# Homeostasis

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- All organisms and cells require specific **internal conditions** in order to function. This is mostly due to the continuous **enzymatic** reactions that occur in every cell that will only work under special **conditions**.

**" Homeostasis is the regulation of condition inside the body and cells to maintain a stable internal environment in response to changes in both e internal and external condition "**

- Examples

1. Maintaining blood glucose concentration.
2. Maintaining body temperature.
3. Maintaining water levels.

- **Autonomic Control Systems**

The process in which the body maintains the conditions of the **internal** environment automatically without thought is called Autonomic Control system

- **Main Components of Autonomic control system**:

Autonomic control system consist of 3 main components

1. **Receptors:**

It detect **stimuli** (changes in the environment) and send information to **coordination centres**

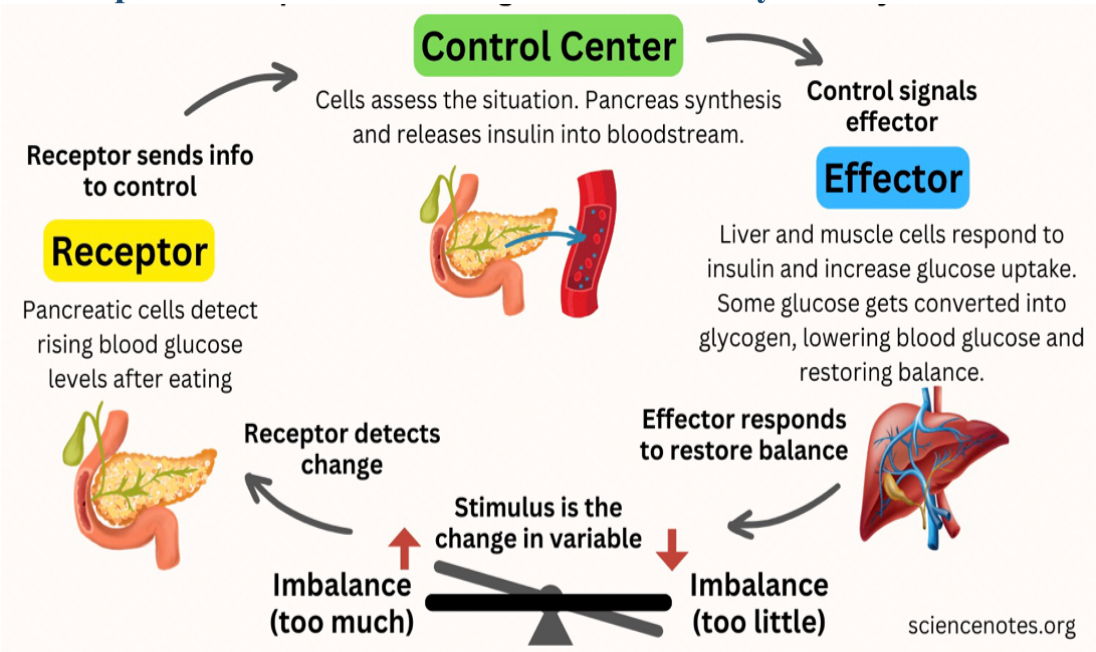
2. **Coordination centres:**

**It** process the information and organise the **response**. Coordination centres include the **brain**, **spinal cord** and **pancreas**.

3. **Effectors:**

It produce a **response.** These responses may be **chemical** (e.g. hormones secreted from glands) or **nervous** (e.g. electrical impulses causing muscle contraction).

The **autonomic control system** works using **negative feedback**.

