

MUGBERIA GANGADHAR MAHAVIDYALAYA

Dept. of Physical Education.

PAPER: ANATOMY AND PHYSIOLOGY

SUB: INTRODUCTION OF ANATOMY AND PHYSIOLOGY

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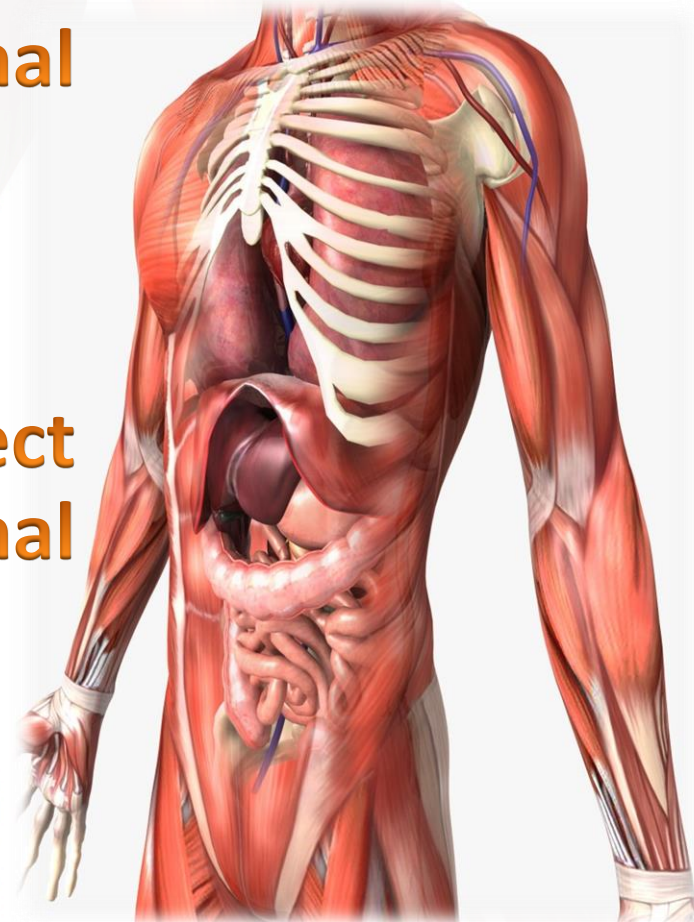
DEFINE THE ANATOMY AND PHYSIOLOGY

Anatomy:

Anatomy is the subject that deals with the normal internal structure of the body.

Physiology:

Physiology is the subject that deals with the normal internal function of the organ.





Importance of Anatomy & Physiology in Physical Ed.

- 1. Anatomy provides the knowledge of structure of various organs**
- 2. Physiology provides the knowledge about the functions of various organs**
- 3. Helpful in prevention of sports injuries**
- 4. Helpful in the process of rehabilitation**
- 5. Helpful in selection of sports**
- 6. Helpful in preparation of training programme**



Importance of Anatomy & Physiology in Physical Ed.

7. Helpful to know about chemical changes during exercise
8. Helpful to know about anatomical & physiological differences among males & females
9. Helpful in providing first aid to sports persons
10. Helpful in physical fitness development
11. Helpful in sports massage
12. Helpful in providing the knowledge of environmental effects on sports persons

Types of Anatomy

- **Gross Anatomy**- structures examined without a microscope.
 - **Systemic**- studied system by system.
 - **Regional**- studied area by area.
 - **Surface**- external form and relation to deeper structures as x-ray in anatomic imaging.
- **Microscopic Anatomy**- structures seen with a microscope.
 - **Cytology**: cellular anatomy.
 - **Histology**: study of tissues.

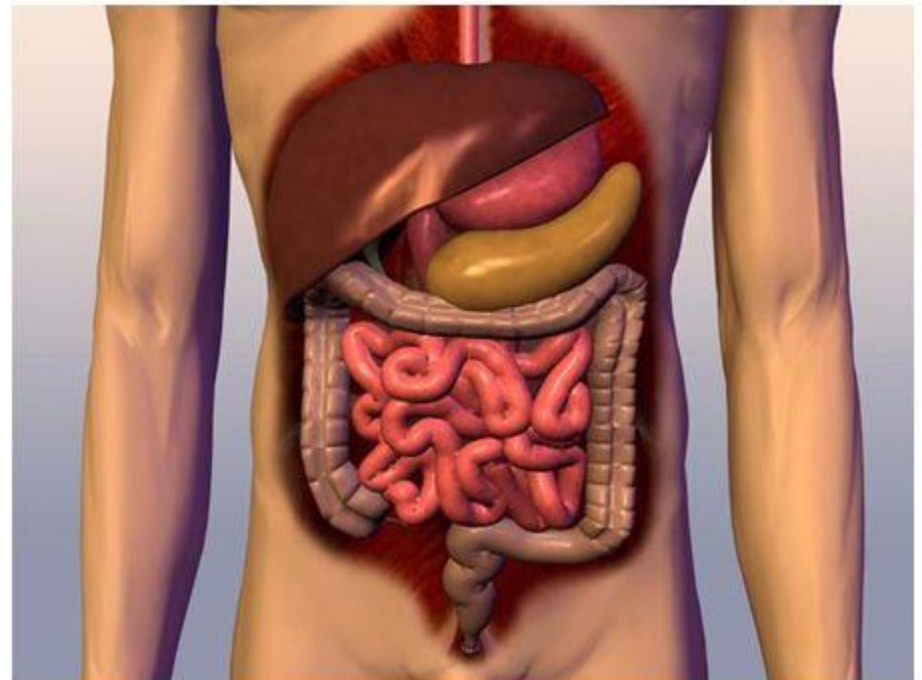
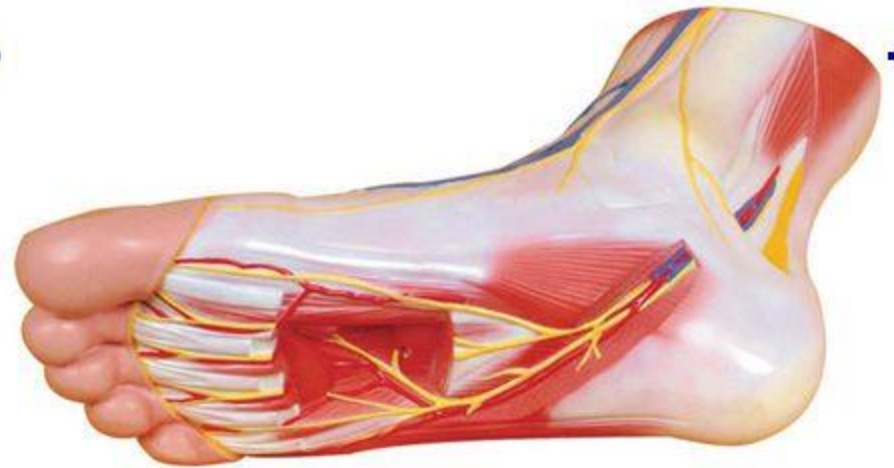


