



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

YEAR : I SEM/I YEAR

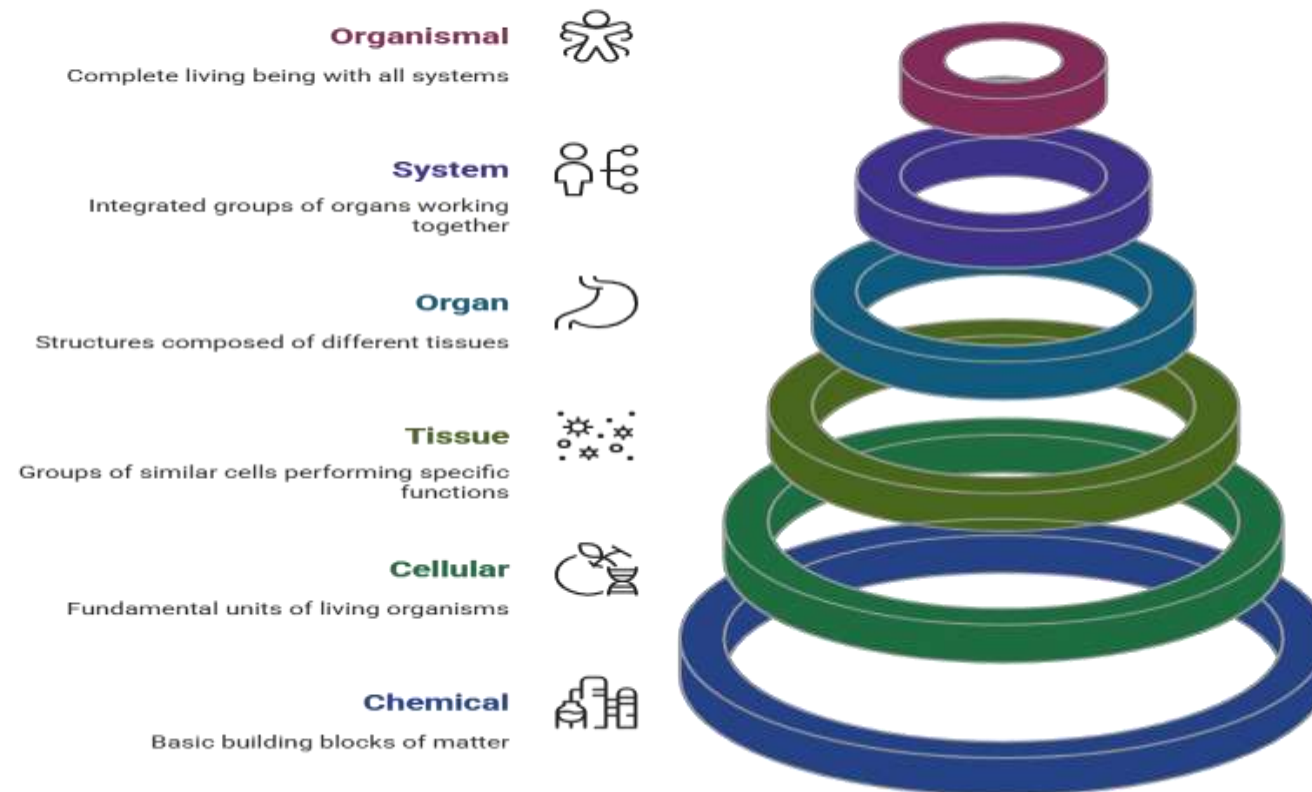
TOPIC 2 : LEVEL OF STRUCTURAL ORGANISATION

