SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES

Affiliated To The Tamil Nadu Dr. MGR Medical University, Chennai
Approved by Pharmacy Council of India, New Delhi. Coimbatore -641035

COURSE NAME: HUMAN ANATOMY & PHYSIOLOGY

(BP301 T)

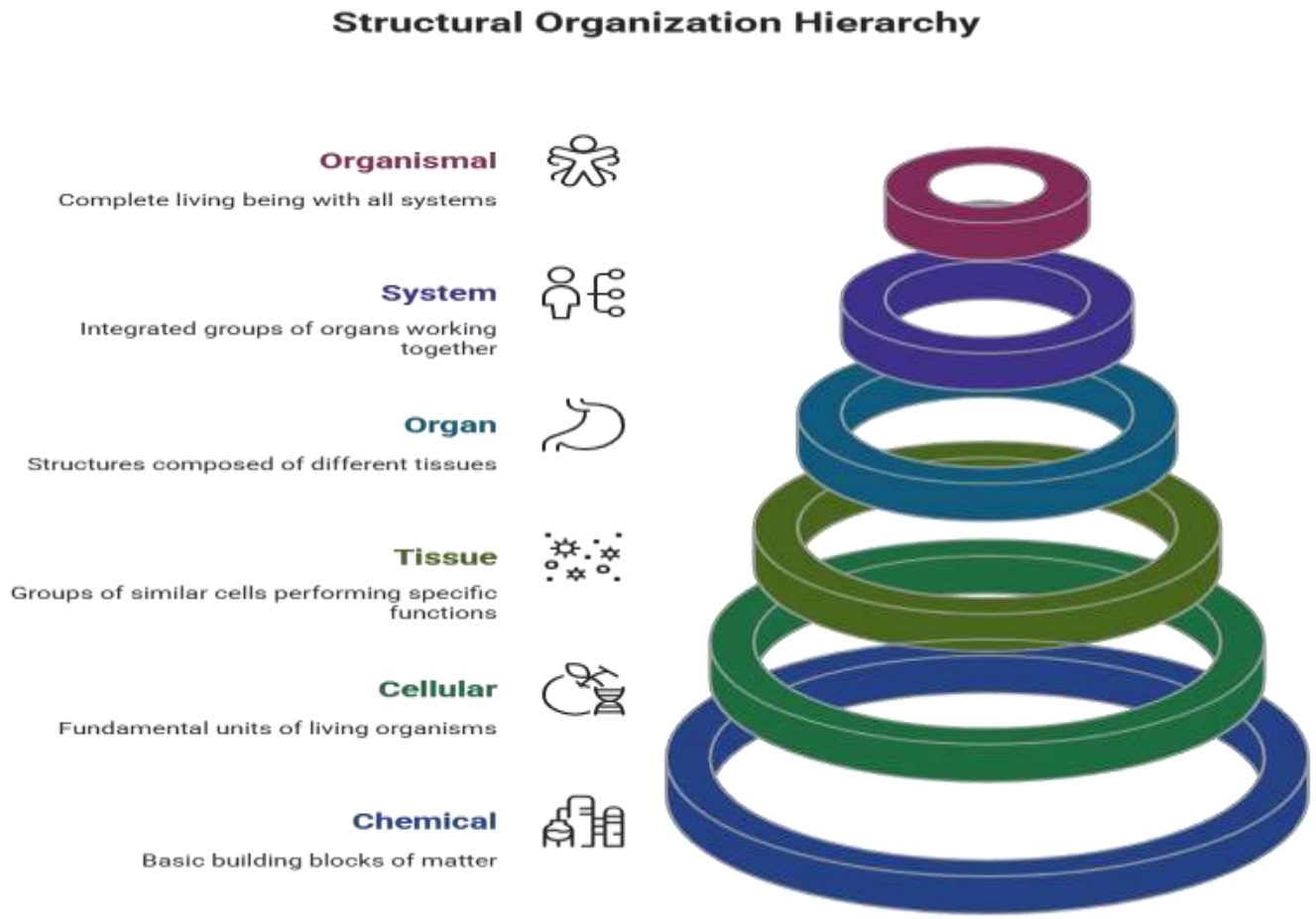
YEAR : I SEM/I YEAR

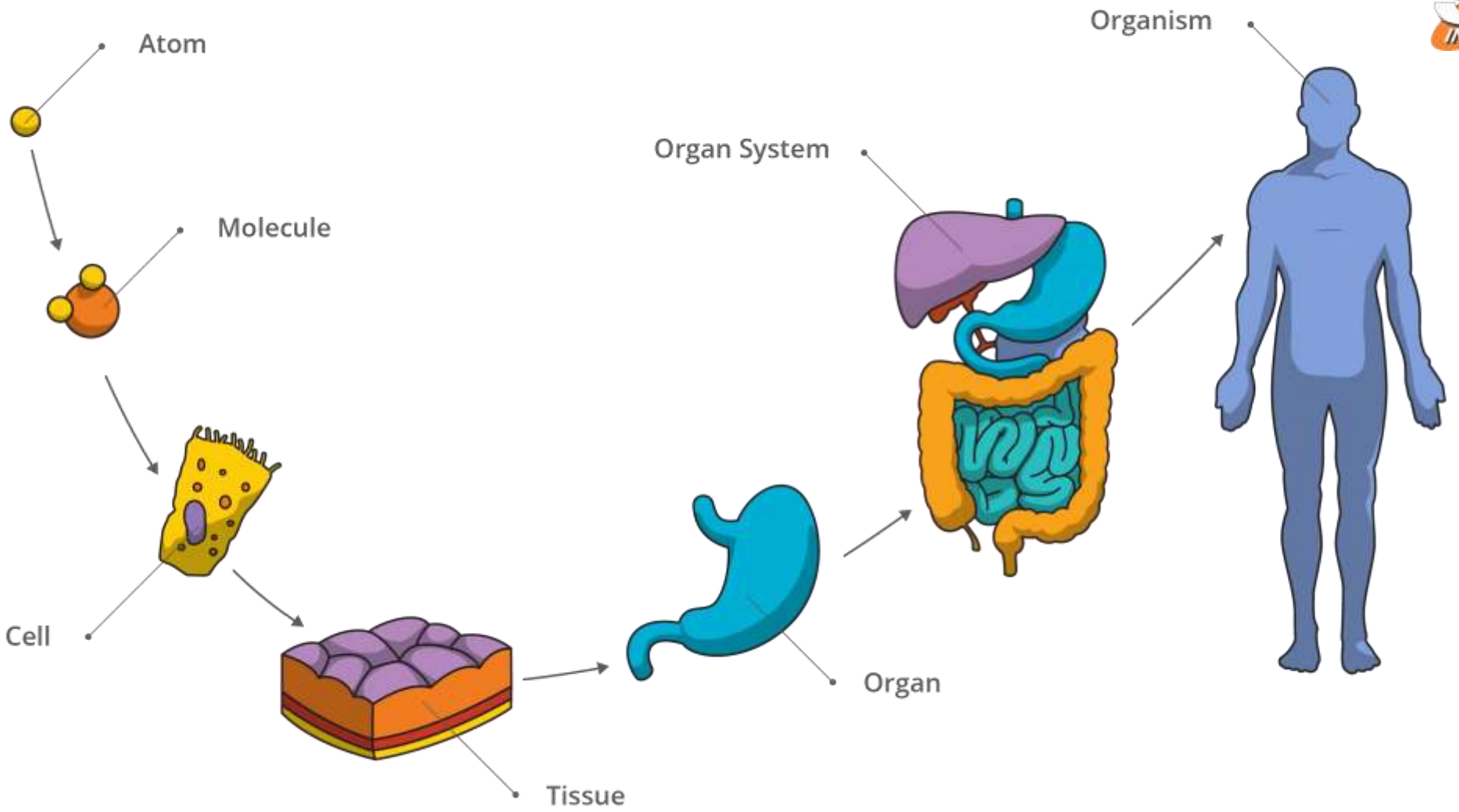
TOPIC 2 : LEVEL OF STRUCTURAL ORGANISATION

DESIGN THINKING IN STRUCTURAL ORGANIZATION

- ✓ **Empathize:** Deeply understand learner's challenges, needs, and experiences in studying anatomy. Engage with students, educators to uncover pain points and preferences.
- ✓ **Define:** Reframe the problem based on insights, establish clear context. Synthesize data to pinpoint core issues, like defining the need for intuitive understanding of body levels.