X-Ray



Gross Anatomy

- **Regional** – all structures in one part of the body (such as the abdomen or leg)
- **Systemic** – gross anatomy of the body studied by an entire system (i.e. digestive or skeletal system)



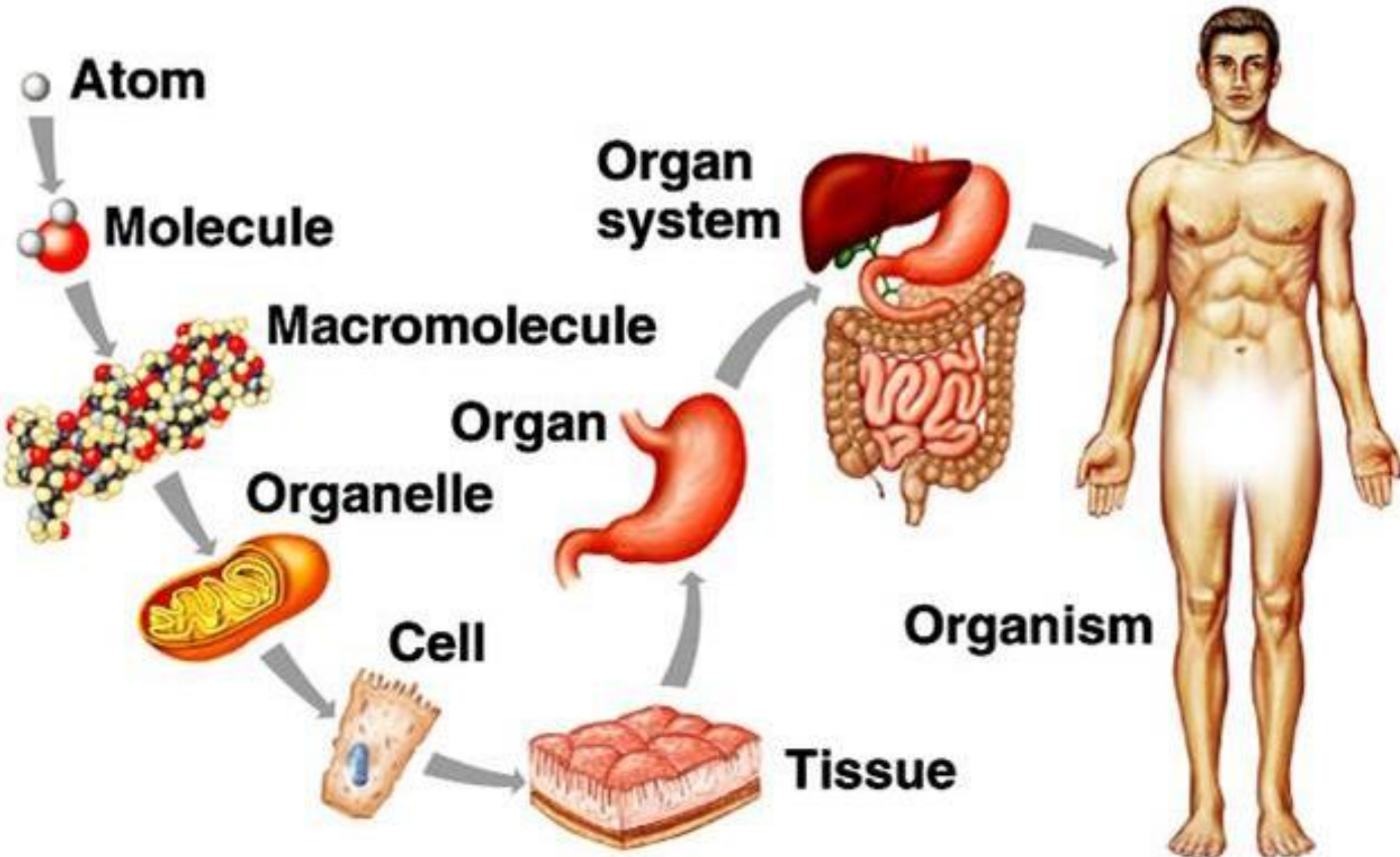
Introduction to the Human Body

The human body is a complex, highly organized structure made up of unique cells that work together to accomplish the specific functions necessary for sustaining life.