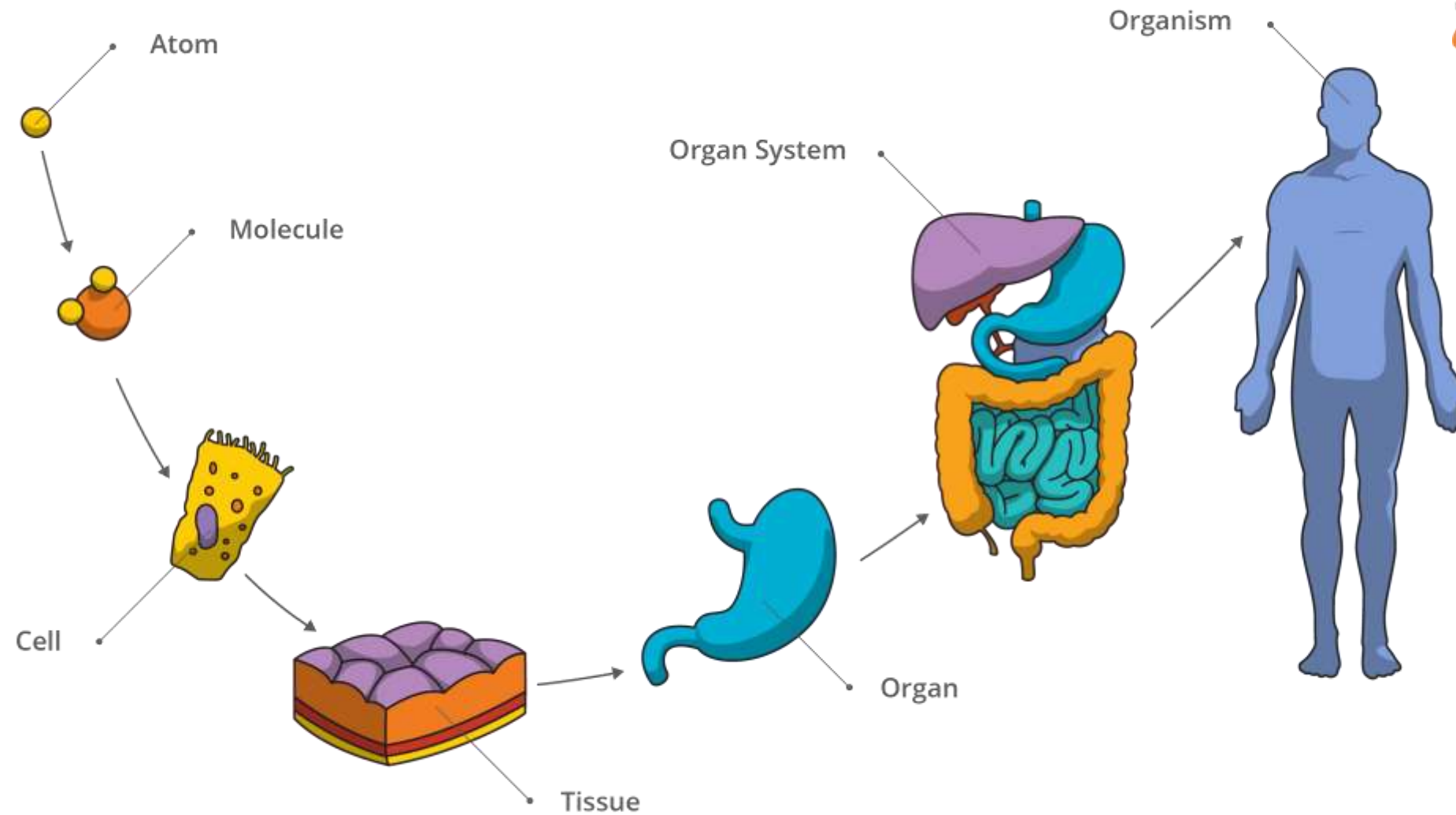
DESIGN THINKING IN STRUCTURAL ORGANIZATION

