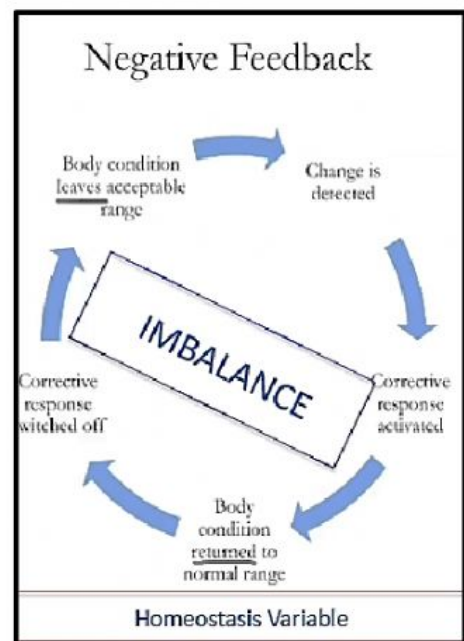


DID YOU KNOW:

- Body systems are interrelated and the correct functioning of one system depends on and influences **homeostasis** in another system.
- **Negative** & **Positive** feedback mechanisms help regulate and maintain homeostasis for our survival.
- Other animals have body systems that have similar structures and functions.
- **Regulated** body conditions are necessary for:
 - Nutrient Absorption
 - Reproduction
 - Defense from injury/illness



Nutrient Absorption

Nutrient Absorption: Food is broken down mechanically and chemically to absorb vitamins and minerals

The following body systems are involved in Nutrient Absorption. **Read** how each system is involved. **Match the correct body system with its role.**

Circulatory-transport of nutrients

Digestive- breaking down of food into smaller particles so it can be absorbed and used by cells

Endocrine-control of metabolism

Muscular-movement of food

Skeletal- storage for mineral reserve



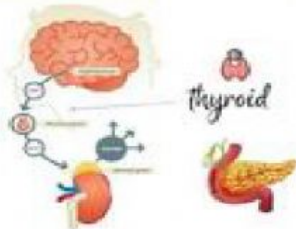
1) Where Nutrient Absorption begins:



2) The system that transports nutrients:



3) The system that moves the food



4) The system responsible for metabolism:



5) The system responsible for mineral storage:

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Reproduction

Reproduction: The endocrine, nervous, muscular, and reproductive systems work together to produce offspring.

A Positive Feedback Mechanism: Example: In childbirth, the nervous system produces hormones to INCREASE contractions. The Body works to INCREASE a stimulus, which takes the body out of homeostasis.

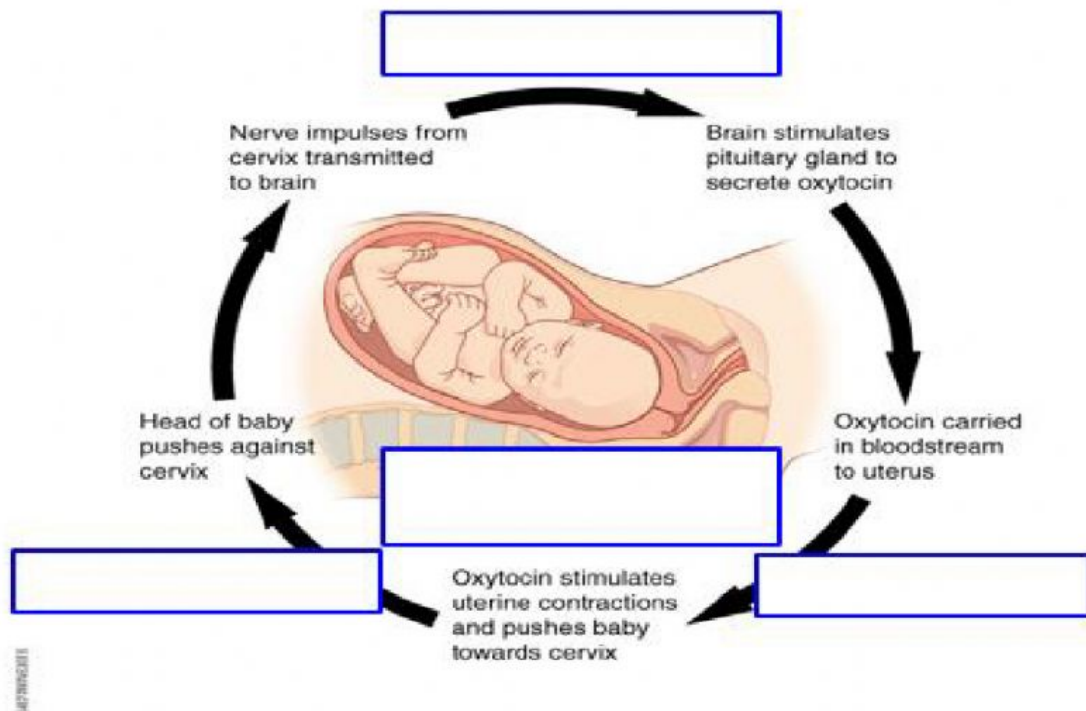
The following body systems are involved in Nutrient Absorption. **Read** how each system is involved. **Match the correct body system with its role.**

Reproductive- Primary reproductive organs, gonads, such as the ovaries and testes.

