Unraveling the Mystery: Why Cancer Risk Declines with Age

Description

As we grow older, our risk of cancer changes. In our 60s and 70s, the risk goes up because of many genetic changes in our bodies. But after about 80 years old, the risk goes down. A new study helps explain why this happens.

Scientists studied lung cancer in mice. They looked at special cells called alveolar type 2 (AT2) stem cells. These cells help the lungs heal and can also become cancer cells.

The study found that older mice had more of a protein called NUPR1. This protein made their cells act like they did not have enough iron. Because of this, the cells could not grow well, which may limit cancer growth.

Researchers also saw similar effects in human cells. When they reduced NUPR1 or added more iron, the cells grew better.

This may help scientists create treatments that focus on iron, especially for older people. These findings can also help improve cancer treatments. Understanding how age affects cancer is very important.

The research was published in *Nature*.

Vocabulary List:

1. **Genetic** /dʒəˈnɛtɪk/ (adjective): Relating to genes or heredity.
2. **Alveolar** /ælˈviːə.lər/ (adjective): Relating to or denoting the alveoli which are tiny air sacs in the lungs.
3. **Protein** /ˈproʊ.tiːn/ (noun): A large molecule made up of amino acids essential for the structure and function of living cells.
4. **Limit** /ˈlɪmɪt/ (verb): To restrict the amount or extent of something.
5. **Treatments** /ˈtriːt·mənts/ (noun): Medical care given to a patient for an illness or injury.
6. **Research** /ˈriː.sɜˑːtʃ/ (noun): A detailed investigation into a subject in order to discover new information.

Comprehension Questions

Multiple Choice

1. What is the potential effect of age on cancer risk according to the text?

Option: Risk increases in 60s and 70s, then decreases after about 80 years old
Option: Risk decreases steadily with age
Option: Risk increases steadily with age
Option: Risk remains constant throughout life

2. Which type of cells did scientists study in relation to lung cancer in mice?

Option: Alveolar type 1 stem cells
Option: Alveolar type 2 stem cells
Option: Bronchial cells
Option: Red blood cells

3. What protein was found to be more abundant in older mice in the study?

Option: AT2
Option: NUPR1
Option: Iron
Option: Hemoglobin

4. How did the presence of NUPR1 affect the cells in older mice?

Option: Enhanced cell growth
Option: No impact on cell growth
Option: Inhibited cell growth
Option: Caused cell division

5. What did researchers observe when they reduced NUPR1 or added more iron in human cells?

Option: Cell growth remained the same
Option: Cells turned cancerous
Option: Cells grew better
Option: Cells died

6. What aspect of cancer treatment might be influenced by the study findings?

Option: Chemotherapy
Option: Targeting iron levels
Option: Surgery
Option: Immunotherapy

True-False

7. Risk of cancer decreases as individuals get older.

8. NUPR1 protein was found to enhance cell growth in older mice.

9. The study focused exclusively on human cells.

10. The research findings may have implications for cancer treatments.

11. NUPR1 protein mimicked the effects of iron deficiency in cells.

12. The research was published in the journal Science.

Gap-Fill

13. The risk of cancer increases in individuals in their _____ and

_____ .

14. Older mice had more of the protein _____ in the study.

15. Adding more iron to human cells resulted in _____ cell growth.

16. The findings of the study could help scientists create treatments focusing on _____

levels.

17. Understanding how age affects cancer is considered very _____ .

18. The study on the effects of NUPR1 was published in the journal _____ .

Answer

Multiple Choice: 1. Risk increases in 60s and 70s, then decreases after about 80 years old 2. Alveolar type 2 stem cells 3. NUPR1 4. Inhibited cell growth 5. Cells grew better 6. Targeting iron levels
True-False: 7. False 8. False 9. False 10. True 11. True 12. False
Gap-Fill: 13. 60s, 70s 14. NUPR1 15. better 16. iron 17. important 18. Nature

Vocabulary quizzes

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

1. What term refers to marking the 100th anniversary of an event?

   Option: Illuminate
   Option: Centennial
   Option: Celebrate
   Option: Researchers

2. Which term relates to inherited traits passed down from parents?

   Option: Alveolar
   Option: Genetic
   Option: Filament
   Option: Protein

3. What is the study of nutrients and their effects on health?

   Option: Disease
   Option: Nutrition
   Option: Published
   Option: Limit

4. Which term means to restrict or set a boundary?

   Option: Filament
   Option: Risk
   Option: Limit
   Option: Condition

5. Which term describes something containing a high amount of sugar?

   Option: Symbol
   Option: Epidemiologist
   Option: Sugary
   Option: Remains

6. Which condition affects the heart and its functioning?

   Option: Genetic
   Option: Heart Disease
   Option: Research
   Option: Soft

7. What term refers to the act of making information available to the public?

   Option: Published
   Option: Protein
   Option: Soft

Option: Digest

8. Which term refers to a slender thread-like structure?

Option: Celebrate
Option: Condition
Option: Filament
Option: Repair

9. Who studies the distribution and determinants of health and disease in populations?

Option: Soft
Option: Epidemiologist
Option: Alveolar
Option: Categorized

10. Which term refers to what is left after something else has been removed?

Option: Protein
Option: Nutrition
Option: Risk
Option: Remains

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

11. A _____ pillow is comfortable to sleep on.

12. Many _____ are working on finding a cure for cancer.

13. There are various _____ available for arthritis to manage the symptoms.

14. The _____ sacs in the lungs facilitate the exchange of oxygen and carbon dioxide.

15. Regular exercise can improve your physical _____.

16. Chicken and beans are good sources of dietary _____.

17. Smoking increases the _____ of developing lung cancer.

18. We will _____ our team's success with a party.

19. The books in the library are _____ by genre.

20. Fiber helps to promote healthy _____ in the digestive system.

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

21. The candles served to the room during the power outage.
22. We will our anniversary with a romantic dinner.
23. Athletes require a high intake of to support muscle recovery.
24. The doctor specializes in the treatment of infectious .
25. Butter is high in fats.
26. Investing in stocks carries a certain level of financial .
27. The university is known for its groundbreaking medical .
28. The baby's blanket was warm and .
29. The dove is often used as a of peace.
30. After the explosion only debris and rubble in the aftermath.

Answer

Multiple Choice: 1. Centennial 2. Genetic 3. Nutrition 4. Limit 5. Sugary 6. Heart Disease 7. Published 8. Filament 9. Epidemiologist 10. Remains
Gap-Fill: 11. Soft 12. Researchers 13. Treatments 14. Alveolar 15. Condition 16. Protein 17. Risk 18. Celebrate 19. Categorized 20. Digest
Matching sentence: 1. Illuminate 2. Celebrate 3. Protein 4. Disease 5. Saturated 6. Risk 7. Research 8. Soft 9. Symbol 10. Remains

CATEGORY

1. Health - LEVEL1

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