- ✓ **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



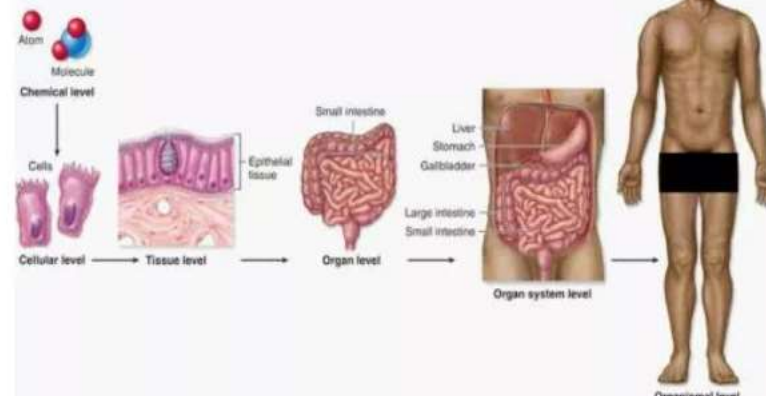


INTRODUCTION

■ Levels of Organization

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

Chemical → Cellular → Tissue → Organ → System → Organism

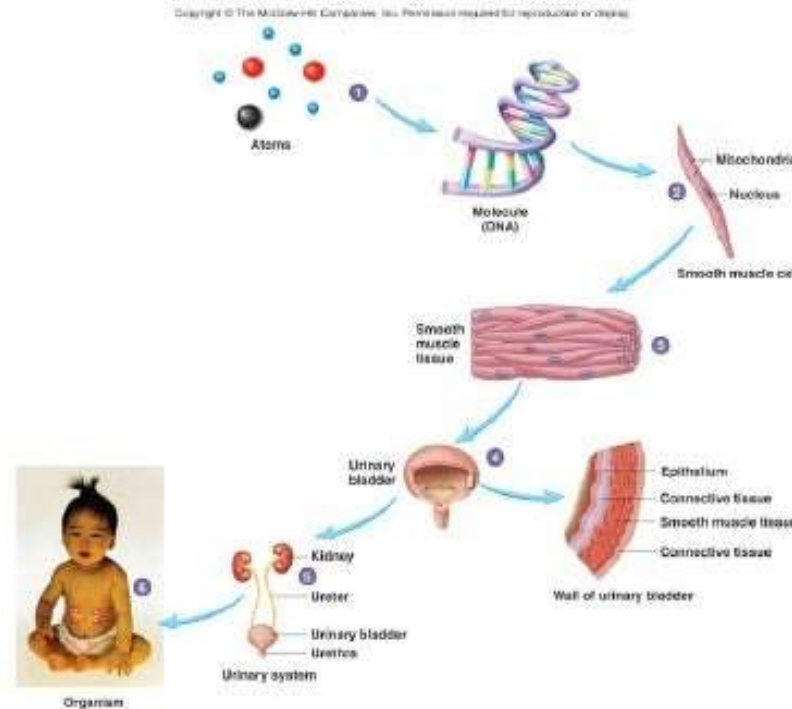


TERMINOLOGY USED IN STRUCTURAL ORGANIZATION

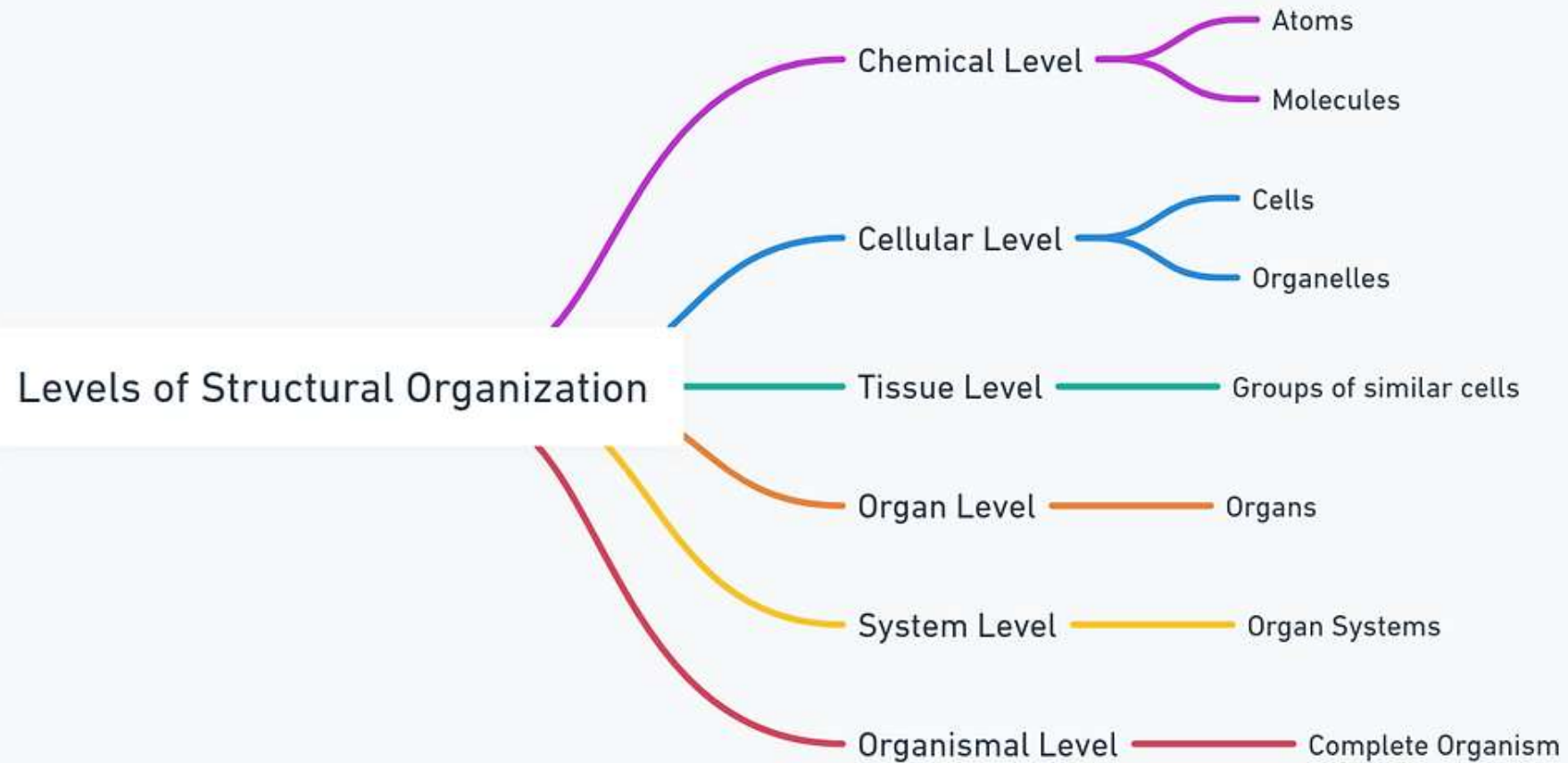
Key Terms:

