



SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES

Coimbatore -641035



COURSE NAME: HUMAN ANATOMY & PHYSIOLOGY

(BP301 T)

YEAR : I SEM/I YEAR

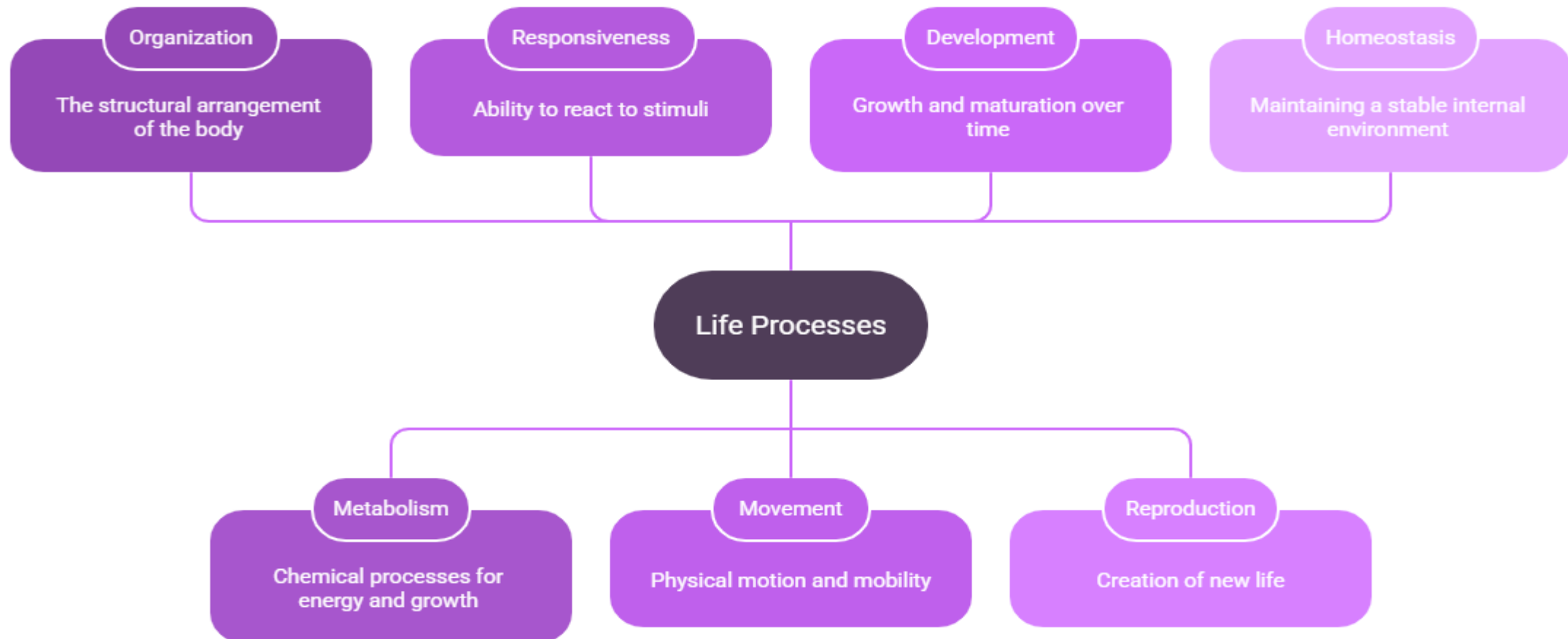
TOPIC 3 : BASIC LIFE PROCESS

DESIGN THINKING IN LIFE PROCESSES

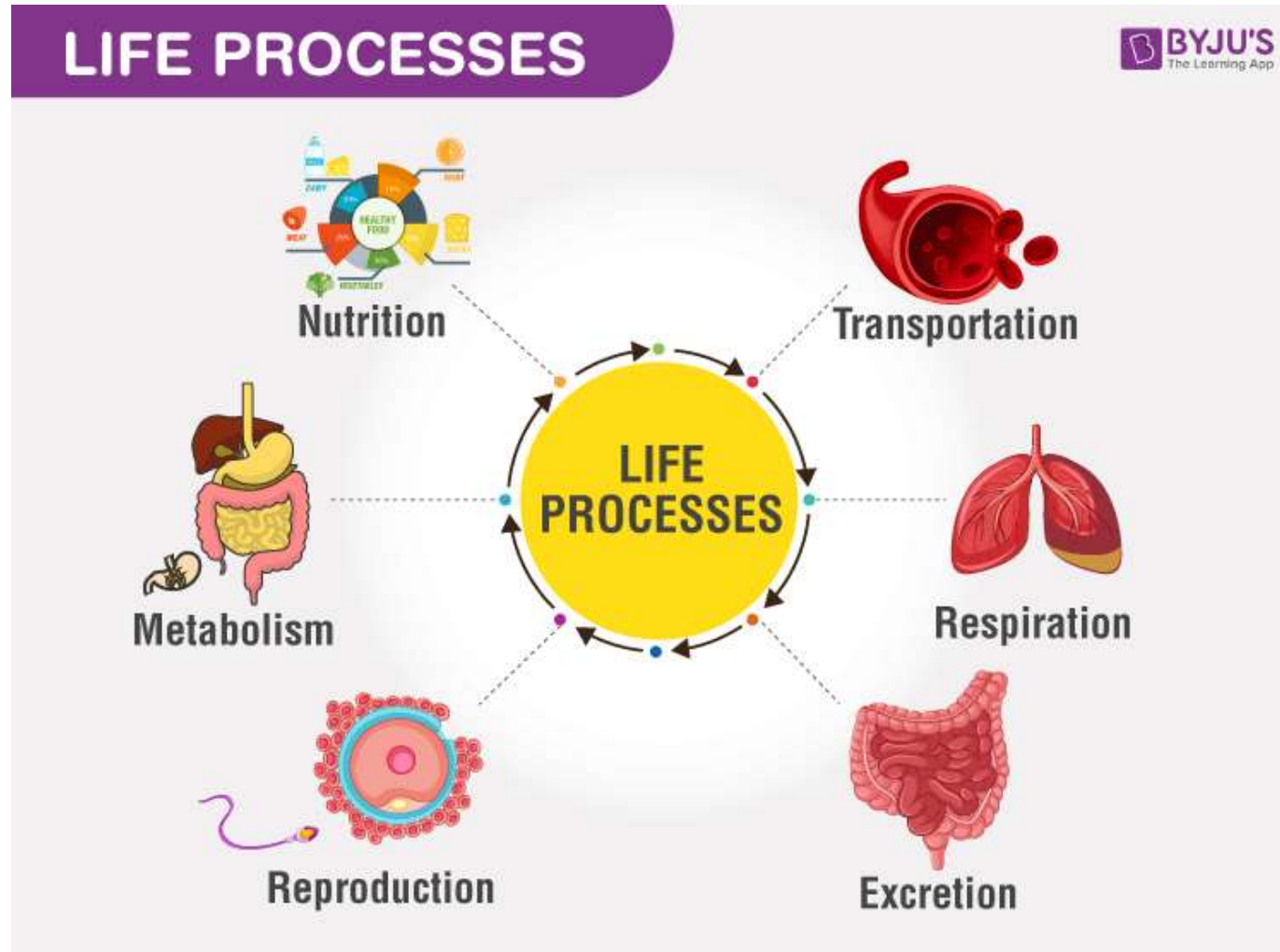
- Empathize (Understand the Needs):** Living organisms must sense and respond to their environment to survive, which is the essence of sensitivity
- Define (Clarify the Problem):** Organisms require energy to function, which is addressed through nutrition. This process defines the need for acquiring nutrients
- Ideate (Generate Solutions):** Respiration provides a solution for converting nutrients into usable energy.
- Prototype (Develop Functional Systems):** Homeostasis acts as a prototype for maintaining internal stability.
- Test (Implement and Refine):** Reproduction tests the organism's ability to sustain its species.

