



Chromatophores and Trichromats

SCIENCE FRIDAY: Where's the Octopus? v=aoCzZHcwKxI

Watch the opening sequence to learn what makes a marine biologist scream.

1. Which of these is a cephalopod? Select all that are correct.

starfish cuttlefish shark squid crab octopus

2. Cephalopods can cannot control their skin texture (bumpiness).

3. These animals are _____-blind yet are capable of creating
_____ -match patterns.

4. Close-up images of squid skin reveal dots of pigment, which are called
_____. [Think of them as biological pixels.]

5. Each one of those spots can expand up to _____ times its diameter.

6. Cephalopods rely on _____ as their main protection from predators.

7. What are the three pattern templates that cephalopods use? Match the terms to the correct definitions.

Uniform • • to interfere with the recognition of what the animal is

Mottle • • little or no contrast in the pattern

Disruptive • • small-scale light and dark splotches

8. Camouflage is not looking exactly like the background. Camouflage just means
_____ whatever's looking at you.

Post-viewing question. Chromatophores come in three "warm" colors: yellow, red, and brown. How do cephalopods get "cool" colors into their camouflage patterns?

>>> THE ROYAL INSTITUTION. Colour Mixing: the Mystery of Magenta >>>

THE ROYAL INSTITUTION. Colour Mixing: the Mystery of Magenta v=iPPYGJjKVco

1. You *can't* mix colors in physics, but you *can* mix colors in
A. chemistry. B. biology. C. Both of these D. None of these

2. Mixing red light and green light gives you _____.

3. If you mix green and blue you get _____.

4. Your eyes can't measure the wavelength of light directly. Instead you have these _____ cells in the back of your eye that are sensitive to different parts of the spectrum.

5. Which three colors are your cones sensitive to? Box them on the spectrum below.



6. How many colors are there in TV pixels? _____

7. What do you see if your red cone fires at one end of the spectrum and your blue cone fires at the other end of the spectrum?

a. Why doesn't your brain just take the average of red and blue?

b. What does it do instead?

8. What do you see when *all* cones are firing at the same time?

Post-Viewing Questions

9. Other than the accent and affiliation with The Royal Institution, how does science presenter, Steve Mould, indicate he's British (rather than American)?

10. Organisms that have three distinct cones are called trichromats. Humans are trichromats. Some birds are tetrachromats. How many primary colors do they have?