- ✓ 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

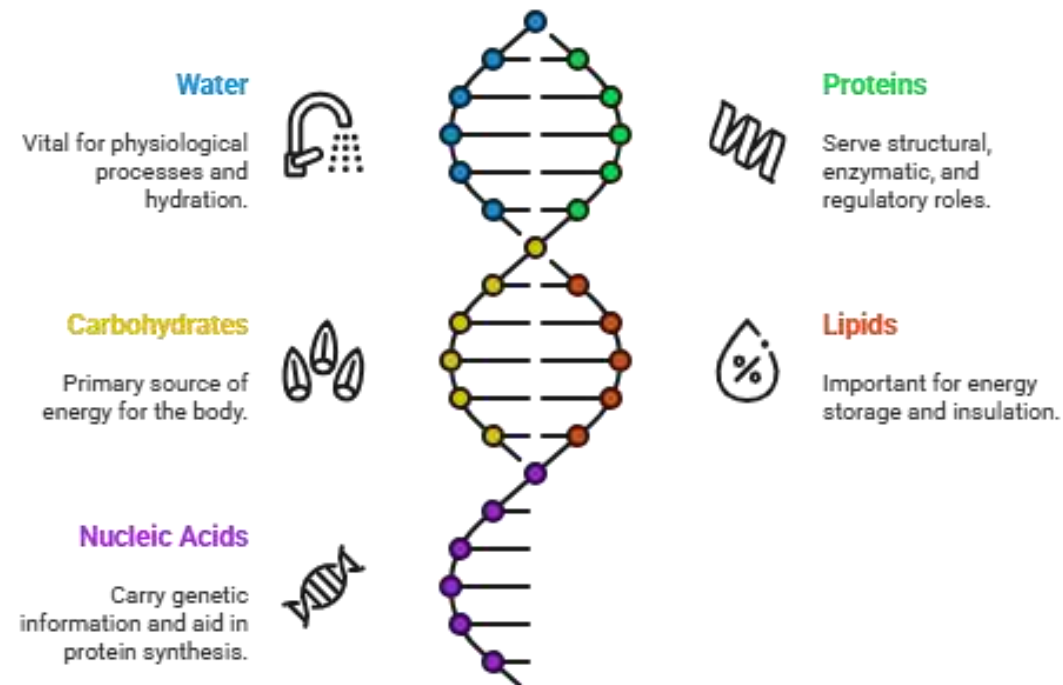


- **Chemical Level:** interaction of atoms
- **Cell Level:** functional unit of life
- **Tissue Level:** group of similar cells and the materials surrounding them
- **Organ Level:** one or more tissues functioning together
- **Organ System Level:** group of organs functioning together
- **Organism Level:**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