- ✓ **Ideate:** Brainstorm and explore a wide range of ideas and potential solutions, including innovative teaching methods or visualizations.
- ✓ **Prototype:** Simulate and build models to enhance comprehension and engagement.

MIND MAP


Structural Organization Hierarchy
Organismal
Complete living being with all systems
System
Integrated groups of organs working together
Organ
Structures composed of different tissues
Tissue
Groups of similar cells performing specific functions
Cellular
Fundamental units of living organisms
Chemical
Basic building blocks of matter

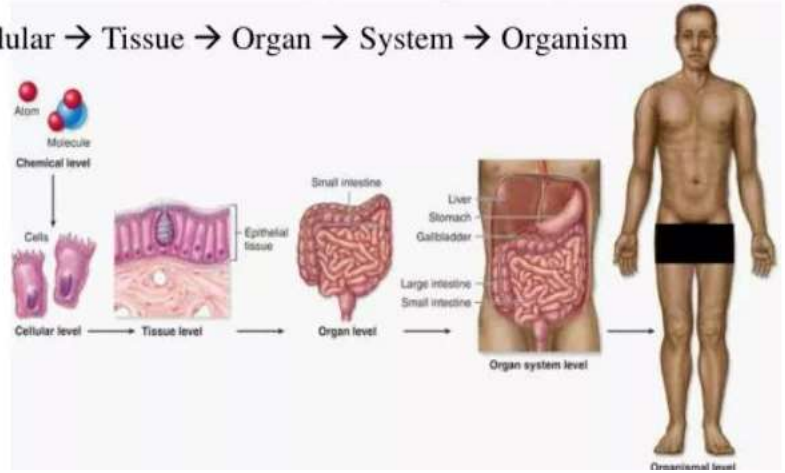

Atom
Molecule
Cell
Tissue
Organ
Organ System
Organism

INTRODUCTION

Levels of Organization

- The structures of the human body are organized into levels of increasing complexity.

