



Homeostasis Reading Activity

Activity

Each team member is assigned to read one of the three articles on how homeostasis is maintained: 1) your eyes, 2) contractions during the birth process, and 3) turgor pressure in plants. You will have an opportunity to share what you have learned with your team members.

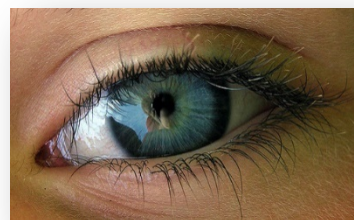
Introduction:

Homeostasis is one of the fundamental characteristics of living things. It refers to the maintenance of the internal environment within tolerable limits. For example, all sorts of factors affect the suitability of our body fluids to sustain life; these include properties like temperature, salinity, acidity, and the concentrations of nutrients and wastes. Because these properties affect the chemical reactions that keep us alive, we have built-in physiological mechanisms to maintain them at desirable levels.

When a change occurs in the body, there are two general ways that the body can respond. In negative feedback, the body responds by stopping and reversing the direction of change. Because this tends to keep things constant, it allows us to maintain homeostasis. On the other hand, positive feedback is also possible. This means that if a change occurs in some variable, the response is to change that variable even more in the same direction. This has de-stabilizing effect, so it does not result in homeostasis. Positive feedback is used in certain situations when relatively rapid change is desirable.

Overall. Negative feedback is far more common than positive feedback.

Readings 1, 2, and 3 are on subsequent pages.





Homeostasis Reading Activity

Activity, continued

Reading 1:

The pupil of the eye responds to changes in light. Light has to reach the back of the eye to allow us to see. However, too much light reaching the back of the eye makes seeing harder and can damage the eye.

When a person enters a dark room, the constriction of the pupil is stopped and the pupils in both eyes will dilate, allowing all the available light to enter the eye. On the other hand, when a person walks outside in bright sunlight, too much light reaches the back of the eye. The pupils in both eyes constrict, allowing only enough light to enter. Constriction and dilation of the pupil is critical to all organisms that use vision. Nocturnal animals, such as jaguars, must be able to use the light of the moon to hunt. On the other hand, diurnal animals such as deer must be able to see predators even in bright light.

Write a claim, provide your evidence by drawing and labeling your graph, and include reasoning to help describe how an organism's eyes are regulated to maintain homeostasis.



Homeostasis Reading Activity

Activity, continued

Reading 2:

When a woman is ready to give birth, the baby's head puts pressure on the uterine wall which sends impulses to the brain to start contractions. The woman's uterus in response will constrict to push the baby into the birth canal, and the uterus will have increasing contractions. This process ebbs and flows so that the baby can slowly move through the birth canal during labor. This also allows the mother's body to go with the contraction in a rhythmic cycle to not stress the mother's body or the baby. Once the uterus has enough strong contractions, the baby is pushed out the birth canal, and the body continues having contractions to get rid of the placenta.

Write a claim, provide your evidence by filling in the diagram, and include reasoning to help describe how the mother's body cycles through labor rhythmically.



Homeostasis Reading Activity

Activity, continued

Reading 3:

The pressure that exists in a plant cell is called turgor pressure. Turgor pressure causes water to move through the cell membrane, either in or out of the cell, to maintain a constant concentration of water and minerals critical to their function. If the concentration of water and some minerals becomes too high, the action is reversed. The transpiration (loss of water) is stopped and additional water enters the cell to correct the problem which causes higher turgor pressure (plant is upright). If the concentration becomes too low, water passes out of the cell (transpiration increases) again to correct the problem by causing lower turgor pressure (plant wilts). If the external environment does not improve, the plant will die.

Write a claim, provide your evidence by filling in the diagram, and include reasoning to help describe how a plant regulates its water and mineral concentrations by using turgor pressure.



Homeostasis Reading Activity

Activity, continued

Claim

Evidence

Reasoning

Sharing Notes Space

Homeostasis Reading Activity

Rubric for writing a scientific explanation

Points Awarded	2	1	0
Claim	Not applicable.	Makes an accurate claim or answers the question.	No claim, or does not answer the question.
Evidence	Cites comparative data, uses labels, and addresses variables.	Cites some, but not all appropriate data or does not use labels or statistical analysis.	No evidence, or cites changes, but does not use data from data table.
Reasoning	Cites the scientifically accurate reason using correct vocabulary and connects this to the claim. Were able to accurately show they understood concept.	Cites a reason, but it is inaccurate or does not support the claim. Reasoning does not use scientific terminology or uses it inaccurately.	No reasoning or restates the claim, but offers no reasoning.
Rebuttal	Rebuttal provides reasons for different data in the class data or outliers in the data. Can also provide relevance to the real world or other uses for the findings.	Rebuttal is not connected to the investigation or is not accurate.	Does not offer a rebuttal.