Homeostasis

The failure of any part of your body can affect the entire system.

All sorts of variables affect an organism’s ability to stay alive.

• These include temperature, food, water, and the level of oxygen.
• All organisms have built-in processes to help them survive when variables change.

In other words, living things can respond to changes in their surroundings to maintain a steady internal environment.

• The process of maintaining a life-supporting system is called homeostasis.

Your body is a living system.

As a living system, your body is organized to use matter and energy to move, grow, and survive.
Why? You need to do these things to stay alive.

Your normal body temperature is 37°C. How do sweating and shivering help you maintain a constant body temperature?

Word Origins of homeostasis

• homeo- from Greek
• homos- meaning “same”-
• stasis meaning “standing”)
• Homeostasis means to maintain the “same standing” or to stay in balance.
• It is the process by which organisms regulate their environment in order to maintain a stable condition.
Our body tries to maintain homeostasis.

- This ability is dependent on a many complex interactions between the various body systems linked by the circulatory system.
- When these interactions do not function properly, a number of problems occur, some of which can be life threatening.

But if one of the individual components fails, a person may die. For example, a person may die:

- from a heart attack - failure of the heart,
- suffocation or pneumonia - from insufficient gas exchange in the lungs,
- shock - from loss of blood volume, or
- a stroke - sometimes caused by an insufficient gas exchange with brain tissues due to the blockage of blood vessels

Today, you will examine the role the chemical serotonin plays in regulating appetite in an effort to maintain homeostasis.

- Terms to know:
  - Neurotransmitter - transmits nerve impulses across a synapse
  - Serotonin - neurotransmitter involved in sleep and depression and memory

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