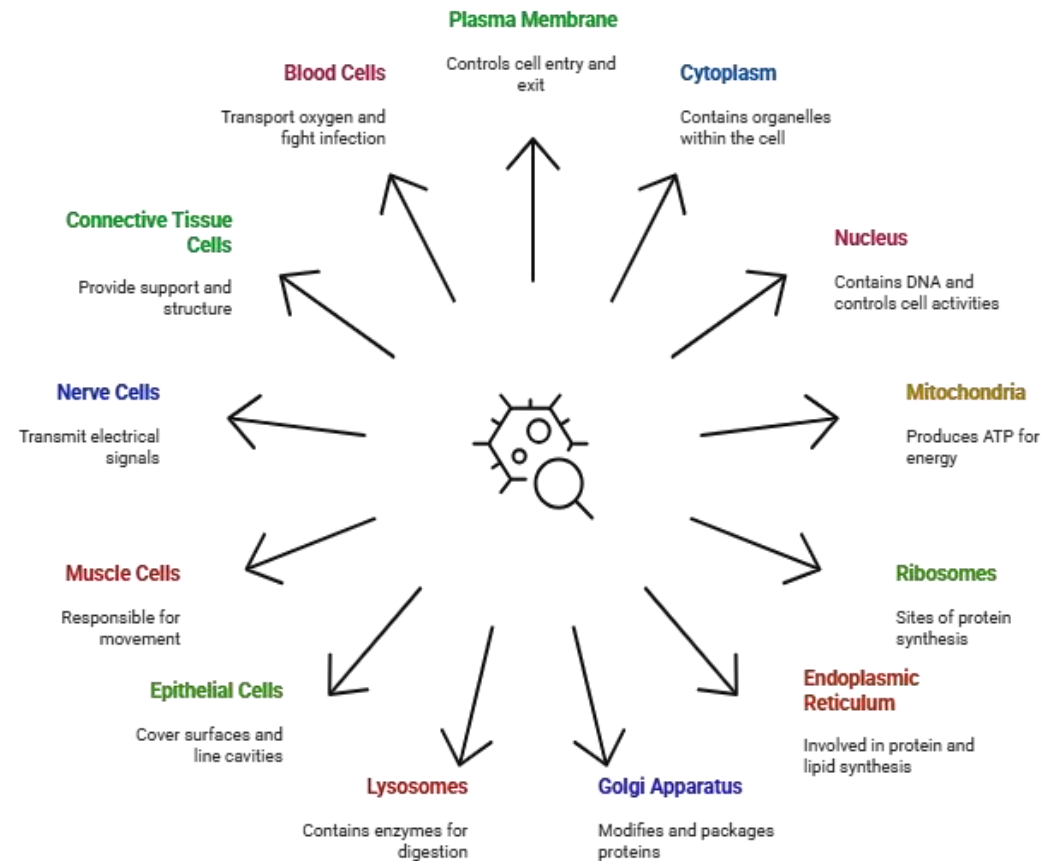
CHEMICAL LEVEL

Essential Molecules of Life



CELLULAR LEVEL

Cell Structure and Types



TISSUE LEVEL

Foundations of Human Tissue



Epithelial Tissue

Covers surfaces and forms glands, providing protection and secretion.



Connective Tissue

Supports and connects tissues, characterized by an extracellular matrix.