Chemical → Cellular → Tissue → Organ → System → Organism

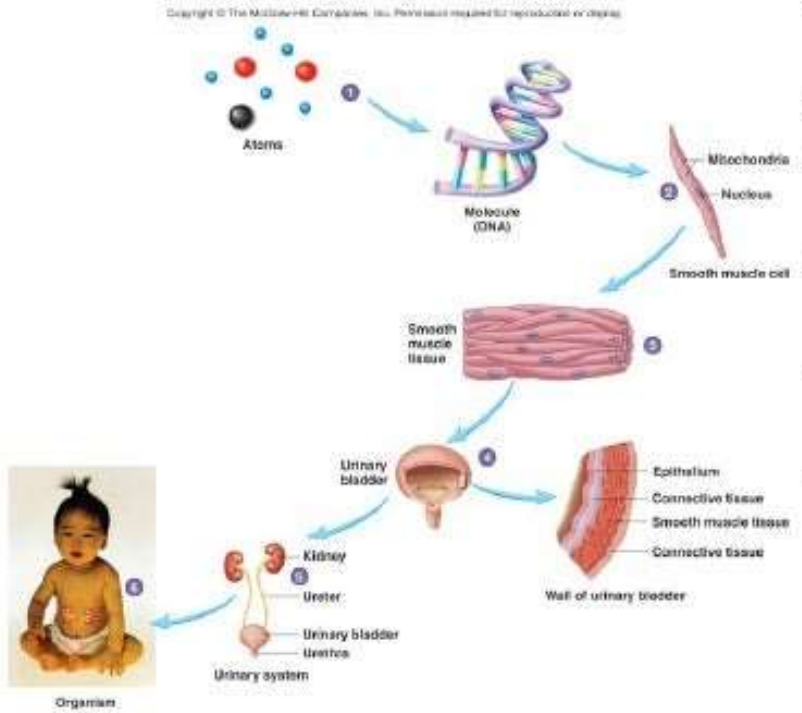


TERMINOLOGY USED IN STRUCTURAL ORGANIZATION

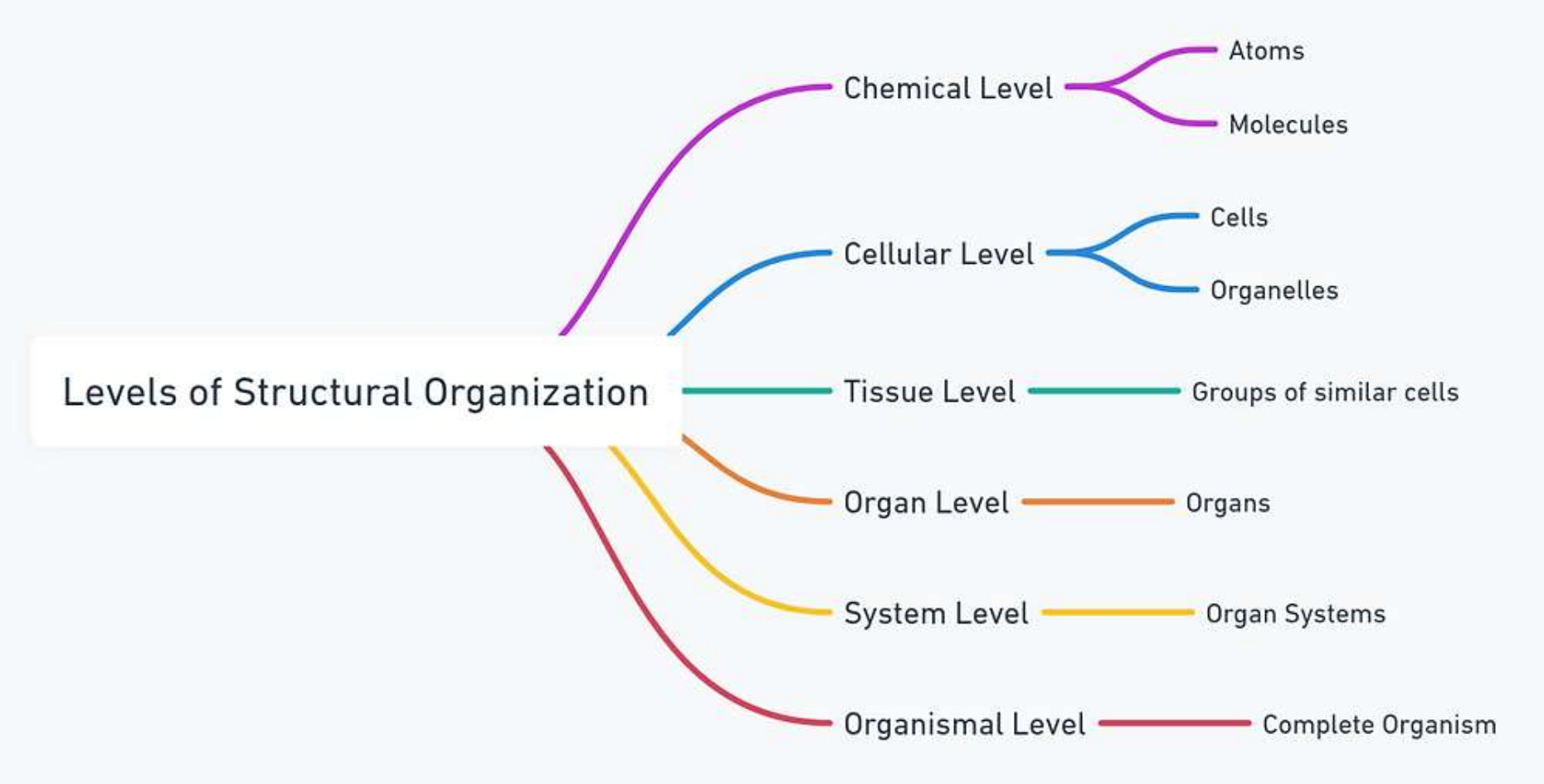
Key Terms:

