



SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES



Coimbatore -641035

**COURSE NAME: HUMAN ANATOMY & PHYSIOLOGY
(BP301 T)**

YEAR : I SEM/I YEAR

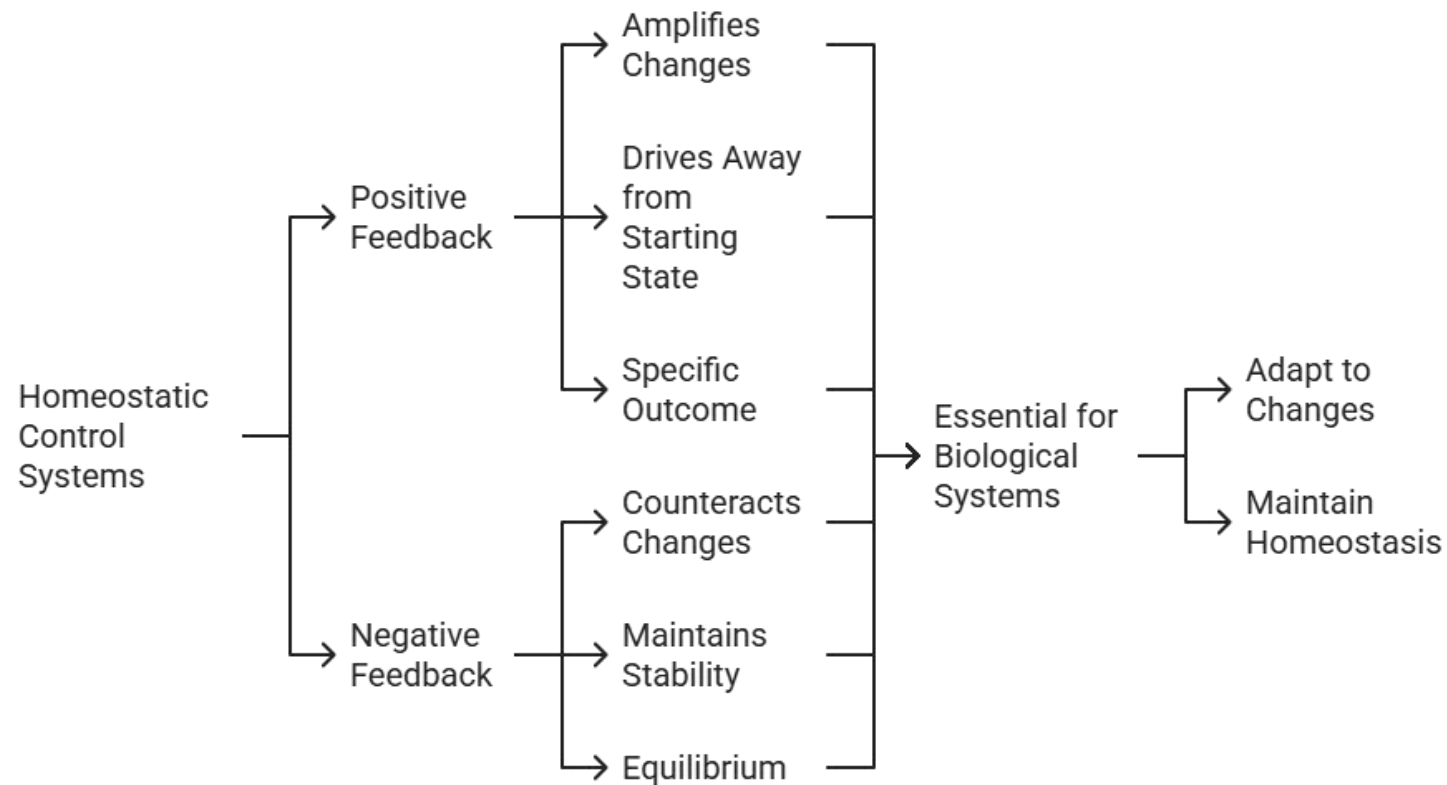
TOPIC 4 : HOMEOSTASIS

DESIGN THINKING IN HOMEOSTASIS

- ✓ **Empathize:** Deeply understand the challenges, needs, and experiences of body cells, tissues, and organs in maintaining balance.
- ✓ **Define:** Reframe the problem based on insights from the empathize phase and establish clear context.
- ✓ **Ideate:** Brainstorm and explore a wide range of ideas and potential solutions, including feedback mechanisms or regulatory systems.
- ✓ **Prototype:** Simulate and build models of homeostatic controls to enhance understanding and application.

