

ADVISORY 2, UNITS 3-4, LESSON 3 TRAITS, BEHAVIORS, AND REPRODUCTION

Summary

- In this lesson, students will read "Chameleons" (pp. 28-35) to learn about the variety of inherited traits that help chameleons survive, including the ability to change colors.

Science Background

Chameleons are reptiles that mostly live in the rain forests and deserts of Africa and the Middle East. There are more than 150 different species.

Chameleons have several traits that help them survive. One is their long, sticky tongues. A chameleon's tongue can whip out at a rate of nearly 21 kph. When it hits the intended prey, it forms a small suction cup that pulls the prey in.

Chameleons live in trees and bushes. Their feet and tails help them stay in place. A chameleon's toes are divided into groups. These groupings allow chameleons to grab branches as they walk. Their prehensile tails coil around branches so they can balance.

The chameleon's eyes are cone-shaped and can rotate and focus in different directions at the same time. This gives them a 360-degree view of their surroundings.

Changing color is a chameleon's most notable trait. Chameleons can't change any color they want to. And contrary to popular belief, they don't change colors to perfectly match their surroundings. But they do change color to communicate or to respond to changes in mood or temperature. Nerve impulses and hormone changes in their four layers of skin cause color cells to expand or shrink. This creates the colors and patterns we see.

ENGAGE

Encourage students to flip through the articles and turn and talk with a partner to discuss what they see. Invite students to ask questions or share what they already know about chameleons.

EXPLORE

Instruct students to examine the photo on pages 28-29 in their Readers. Invite a volunteer to read aloud the headline and deck. **Ask:** *According to the deck, what is unique about a chameleon's color?* (It uses color to communicate.) Brainstorm ideas about how this might be possible and the types of message chameleons might send through different colors.

EXPLAIN

Remind students that many people falsely believe chameleons change color so they can blend in with their environment. **Ask:** *Why do chameleons change colors?* (It's a response to a change in the environment, such as temperature, humidity, or the presence of another chameleon.) Encourage students to turn and talk as they discuss how melanin, light, and nanocrystals in a chameleon's skin work together to help it change colors. Challenge them to identify specific messages that chameleons use color to send. Then have students identify other inherited traits of chameleons. (tongue, tail, toes, eyes) Challenge them to explain how each of those traits helps chameleons survive.

ELABORATE

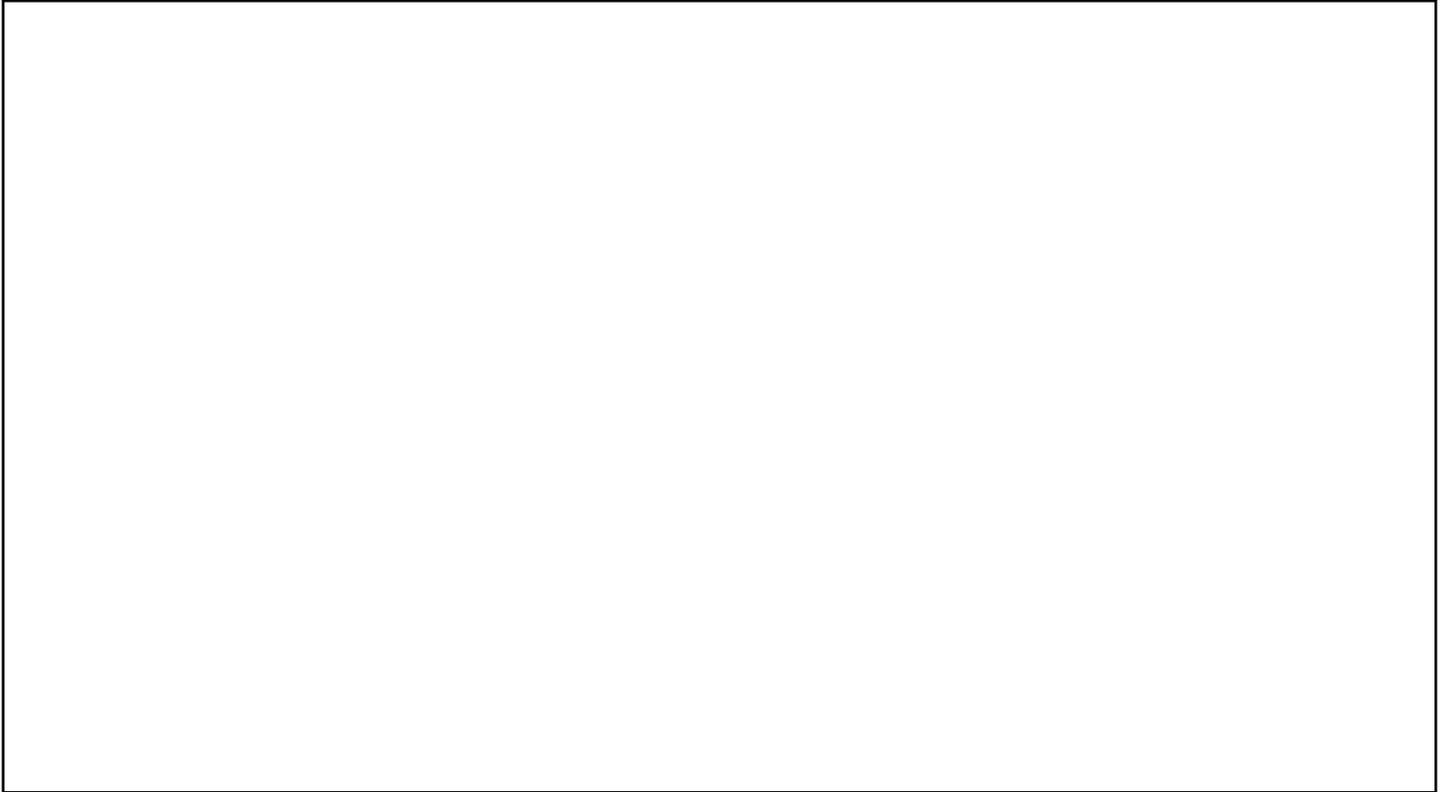
Invite students to read the National Geographic Education encyclopedic entry "Camouflage" (<https://www.nationalgeographic.org/encyclopedia/camouflage/>) to learn more about how chameleons and other animals use color to survive. Challenge students to identify messages other types of animals send with their inherited colors.

EVALUATE

Have students complete the **Content Assessment** for this lesson. Encourage them to share and compare their results in small groups.

CONTENT ASSESSMENT: The Colors of Chameleons

Draw and color a picture of a chameleon. Show it in a way that its tongue, toes, tail, or eyes are helping it survive.



Examine the colors in your picture. What message would those colors send to another chameleon? How do you think that other chameleon would respond?
