SNS COLLEGE OF ALLIED HEALTH SCIENCE

Affiliated to The Tamil Nadu Dr. M.G.R Medical University, Chennai

DEPARTMENT OF PHYSICIAN ASSISTANT

COURSE NAME : PHYSIOLOGY

UNIT : INTRODUCTION TO PHYSIOLOGY

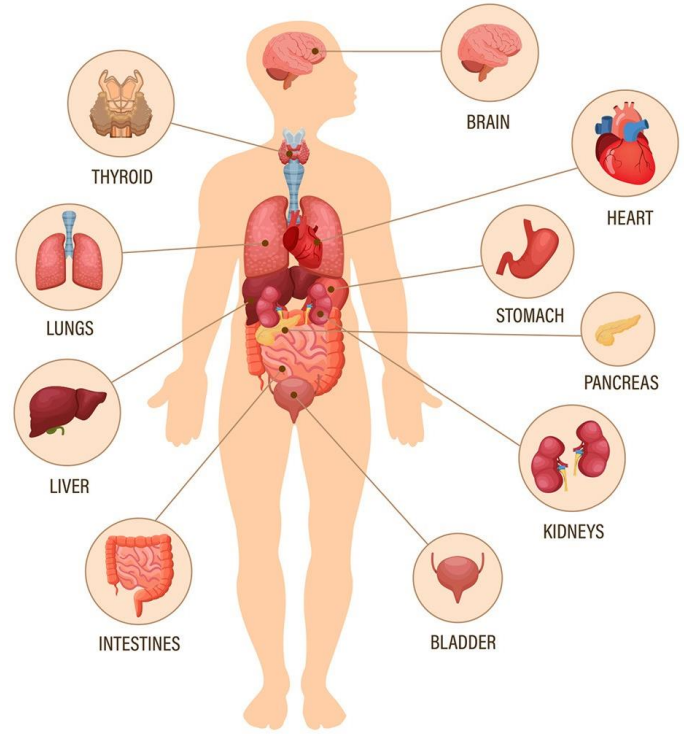
TOPICS : INTRODUCTION, IMPORTANCE AND BRANCHES

FACULTY NAME : Ms. SINEKA M

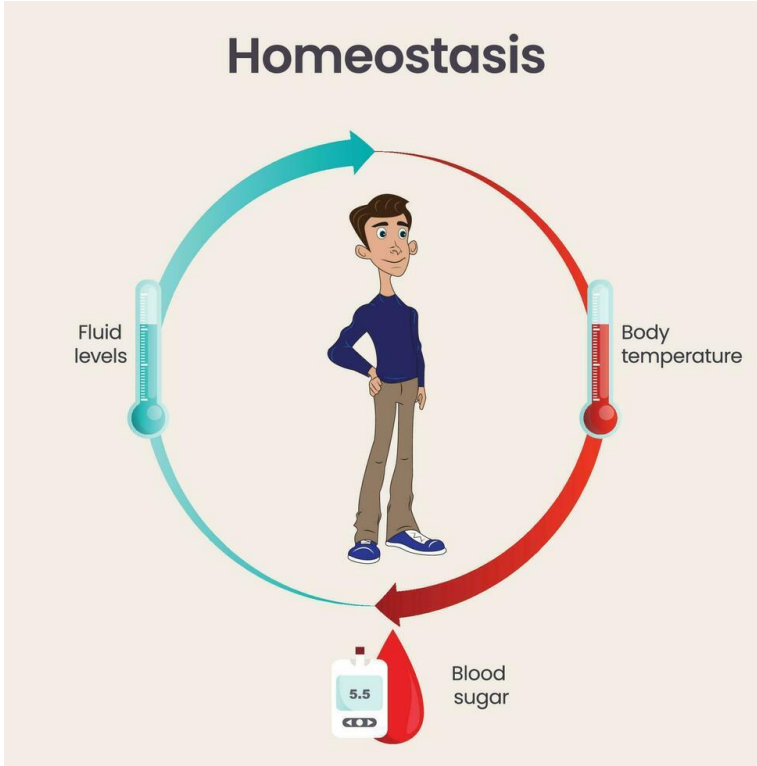
INTRODUCTION (Define)

- Physiology is the branch of biology that studies the **normal functions and mechanisms of living organisms.**
- Focusing on how cells, tissues, organs, and organ systems carry out the chemical and physical processes essential for life.

