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## Scientists Find Way to Prevent Vision Loss

### Description

Scientists have found molecules that protect cone cells in the eye from damage. This discovery is important because these cells help us see clearly and lose function in diseases like age-related macular degeneration.

A team from the Institute of Molecular and Clinical Ophthalmology Basel, led by Botond Roska, studied cone photoreceptors. These cells are in the macula, a part of the eye crucial for activities like reading and seeing colours. If they die, it can result in vision loss, and currently, there are no approved treatments.

The researchers screened over 2,700 compounds using 20,000 human retinal organoids, mini-lab versions of the retina. They found some compounds damage cone cells but also identified molecules that protect them. One mechanism involves blocking a protein called casein kinase 1.

They labelled cone cells to track how long they survived under stress similar to diseases. Two kinase inhibitors kept the cells alive for longer, even in tests on mice, suggesting the results are significant.

The team made their data public, providing information on the compounds and their effects. This could help develop future treatments to preserve vision and assess retinal safety.

By combining new methods, this research moves closer to protecting vision, a key goal in eye health.

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### Vocabulary List:

1. **molecules** //ˈmɒlɪ,kjʊlz// (noun): very small parts that make up substances
2. **photoreceptors** //ˌfəʊtə'resəptərz// (noun): cells in the eye that detect light
3. **macula** //ˈmækjələ// (noun): small central part of the retina for sharp vision
4. **organoids** //ˈɔrgə,nɔɪdz// (noun): small lab-grown tissue that mimics an organ
5. **inhibitors** //ɪn'hɪbɪtərz// (noun): things that stop or slow a process
6. **screened** //skri:nd// (verb): tested many things to find important ones

### Comprehension Questions

#### Multiple Choice

1. What are cone cells responsible for?



- Option: Detecting light intensity
- Option: Helping us see clearly
- Option: Producing retinal cells
- Option: Blocking proteins

2. Who led the team that studied cone photoreceptors?

- Option: John Doe
- Option: Botond Roska
- Option: Jane Smith
- Option: Michael Johnson

3. How many compounds were screened by the researchers?

- Option: 1,000
- Option: 2,000
- Option: 2,700
- Option: 3,500

4. What is the macula important for?

- Option: Hearing
- Option: Balance
- Option: Reading and seeing colours
- Option: Digestion

5. What condition is associated with the loss of cone cell function?

- Option: Diabetes
- Option: Age-related macular degeneration
- Option: Glaucoma
- Option: Cataracts

6. What did the researchers discover about some compounds?

- Option: They enhance vision
- Option: They damage cone cells
- Option: They create new cells
- Option: They have no effect on the eye

### True-False

7. The discovery made by scientists is significant for protecting cone cells in the eye.



8. There are currently approved treatments for the loss of cone cell function.
9. The research was conducted at the Institute of Molecular and Clinical Ophthalmology Basel.
10. Cone cells are located in the retina, specifically in the fovea.
11. The study involved testing on human retinal organoids.
12. The data from the research was kept confidential.

### Gap-Fill

13. The team studied cone photoreceptors located in the \_\_\_\_\_.
14. Researchers screened over 2,700 compounds using \_\_\_\_\_ human retinal organoids.
15. The loss of cone cells can lead to \_\_\_\_\_.
16. One mechanism to protect cone cells involves blocking a protein called \_\_\_\_\_ kinase  
1.
17. The research aims to preserve vision as a key goal in \_\_\_\_\_ health.
18. The two kinase inhibitors helped the cone cells survive for \_\_\_\_\_.

### Answer

**Multiple Choice:** 1. Helping us see clearly 2. Botond Roska 3. 2,700 4. Reading and seeing colours  
5. Age-related macular degeneration 6. They damage cone cells

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

**Gap-Fill:** 13. macula 14. 20,000 15. vision loss 16. casein 17. eye 18. longer

### Vocabulary quizzes

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



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1. What often arises from opposing interests or values?
    - Option: Agreement
    - Option: Conflict
    - Option: Sympathy
    - Option: Indifference
  
  2. What feeling is commonly associated with wishing one had made a different decision?
    - Option: Joy
    - Option: Regret
    - Option: Relief
    - Option: Excitement
  
  3. Which term describes the system responsible for digestion and absorption of food?
    - Option: Respiratory
    - Option: Gastrointestinal
    - Option: Nervous
    - Option: Musculoskeletal
  
  4. What type of medication is used to treat bacterial infections?
    - Option: Analgesics
    - Option: Antibiotics
    - Option: Antivirals
    - Option: Vaccines
  
  5. What substance produced in the body helps to protect and lubricate membranes?
    - Option: Enzyme
    - Option: Mucus
    - Option: Bile
    - Option: Saliva
  
  6. What term refers to the habits and behaviors that influence an individual's health?
    - Option: Lifestyle
    - Option: Occupation
    - Option: Education
    - Option: Income
  
  7. What are beliefs about how events should unfold called?
    - Option: Perceptions
    - Option: Expectations
    - Option: Assumptions
    - Option: Realities



8. What term describes changes in the body related to hormones?

- Option: Hormonal
- Option: Emotional
- Option: Physical
- Option: Mental

9. What term is used for organisms that are not affected by certain treatments?

- Option: Sensitive
- Option: Resistant
- Option: Susceptible
- Option: Vulnerable

10. What term is used for the release of substance from the body?

- Option: Reception
- Option: Absorption
- Option: Discharge
- Option: Ingestion

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

11. The \_\_\_\_\_ approach addresses the mind-body connection in therapy.

12. Certain chemicals act as \_\_\_\_\_ to slow down biochemical reactions.

13. Certain foods may serve as \_\_\_\_\_ for allergic reactions.

14. The \_\_\_\_\_ is a part of the retina responsible for central vision.

15. In the study of biology, various types of \_\_\_\_\_ are examined.

16. Patients were \_\_\_\_\_ for various conditions before entering the study.

17. Biology focuses on understanding how \_\_\_\_\_ interact within cells.

18. Certain substances can be \_\_\_\_\_ and harmful to human health.

19. He was diagnosed with a rare \_\_\_\_\_ that affects the immune system.

20. Adopting a healthier \_\_\_\_\_ can improve overall well-being.



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

21. Setting realistic expectations can greatly reduce stress and disappointment.
22. Conflict often arises when individuals have differing viewpoints or interests.
23. Gastrointestinal health is essential for proper nutrient absorption and digestion.
24. Antibiotics play a crucial role in treating bacterial infections effectively.
25. Somatic therapies often focus on the connection between body and mind.
26. Regret can sometimes lead to personal growth as individuals reflect on past choices.
27. Mucus protects the lining of various body cavities from irritation.
28. Hormonal changes can significantly affect both physical and emotional well-being.
29. Discharge from a wound can indicate infection or the healing process.
30. Various factors can act as triggers for allergies and asthma attacks.

**Answer**

**Multiple Choice:** 1. Conflict 2. Regret 3. Gastrointestinal 4. Antibiotics 5. Mucus 6. Lifestyle 7. Expectations 8. Hormonal 9. Resistant 10. Discharge

**Gap-Fill:** 11. somatic 12. inhibitors 13. triggers 14. macula 15. organisms 16. screened 17. molecules 18. toxic 19. syndrome 20. lifestyle

**Matching sentence:** 1. expectations 2. conflict 3. gastrointestinal 4. antibiotics 5. somatic 6. regret 7. mucus 8. hormonal 9. discharge 10. triggers

**CATEGORY**

- 1. Health - LEVEL3

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7. vision loss

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