

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 /krə'mætə,fɔrz/ (noun): Pigment-filled cells that allow organisms to change color.
- 2. **Pigment** /'pɪg.mənt/ (noun): A substance that gives color to an organism or material.
- 3. Granules /'græn.ju:lz/ (noun): Small particles or grains often referring to aggregated structures.
- 4. **Electricity** /I, lek'trIS.I.ti/ (noun): A form of energy resulting from the existence of charged particles.
- 5. Advancements /ad'væns.mants/ (noun): Progress or improvements in a particular field.
- 6. **Predators** /'prɛd.ə.tərz/ (noun): Animals that prey upon other organisms for food.

Comprehension Questions

Multiple Choice

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

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