The biology of the human body includes-

- **Anatomy** (how the body is structured)
- **Physiology** (how the body functions)

Levels of Organization

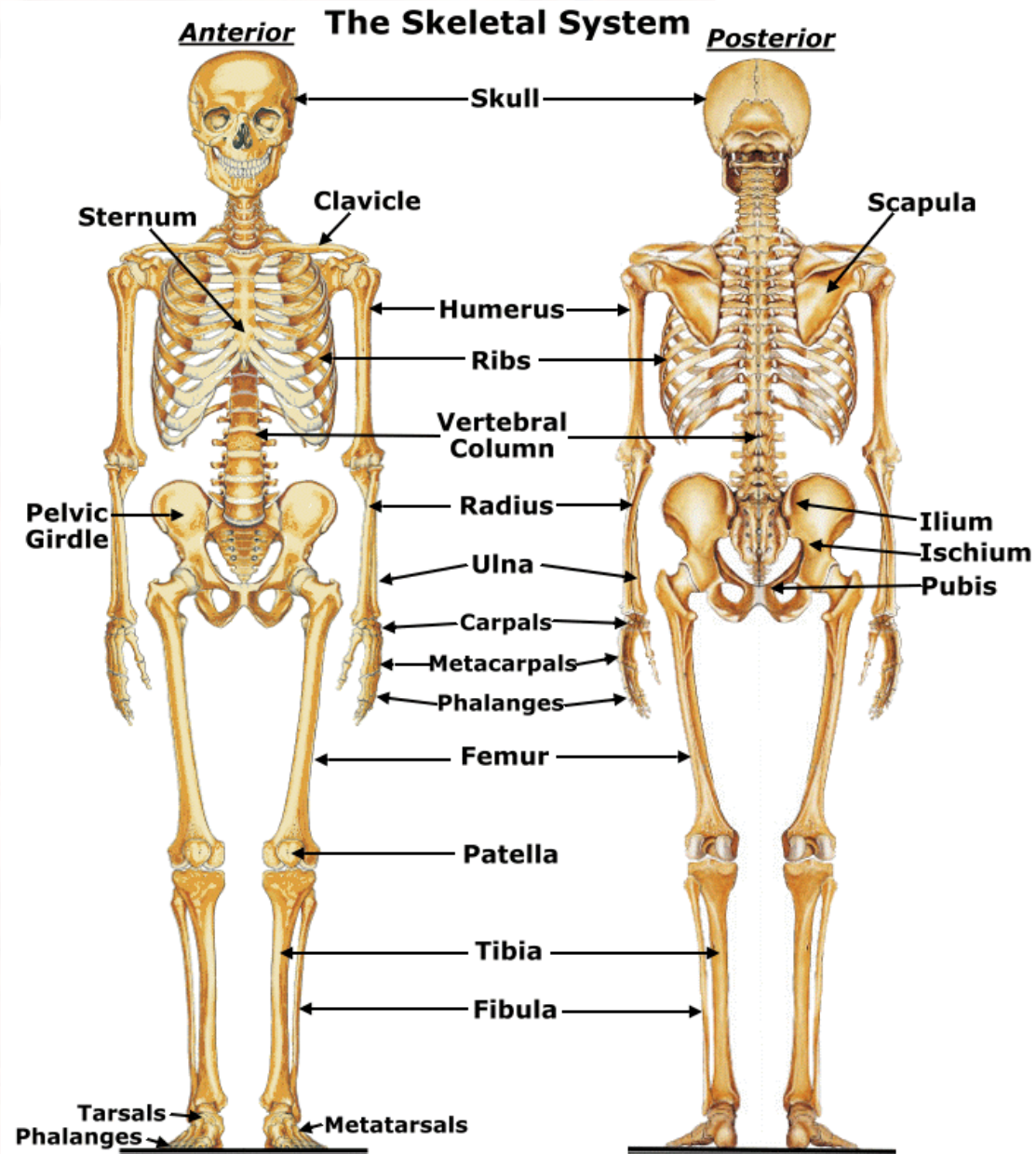


1. Muscular System:

Skeletal muscles attach to bones;
maintains posture;
helps us move

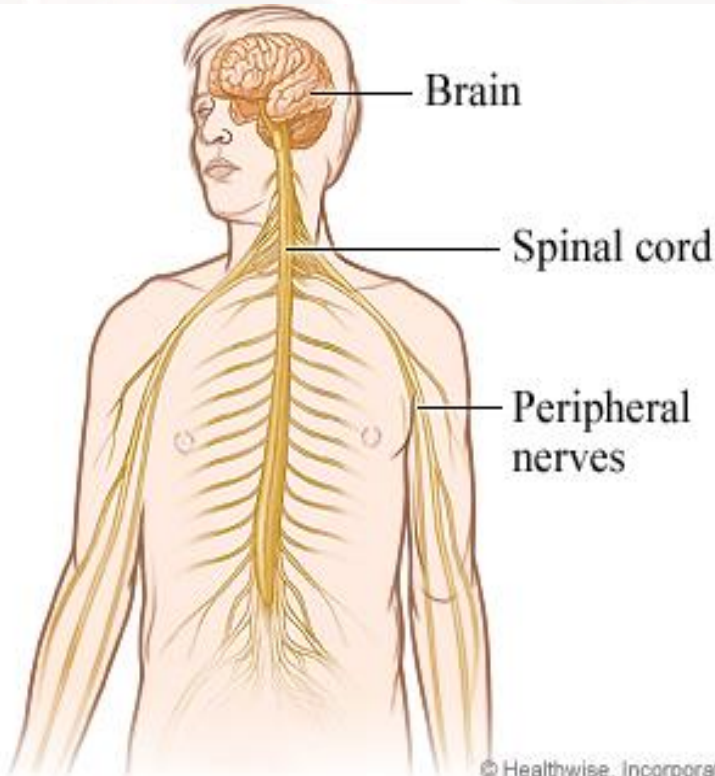
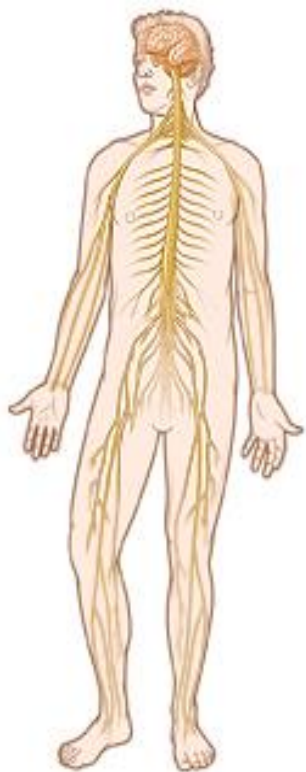