MINDMAP

Essential Life Processes

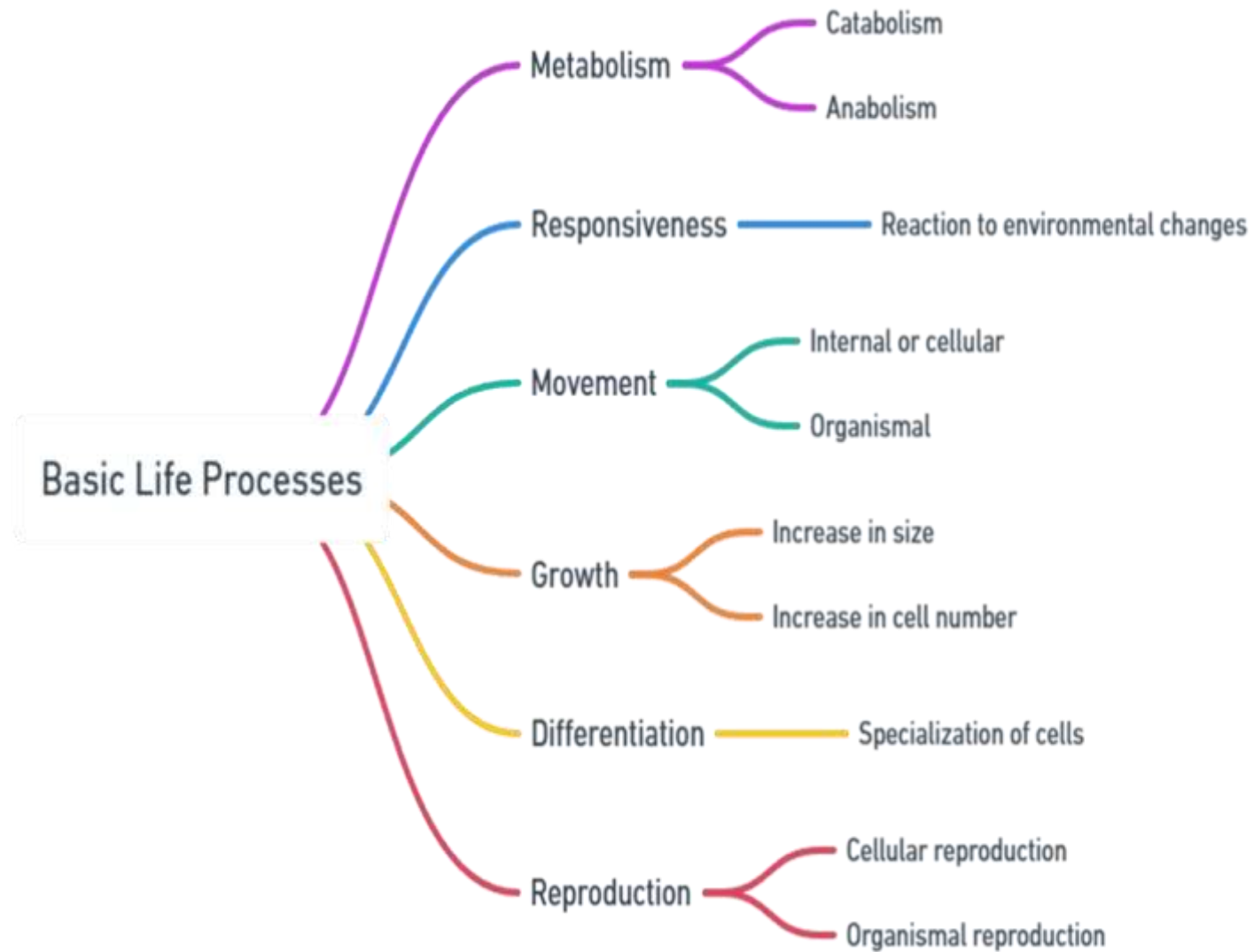


INTRODUCTION



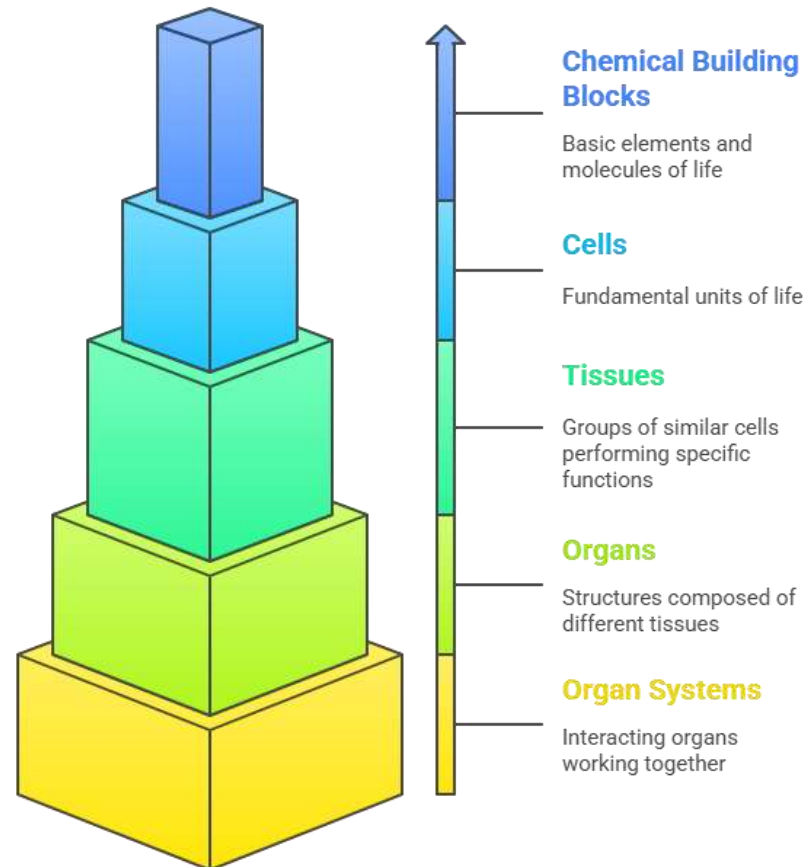
BASIC LIFE PROCESSES

- There are 6 most important life processes of human body are :
 1. **Metabolism:** It is the sum of all chemical processes that occurs in the body.
 - a) **Catabolism:** breakdown of complex chemical substance into simpler components e.g. digestion of protein into amino acids.
 - b) **Anabolism:** building up of complex chemical substance from smaller, simpler components e.g. use of amino acids to build new proteins of the body.
 2. **Responsiveness:** It is the body's ability to detect and respond to changes.
 3. **Movement:** It includes motion of the whole body, individual organs, single cells etc.
 4. **Growth:** It is an increase in body size and weight
 5. **Differentiation:** It is the development of a cell from an unspecialized to a specialized state.
 6. **Reproduction:** formation of new cells or to the production of a new individual.



