How Squids Change Color with Electricity: A Groundbreaking Discovery

Description

Squids can change colors to match their surroundings thanks to pigment-filled cells called chromatophores. Researchers at Northeastern University discovered that these pigment granules can turn light into electricity.

When exposed to sunlight, the granules produce a charge. Biochemist Leila Deravi explained that the more granules there are, the more electricity they generate, which could potentially be used as a power source for the squid.

This amazing ability allows squids to quickly change their appearance underwater, where light levels are low. The researchers were impressed by how fast and accurate the color-changing process is.

By studying these light sensors in squids, scientists hope to improve technologies like wearable electronics. This discovery could lead to new advancements in various fields.

The research was published in the Journal of Materials Chemistry C. Squids, like the longfin inshore squid, use their color-changing skills to survive in the ocean by hiding from predators.

Vocabulary List:

1. **Chromatophores** /krəˈmætəˌfɔrz/ (noun): Pigment-filled cells that allow organisms to change color.
2. **Pigment** /ˈpɪg.mənt/ (noun): A substance that gives color to an organism or material.
3. **Granules** /ˈgræn.juːlz/ (noun): Small particles or grains often referring to aggregated structures.
4. **Electricity** /ɪˌlekˈtrɪs.ɪ.ti/ (noun): A form of energy resulting from the existence of charged particles.
5. **Advancements** /ədˈvæns.mənts/ (noun): Progress or improvements in a particular field.
6. **Predators** /ˈprɛd.ə.tərz/ (noun): Animals that prey upon other organisms for food.

Comprehension Questions

Multiple Choice

1. What is the name of the pigment-filled cells in squids that allow them to change colors?

   Option: Chromosomes

Option: Chromatophores
Option: Chloroplasts
Option: Chemotrophs

2. What can the pigment granules in squids do when exposed to sunlight?

Option: Change shape
Option: Conduct electricity
Option: Produce sound
Option: Attract prey

3. How do squids use their color-changing ability to survive in the ocean?

Option: To communicate with each other
Option: To scare off predators
Option: To match their surroundings and hide from predators
Option: To attract mates

4. According to the research, what could the electricity generated by the pigment granules potentially be used for?

Option: As a communication signal
Option: As a power source for the squid
Option: To attract prey
Option: To navigate underwater

5. Where was the research on squid color-changing abilities published?

Option: Journal of Animal Behavior
Option: Journal of Materials Chemistry C
Option: Journal of Marine Biology
Option: Journal of Evolutionary Ecology

6. Which specific type of squid was mentioned in the text that uses color-changing skills to hide from predators?

Option: Humboldt squid
Option: Giant squid
Option: Longfin inshore squid
Option: Dumbo octopus

True-False

7. Squids change colors using organelles called chromatophores.

8. Researchers at Northeastern University discovered that squid pigment granules can turn sound into electricity.

9. The color-changing process in squids is slow and imprecise.

10. The ability of squids to change colors quickly is useful for camouflage.

11. Studying light sensors in squids could lead to advancements in wearable electronics.

12. Squids primarily use their color-changing skills to attract prey.

Gap-Fill

13. According to the text, squid pigment granules can turn light into _____.

14. Researchers believe that the more pigment granules there are in squids, the more _____ they can generate.

15. The color-changing ability of squids allows them to quickly match their surroundings, especially in environments with low _____ levels.