2. Skeletal System:
basic framework of the
body
protects & supports
bones, joints, cartilage

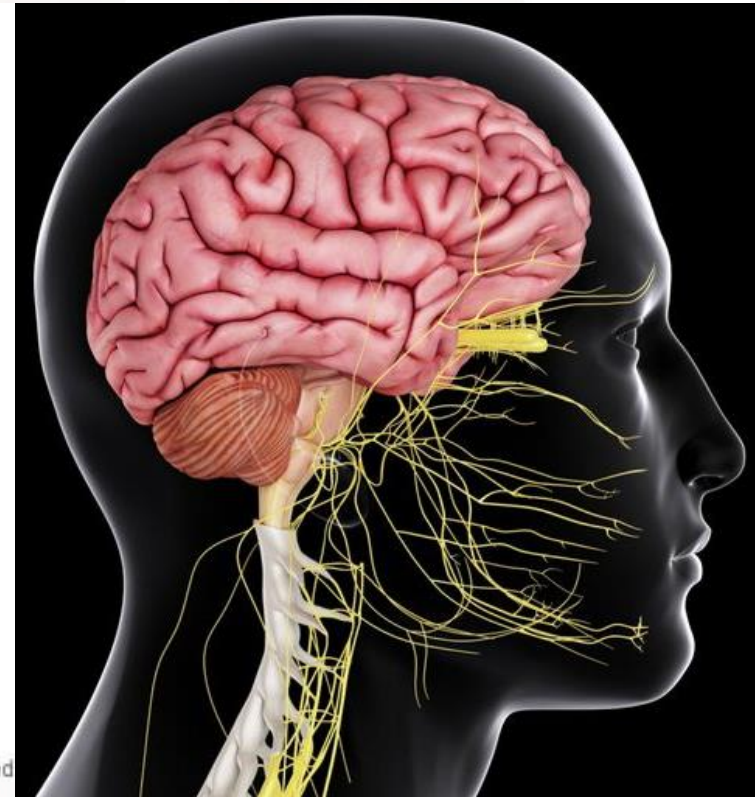


3. Nervous System:

Brain, spinal cord, nerves & sensory organs



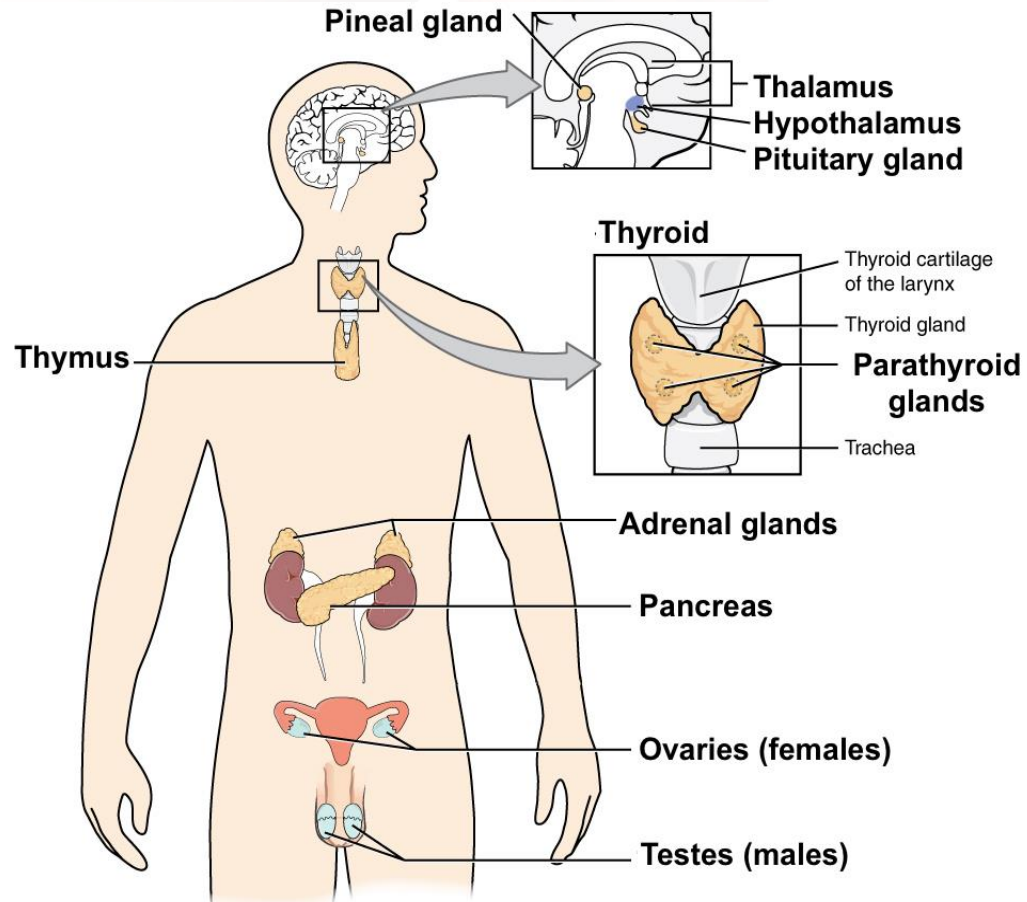
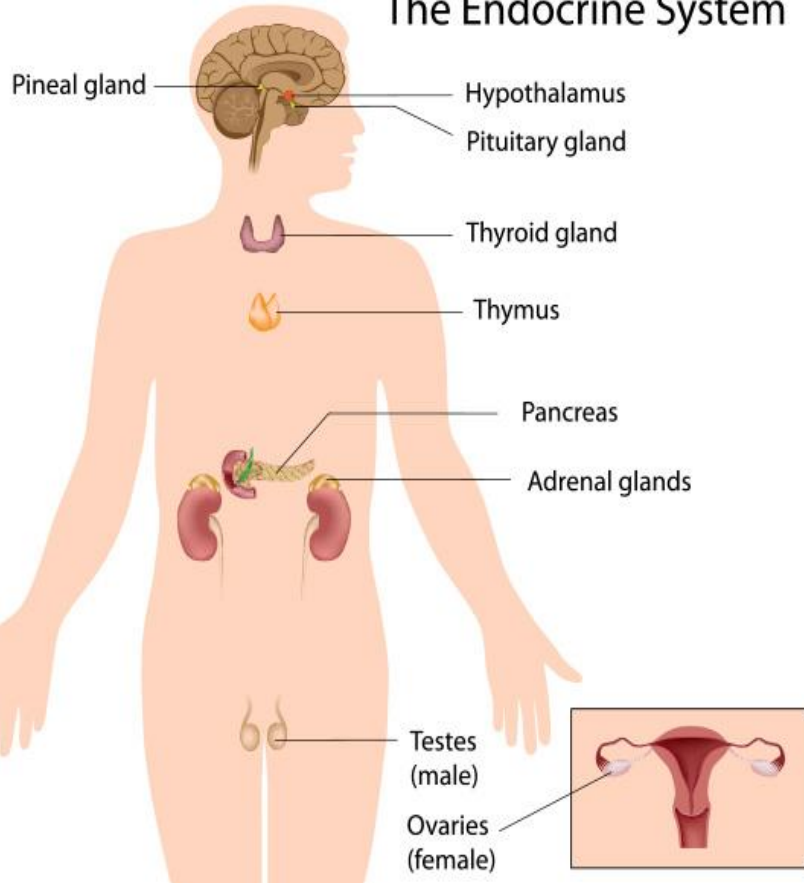
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4. Endocrine System

