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## 'Zombie Cells' Discovery Could Extend Lifespan

### Description

Scientists have found that certain cells linked to aging may also help keep us healthy. This is important because it changes how we think about aging.

Research is revealing new insights into senescent cells, sometimes called "zombie cells." These cells have been linked to aging and illness, but they might play more complex roles than previously thought.

A review in the journal *Aging-US* discusses the role of these cells in aging and suggests future anti-aging treatments should be more targeted. The authors, including Jian Deng and Dong Yang from Sichuan University in China, led the study.

Senescent cells do not divide anymore. They were once considered harmful because they release substances that can damage nearby tissues. However, scientists now see that these cells can also help with healing wounds and maintaining healthy tissues.

The review looks at how these cells affect different organs, like the liver, lungs, and heart. Damage from stress, aging, and the environment causes these cells to build up, which may lead to diseases.

The study highlights that senescent cells can be both helpful and harmful, depending on the context. This has led scientists to explore more precise ways to treat aging by targeting only the harmful cells.

New treatments are looking at better ways to manage these cells without harming the beneficial ones, promoting healthier aging.

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### Vocabulary List:

1. **senescent** //sə'nesənt// (adjective): no longer able to grow or divide
2. **insights** //ɪn'saɪts// (noun): new knowledge that helps explain something
3. **review** //rɪ'vjuː// (noun): a careful report that examines past research
4. **targeted** //ˈtɑrgətɪd// (adjective): directed at a specific person or thing
5. **context** //ˈkɒntɛkst// (noun): the situation around an event or word
6. **beneficial** //ˌbɛnə'fɪʃəl// (adjective): good for health or for a purpose

### Comprehension Questions



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## Multiple Choice

1. What are senescent cells commonly referred to as?
  - Option: Zombie cells
  - Option: Ghost cells
  - Option: Dead cells
  - Option: Ancient cells
  
2. In which journal was the review on senescent cells published?
  - Option: Aging-US
  - Option: Cell Journal
  - Option: Nature Reviews
  - Option: Journal of Aging Research
  
3. What role do senescent cells play according to recent research?
  - Option: They only harm the body
  - Option: They only help with aging
  - Option: They have complex roles
  - Option: They are useless
  
4. Which university are the authors Jian Deng and Dong Yang associated with?
  - Option: Peking University
  - Option: Tsinghua University
  - Option: Sichuan University
  - Option: Fudan University
  
5. What potential benefits do senescent cells provide according to the study?
  - Option: They help with healing wounds
  - Option: They speed up aging
  - Option: They cause diseases
  - Option: They have no benefits
  
6. What are scientists exploring in relation to senescent cells?
  - Option: Ways to increase their numbers
  - Option: Methods to eradicate all cells
  - Option: Precise ways to treat aging
  - Option: Ways to make them harmful



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### True-False

7. Senescent cells can divide like normal cells.
8. The review suggests that future anti-aging treatments should be more targeted.
9. Damage from external factors can cause an increase in senescent cells.
10. All senescent cells are harmful to human health.
11. The study asserts that senescent cells can only be harmful in every context.
12. Senescent cells have no role in the healing of tissues.

### Gap-Fill

13. Research is revealing new insights into senescent cells, sometimes called \_\_\_\_\_.
14. Senescent cells do not \_\_\_\_\_ anymore.
15. The authors of the study suggest that treatments should target only the \_\_\_\_\_ cells.
16. The review looks at how these cells affect different \_\_\_\_\_.
17. Scientists now see that these cells can also help with \_\_\_\_\_ wounds.
18. New treatments are looking at better ways to manage these cells without harming the \_\_\_\_\_ ones.