Muscle Tissue

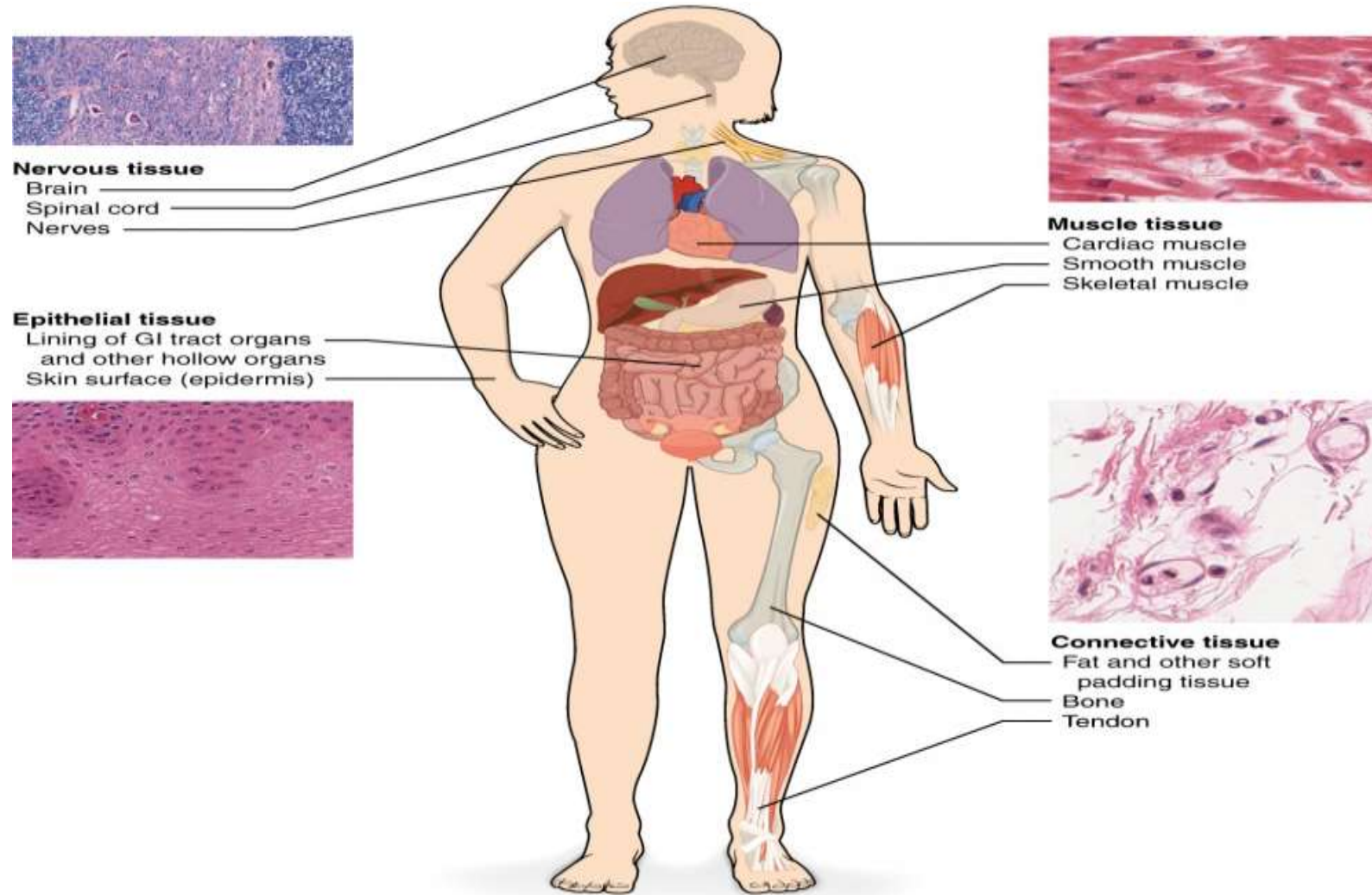
Responsible for movement, including skeletal, smooth, and cardiac types.