- Physiology explores how biological systems such as the cardiovascular, respiratory, nervous, muscular, digestive, endocrine, immune, urinary system
- And reproductive systems function individually and in concert.

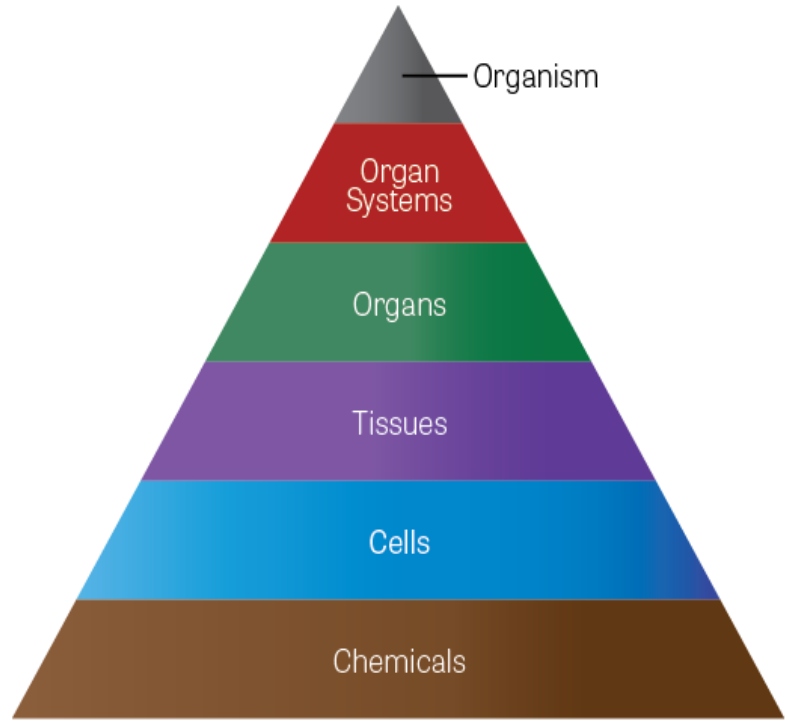


- It aims to understand both the microscopic (molecular and cellular) and macroscopic (organ and system) levels.
- Revealing how processes like metabolism, contraction, secretion, and homeostasis are regulated.



LEVELS OF ORGANIZATION

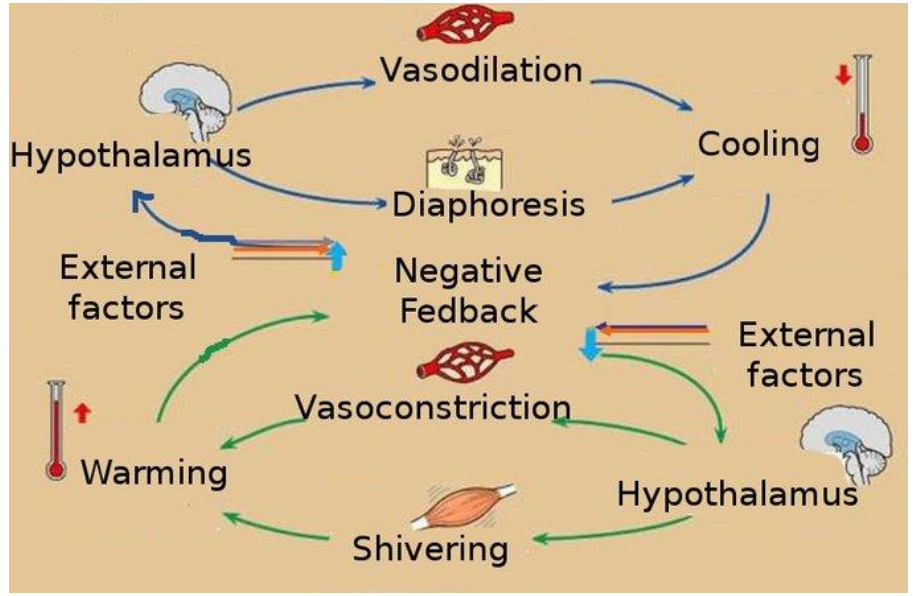
- The human body is organized into several levels: chemical (atoms and molecules), cellular, tissue, organ, organ system, and organism.
- Each level builds upon the previous one, from molecules forming cells, to tissues, then organs, organ systems, and finally, the complete organism.



