Acclimation and Adaptation

Engagement Activity for “Evolutionary Adaptations of Predators in their Environment” Teaching Module
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ACCLIMATION

SHORT-TERM RESPONSES
• Improve performance in the altered environment
• Occur within minutes of environmental change
• Easily reversible
• Typically involve pre-existing components within biochemical pathway

LONG-TERM RESPONSES
• Improve performance in the altered environment
• May begin within minutes, but is pronounced within days or weeks of environmental change
• Not immediately reversible
• Often lead to a visually different phenotype
ACCLIMATION

Increase in RBC count in mammals inhabiting high elevation environments where there is less oxygen available.
ACCLIMATION

*Amaranthus retroflexus* (Pigweed)

- One species, but metabolism is acclimated to different climates.
- In hot climates (like North Carolina), populations are heat tolerant.
- In colder climates and higher elevations (like northern Canada), they do not have thermal tolerance.
ACCLIMATION

Plethodontid salamanders

Increased metabolic rate with increased temperatures

Psuedacris triseriata

Decreased metabolic rate with decreased temperatures
ADAPTATION

• POPULATIONS become better suited to survive in their habitats
• Occurs over MULTIPLE GENERATIONS
ADAPTATION

PLAYING “POSSUM”   ARTIFICIAL “BIGNESS”
ADAPTATION

RESOURCE CONSERVATION
ADAPTATION

MIGRATION
ADAPTATION

Summer

Winter