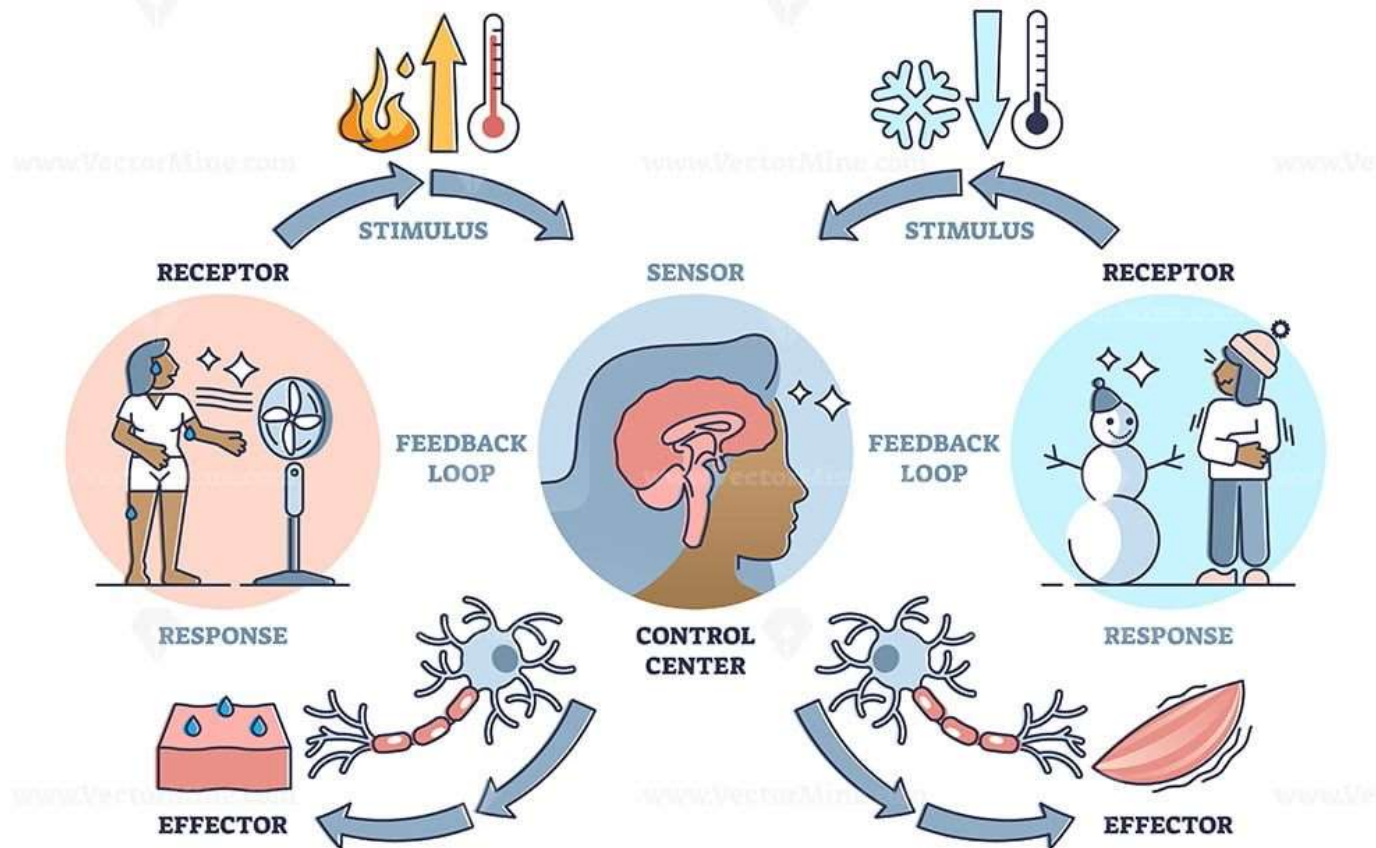
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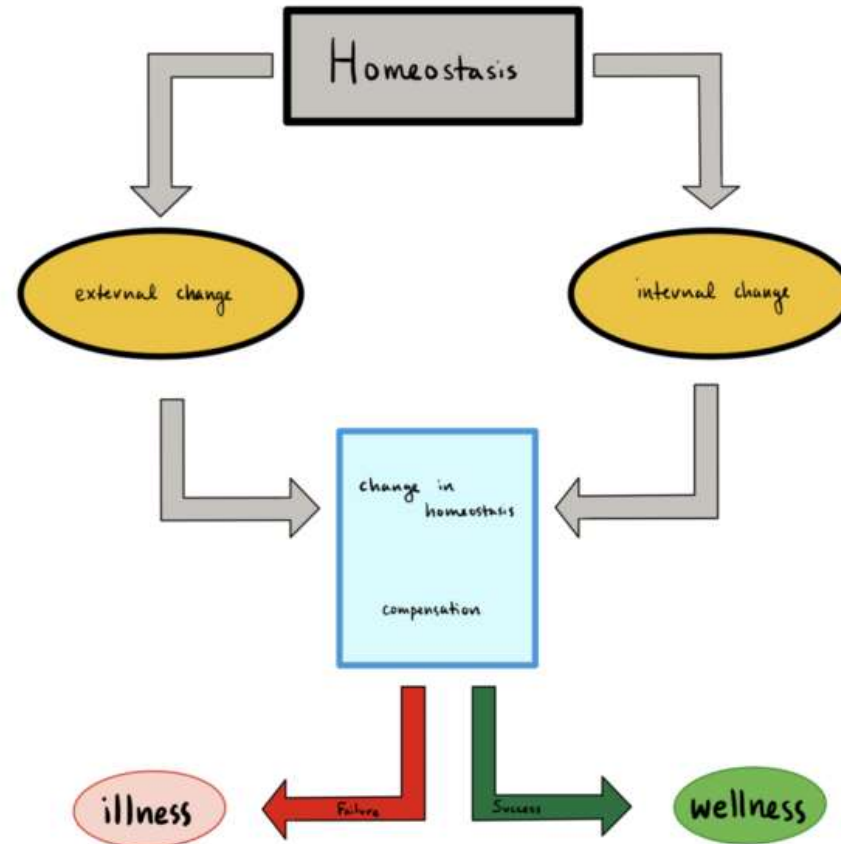
Homeostatic Control Systems