Endocrine- production of hormones such as oxytocin during pregnancy.

Muscular- muscle contractions allow baby through birth canal.

Nervous- stimulates the pituitary gland to produce hormones.









Defense From Injury

Show how each body system helps defend from injury.

Match the Body System with its role in defending the body from injury.



System:	Function:	Picture:
	Blood flow TRANSPORTS white blood cells to injury site.	
	Production of white blood cells.	
	Allows reflex response to MOVE away from object.	
	<u>Fight or Flight Response</u> Recognizes danger and reacts accordingly.	
	Adrenaline Rush	
	Increases breathing rate.	

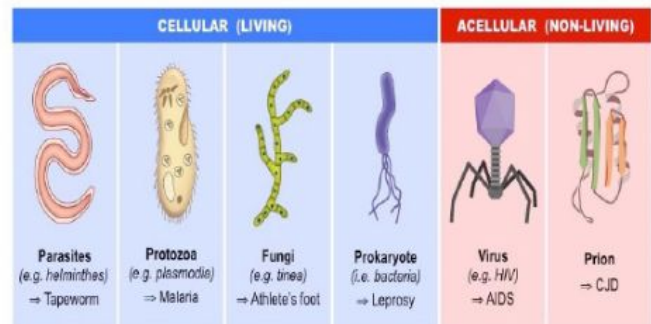
Defense from Illness (Part A)

At some point in our life we all get infected by **Pathogens**.

A pathogen is a Disease causing agents which can be cellular or acellular (Viruses, bacteria, parasites).

Identify how each body system helps defend from illness.

Types of Pathogens



System:	Function:	Picture:
	Skin, hair nails. The body's largest organ and first line of defense. Regulates body temp	
	Mucous, nasal hairs, coughing sneezing all provide physical barriers to pathogens.	
	Stomach acid kills pathogens commonly found in food particles.	
	Blood transports defensive molecules, such as white blood cells, antibodies to site of pathogen.	
	Phagocytes and Lymphocytes attack and destroy pathogens. Adaptive response leads to immune memory.	







Defense from Illness (Part B)






At some point in our life we all get infected by **Pathogens**.

A pathogen is a Disease causing agents which can be cellular or acellular (Viruses, bacteria, parasites).

Identify how each body system helps defend from illness.

Types of Pathogens

CELLULAR (LIVING)				ACELLULAR (NON-LIVING)	
					
Parasites (e.g. helminthes) → Tapeworm	Protozoa (e.g. plasmodia) → Malaria	Fungi (e.g. tinea) → Athlete's foot	Prokaryote (i.e. bacteria) → Leprosy	Virus (e.g. HIV) → AIDS	Prion → CJD

System:	Function:	Picture:
	Removal of waste from the body.	
	This system is where white blood cells are made.	
	This system is responsible for movement. When you vomit, the stomach muscles contract.	
	This system produces hormones necessary for defense.	
	In females especially, there is innate defense from illness in the reproductive tract.	

Multiple Choice:

Question 1: How do the circulatory and immune system work together to respond to injury.

- A. Increased blood flow kills healthy cells which prevents infection at the site of the injury.
- B. Increased blood flow removes infected cells from the body at the site of the injury.
- C. Increased blood flow carries white blood cells to the site of the injury.
- D. Increased blood flow allows for an increase in the exchange of O₂ and CO₂ at the site of the injury.

Question 2: Based on the answer you chose in Question 1, is this process an example of regulation, nutrient absorption, reproduction, or defense from injury/illness.

- A. Regulation
- B. Nutrient absorption
- C. Reproduction
- D. Defense from injury
- E. Defense from illness

Question 3: The picture shows bean-shaped glands called **nodes**. The clusters of cells in nodes include macrophages that break down viruses and other potentially harmful materials. Nodes also contain cells that produce protein particles capable of capturing harmful materials that flow in tissue fluid through the nodes. Different parts of the body are drained by nodes in different regions of the body.

Which body systems are directly responsible for regulating these nodes and protecting the body from harmful materials in tissue fluid?

- G. Immune and lymphatic systems
- H. Digestive and nervous systems
- I. Endocrine and digestive systems
- J. Circulatory and nervous systems