### Answer

**Multiple Choice:** 1. Zombie cells 2. Aging-US 3. They have complex roles 4. Sichuan University 5. They help with healing wounds 6. Precise ways to treat aging

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

**Gap-Fill:** 13. zombie cells 14. divide 15. harmful 16. organs 17. healing 18. beneficial



## Vocabulary quizzes

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

1. What condition is characterized by weakened bones, making them more prone to fractures?  
Option: Arthritis  
Option: Osteoporosis  
Option: Scoliosis  
Option: Osteomyelitis
2. What substances are recognized by the immune system as foreign and can trigger an immune response?  
Option: Hormones  
Option: Antibodies  
Option: Antigens  
Option: Integrins
3. In biology, what term refers to structures that extend outward from a surface?  
Option: Contractions  
Option: Protrusions  
Option: Integration  
Option: Inflammation
4. Which of the following are often used to enhance dietary intake of vitamins and minerals?  
Option: Supplements  
Option: Placebo  
Option: Antivirals  
Option: Integrins
5. What term is used for experiments conducted to test new medical treatments?  
Option: Research  
Option: Studies  
Option: Trials  
Option: Evaluations
6. What term describes a system where decision-making is distributed rather than concentrated?  
Option: Integrated  
Option: Centralized  
Option: Decentralized  
Option: Hierarchical
7. What process do plants use to convert light energy into chemical energy?



- Option: Respiration
- Option: Photosynthesis
- Option: Metabolism
- Option: Digestion

8. What term describes processes related to thinking, learning, and memory?

- Option: Emotional
- Option: Cognitive
- Option: Sensory
- Option: Motor

9. What term describes something that is advantageous or helpful?

- Option: Detrimental
- Option: Beneficial
- Option: Neutral
- Option: Adverse

10. What type of stress is associated with the damage caused by free radicals in the body?

- Option: Oxidative
- Option: Nitrosative
- Option: Metabolic
- Option: Physical

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

11. Integrins are proteins that facilitate cell-to-cell and cell-to-\_\_\_\_\_ interactions.

12. The body's response to injury often involves \_\_\_\_\_ as a means of protecting and healing.

13. Cells that have reached a state of senescence cease to divide and may contribute to \_\_\_\_\_ diseases.

14. Targeted therapies are designed to precisely identify and treat specific \_\_\_\_\_ in diseases.

15. A \_\_\_\_\_ is often used in clinical trials to provide a control group that receives no



active treatment.

16. Biological \_\_\_\_\_ can prevent pathogens from entering the body and causing disease.

17. The results from the \_\_\_\_\_ group were compared to those of the control group to determine effectiveness.

18. A systematic \_\_\_\_\_ of existing literature helps in understanding current trends in research.

19. Osteoporosis increases the risk of bone \_\_\_\_\_, especially in older adults.

20. Antiviral medications are often used to treat infections caused by \_\_\_\_\_ agents.

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

21. The coordinated movements of the muscles allow for smooth and efficient motion.
22. Chloroplasts are the organelles in plant cells responsible for conducting photosynthesis.
23. Muscle fibers are contractile cells that enable movement through contraction.
24. Recent studies have provided valuable insights into the mechanisms of immune response.
25. Health professionals often recommend supplements for those who have dietary deficiencies.
26. Understanding the context of a research study is crucial for interpreting its findings accurately.
27. The immune system plays a critical role in defending the body against infections and diseases.
28. Certain foods have been shown to have beneficial effects on overall health and wellness.
29. Antiviral drugs are designed to specifically target viral infections and inhibit their replication.
30. Inflammation is a natural response of the body to injury or infection, often characterized by redness and swelling.



## Answer

**Multiple Choice:** 1. Osteoporosis 2. Antigens 3. Protrusions 4. Supplements 5. Trials 6. Decentralized  
7. Photosynthesis 8. Cognitive 9. Beneficial 10. Oxidative

**Gap-Fill:** 11. matrix 12. inflammation 13. age-related 14. pathways 15. placebo 16. barriers 17. experimental  
18. review 19. fractures 20. viral

**Matching sentence:** 1. coordinated 2. chloroplasts 3. contractile 4. insights 5. recommend 6. context 7.  
immune 8. beneficial 9. antiviral 10. inflammation

## CATEGORY

1. Health - LEVEL3

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