contains glands that secrete hormones;
chemical substances regulate body activities

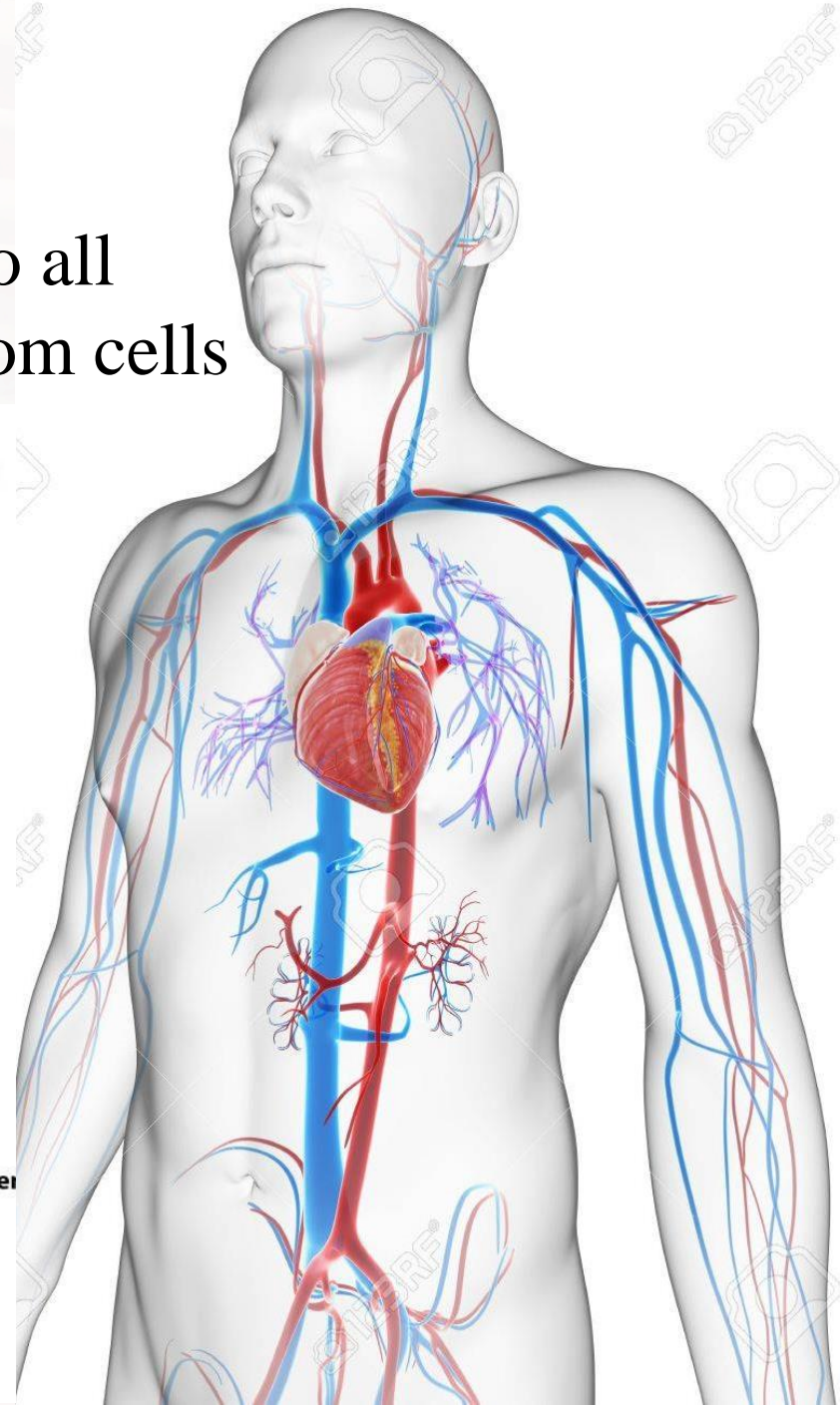
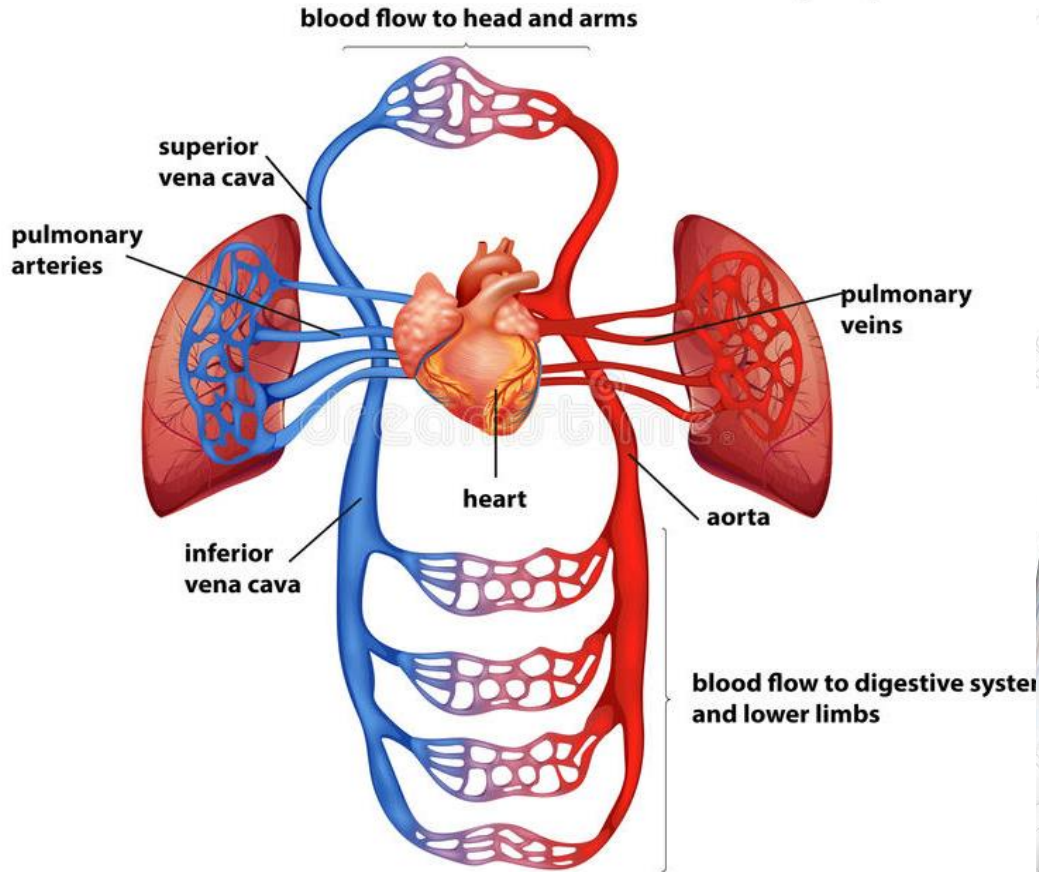
The Endocrine System