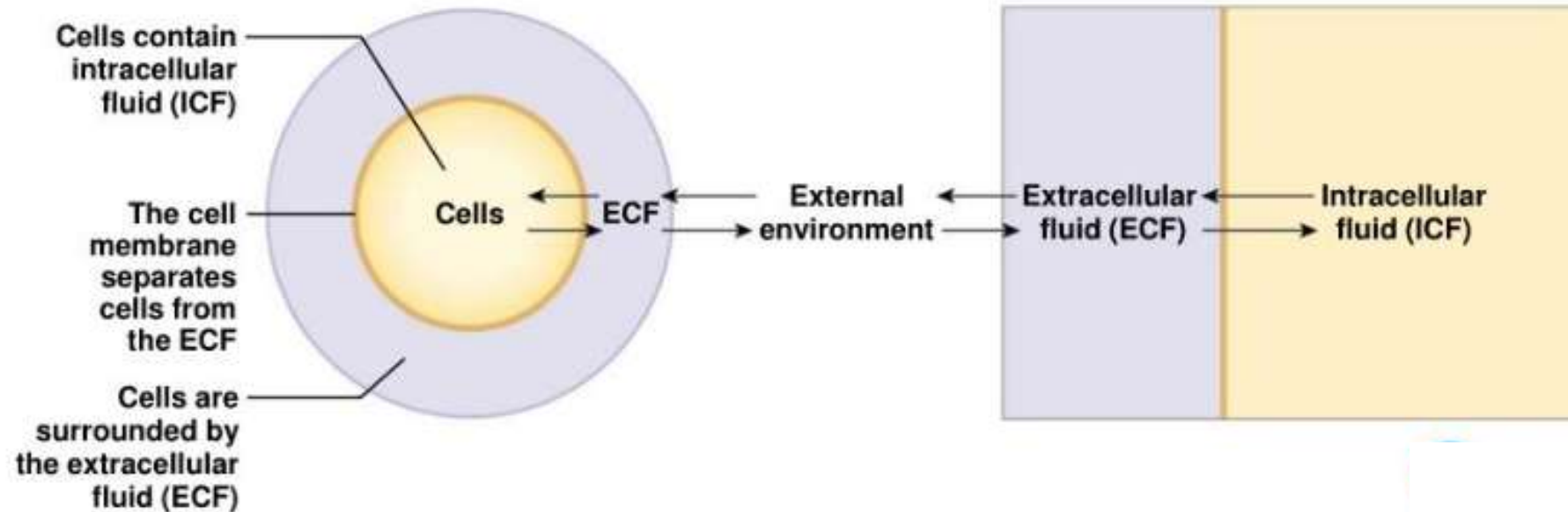
HOMEOSTASIS

HOMEOSTASIS



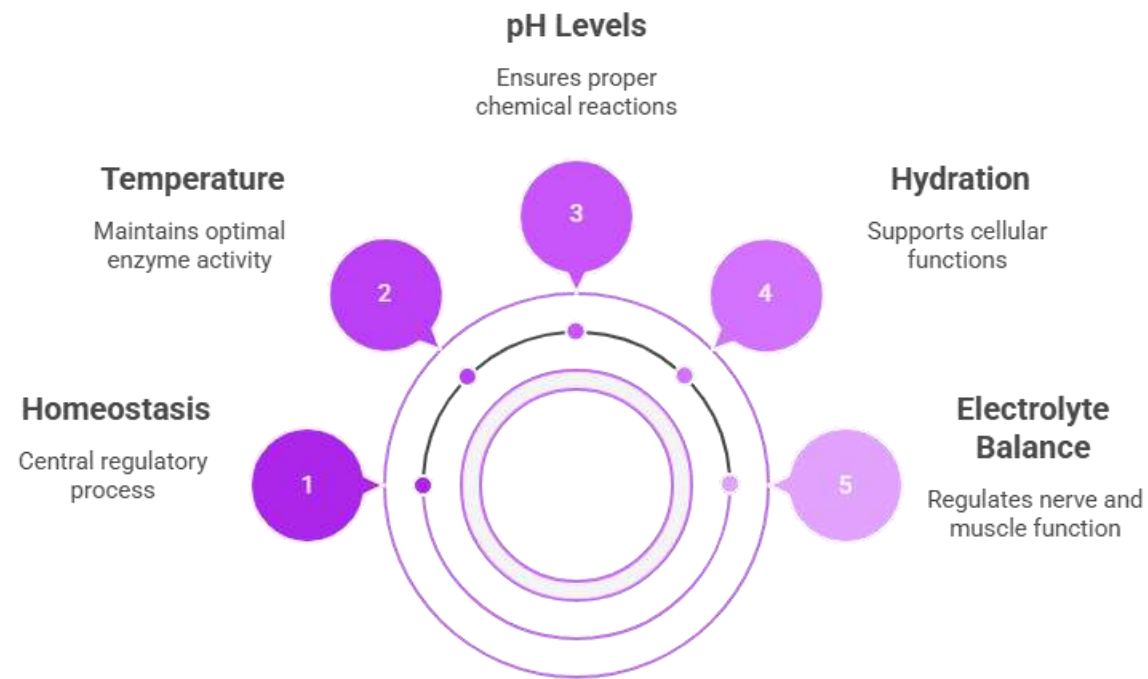


