Homeostasis and the Endocrine System

The nervous system and the endocrine system complement each other and communicate with each other to maintain **homeostasis**.

Homeostasis - the process by which a constant internal environment is maintained despite changes in the environment.

(maintaining a constant balance, or steady state, through a series of adjustments)

Also referred to as **dynamic equilibrium** - a state of stability within fluctuating limits

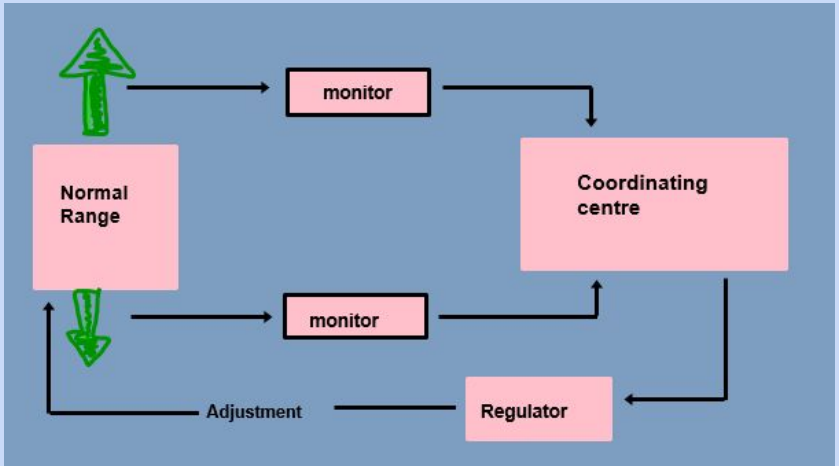
All homeostatic control systems have three functional components:

1 a **receptor** - located in the organs - detects levels

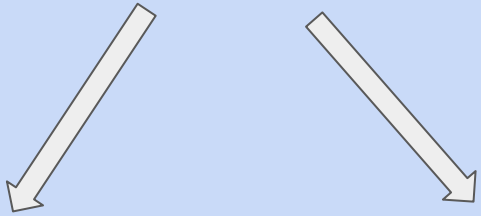
2 a **coordinating centre** - signaled by the receptor once an organ begins to operate outside its normal limits - communicates to appropriate effector

3 an **effector** - receives information from the coordinating centre - helps to restore the normal balance

This is crucial for life to exist.



Mechanisms that make adjustments to bring the body back within an acceptable range are referred to as **feedback loops.**

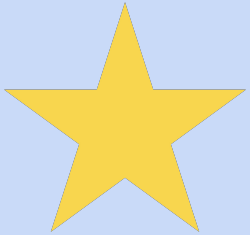


Negative feedback

- The process by which a mechanism is activated to restore conditions to their original state.
- Triggers the control mechanism to counteract any further changes in the same direction. By doing so they prevent small changes from becoming too large.
- Most of our homeostatic mechanisms operate on the principle of negative feedback.

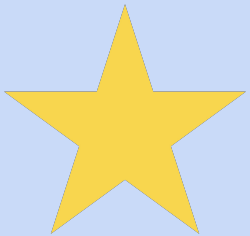
Positive feedback

- The process by which a small effect is amplified
- Less common in the body
- Move the controlled variable away from the steady state.
- It allows a discrete physiological event to be accomplished rapidly. Once this event is accomplished, the feedback system stops.



Negative feedback systems are designed to resist change.

Ex., maintaining body temperature
Blood glucose levels
pH levels in the blood
Etc ……...



Positive feedback systems reinforce change.

Ex., a baby nursing
Contractions during labour
Blood clotting
There is one you will learn about in the menstrual cycle :)

Hormones help your body maintain homeostasis through negative feedback.

Hormones are released by the endocrine system. The endocrine system is made up of the following glands: