

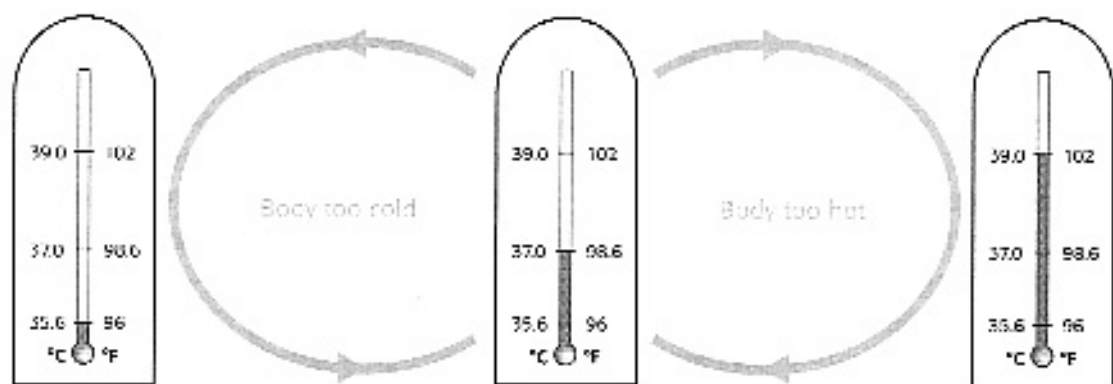
Regulation

How do organisms sense and respond to change?

Organisms must be able to sense changes in their environment and respond to those changes. An environmental change that affects the activity of an organism is a **stimulus**. The way an organism reacts to the stimulus is its **response**.

A stimulus may come from an organism or from the external environment. For example, a rabbit responds to thirst, an internal stimulus, by drinking. It responds to danger, an external stimulus, by fleeing.

Responding to changes in the environment allows organisms to achieve homeostasis. **Homeostasis** is the maintenance of a stable internal environment. Organisms must maintain a stable internal environment in order to survive. A series of responses called **feedback mechanisms** helps an organism return to a state of homeostasis if internal conditions start to change. The diagram below shows how feedback mechanisms regulate human body temperature.



In cold weather, body temperature may fall. The brain signals muscles under the skin to contract and relax repeatedly, or shiver. Shivering produces heat, and the body warms.

Normal human body temperature is 37°C (98.6°F).

During exercise, body temperature may rise. The brain signals sweat glands to produce sweat. When sweat evaporates, the body cools.

Feedback mechanisms regulate human body temperature.

Show What You Know

Explain one example of either an internal or external stimulus and a response that allows an organism to maintain homeostasis.