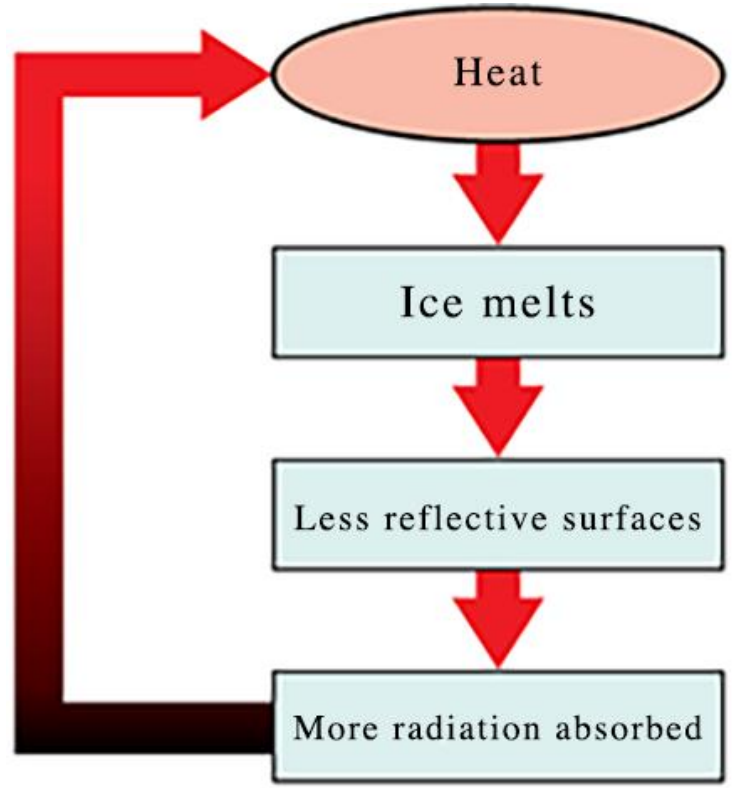
BASIC PRINCIPLES (Empathy)

Homeostasis:

- A core concept in physiology, referring to the body's ability to maintain a stable internal environment despite external changes using complex feedback mechanisms.

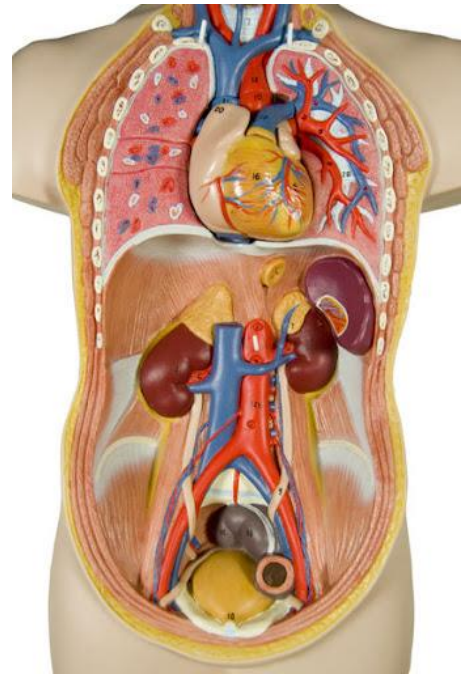


- **Feedback Loops:** Physiology examines how negative and positive feedback mechanisms regulate body systems.
- **Transport Mechanisms:** It studies passive and active transport across cell membranes and how substances are exchanged within and between cells and tissues.