THE INTERNAL & EXTERNAL ENVIRONMENT



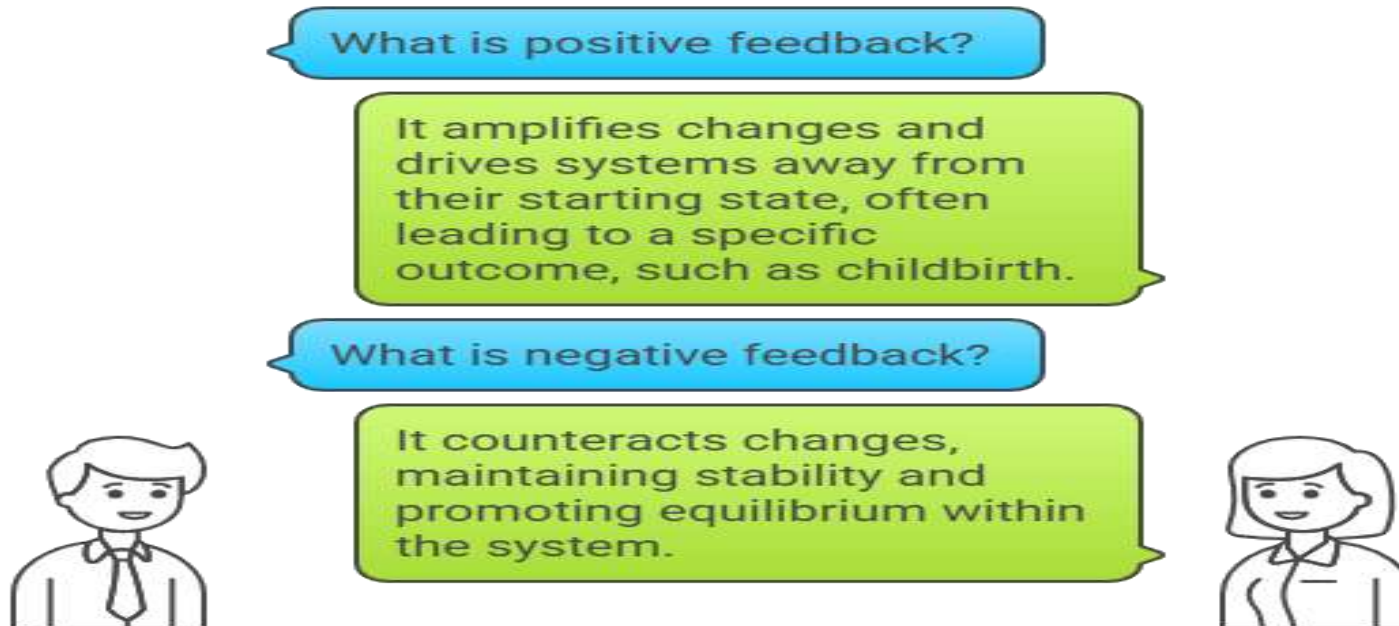
IMPORTANCE OF HOMEOSTASIS

Homeostatic Regulation

