Feedback Mechanisms

Organisms use feedback mechanisms to maintain their internal environments and respond to environmental changes.

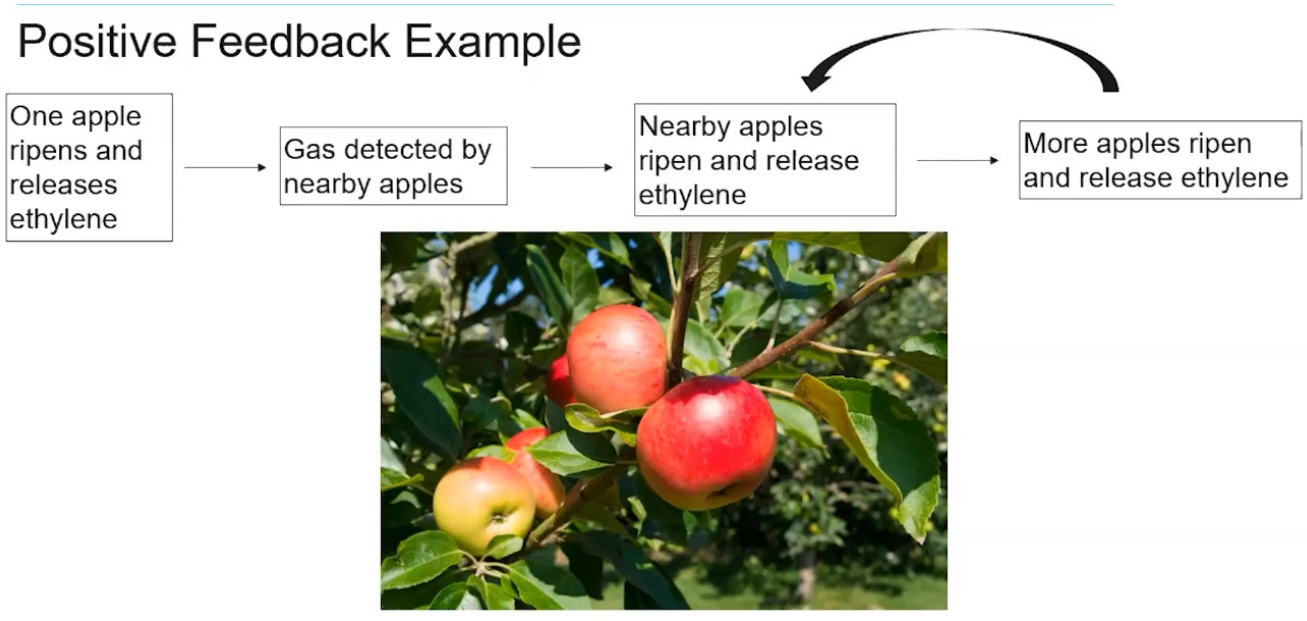
- The internal and external cell environments are constantly changing.
- Homeostasis is the maintenance of a stable environment.
- Feedback mechanisms are processes used to maintain homeostasis by increasing or decreasing a cellular response to an event.

Negative feedback mechanisms maintain homeostasis for a particular cell condition.

- Negative feedback mechanisms maintain homeostasis for a particular homeostasis for a particular condition by regulating physiological processes.
- If a system is disrupted, negative feedback mechanisms return the system back to its target set point.
- These processes operate at the molecular and cellular levels.

Positive feedback mechanisms amplify responses and processes in biological organisms.

- The variable initiating the response is moved farther away from the initial set point, disrupting homeostasis.
- Amplification occurs when the stimulus is further activated, which in turn, initiates an addition response that produces system change.



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Example Question

Air is less dense at very high elevations, so less oxygen is available than in the denser air at sea level. Based on the model in Figure 1, if a person travels from sea level to a high elevation location, which of the following correctly **predicts** the response to the decreased blood oxygen level?

a. More erythropoietin will be secreted from the kidneys, decreasing the production of erythrocytes.
b. More erythropoietin will be secreted from the kidneys, increasing production of erythrocytes.
c. Less erythropoietin will be secreted from the kidneys, decreasing the production of erythrocytes.
d. Less erythropoietin will be secreted from the kidneys, increasing the production of erythrocytes.

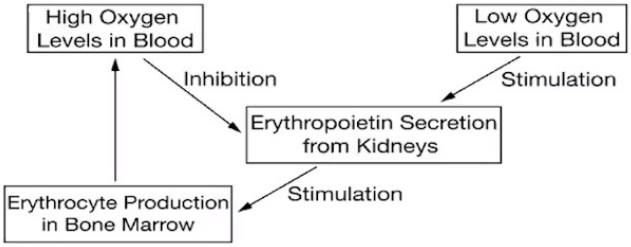

Figure 1 is a proposed model of the feedback system controlling erythrocyte (red blood cell) production.