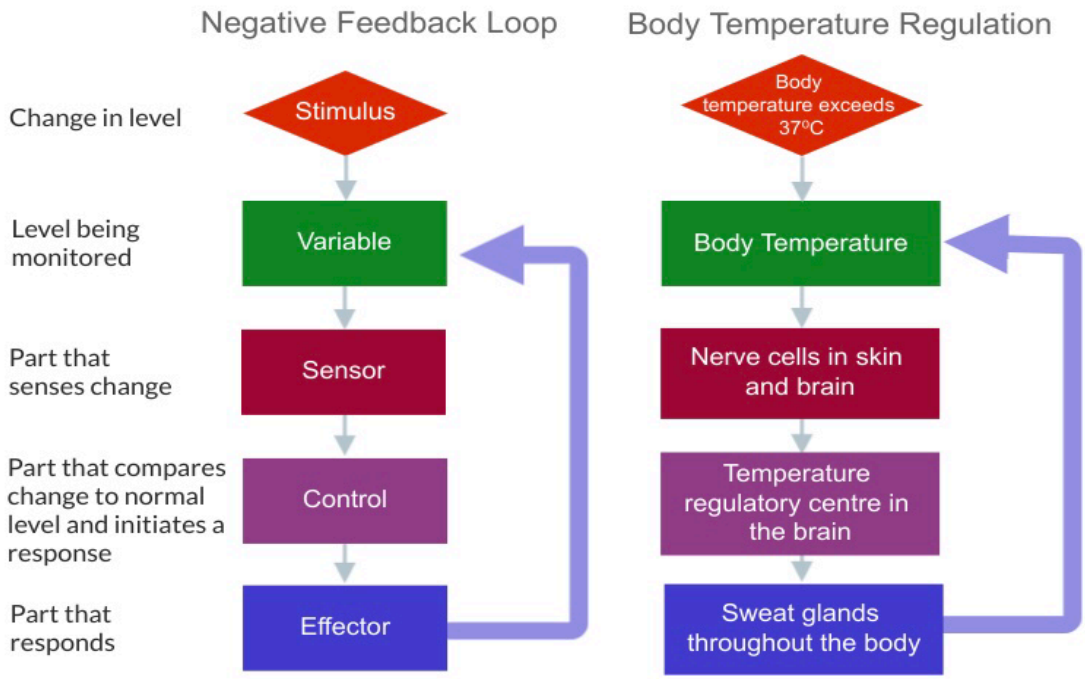


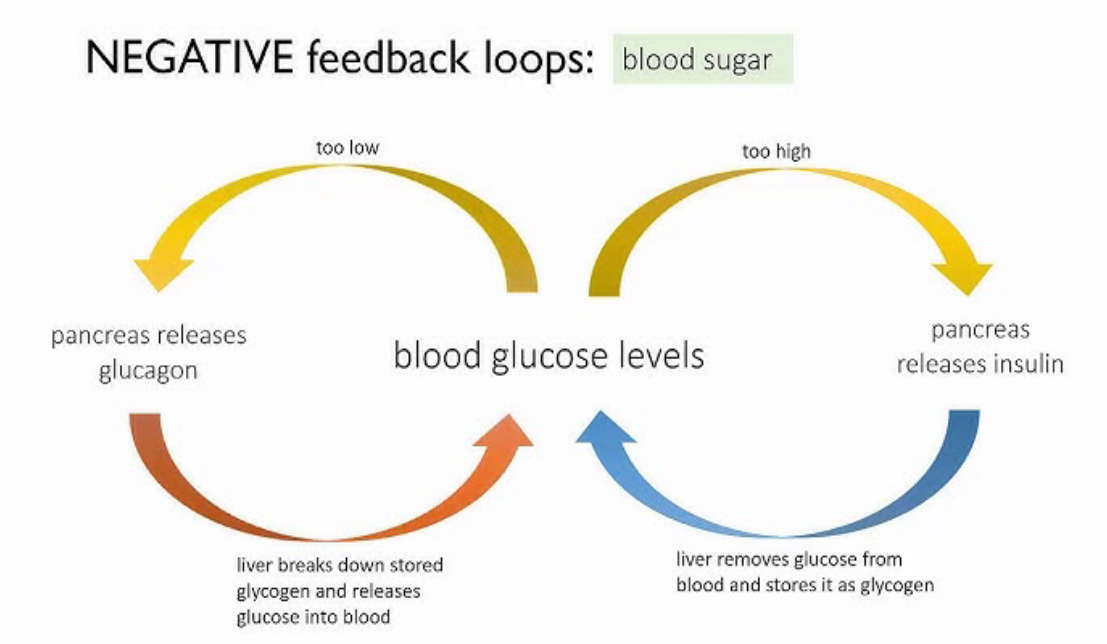

# Negative Feedback counteracts changes

- Your automatic control system keep your internal environment stable using a mechanism called. Negative feedback.

- In general this works by:

  - if the level of something rises, control systems reduce it again
  - if the level of something falls, control systems raise it again




NEGATIVE feedback loops: blood sugar
too low
too high
pancreas releases glucagon
blood glucose levels
pancreas releases insulin
liver breaks down stored glycogen and releases glucose into blood
liver removes glucose from blood and stores it as glycogen