



Legged Fish: Finding and Tasting Buried Food in Evolution

Description

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The northern sea robin uses its legs to find food in the seabed

Anik Grearson

An intriguing fish dwelling at the base of the Atlantic Ocean has developed legs – not merely for walking, but as a unique sensory organ akin to a tongue, aiding in the discovery of prey hidden in the seabed.

The Northern sea robin (*Prionotus carolinus*) boasts three legs on either side of its body, emerging from the base of its pectoral fins. These legs originate from structures within the pectoral fins known as fin rays.

During an expedition to Woods Hole, Massachusetts, Nicholas Bellono from Harvard University, alongside his colleagues, encountered tales of the sea robins' hunting prowess and decided to transport live specimens back to their laboratory.

Curious to test the fish's ability to locate prey, Bellono expressed surprise at their proficiency, unearthing capsules filled with mussel extract and single amino acids. However, upon acquiring a different species unintentionally, namely the striped sea robin (*Prionotus evolans*), the team realized the distinctiveness in their walking abilities versus sensing buried prey.

By examining the genetic factors propelling the evolution of the sea robin's distinctive legs, they identified the influence of an ancient regulatory gene called *tbx3a*. This revelation showcases the remarkable process of creating new body parts by modifying existing, shared tools across diverse species.

Topics:

Vocabulary List:

1. **Intriguing** /ɪnˈtruː.gɪŋ/ (adjective): Arousing curiosity or interest; fascinating.
2. **Sensory** /ˈsen.sər.i/ (adjective): Relating to sensation or to the senses.
3. **Proficiency** /prəˈfɪ.ən.si/ (noun): A high degree of skill or expertise.
4. **Distinctiveness** /dɪsˈtɪŋk.tɪv.nəs/ (noun): The quality of being individual or unique.
5. **Regulatory** /ˈreg.jə.lə.tɔːr.i/ (adjective): Concerned with the control or supervision of an activity.
6. **Evolution** /ˌiː.vəˈluː.ʃən/ (noun): The gradual development of something especially from a simple to a more complex form.

Comprehension Questions



Multiple Choice

1. Where does the northern sea robin dwell?

- Option: Pacific Ocean
- Option: Atlantic Ocean
- Option: Indian Ocean
- Option: Southern Ocean

2. What are the legs of the northern sea robin used for?

- Option: Swimming
- Option: Finding food in the seabed
- Option: Attracting mates
- Option: Defense mechanism

3. How many legs does the northern sea robin have on each side of its body?

- Option: One
- Option: Two
- Option: Three
- Option: Four

4. From which part of the pectoral fins do the legs of the northern sea robin emerge?

- Option: Fin rays
- Option: Scales
- Option: Gills
- Option: Spine

5. Who conducted the expedition to Woods Hole to study the sea robins?

- Option: Nicholas Bellono
- Option: Anik Grearson
- Option: John Smith
- Option: Emily Johnson

6. Which ancient regulatory gene was identified as influencing the evolution of the sea robin's legs?

- Option: tbx3a
- Option: tbx4a
- Option: tbx5a
- Option: tbx6a



Answer

Multiple Choice: 1. Atlantic Ocean 2. Finding food in the seabed 3. Three 4. Fin rays 5. Nicholas Bellono 6. tbx3a

Vocabulary quizzes

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

1. Which term describes a significant disturbance in an industry or market often leading to innovation?
Option: Disruption
Option: Senescence
Option: Mitigate
Option: Espionage
2. What is a medication used to treat epilepsy?
Option: Quartz
Option: Valproate
Option: Organoid
Option: Congenital
3. Which term describes a society characterized by human misery and oppression?
Option: Chilling
Option: Dystopian
Option: Vibrant
Option: Proficiency
4. What term relates to the enforcement of rules and regulations within an industry?
Option: Evolution
Option: Espionage
Option: Regulatory
Option: Compelling
5. Which term means attractive or tempting?
Option: Disturbance
Option: Enticing
Option: Distinctiveness
Option: Intriguing



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6. What term describes lacking a moral sense or ignoring moral considerations?
Option: Mitigate
Option: Amoral
Option: Contemplation
Option: Senescence
7. Which term refers to producing or intensifying a sound by vibration?
Option: Mitigate
Option: Resonating
Option: Intrigue
Option: Valproate
8. What term refers to the condition or process of deterioration with age?
Option: Critical
Option: Senescence
Option: Mitigate
Option: Vibrant
9. Which term describes evoking interest attention or admiration in a powerfully irresistible way?
Option: Chilling
Option: Compelling
Option: Entanglement
Option: Dystopian
10. What term describes the gradual development of something into a more complex or advanced state?
Option: Quartz
Option: Essential
Option: Espionage
Option: Evolution

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

11. _____ is the process of making products on a large scale using machinery.
12. Efforts to _____ the impact of climate change are crucial for the future of the planet.
13. The spy novel was filled with mystery and _____ keeping readers on the edge of their seats.
14. Moments of quiet _____ often lead to insightful decisions and realizations.



15. The marketplaces in the city were always bustling with energy and _____ colors.
16. _____ heart defects are present at birth and may require medical intervention.
17. The art exhibition aimed to engage not only the visual sense but also the _____ experiences of the audience.
18. Proper planning and decision-making are _____ in high-pressure situations.
19. Good nutrition is _____ for overall health and well-being.
20. The diplomat found himself in a complicated _____ of political alliances and personal interests.

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

21. The watch was made with precision and contained a small piece of mineral often used in timekeeping devices.
22. The scientists grew a miniature version of a brain structure in the lab for research purposes.
23. The horror movie had a effect on the audience leaving them with a sense of unease.
24. The temperatures in the mountains warned hikers of potential danger.
25. The author presented a argument that convinced many to reconsider their positions.
26. The government agency was responsible for overseeing and enforcing policies within the industry.
27. The novel depicted a future society where oppressive control and deprivation were the norm.
28. Efforts to the environmental impact of industrial activities are crucial for sustainability.
29. The artist's unique take on classical themes involved traditional myths and legends.
30. Higher levels of in a skill often lead to better performance and results.



Answer

Multiple Choice: 1. Disruption 2. Valproate 3. Dystopian 4. Regulatory 5. Enticing 6. Amoral 7. Resonating
8. Senescence 9. Compelling 10. Evolution

Gap-Fill: 11. Manufacturing 12. Mitigate 13. Intrigue 14. Contemplation 15. Vibrant 16. Congenital 17.
Sensory 18. Critical 19. Essential 20. Entanglement

Matching sentence: 1. Quartz 2. Organoid 3. Chilling 4. Chilling 5. Compelling 6. Regulatory 7. Dystopian
8. Mitigate 9. Reimagining 10. Proficiency

CATEGORY

1. Sci/Tech - LEVEL4

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