



Scientists have unlocked the key to understanding degenerative brain disorders such as Alzheimer's

Description

Researchers have introduced 'NeuM', a cutting-edge technology for labeling neurons, allowing for detailed observation of neuronal structures and real-time monitoring of changes. This innovation holds significant promise in the battle against neurodegenerative diseases such as Alzheimer's, Parkinson's, and stroke. These conditions are characterized by the gradual deterioration of nerve cells, necessitating precise labeling technologies to visualize changes in neurons under various conditions.

Developed by a research team led by Dr. Kim Yun Kyung from KIST in collaboration with Professor Chang Young-Tae's team, NeuM selectively labels neuronal membranes, enabling high-resolution imaging and long-term tracking of living neurons. Unlike current labeling technologies, NeuM utilizes fluorescent probes that bind to neuronal membranes, emitting fluorescent signals upon excitation. This technology allows for detailed observation of neuronal structures and tracking of changes over an extended period.

With the ability to distinguish between aging and degenerating neurons, NeuM is poised to enhance our understanding of degenerative brain disorders and aid in the development of effective treatments. Dr. Kim emphasized the importance of NeuM in elucidating disease mechanisms and expressed plans to further refine the technology for more precise neuronal analysis. This groundbreaking research, published in *Angewandte Chemie International Edition*, was supported by the Ministry of Science and ICT and the Dementia Overcoming Project.

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Vocabulary List:

1. **Neurons** // (noun): Nerve cells that are the basic building blocks of the nervous system.
2. **Labeling** // (noun): The process of attaching a tag or marker to something for identification or classification.
3. **Observation** // (noun): The action or process of observing something or someone carefully in order to gain information.
4. **Monitoring** // (noun): The act of observing and checking the progress or quality of something over a period of time.
5. **Deterioration** // (noun): The process of becoming progressively worse.
6. **Fluorescent** // (adjective): Having or showing fluorescence.

Vocabulary quizzes

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

1. Which term describes something that is widespread or commonly occurring?

- Option: Epidemiologist
- Option: Innovative
- Option: Prevalent
- Option: Proponents

2. Which term is related to a type of infection caused by molds or yeasts?

- Option: Efficient
- Option: Fungal
- Option: Dengue
- Option: Neurons

3. What is the term used for the cultivation of grapes?

- Option: Viticulture
- Option: Consistency
- Option: Delightful
- Option: Observation

4. Which term refers to a widespread occurrence of an infectious disease in a community at a particular



time?

- Option: Endemic
- Option: Epidemic
- Option: Sanitation
- Option: Impact

5. What is the act of carefully watching or monitoring something or someone?

- Option: Irrigation
- Option: Observation
- Option: Fluorescent
- Option: Deterioration

6. Which term describes the cells that transmit information in the brain and nervous system?

- Option: Concept
- Option: Neurons
- Option: Overwhelming
- Option: Prevalence

7. What term refers to an abstract idea or general notion?

- Option: Surveillance
- Option: Irrigation
- Option: Concept
- Option: Misdiagnosed

8. Which term describes the effect or influence of one thing on another?

- Option: Misdiagnosed
- Option: Impact
- Option: Epidemic
- Option: Efficient

9. Which term relates to the human organ system responsible for breathing?

- Option: Innovative
- Option: Respiratory
- Option: Viticulture
- Option: Labeling

10. Which term refers to the conditions relating to public health especially the provision of clean drinking water and adequate sewage disposal?

- Option: Consistency
- Option: Sanitation
- Option: Innovative
- Option: Efficient



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

11. An _____ studies the patterns causes and effects of health and disease conditions in defined populations.
12. To achieve success it is important to maintain _____ in your efforts.
13. Installing an _____ irrigation system can save water and improve plant growth.
14. The _____ of diabetes is increasing globally due to changes in lifestyle.
15. An _____ approach to problem-solving can lead to unique and effective solutions.
16. Public health officials conduct ongoing _____ to monitor disease outbreaks.
17. Lack of maintenance leads to the _____ of infrastructure over time.
18. Some marine animals exhibit mesmerizing colors under _____ lighting.
19. The artist created a _____ illustration that captured the beauty of nature.
20. Effective product _____ helps consumers make informed choices.

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

21. The response to the charity drive was so positive that it was .
22. The of the new policy believe it will bring positive changes to the community.
23. The patient's symptoms were typical but often by healthcare providers.
24. The exploration of the by early settlers led to the discovery of new lands.
25. The mystery novel had a plot full of twists and turns that kept readers engaged and stimulated their curiosity.
26. During the dry season farmers rely on proper systems to water their crops.
27. Achieving success in any field often requires dedication hard work and a high level of .



28. Health authorities conduct regular to track the spread of infectious diseases.

29. The new policy had a significant on the local economy leading to increased investment.

30. The sudden outbreak of the flu became an in the region affecting a large number of people.

Answer

Multiple Choice: 1. Prevalent 2. Fungal 3. Viticulture 4. Epidemic 5. Observation 6. Neurons 7. Concept
8. Impact 9. Respiratory 10. Sanitation

Gap-Fill: 11. Epidemiologist 12. Consistency 13. Efficient 14. Prevalence 15. Innovative 16. Surveillance
17. Deterioration 18. Fluorescent 19. Delightful 20. Labeling

Matching sentence: 1. Overwhelming 2. Proponents 3. Misdiagnosed 4. Americas 5. Intriguing 6. Irrigation
7. Consistency 8. Surveillance 9. Impact 10. Epidemic

CATEGORY

1. Health - LEVEL4

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