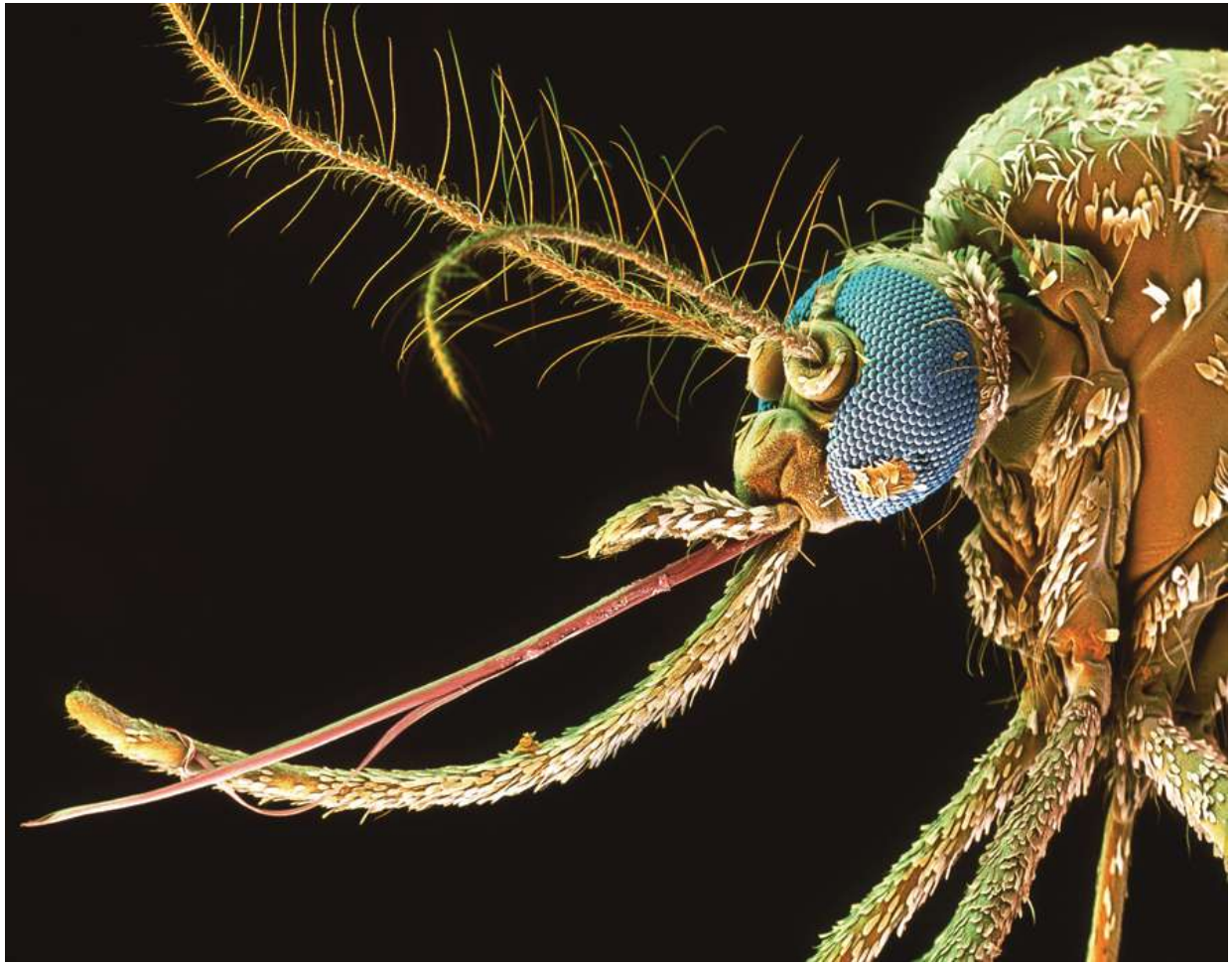
1.2 Unifying Themes of Biology

KEY CONCEPT

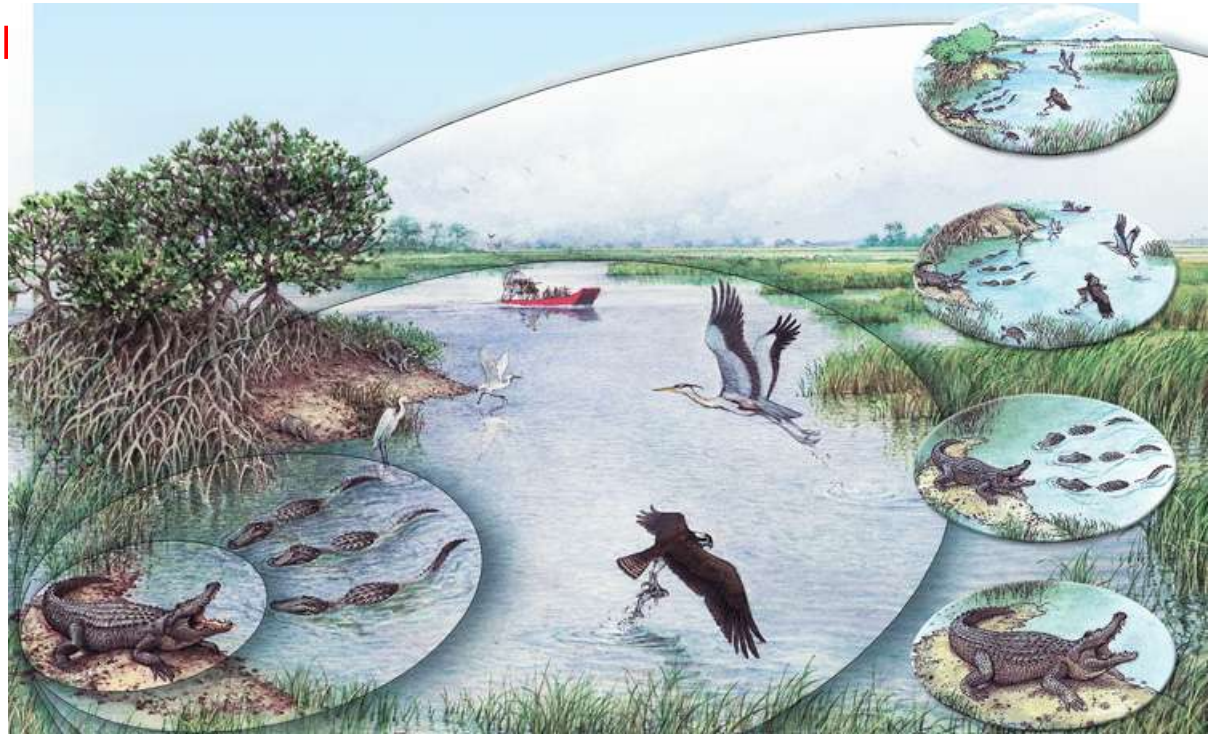
Unifying themes connect concepts from many fields of biology.



1.2 Unifying Themes of Biology

All levels of life have systems of related parts.

- A system is an organized group of interacting parts.
  - A cell is a system of chemicals and processes.
  - **A body system includes organs that interact.**
  - **An ecosystem includes living and nonliving things that inte**



1.2 Unifying Themes of Biology

- Biologists study many different systems.

