

## Photo Description



This image shows a bright green lizard resting on a piece of tree bark. You can see the lizard's detailed scales covering its body, its alert eye, and its long tail. The lizard's green color helps it blend in with leaves and plants in its natural environment, which is called camouflage.

## Scientific Phenomena

Anchoring Phenomenon: Why is this lizard green, and how does its body help it survive?

This lizard displays structural adaptation and camouflage—physical features that help animals survive in their environment. The bright green coloring happens because of pigments (natural colors) in the lizard's skin. This green color is NOT random; it evolved over many generations because lizards with green coloring were better hidden from predators on green plants and leaves. Animals that are hard to see are more likely to survive and have babies, passing this trait to the next generation. This is a direct result of natural selection and environmental adaptation.

## Core Science Concepts

- \* **Structural Adaptations:** Physical features of an animal's body that help it survive. The lizard's green color, scales, and body shape are all adaptations for life in trees and on vegetation.
- \* **Camouflage:** A type of adaptation where an animal's color, pattern, or shape matches its environment, making it harder for predators to see it. The green lizard blends with leaves and branches.
- \* **Animal Behavior & Survival:** Animals exhibit behaviors (like staying still or hiding) that work together with their body structures to help them survive and find food.
- \* **Sensory Adaptations:** The lizard's visible eye, positioned on the side of its head, allows it to see predators and prey while remaining still—an important survival advantage.

### Pedagogical Tip:

When teaching adaptations, help students distinguish between structural (body features) and behavioral (actions) adaptations. Ask: "Is that something the lizard's BODY has, or something the lizard DOES?" This clarification prevents misconceptions about how adaptations work.

### UDL Suggestions:

Provide multiple means of representation: Show this image alongside photos of the same lizard species in different environments (sandy areas, forest floors) to help students see how the same green color works differently depending on habitat. Also include a diagram labeling the lizard's body parts. For students who process language differently, create a word bank with images paired to vocabulary terms before the lesson.

### Zoom In / Zoom Out

#### Zoom In: Cellular Level – Pigments in Skin Cells

The bright green color you see on this lizard comes from tiny particles called pigments (like chlorophyll and carotenoids) inside the lizard's skin cells. If you could look at the lizard's skin under a microscope, you'd see millions of individual cells packed together. Inside many of these cells are special structures that hold green, yellow, and blue colors. When light hits these pigments, they reflect the green color back to your eyes. This is why the lizard appears green—it's not paint or dye, but actual colored molecules inside living cells working together to create the color we see.

#### Zoom Out: Ecosystem Level – Food Webs & Predator-Prey Relationships

This single green lizard is part of a much larger ecosystem. The lizard eats insects and small invertebrates, which means it's a consumer. Larger predators (like snakes, birds, or bigger reptiles) hunt the lizard, making the lizard both predator and prey. The vegetation around the lizard (trees, shrubs, plants) provides both food and shelter. When the lizard's green color keeps it hidden from predators in this leafy environment, the entire food web of that habitat is affected. If more lizards survive because of their camouflage, there are more lizards to eat insects (controlling insect populations) and more lizards available as food for predators. The lizard's adaptation creates a ripple effect throughout its entire ecosystem.

### Discussion Questions

1. Why do you think this lizard is green instead of red or blue? (Bloom's: Analyze | DOK: 2)

This question encourages students to connect color to environment and think about cause-and-effect relationships.

2. If this lizard moved to a sandy desert, would its green color still help it hide from predators? Explain your thinking.

(Bloom's: Evaluate | DOK: 3)

This higher-order question asks students to apply their understanding to a new scenario and defend their reasoning.

3. What other animals have you seen that use camouflage to hide? How is their hiding strategy similar to or different from this lizard's? (Bloom's: Analyze | DOK: 2)

This connects the concept to students' prior knowledge and builds understanding through comparison.

4. How do you think this lizard's scales help it survive? (Bloom's: Understand | DOK: 1)

This foundational question helps students observe and describe a visible structural adaptation.

### Potential Student Misconceptions

Misconception 1: "The lizard turned green on purpose because it knew it needed to hide."

Clarification: The lizard didn't choose to be green or decide to change color to match its environment. Over many, many generations (thousands of years), lizards with green coloring survived better than lizards with other colors because predators couldn't see them as easily. Those green lizards had baby lizards that were also green. This process is called natural selection, and it happens over a very long time—the lizard itself doesn't control it.

Misconception 2: "All lizards are green because they all live in trees and on plants."

Clarification: Different lizards live in different environments, and their colors match where they live. Some lizards are brown (to blend with desert sand), some are gray (to blend with rocks), and some are green (to blend with plants and leaves). The color an animal has depends on where its ancestors lived and what colors helped them survive in that specific place. A green lizard in a desert would stick out and be easy for predators to see!

Misconception 3: "Scales are just bumpy skin—they don't really help the lizard survive."

Clarification: Scales are actually very important structural adaptations. Scales protect the lizard's skin from drying out in the sun, help it move smoothly through bushes and branches without getting hurt, and keep germs and parasites from getting into its body. Scales are one of the reasons reptiles like lizards can live in many different dry environments where other animals can't survive.