- ✓ Homeostasis: Maintenance of internal balance.
- ✓ Hierarchy: Levels from chemical to organismal.
- ✓ Anatomy: Structure; Physiology: Function.
- ✓ Integration: How levels interact for survival.

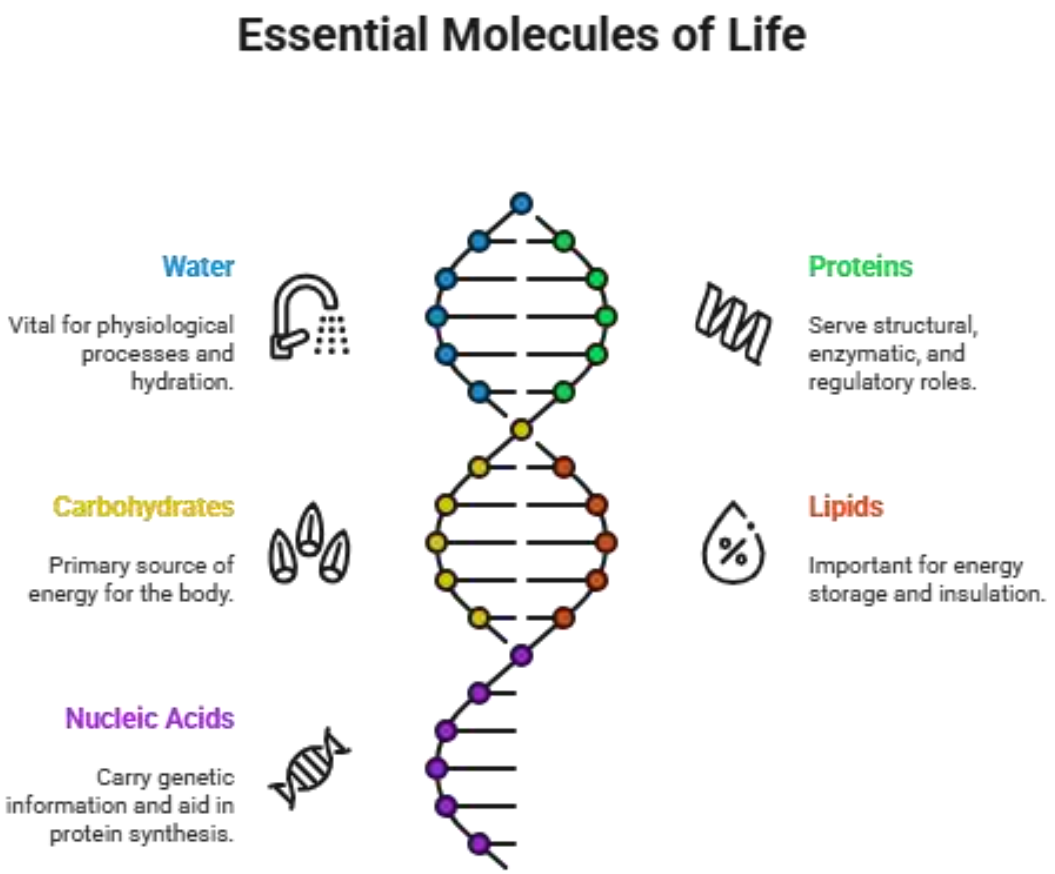
Levels of Structural Organization



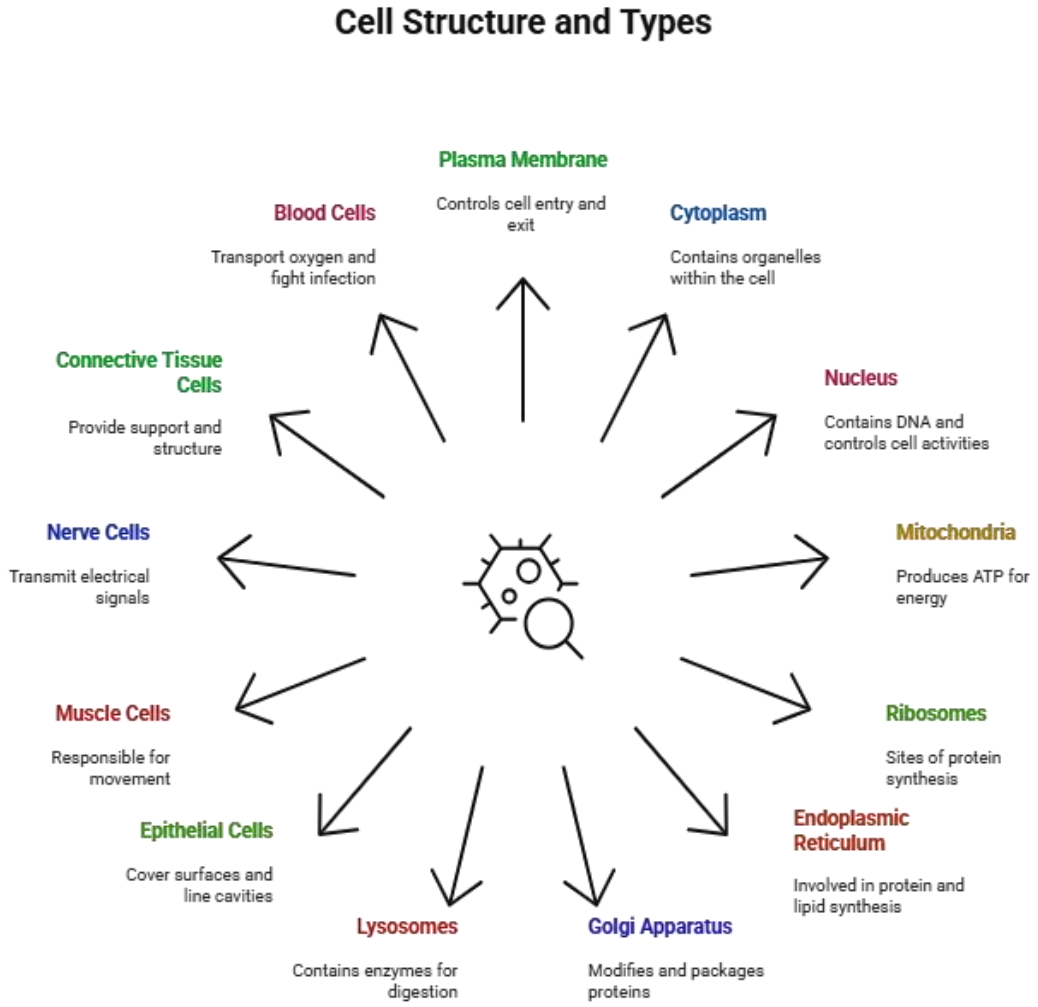
- **Chemical** Level: interaction of atoms
- **Cell** Level: functional unit of life
- **Tissue** Level: group of similar cells and the materials surrounding them
- **Organ** Level: one or more tissues functioning together
- **Organ System** Level: group of organs functioning together
- **Organism** Level: any living thing.


Levels of Structural Organization
Chemical Level
Atoms
Molecules
Cellular Level
Cells
Organelles
Tissue Level
Groups of similar cells
Organ Level
Organs
System Level
Organ Systems
Organismal Level
Complete Organism

