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.

Vocabulary List:

1. **molecules** /ˈmɑlɪˌkjulz/ (noun): very small parts that make up substances
2. **photoreceptors** /ˌfoʊtəˈrɛsəptərz/ (noun): cells in the eye that detect light
3. **macula** /ˈmækjələ/ (noun): small central part of the retina for sharp vision
4. **organoids** /ˈɔrgəˌnɔɪdz/ (noun): small lab-grown tissue that mimics an organ
5. **inhibitors** /ɪnˈhɪbɪtərz/ (noun): things that stop or slow a process
6. **screened** /skriːnd/ (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

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Author
aimeeyoung99