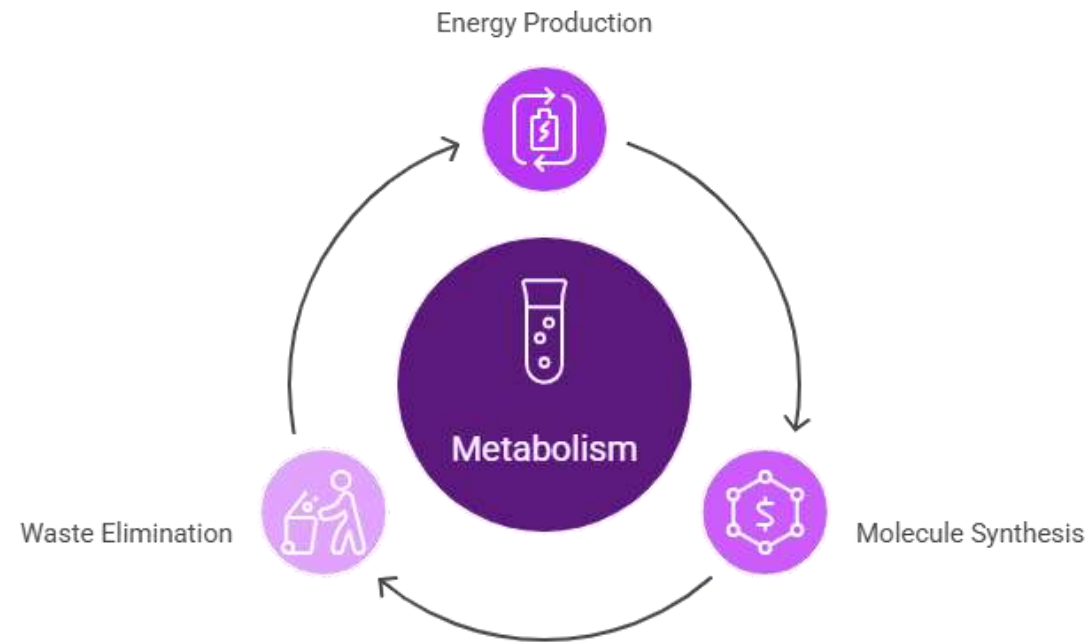
ORGANIZATION

Human Body Organization Hierarchy

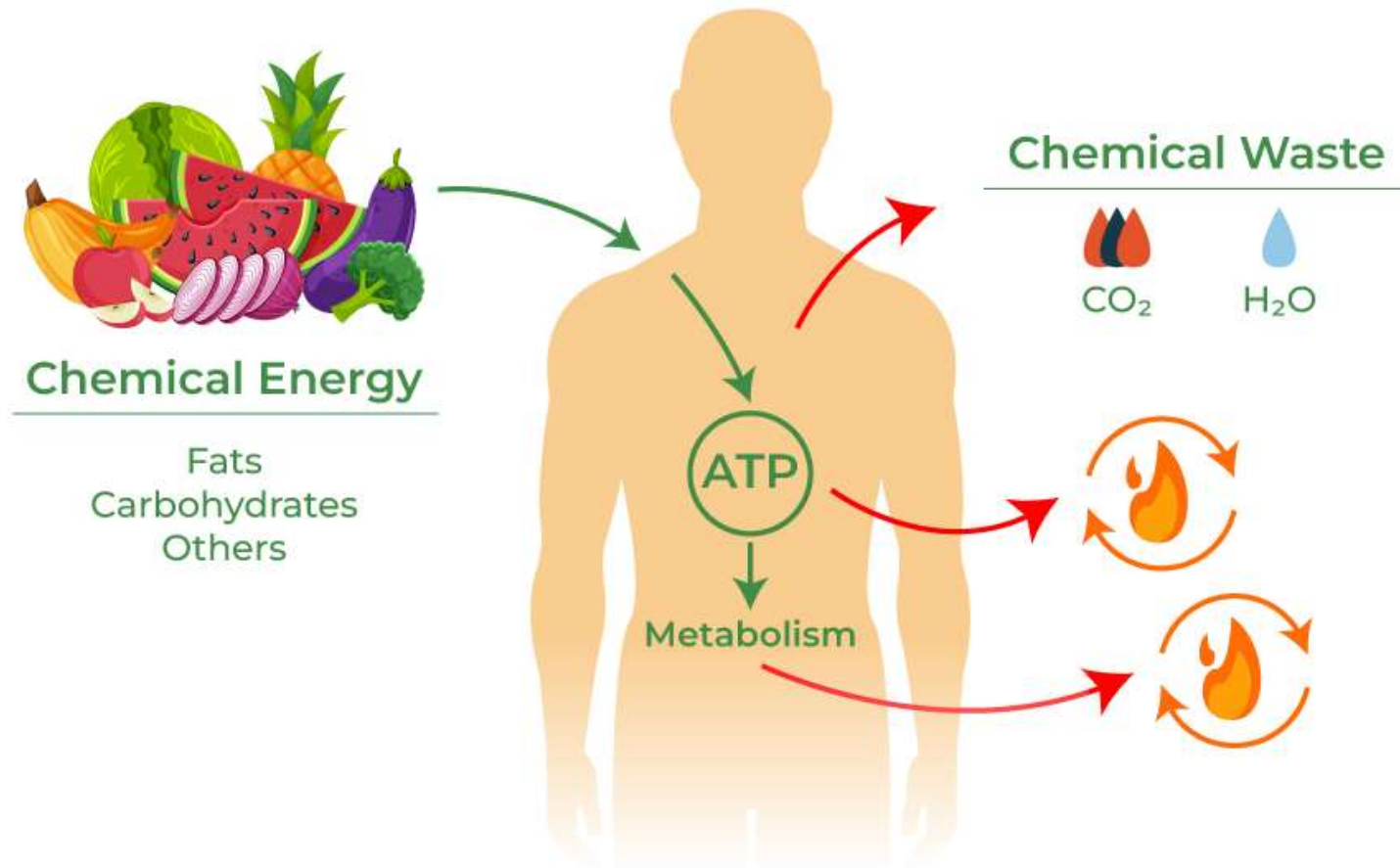


METABOLISM

The Metabolic Cycle

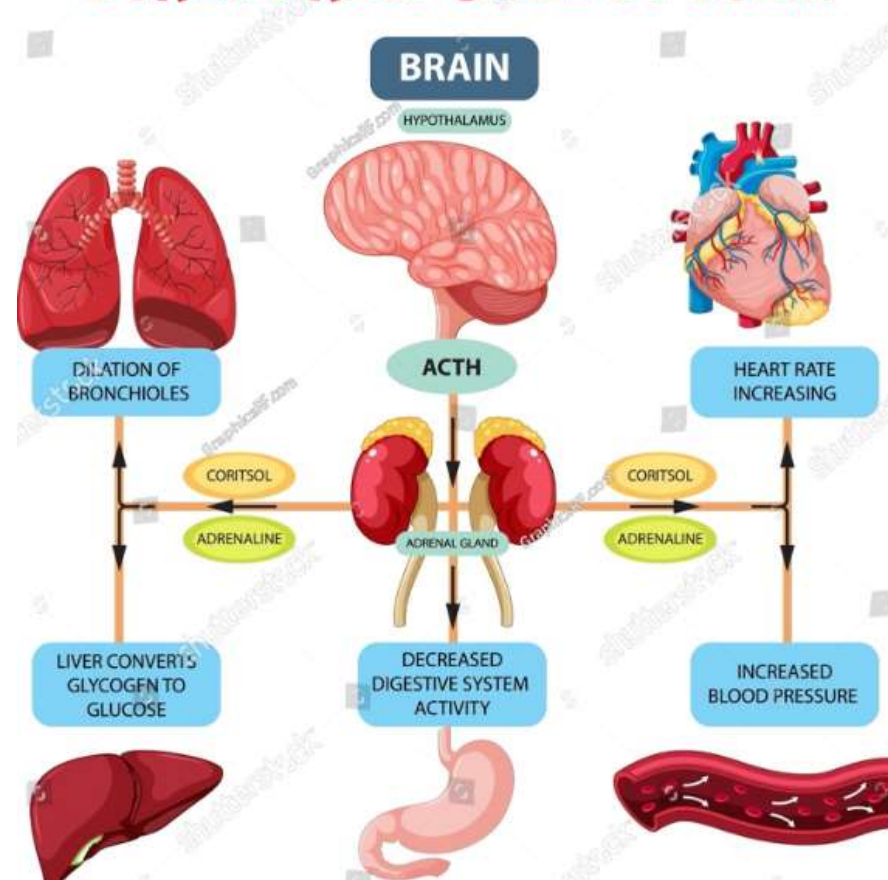


METABOLISM

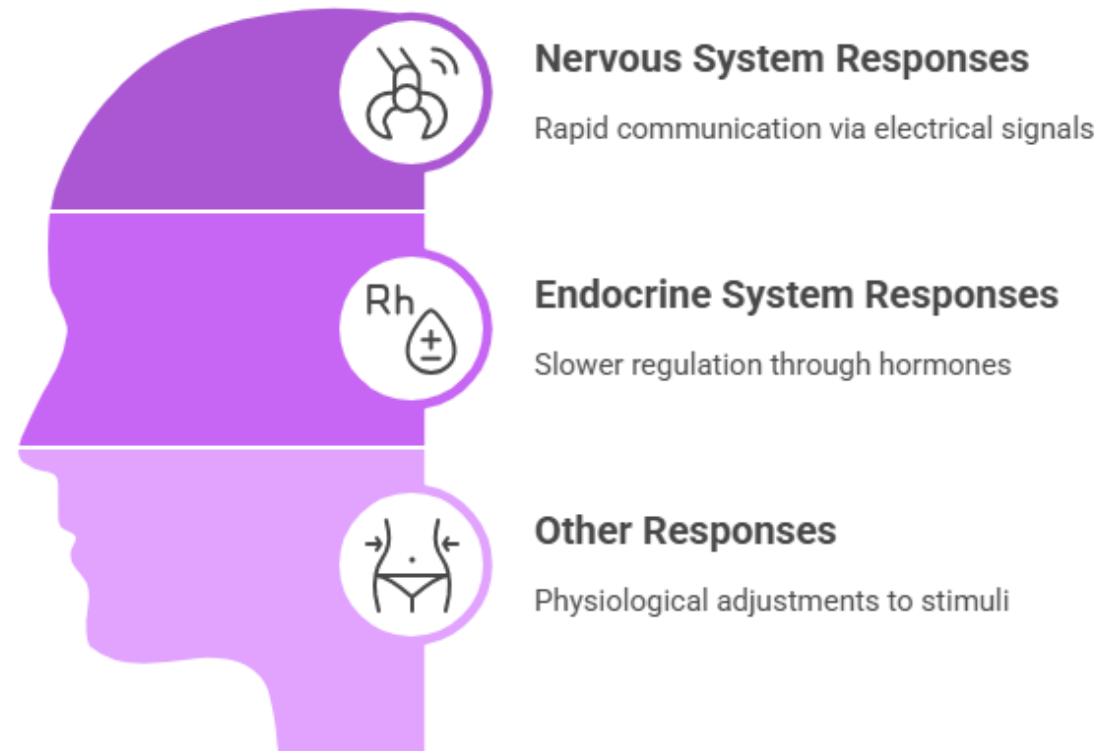


RESPONSIVENESS

STRESS RESPONSE SYSTEM

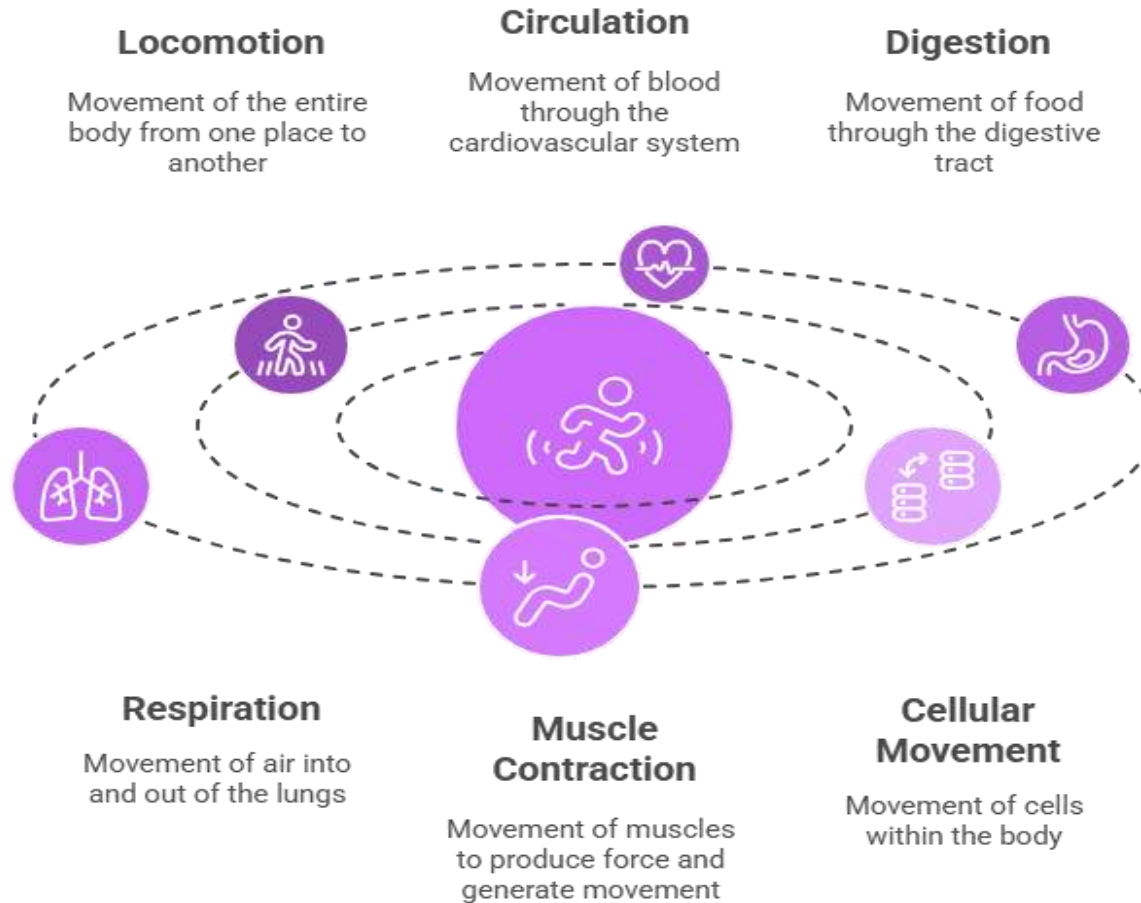


Components of Body Responsiveness



MOVEMENT

Essential Functions of Movement



DEVELOPMENT

Development of Cells



Undifferentiated Cell

Unspecialized cell



Growth

Increase in size or number



Differentiation