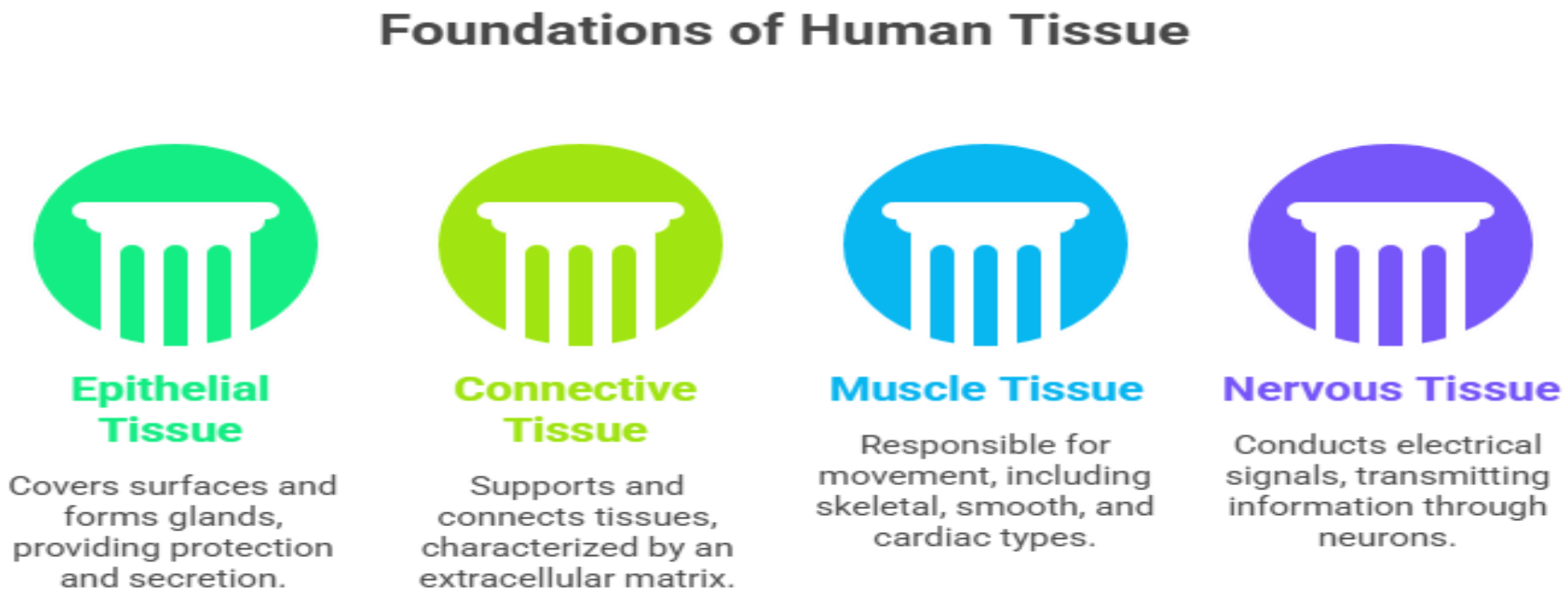
CHEMICAL LEVEL



CELLULAR LEVEL



TISSUE LEVEL