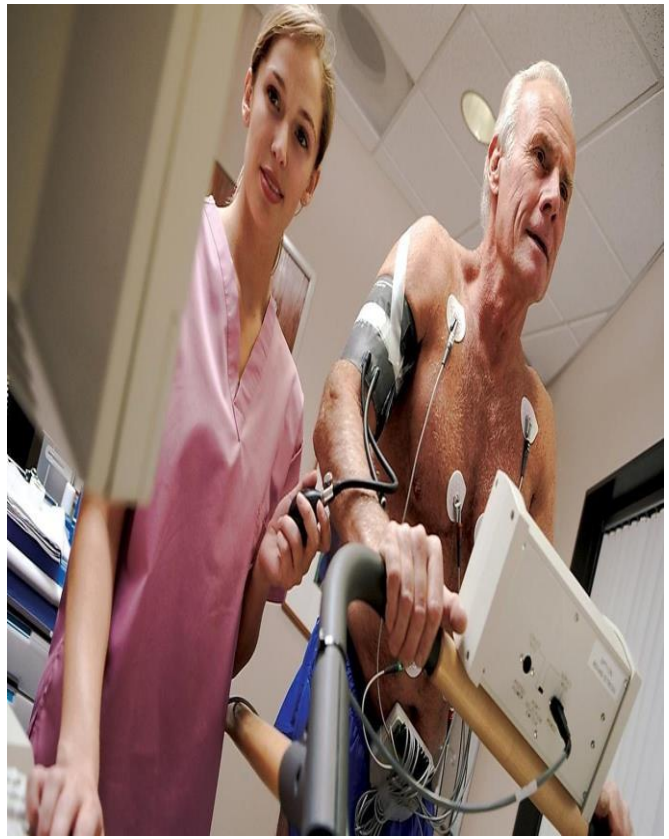


BRANCHES

- **Cellular Physiology:** Focuses on the functions of individual cells and their interactions, including cell signaling and metabolism.
- **Systems Physiology:** Examines how different organ systems work together to maintain overall body function.
- **Pathophysiology:** Studies the functional changes that occur during disease states, which helps in understanding illness and developing treatments.



- **Comparative Physiology:** Compares the physiological processes across different species, offering insights into evolution and adaptation to diverse environments.
- **Applied Physiology:** Applies physiological knowledge to specific areas such as exercise physiology, environmental physiology, and clinical physiology.