Nervous Tissue

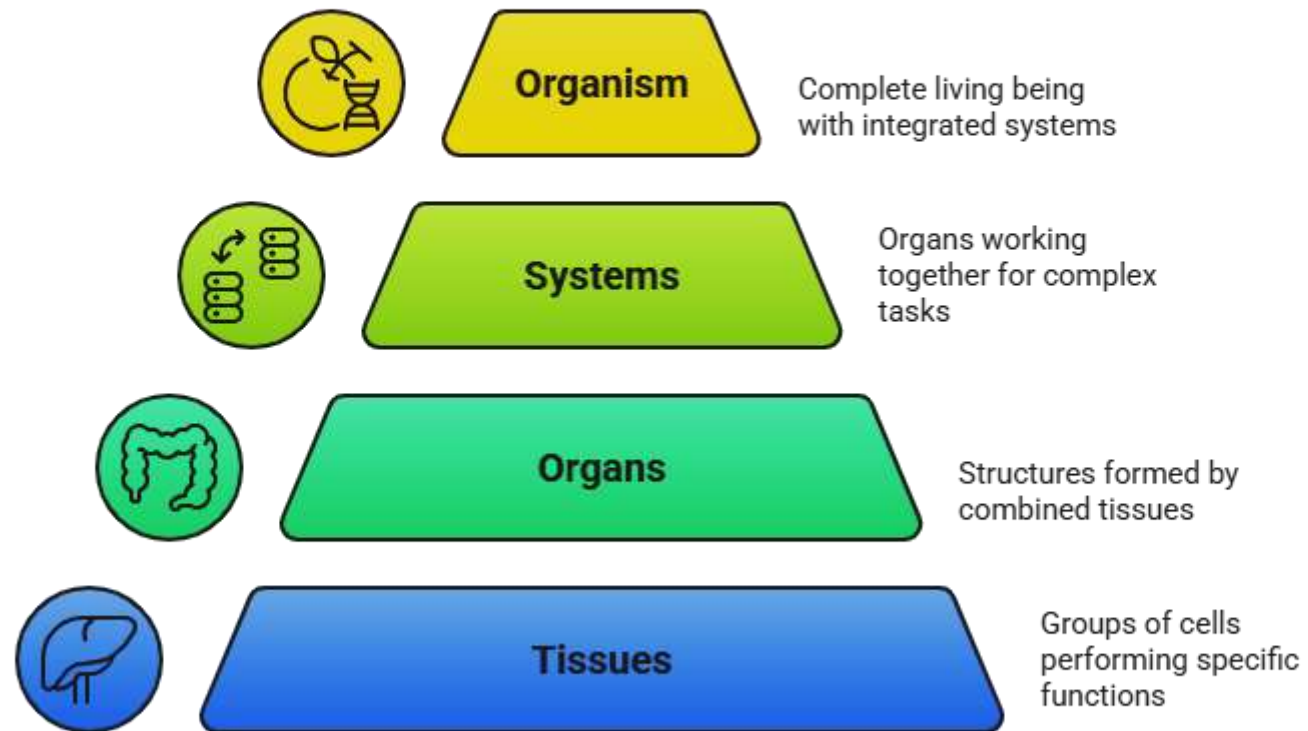
Conducts electrical signals, transmitting information through neurons.