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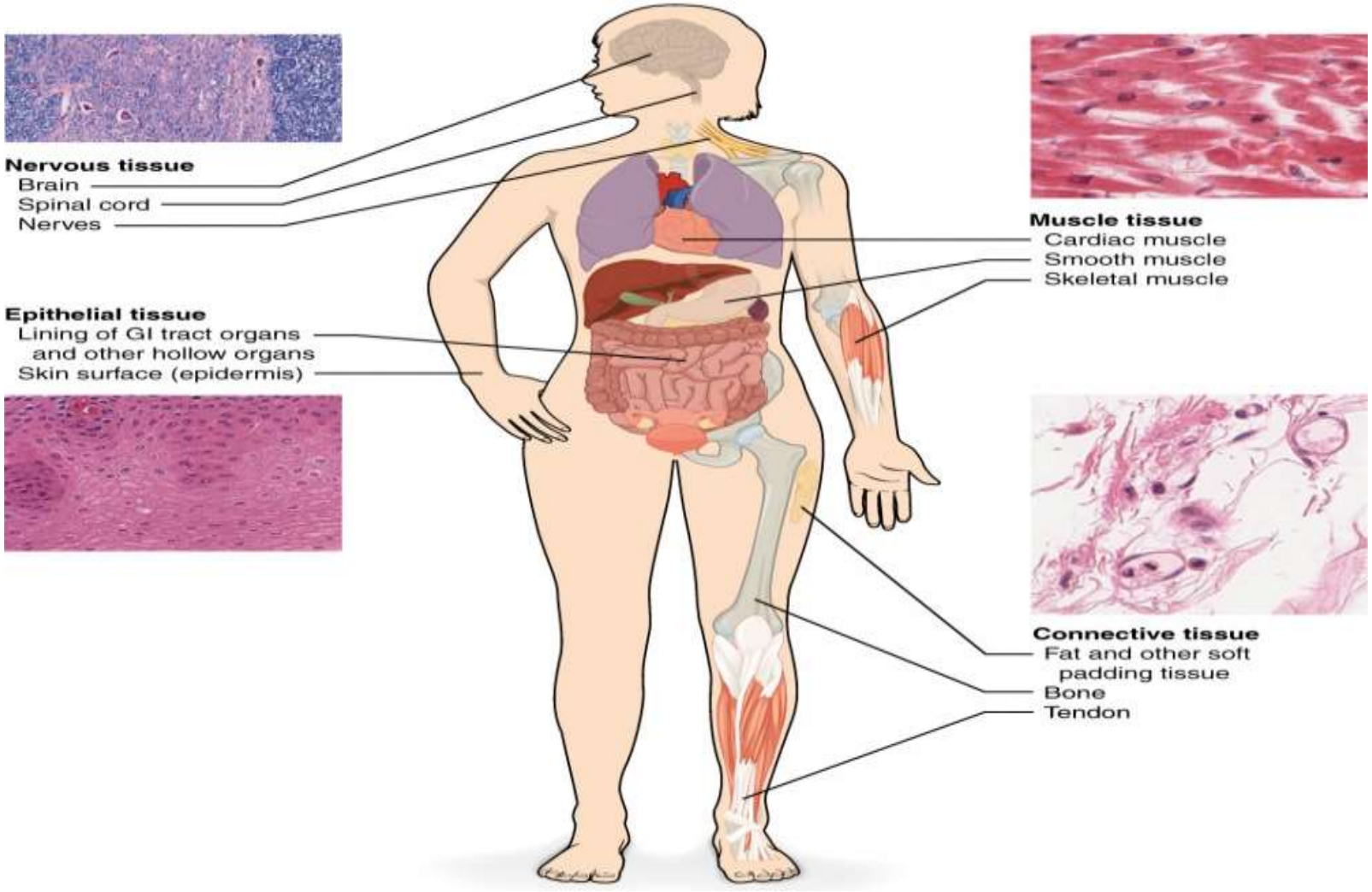