16. Scientists are interested in studying light sensors in squids to improve technologies like wearable _____.

17. The discovery about squid color-changing abilities could lead to new advancements in various _____.

18. The research on squids was published in the Journal of Materials Chemistry _____.

Answer

Multiple Choice: 1. Chromatophores 2. Conduct electricity 3. To match their surroundings and hide from predators 4. As a power source for the squid 5. Journal of Materials Chemistry C 6. Longfin inshore squid
True-False: 7. True 8. False 9. False 10. True 11. True 12. False
Gap-Fill: 13. electricity

15. light 16. electronics 17. fields 18. C

Vocabulary quizzes

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

1. Which of the following is a respiratory condition characterized by narrowing of the airways?

Option: Asthma
Option: ADHD
Option: Seizures
Option: Pre-diabetes

2. Animals that hunt and prey on other animals for survival are known as:

Option: Predators
Option: Bacteria
Option: Settlement
Option: Outbreak

3. Systematic investigative activities to discover and interpret facts is known as:

Option: Flexibility
Option: Research
Option: Chromatophores
Option: Pigment

4. An event or occurrence that provokes a specific reaction or response is called a:

Option: Increase
Option: Healthcare
Option: Stimulus
Option: Crucial

5. The process by which different kinds of living organisms are believed to have developed and diversified from earlier forms is called:

Option: Athletes
Option: Soreness
Option: Evolution
Option: Plague

6. The quality state or capability of being connected or interconnected is known as:

Option: Insight
Option: Connectivity
Option: Cognitive

Option: Enrich

7. The state of being tender sensitive or painful due to injury or overuse is known as:

Option: Boost
Option: Soreness
Option: Flexibility
Option: Recovery

8. Brief disturbances in the electrical activity of the brain that may be associated with epilepsy are known as:

Option: Investigation
Option: Seizures
Option: Pre-diabetes
Option: Increase

9. Cells containing pigment granules that change color in response to stimuli are called:

Option: Boost
Option: Chromatophores
Option: Granules
Option: Electricity

10. The invasion of an organism's body tissues by disease-causing agents is called:

Option: Connectivity
Option: Cognitive
Option: Enrich
Option: Infection

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

11. Attention-Deficit/Hyperactivity Disorder commonly known as _____ is a neurodevelopmental disorder.

12. The provision of medical services to individuals or communities to maintain or improve their health is known as _____.

13. Technological _____ have revolutionized various industries and aspects of human life.

14. The process of establishing a community or society in a specific area is called _____.

15. A widespread occurrence of a harmful infectious disease often resulting in many deaths is referred to as a _____.

16. Gaining deep understanding or intuitive _____ into a specific subject can lead to valuable discoveries.

17. Microscopic organisms that can cause infections and often play essential roles in various ecosystems are known as _____.

18. The _____ abilities of the human brain are crucial for processing information and making decisions.

19. To boost economic growth countries aim to _____ their production and innovation capacities.

20. Education plays a vital role in helping individuals _____ their knowledge and skills.

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

21. Yoga and stretching exercises can improve one's physical and range of motion.
22. Adequate rest and proper nutrition are essential for effective muscle after intense workouts.
23. Energy drinks claim to provide a quick of energy due to their caffeine content.
24. The color-changing ability of chameleons is due to specialized skin cells called that contain pigment.
25. Some deep-sea creatures produce light through a process called bioluminescence using specialized cells that generate .
26. Scientists conduct to explore new medical treatments and technologies.
27. The in plant leaves is responsible for capturing sunlight during photosynthesis.

28. The rapid in artificial intelligence have led to innovations in various industries.
29. Effective communication skills are in building strong relationships and collaboration.
30. Police detectives are involved in the of crime scenes and gathering evidence.

Answer

Multiple Choice: 1. Asthma 2. Predators 3. Research 4. Stimulus 5. Evolution 6. Connectivity 7. Soreness 8. Seizures 9. Chromatophores 10. Infection
Gap-Fill: 11. ADHD 12. Healthcare 13. Advancements 14. Settlement 15. Plague 16. Insight 17. Bacteria 18. Cognitive 19. Increase 20. Enrich
Matching sentence: 1. Flexibility 2. Recovery 3. Boost 4. Granules 5. Electricity 6. Research 7. Pigment 8. Advancements 9. Crucial 10. Investigation

CATEGORY

1. Health - LEVEL2

Date Created
2025/03/14
Author
aimeeyoung99