgnəlz/ (noun): Things that are used to convey information or instructions.
6. **Disorders** /dɪsˈɔːdərz/ (noun): Abnormal conditions affecting health often involving significant functional impairment.

Comprehension Questions

Multiple Choice

1. What can affect your immune system even without skipping a meal?

Option: Thinking about hunger
Option: Exercising
Option: Drinking water
Option: Sleeping

2. Which brain cells control feelings of hunger and fullness?

Option: AgRP neurons and POMC neurons
Option: Olfactory neurons
Option: Motor neurons
Option: Visual neurons

3. What can hunger signals cause in the body?

Option: Release of stress hormones
Option: Improved vision
Option: Lower heart rate
Option: Stabilization of blood sugar

4. How does the brain communicate with the liver in terms of energy levels?

Option: Through hormonal signals
Option: Direct electrical signals
Option: Through the spinal cord
Option: By sending neurotransmitters

5. What is one of the impacts of the research mentioned?

Option: Impacting heart disease
Option: Improving eyesight
Option: Enhancing muscle strength
Option: Boosting memory

6. What condition does the research shed light on?

Option: Obesity and eating disorders
Option: Diabetes and hypertension
Option: Skin conditions
Option: Respiratory diseases

True-False

7. Thinking you're hungry has no effect on the immune system.

8. Hunger neurons being activated in well-fed mice led them to want to eat more.

9. The brain does not help prepare for food shortages by adjusting energy and immune responses.

10. This research may not have any impact on diseases like multiple sclerosis.

11. The brain has no influence on the immune system according to the study.

12. More studies are not needed to understand the link between the brain and the immune system fully.

Gap-Fill

14. The brain communicates with the _____ to control energy levels, affecting immune cells.

15. More studies are needed to understand the link between the brain and the immune system _____.

17. This research sheds light on how the brain can influence the immune system in cases of obesity and eating _____.

18. When hunger neurons were activated in well-fed mice, they showed an increased desire to _____.

Answer

Multiple Choice: 1. Thinking about hunger 2. AgRP neurons and POMC neurons 3. Release of stress hormones 4. Through hormonal signals 5. Impacting heart disease 6. Obesity and eating disorders
True-False: 7. False 8. True 9. False 10. False 11. False 12. False
Gap-Fill: 14. liver 15. fully 17. disorders 18. eat more

Vocabulary quizzes

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

1. Who is involved in conducting advanced studies?

   Option: Geologists
   Option: Medical professionals
   Option: Engineers
   Option: Researchers

2. What are the components that make up a particular substance?

   Option: Ingredients
   Option: Experiences
   Option: Textures
   Option: Environment

3. What type of cells have the potential to develop into different cell types in the body?

   Option: Streaks
   Option: Tissue
   Option: Protein
   Option: Stem cells

4. What are difficulties or obstacles that need to be overcome?

   Option: Welfare
   Option: Immunity
   Option: Challenges
   Option: Neurons

5. What is the main ingredient in chocolate production?

   Option: Amplifying
   Option: Cocoa
   Option: Researchers
   Option: Disorders

6. What medical condition involves the growth of endometrial-like tissue outside the uterus?

   Option: Environment
   Option: Endometriosis
   Option: Stigma
   Option: Disorders

7. Which cells transmit information in the nervous system?

   Option: Cracks
   Option: Texture
   Option: Protein

Option: Neurons

8. What activity involves the systematic investigation to establish facts or principles?

Option: Research
Option: Tissue
Option: Protein
Option: Environment

9. What are small chunks of valuable information or insights?

Option: Influence
Option: Nuggets
Option: Signals
Option: Disorders

10. What is the practice of avoiding extremes?

Option: Amplifying
Option: Moderation
Option: Stigma
Option: Ingredients

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

11. _____ plays a vital role in advancing knowledge and understanding in various fields.

12. People with mental health issues often face social _____.

13. Cells are organized into organs and _____ in the body.

14. Dietary sources of _____ are essential for muscle building and repair.

15. Vaccinations help strengthen the body's _____ against diseases.

16. Human activities can have a significant impact on the _____.

17. Peer pressure can have a powerful _____ on individual decision-making.

18. Genetic mutations can lead to various health _____.

19. _____ in the foundation of a building can indicate structural issues.

20. _____ gained through practical involvement is valuable in many professions.

21. The _____ of a product can determine its quality and appeal.

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

22. Scientists working on cutting-edge technology are often involved in research projects.
23. Some individuals experience discomfort and pain during their cycle.
24. The government introduced programs to ensure the of its citizens.
25. Communication systems rely on the transmission of electronic .
26. Using a microphone helps in sound for a large audience to hear.
27. The of a fabric can determine its comfort and usability.
28. Overcoming a difficult obstacle can be seen as a personal .
29. Some minerals exhibit unique color under specific lighting conditions.
30. Medical professionals work to diagnose and treat various health .
31. The protection of the natural is crucial for biodiversity conservation.

Answer

Multiple Choice: 1. Researchers 2. Ingredients 3. Stem cells 4. Challenges 5. Cocoa 6. Endometriosis 7. Neurons 8. Research 9. Nuggets 10. Moderation
Gap-Fill: 11. Research 12. Stigma 13. Tissue 14. Protein 15. Immunity 16. Environment 17. Influence 18. Disorders 19. Cracks 20. Experience 21. Content
Matching sentence: 1. Advanced 2. Menstrual 3. Welfare 4. Signals 5. Amplifying 6. Texture 7. Challenge 8. Streaks 9. Disorders 10. Environment

CATEGORY

1. Health - LEVEL2

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