5. Circulatory System

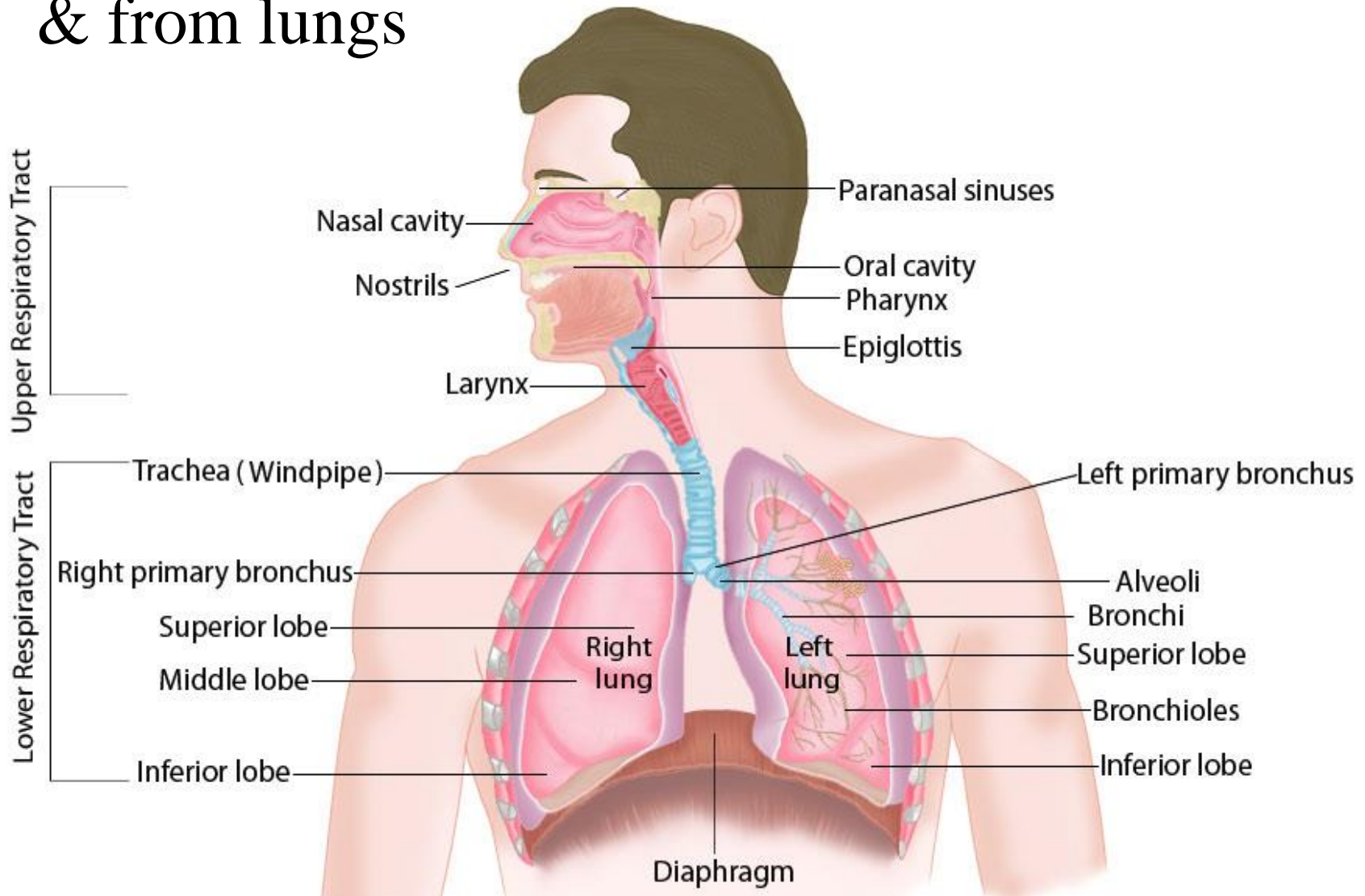
blood, heart & blood vessels
pumps/ transports blood; carries to all
body cells; carries waste away from cells