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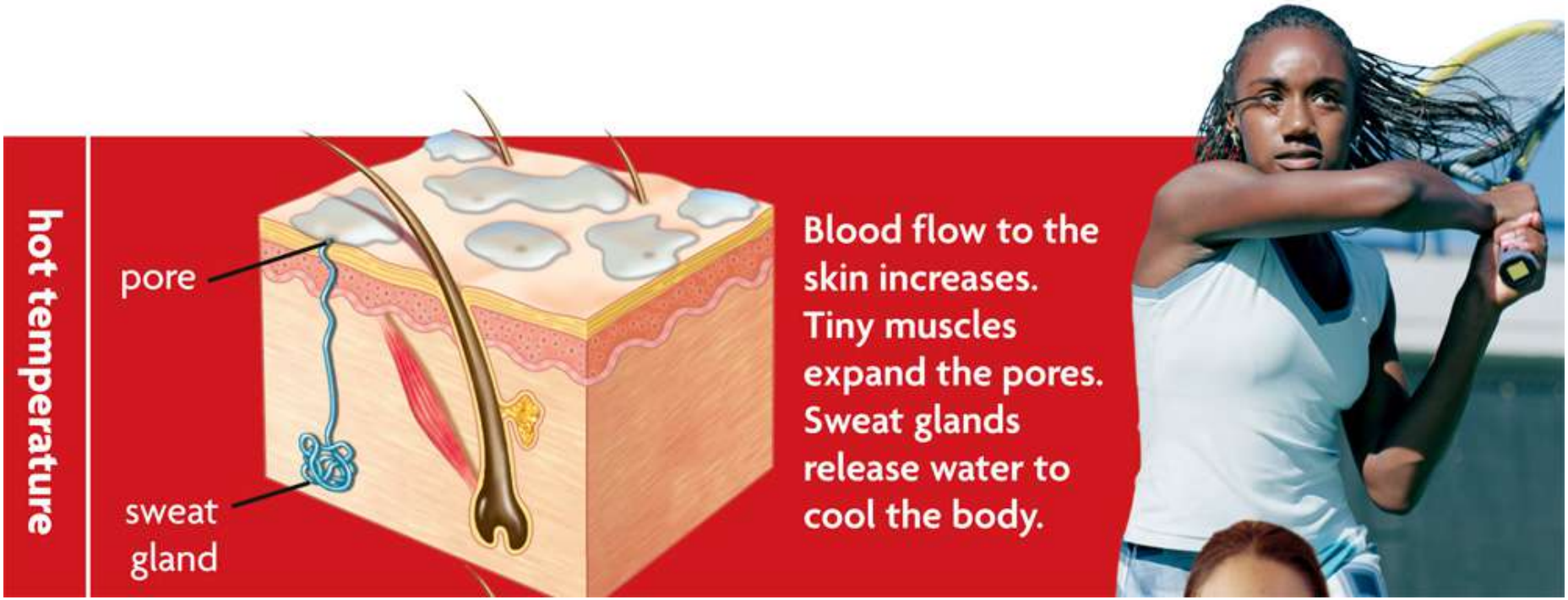
Structure and function are related in biology.

- Structure determines function.
  - Proteins with different structures perform different functions.
  - **Heart muscle cells have a different structure and function than stomach muscle cells**.
  - Different species have different anatomical structures with different functions.

1.2 Unifying Themes of Biology

Organisms must maintain homeostasis to survive in diverse environments.

- **Homeostasis is the maintenance of constant internal conditions.**



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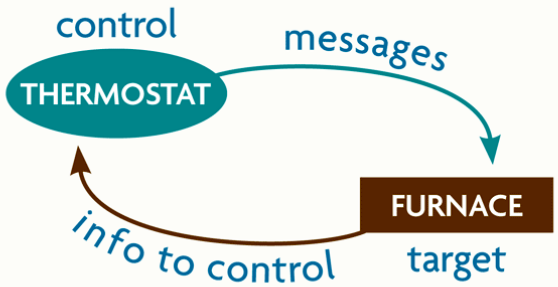
- **Homeostasis is the maintenance of constant internal conditions.**
  - Homeostasis is usually maintained through negative feedback.
  - Negative feedback systems return a condition to its normal (set) point.

VISUAL VOCAB

Thermoregulation maintains a stable body temperature under a variety of conditions, just as a thermostat regulates a furnace. Both mechanisms use feedback to keep temperatures within set ranges.



1.2 Unifying Themes of Biology

- **Behaviors and adaptations can help maintain homeostasis.**

1.2 Unifying Themes of Biology

Evolution explains the unity and diversity of life.

- **Evolution is the change in living things over time.**
  - The genetic makeup of a population of a species changes.
  - Evolution can occur through natural selection of adaptations.
  - **Adaptations are beneficial inherited traits that are passed to future generations.**