Specialization for specific functions



Morphogenesis

Development of body form



Specialized Cell

Cell with specific function

REPRODUCTION

Sexual vs. Asexual Reproduction

What is sexual reproduction?

It involves the fusion of gametes (sperm and egg) from two parents, resulting in offspring with a combination of genetic material from both parents.

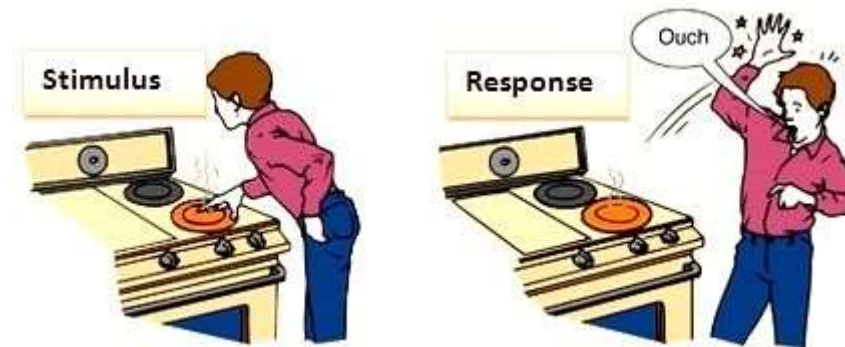
What is asexual reproduction?

It involves the production of offspring from a single parent, resulting in offspring that are genetically identical to the parent. This does not occur in humans.



CLASS ASSESSMENTS

- ✓ During a sudden loud noise, a person instinctively turns their head toward the sound, and their heart rate increases to prepare for potential action. Meanwhile, their body continues to break down glucose to fuel this response. Identify the two life processes involved.



SUMMARY

Living organisms perform essential life processes to survive.

- ✓ Nutrition provides energy and nutrients
- ✓ Respiration releases energy from food.
- ✓ Movement enables internal or external motion
- ✓ Excretion removes metabolic wastes.
- ✓ Growth and development involve size increase and specialization
- ✓ Reproduction ensures species continuity,
- ✓ Sensitivity allows response to stimuli
- ✓ Homeostasis maintains internal balance.

These processes sustain life across all organisms.

REFERENCE

- ✓ Essentials of Medical Physiology, K. Sembulingam & P. Sembulingam (Jaypee Brothers Medical Publishers)
- ✓ A Textbook of Human Anatomy and Physiology-I, SIA Publishers
- ✓ Human Anatomy & Physiology Gerard J. Tortora & Bryan H. Derrickson (Wiley)
- ✓ Ross and Wilson anatomy and physiology in health and illness, Anne Waugh & Allison Grant.