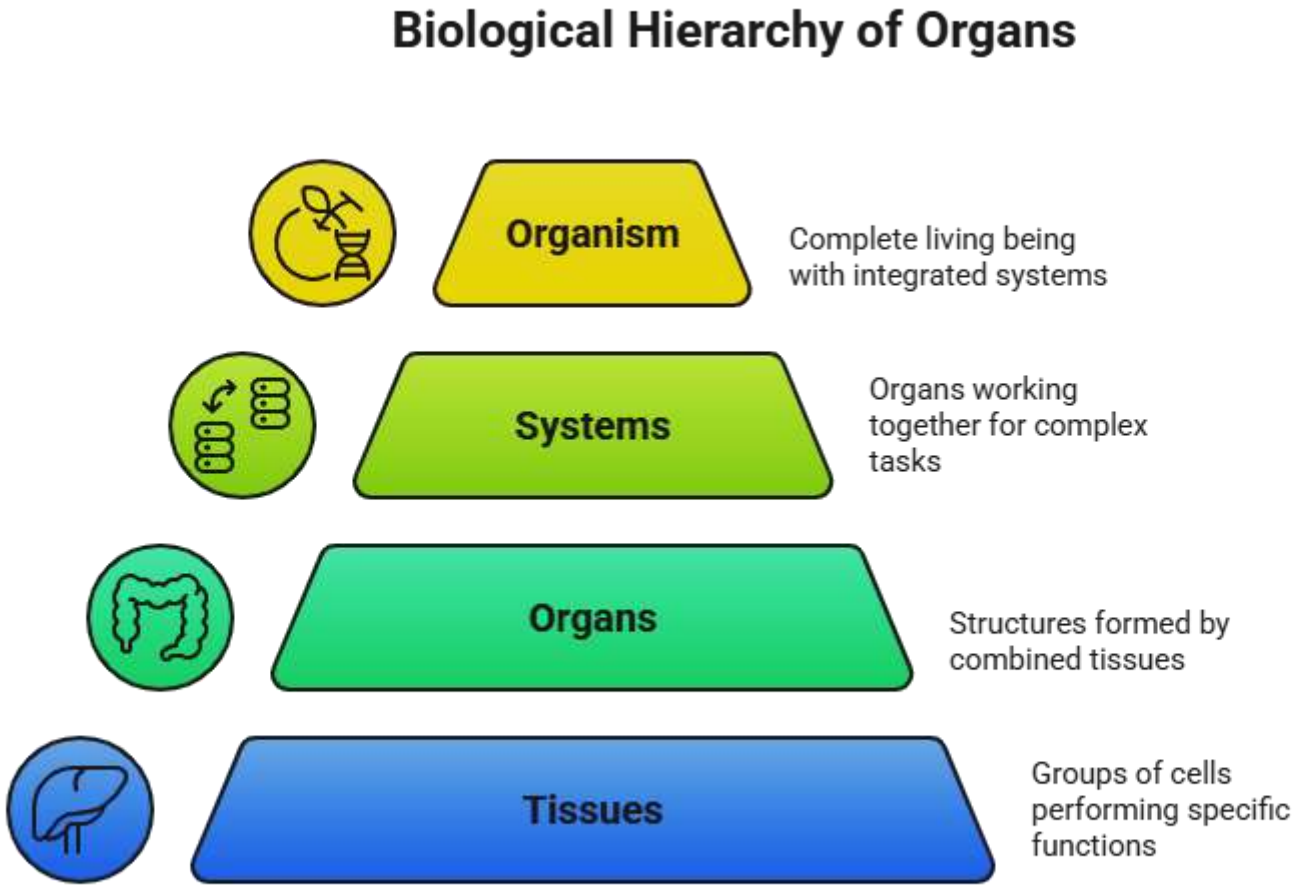
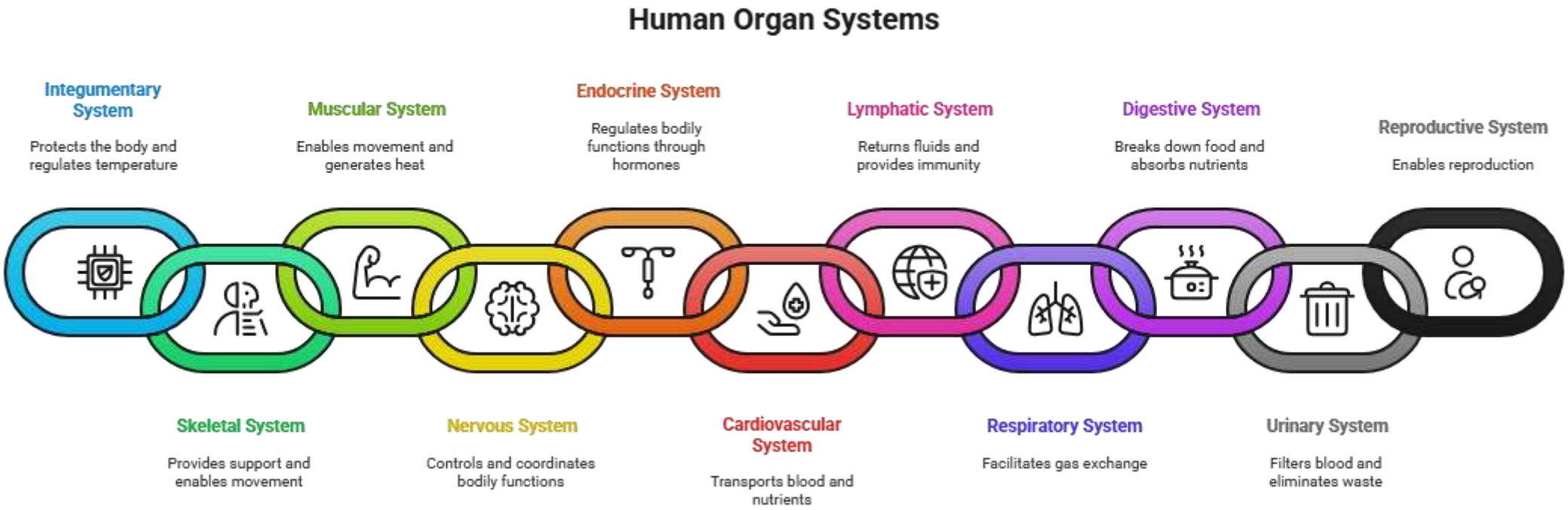


