

# Adaptations

AP Environmental Science · Unit 2: The Living World: Biodiversity

## The Teaching Analogy

"Think of a bear going into hibernation like a phone switching to low-power mode. The bear slows its heart rate and drops its body temperature — that's physiological. The decision to den up before winter? That's behavioral. And the thick insulating fur? Structural. Same bear, three adaptation types."

## Key Concept

An **adaptation** is a heritable trait that improves an organism's survival and reproduction in its specific environment. Adaptations arise from natural selection over generations. They fall into three categories: **structural** (physical features), **behavioral** (actions and decisions), and **physiological** (internal biochemical processes).

## AP FRQ Quick Reference — Three Adaptation Types

Type	Definition	Bear Example
Physiological	Internal body chemistry / processes	Slows heart rate, lowers body temp
Behavioral	An action or decision the organism makes	Denning up before winter
Structural	A physical body feature	Thick insulating fur

## Guided Practice

1. A penguin has a thick layer of blubber under its skin to stay warm in Antarctica. Is this a structural, behavioral, or physiological adaptation? Explain how you know.
2. Using the phone analogy, explain why the *decision* to hibernate is different from the body *changes* that happen during hibernation. What type of adaptation is each?
3. Identify one structural, one behavioral, and one physiological adaptation in the same organism of your choice. Justify each classification.

## Extension Activity

Have students choose any organism from their local ecosystem and build a "Three-Lens Card" — one card per adaptation type — each showing the adaptation, its survival benefit, and the environmental pressure that drove it. Encourage students to find organisms where one animal or plant demonstrates all three types, just like the bear. Share cards as a class gallery walk and vote on the most surprising adaptation.