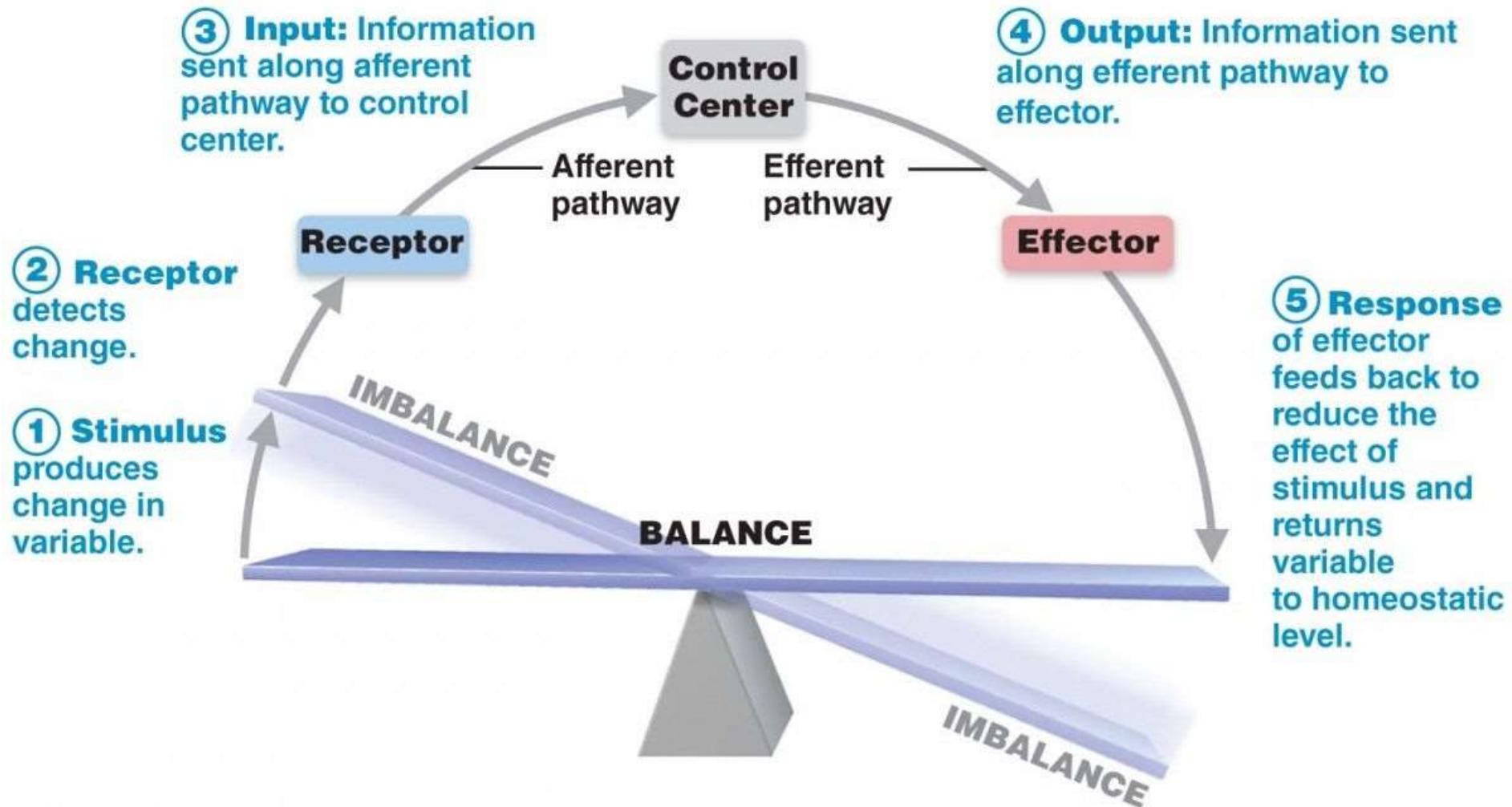


TYPES OF FEEDBACK MECHANISMS

Positive vs. Negative Feedback in Homeostasis