Blood Flow in Human Circulatory System



6. Respiratory System

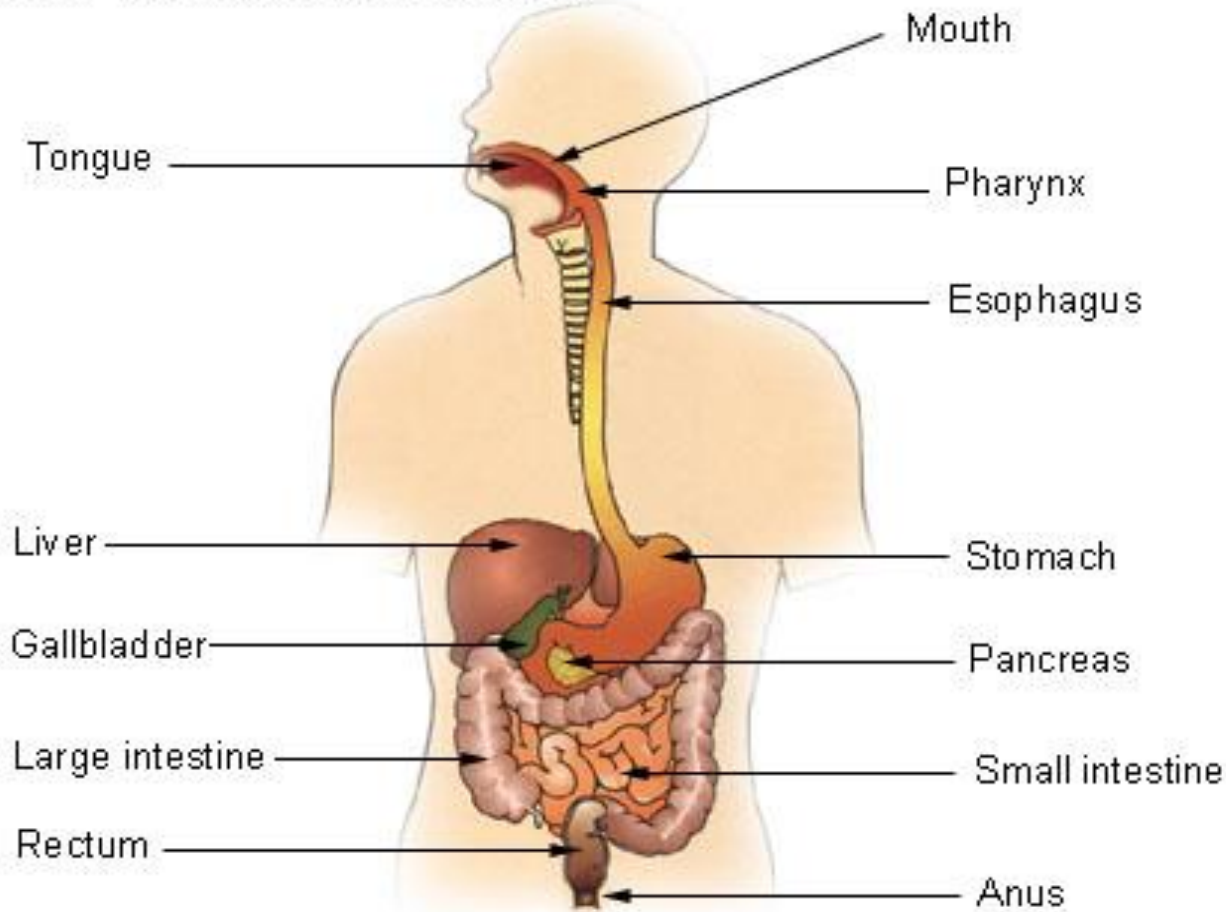
lungs & other structures that carry/conduct air to & from lungs



7. Digestive System

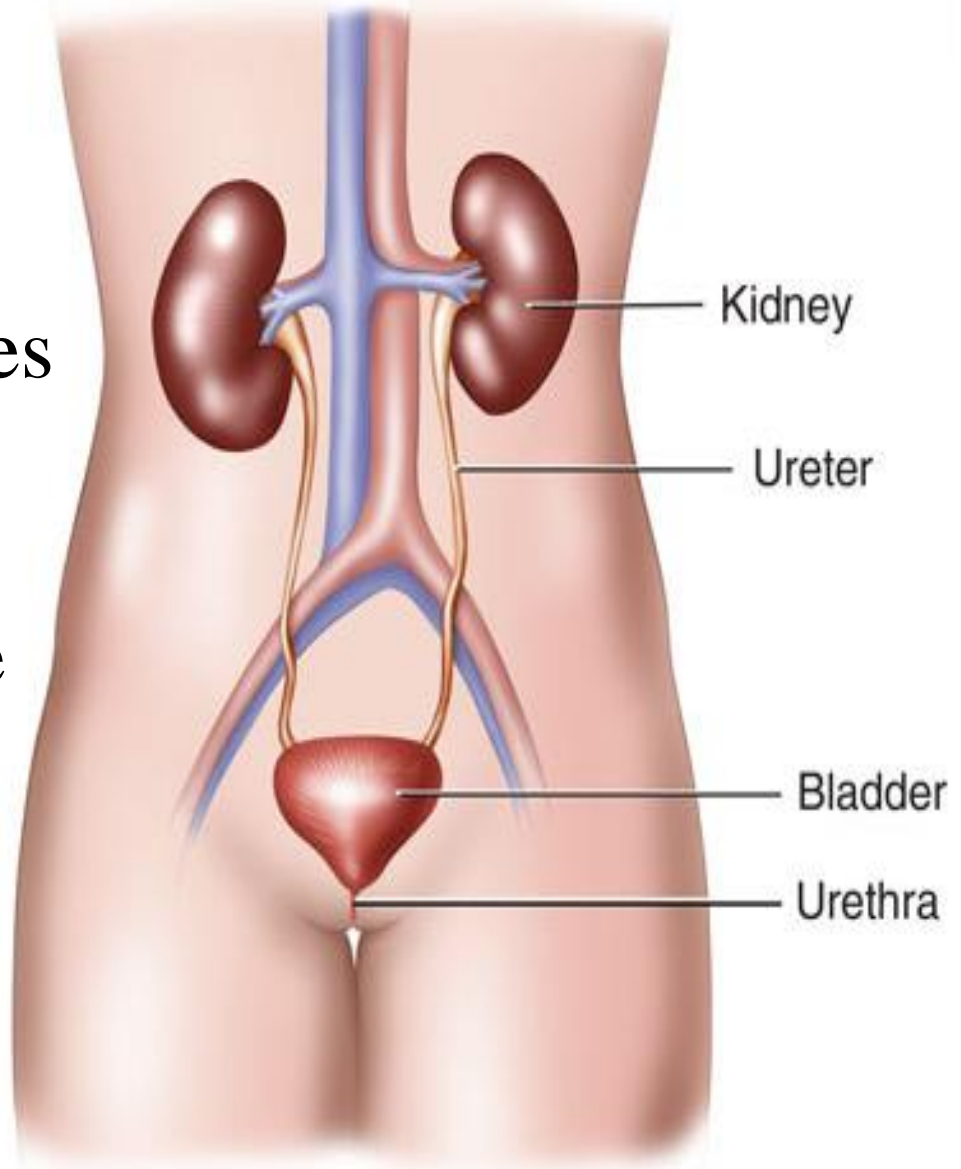
made up of organs designed to ingest and digest food
breaks food down into substance that can be absorbed;
eliminates the rest as waste