### Extension Activities

1. Camouflage Hunt: Hide pictures of various animals (some with camouflage, some brightly colored) around the classroom. Have students find the animals and sort them into two groups: "Easy to See" and "Hard to See." Discuss why camouflage helps survival and brainstorm other hiding strategies animals use.
2. Design Your Own Animal: Provide students with a specific habitat (rainforest, desert, snow, ocean). Have them draw and color an imaginary animal with adaptations suited to that environment. Students should label their structural adaptations and explain how each one helps the animal survive.
3. Lizard Behavior Observation: If possible, show a short video of a lizard moving, basking, hunting, or hiding. Have students use a simple observation chart to record what behaviors they see and predict WHY the lizard does each behavior (e.g., "The lizard stayed very still—maybe to hide from predators").

### Cross-Curricular Ideas

ELA Connection: Descriptive Writing & Observation Journals

Have students write a descriptive paragraph from the perspective of the lizard in the photo. What does the lizard see, hear, and feel? Encourage them to use vivid adjectives (bright, tiny, scaly, alert) and sensory words. Students could also keep an "Animal Observer's Journal" where they sketch and write detailed descriptions of real or imagined animals in different habitats, focusing on how their body features help them survive.

Math Connection: Scale & Measurement

Use this image to teach about scale and proportion. Ask students: "If one scale on this lizard's head is 2 millimeters, how many scales might cover the lizard's entire body?" Have students measure small objects (a grain of rice, a pencil tip) and estimate how many would fit across the lizard in the photo. This builds understanding of proportion, measurement, and estimation skills while reinforcing observation of the detailed scales.

Art Connection: Camouflage Collage & Color Theory

Students create a mixed-media collage or painting of an animal with camouflage in a specific habitat. They could cut pictures from magazines (leaves, branches, rocks, sand) and arrange them to show how their animal blends in. Extend this by discussing warm colors (yellows, oranges, reds) vs. cool colors (greens, blues) and why certain colors work better in certain environments. Students could also try painting or coloring with limited color palettes to match specific habitats.

Social Studies Connection: Habitats & Regions Around the World

Different regions of the world have different animals with different adaptations. Have students research where this type of green lizard lives (Mediterranean regions, North Africa, parts of Europe). Using a map, students can identify the climate, vegetation, and other animals in that region. Compare it to other regions like deserts, rainforests, or polar areas, and discuss how animals in each place have different adaptations suited to their specific environment and culture.

### STEM Career Connection

Wildlife Biologist / Herpetologist

A herpetologist is a scientist who studies reptiles and amphibians (like lizards, snakes, and frogs). These scientists travel to different habitats to observe animals, take photos and measurements, and learn how they survive. They might study how a lizard's color helps it hide, what it eats, how it raises babies, and how it fits into its ecosystem. Some herpetologists work in zoos or museums; others work in nature preserves helping protect endangered species. Average Salary: \$65,000–\$85,000 per year

#### Zookeeper / Animal Care Specialist

A zookeeper takes care of animals in zoos, wildlife sanctuaries, or research facilities. They feed animals, clean habitats, observe behavior, and help educate visitors about why animals have special adaptations. A zookeeper working with lizards might design habitats that match the lizard's natural environment (with the right plants, rocks, and temperature) so the lizard stays healthy. They also watch for signs of illness or stress and report to veterinarians. Average Salary: \$28,000–\$38,000 per year

#### Wildlife Photographer / Nature Documentary Filmmaker

A wildlife photographer or documentary filmmaker captures stunning images and videos of animals like this green lizard in their natural habitats. They use special cameras, lenses, and patience to photograph animals up close and show the world how animals look, move, and survive. Their photos and videos help scientists study animals and help people understand why protecting habitats and animals is important. Some work for National Geographic, BBC, or other nature organizations. Average Salary: \$45,000–\$75,000 per year (varies widely by experience and employer)

### NGSS Connections

Performance Expectation:

4-LS1.A | Structure and Function

"All organisms have external structures that serve various functions in growth, survival, and reproduction."

Disciplinary Core Ideas:

- 4-LS1.A (Structure and function of organisms)
- 4-LS4.B (Natural selection and variation in populations)

Crosscutting Concepts:

- Structure and Function
- Cause and Effect

### Science Vocabulary

- \* Adaptation: A special feature or behavior of an animal that helps it survive and live in its environment.
- \* Camouflage: When an animal's color or pattern matches its surroundings so it is hard to see.
- \* Scales: Small, flat, overlapping plates that cover a reptile's skin and protect its body.
- \* Predator: An animal that hunts other animals for food.
- \* Prey: An animal that is hunted by other animals for food.
- \* Natural Selection: The process where animals with helpful traits are more likely to survive and have babies that inherit those same traits.

## External Resources

Children's Books:

- Chameleon, Chameleon by Joy Cowley (illustrator: Nic Bishop)—A rhythmic story about a chameleon's color changes and camouflage.
- The Lizard and the Sun / La Lagartija y el Sol by Alma Flor Ada—A folktale celebrating diverse animals and nature.
- What Do You Know About Reptiles? by Buffy Silverman—A nonfiction picture book perfect for building background knowledge.

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Teacher Note: This lesson naturally scaffolds toward Fourth Grade standards on animal structures and adaptations while building curiosity about the natural world. Students will benefit from hands-on observation, discussion, and creative application of concepts to new scenarios.