



The Power of One Atom: Transforming Parrot Colors

Description

Birds are very colorful animals in the animal kingdom. They get their bright colors from pigments called carotenoids, which they get from the plants they eat. Parrots, however, have a unique way of producing colorful pigments called psittacofulvins.

Recent studies on parrots and finches have helped scientists understand how birds use pigments to vary in color. For example, in parrots like the dusky lory, an enzyme called ALDH3A2 determines whether feathers are yellow or red.

In finches like the long-tailed finch, genes CYP2J19 and TTC39B play a role in changing the color of their bills from yellow to red by converting dietary carotenoids.

These studies show that just a few genes can make a big difference in the colors of birds. Evolution can create new species based on these color changes.

It's important to protect the genetic diversity of bird species to ensure their survival. Every individual bird has a unique genetic makeup that has evolved over millions of years, leading to the diverse bird species we see today.

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Vocabulary List:

1. **Carotenoids** /kə'rɒtə,nɔɪdz/ (noun): Pigments found in plants that give color to various organisms.
2. **Psittacofulvins** /,sɪtəkoʊ'fʌlvɪnz/ (noun): A unique class of pigments found specifically in parrots.
3. **Enzyme** /'enzaim/ (noun): A protein that acts as a catalyst to accelerate chemical reactions.
4. **Genetic** /dʒə'netɪk/ (adjective): Relating to genes or heredity.
5. **Evolution** /,evə'lu:ʃən/ (noun): The gradual development of organisms over time through genetic changes.
6. **Diversity** /daɪ'vɜrsɪti/ (noun): The variety of different species in a given ecosystem.

Comprehension Questions



Multiple Choice

1. Where do birds get their bright colors from?
Option: From the air they breathe
Option: From pigments called carotenoids in the plants they eat
Option: From underground minerals
Option: From the sunlight

2. What unique way do parrots have of producing colorful pigments?
Option: Through sunlight exposure
Option: Through genetic mutations
Option: Through pigments called psittacofulvins
Option: Through camouflage techniques

3. Which enzyme determines whether feathers are yellow or red in parrots like the dusky lory?
Option: ALDH3A2
Option: CYP2J19
Option: TTC39B
Option: PSITTALEO

4. Which genes play a role in changing the color of bills in finches like the long-tailed finch?
Option: ALDH3A2 and PSITTALEO
Option: CYP2J19 and TTC39B
Option: CAROGEN and TINTONE
Option: BLILO and MELANI

5. What can create new species based on color changes?
Option: Genetic mutations
Option: Dietary changes
Option: Evolution
Option: Climate change

6. Why is it important to protect the genetic diversity of bird species according to the article?
Option: To study their behavior
Option: To keep them as pets
Option: To ensure their survival
Option: To increase tourism



True-False

7. Parrots get their bright colors from carotenoids.
8. Genes play a role in changing the color of bills in finches.
9. Evolution can create new species based on color changes in birds.
10. Protecting genetic diversity of bird species is irrelevant for their survival.
11. Every individual bird has a unique genetic makeup that has evolved over millions of years.
12. Psittacofulvins are produced in traditional bird glands.

Gap-Fill

13. In finches like the long-tailed finch, genes CYP2J19 and TTC39B play a role in changing the color of their bills from yellow to _____.
14. Every individual bird has a unique genetic makeup that has evolved over _____ years.
15. Evolution can create new species based on these color _____.
16. Birds get their bright colors from pigments called _____, which they get from the plants they eat.
17. It is important to protect the genetic diversity of bird species to ensure their _____.
18. Recent studies on parrots and finches have helped scientists understand how birds use pigments to vary in _____.

Answer

Multiple Choice: 1. From pigments called carotenoids in the plants they eat 2. Through pigments called psittacofulvins



3. ALDH3A2 4. CYP2J19 and TTC39B 5. Evolution 6. To ensure their survival
True-False: 7. False 8. True 9. True 10. False 11. True 12. False
Gap-Fill: 13. red 14. millions 15. changes 16. carotenoids 17. survival 18. color

Answer

CATEGORY

1. Health - LEVEL2

Date Created

2024/11/18

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