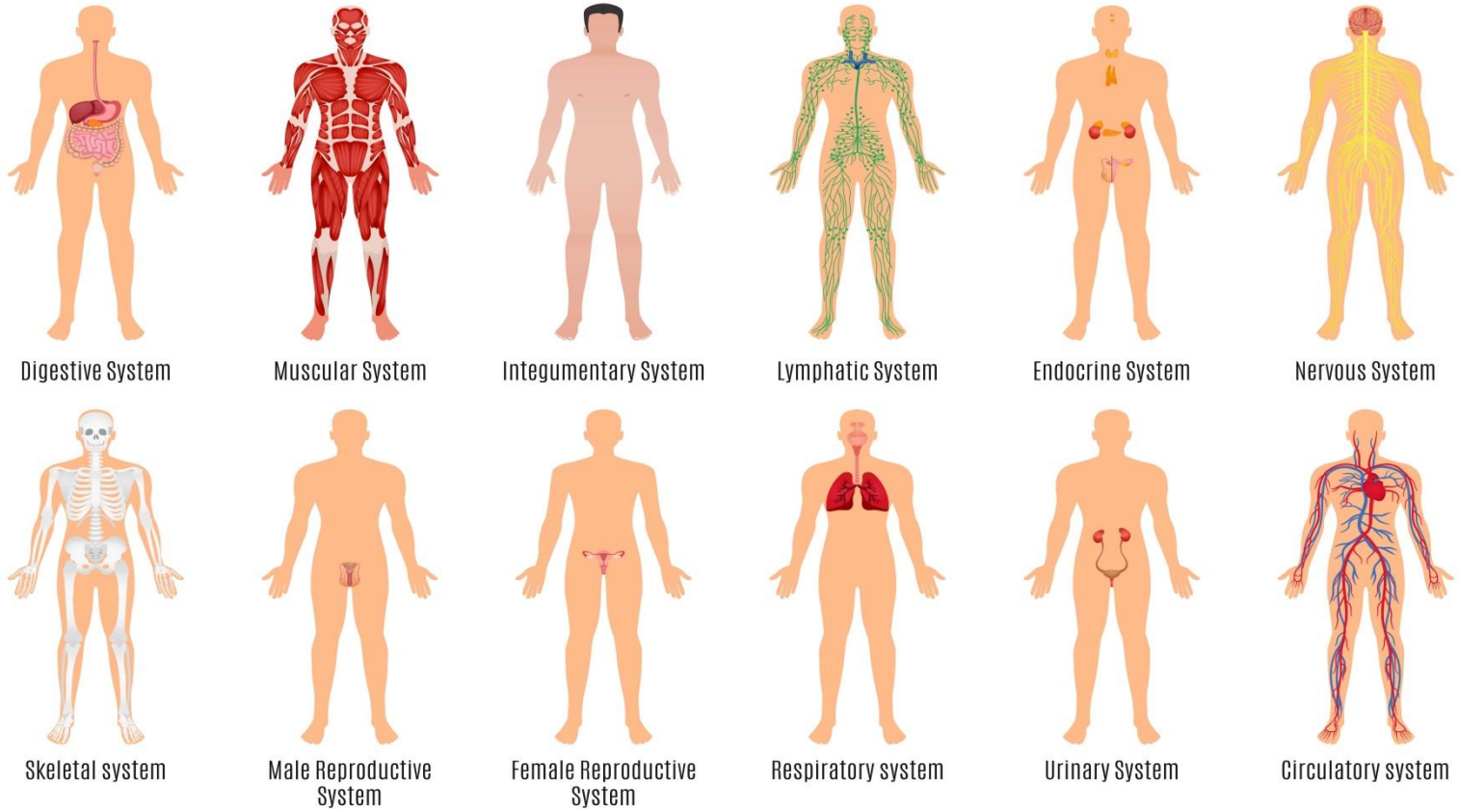
IMPORTANCE OF PHYSIOLOGY

- Understanding physiology is crucial for diagnosing disease, developing treatments, and understanding the basis of medical interventions.
- The discipline forms the scientific foundation for fields such as medicine, pharmacology, and biological research.