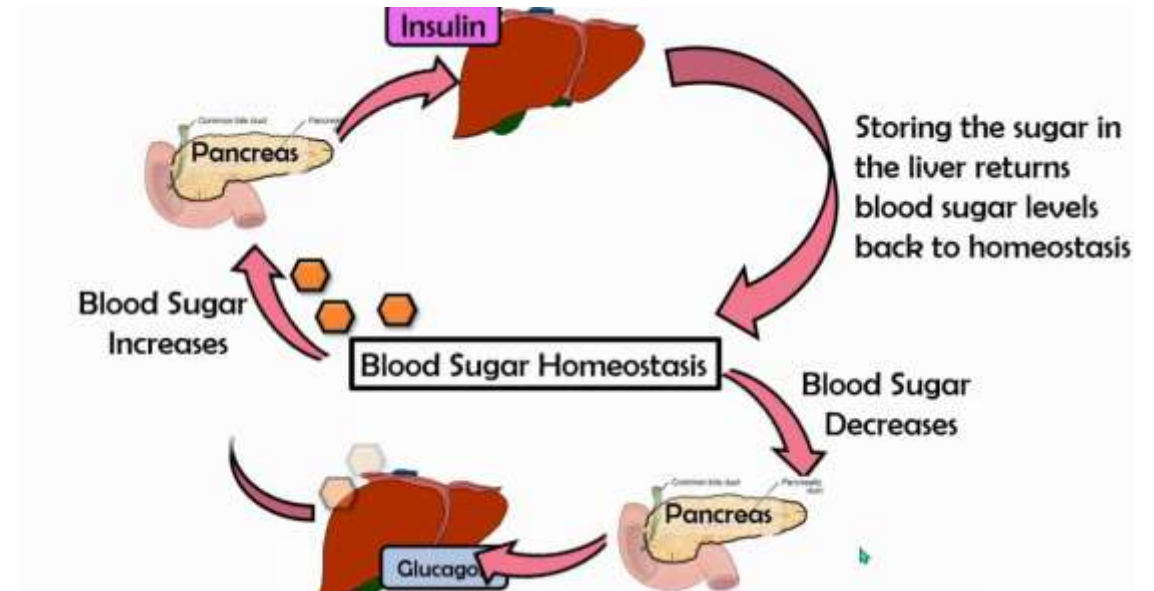
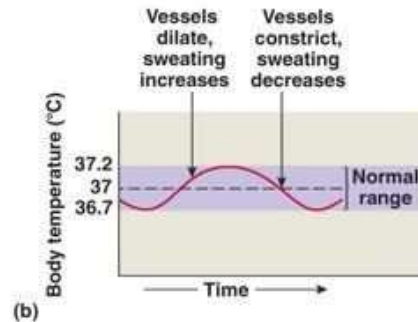
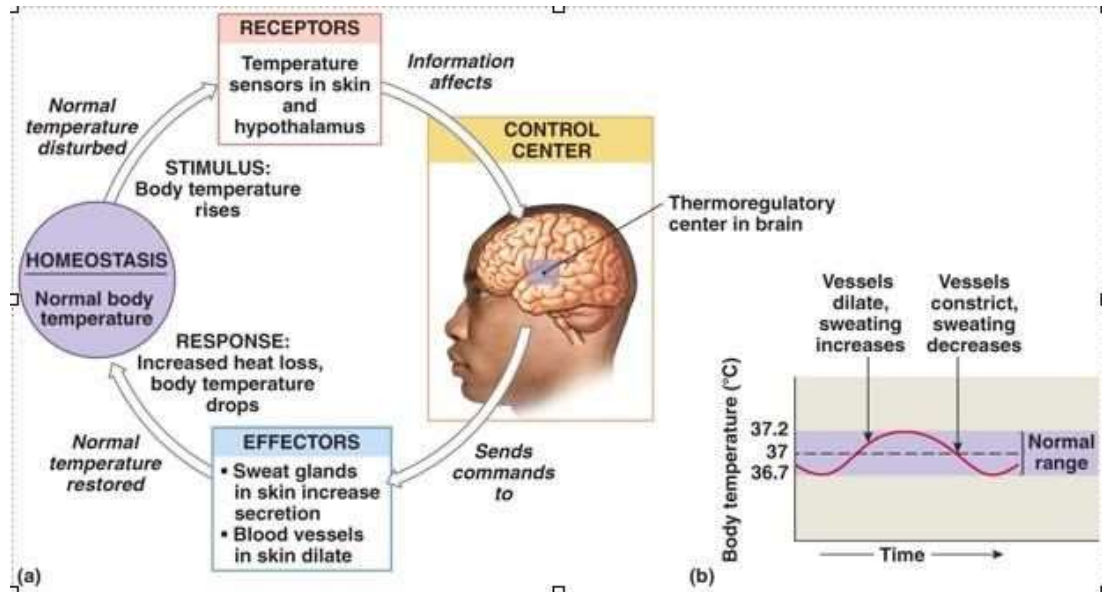