ORGAN LEVEL


Biological Hierarchy of Organs
Organism
Complete living being with integrated systems
Systems
Organs working together for complex tasks
Organs
Structures formed by combined tissues
Tissues
Groups of cells performing specific functions

SYSTEM LEVEL

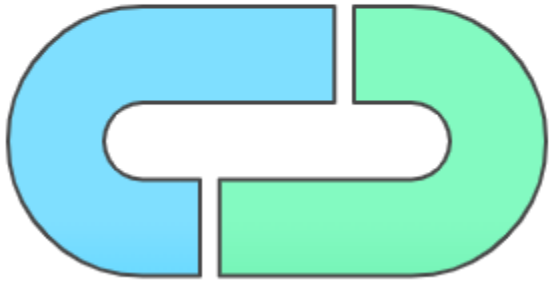


ORGANISMAL LEVEL

Maintaining Life's Balance

Interdependence of Systems

The interconnectedness of organ systems for proper function



Homeostasis

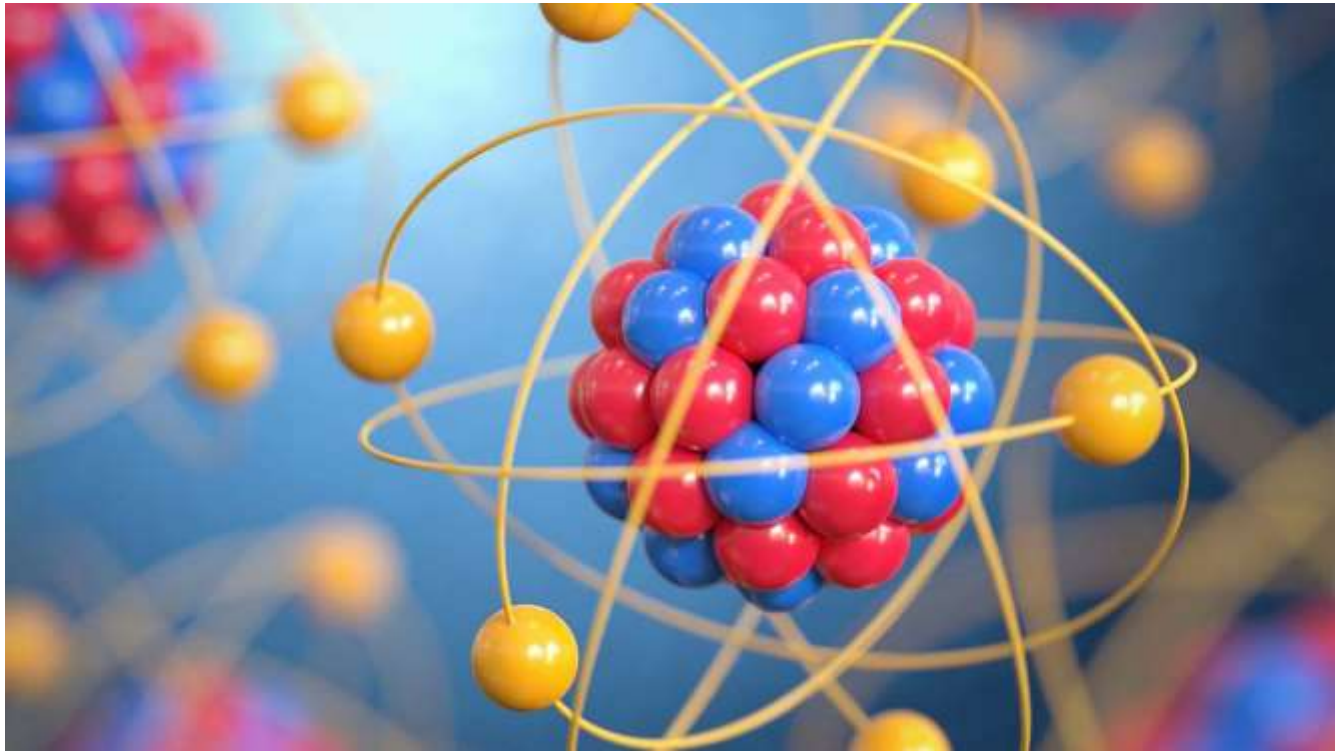
The process of maintaining a stable internal environment

SUMMARY

- ✓ Understanding these levels of structural organization is fundamental to understanding human anatomy and physiology. It provides a framework for comprehending how the body is built and how it functions, both in health and in disease.
- ✓ Disruptions at any level can have cascading effects on other levels, ultimately impacting the overall health and well-being of the organism.

CLASS ASSESSMENTS

Identify the level of organization shown in the picture 👇



A. Organ
B. Tissue
C. Chemical
D. Organism

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 & PhysiologyGerard J. Tortora & Bryan H. Derrickson (Wiley)
- ✓ Ross and wilson anatomy and physiology in health and illness, Anne Waugh &Allison Grant.


Thank You