TISSUE LEVEL



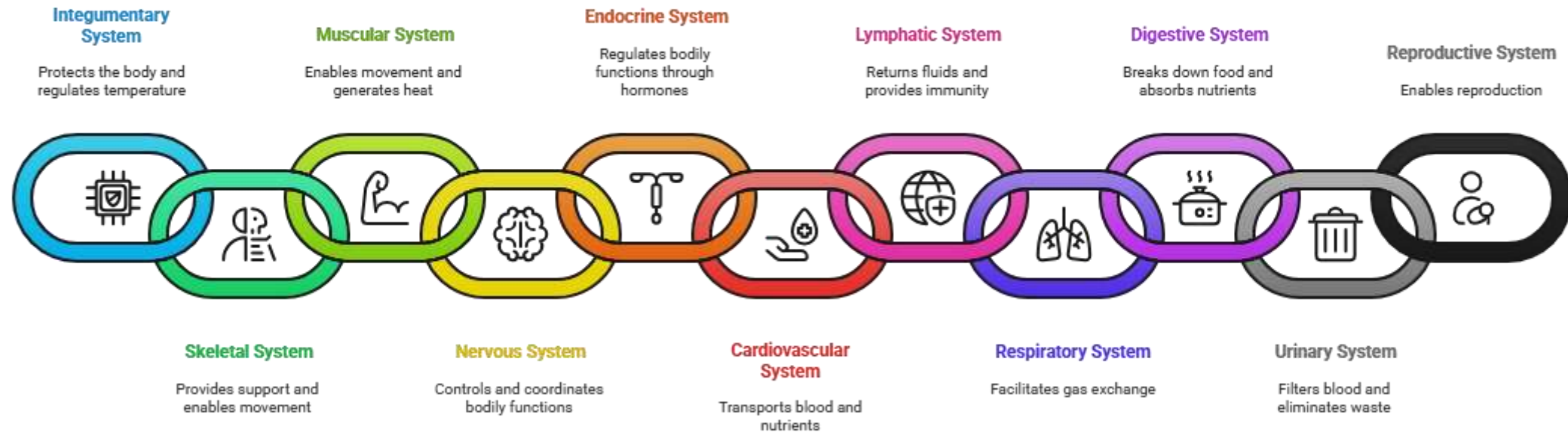
ORGAN LEVEL

Biological Hierarchy of Organs



SYSTEM LEVEL

Human Organ Systems



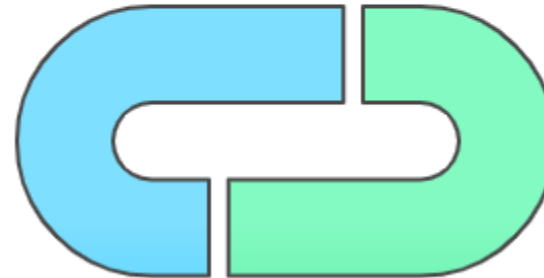
ORGANISMAL LEVEL



Maintaining Life's Balance

Interdependence of Systems

The interconnectedness
of organ systems for
proper function



Homeostasis

The process of
maintaining a stable
internal environment

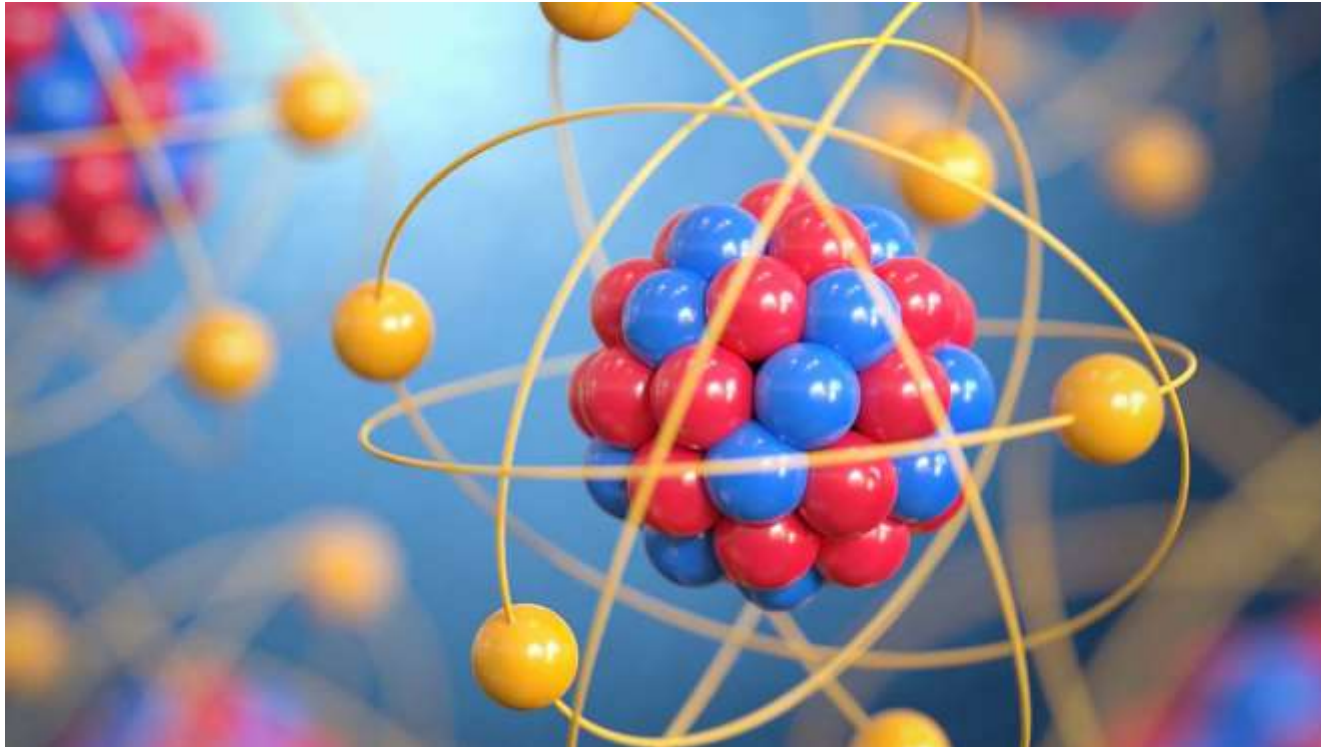
SUMMARY

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