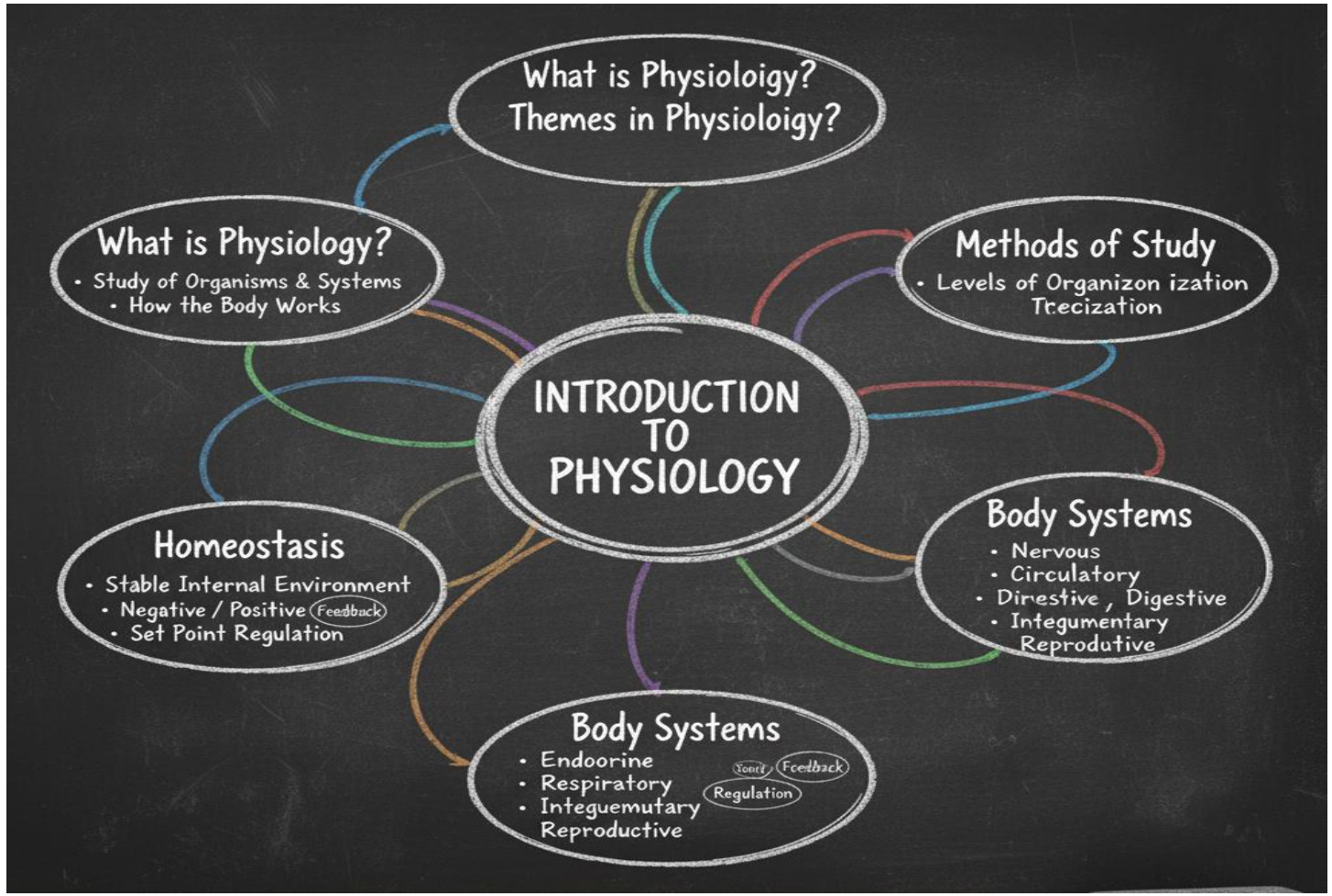
MAJOR SYSTEMS

System	Main Function
Muscular	Enables movement and maintains posture
Nervous	Coordinates activities, perception, movement
Cardiovascular	Circulates blood, delivers nutrients, removes waste
Respiratory	Manages gas exchange (O2/CO2)
Digestive	Breaks down food, absorbs nutrients
Endocrine	Regulates metabolism via hormones
Immune/Lymphatic	Defends against diseases, maintains fluid balance
Urinary	Removes waste, regulates fluids, maintains pH
Reproductive	Ensures species continuity

HUMAN BODY ORGAN SYSTEMS



SUMMARY


What is Physioloigy?
Themes in Physioloigy?
What is Physiology?
• Study of Organisms & Systems
• How the Body Works
Methods of Study
• Levels of Organizon ization
Tt:ecization
INTRODUCTION TO PHYSIOLOGY
Homeostasis
• Stable Internal Environment
• Negative / Positive Feedback
• Set Point Regulation
Body Systems
• Nervous
• Circulatory
• Direstive , Digestive
• Integumentary
Reprodutive
Body Systems
• Endoorine
• Respiratory
• Integuemutary
Reproductive
Feedback
Regulation

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References

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