COMPONENTS OF HOMEOSTATIC CONTROL



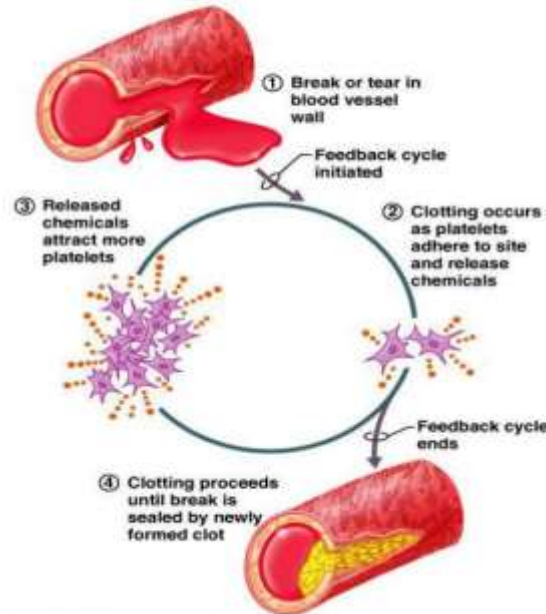
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NEGATIVE FEEDBACK MECHANISMS



POSITIVE FEEDBACK MECHANISMS

Positive Feedback Mechanisms



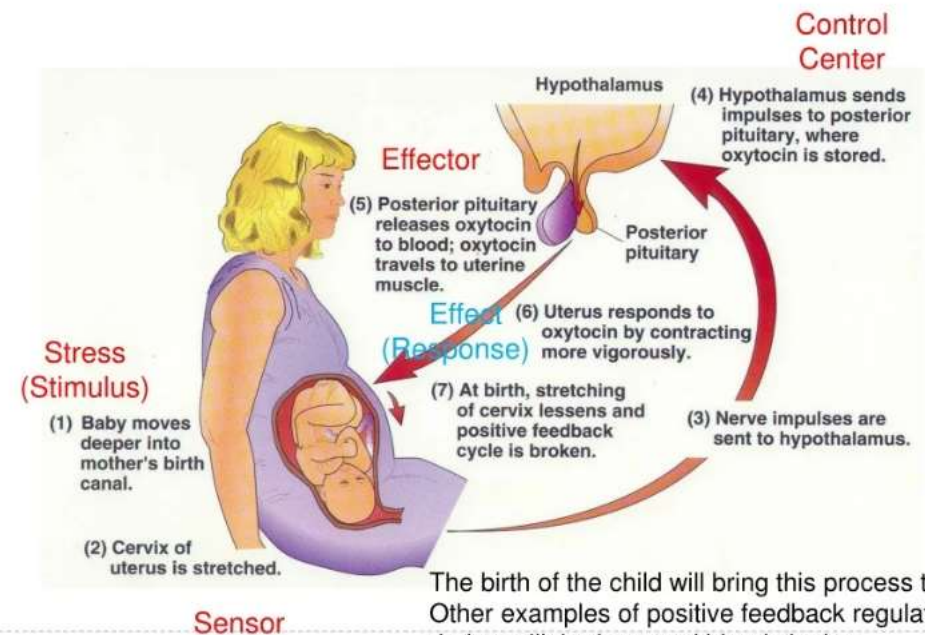
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Examples:

– Blood clotting:

- Blood clotting is a normal response to a break in the lining of a blood vessel
- 1. Once vessel damaged has occurred
- 2. Blood elements called **platelets** immediately begin to cling to the injured site
- 3. Platelets release chemical that attract more platelets
- 4. This rapidly growing pileup of platelets initiates the sequence of events that finally forms a **clot**

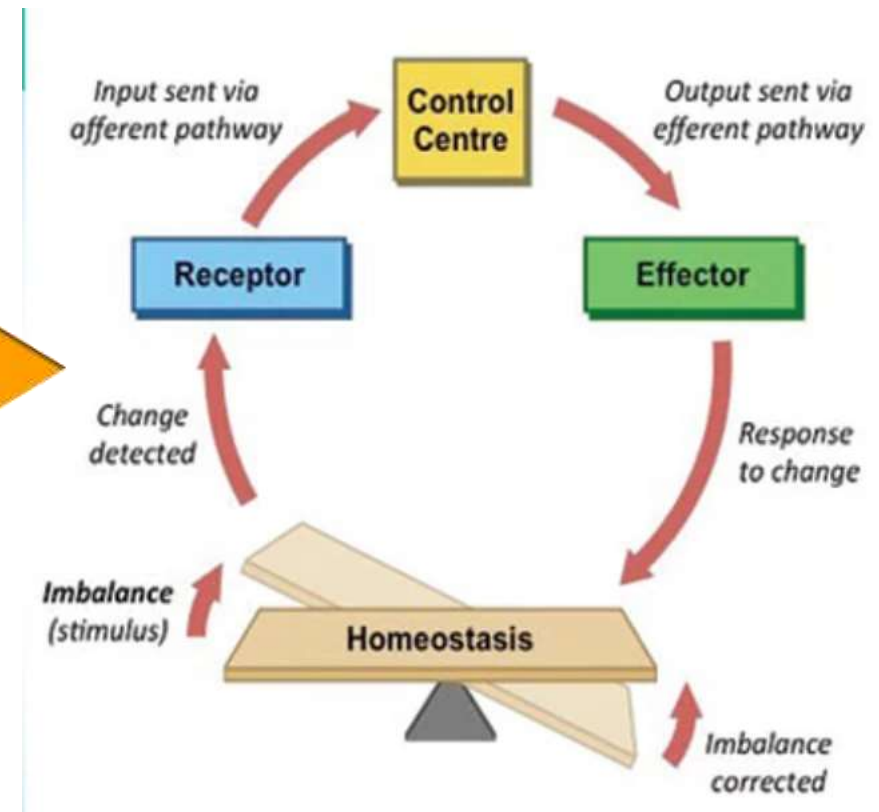
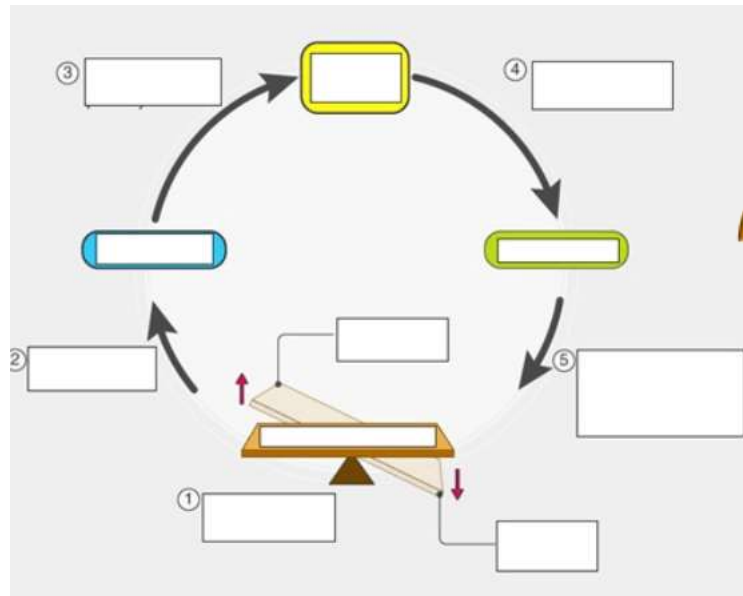
Positive Feedback - Childbirth



The birth of the child will bring this process to a close. Other examples of positive feedback regulation occur during milk letdown and blood clotting.



CLASS ASSESSMENTS



SUMMARY

- ✓ Homeostasis is a fundamental process that is essential for the survival and proper functioning of living organisms.
- ✓ By maintaining a stable internal environment, organisms can optimize cellular function and adapt to changing external conditions.
- ✓ Disruptions in homeostasis can lead to various health problems and diseases, highlighting the importance of maintaining this delicate balance.
- ✓ Understanding the principles of homeostasis is crucial for understanding physiology and disease processes.

REFERENCE

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- ✓ Ross and Wilson anatomy and physiology in health and illness, Anne Waugh & Allison Grant.
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