Organs of the Digestive System



8. Excretory System / Urinary System:

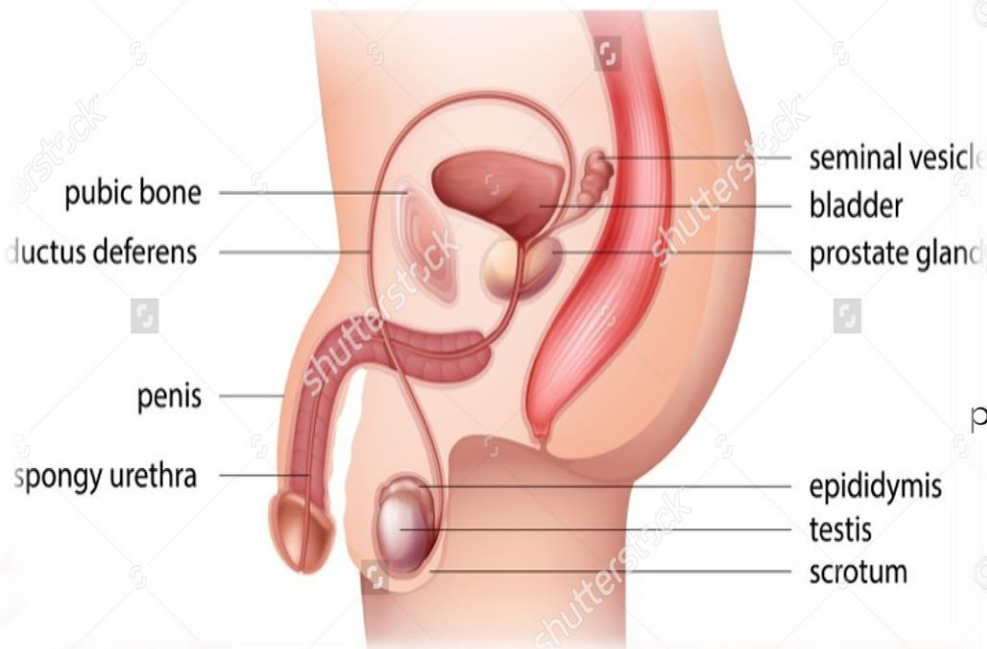
kidneys & other structures
helps excrete waste;
controls water &
electrolyte balance in the
body



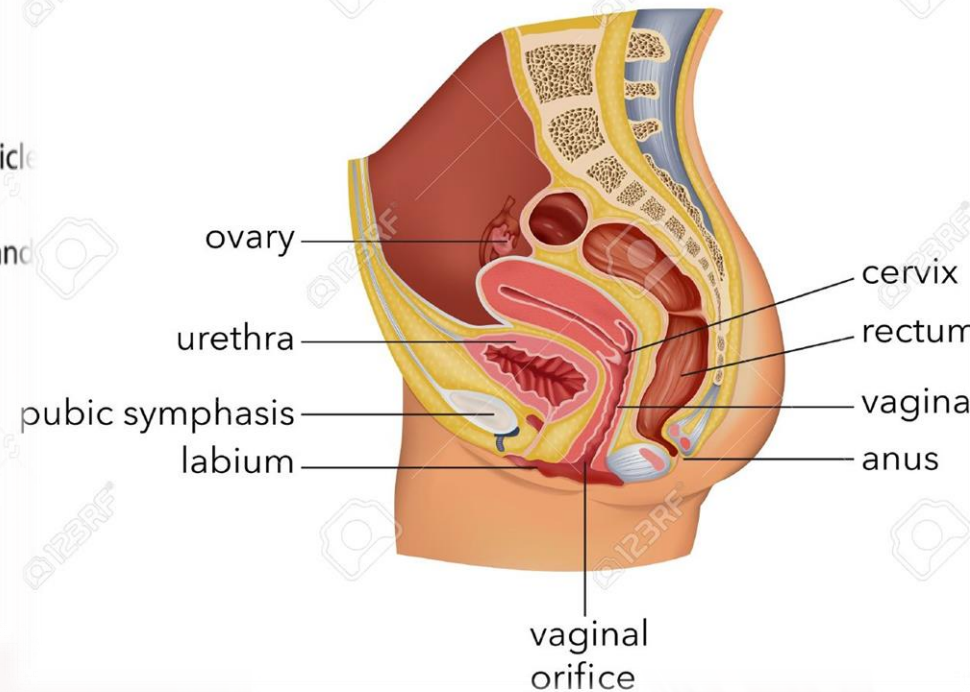
9. Reproductive System / Genital System:

Organs & structures that enable humans to reproduce

Male Reproductive System

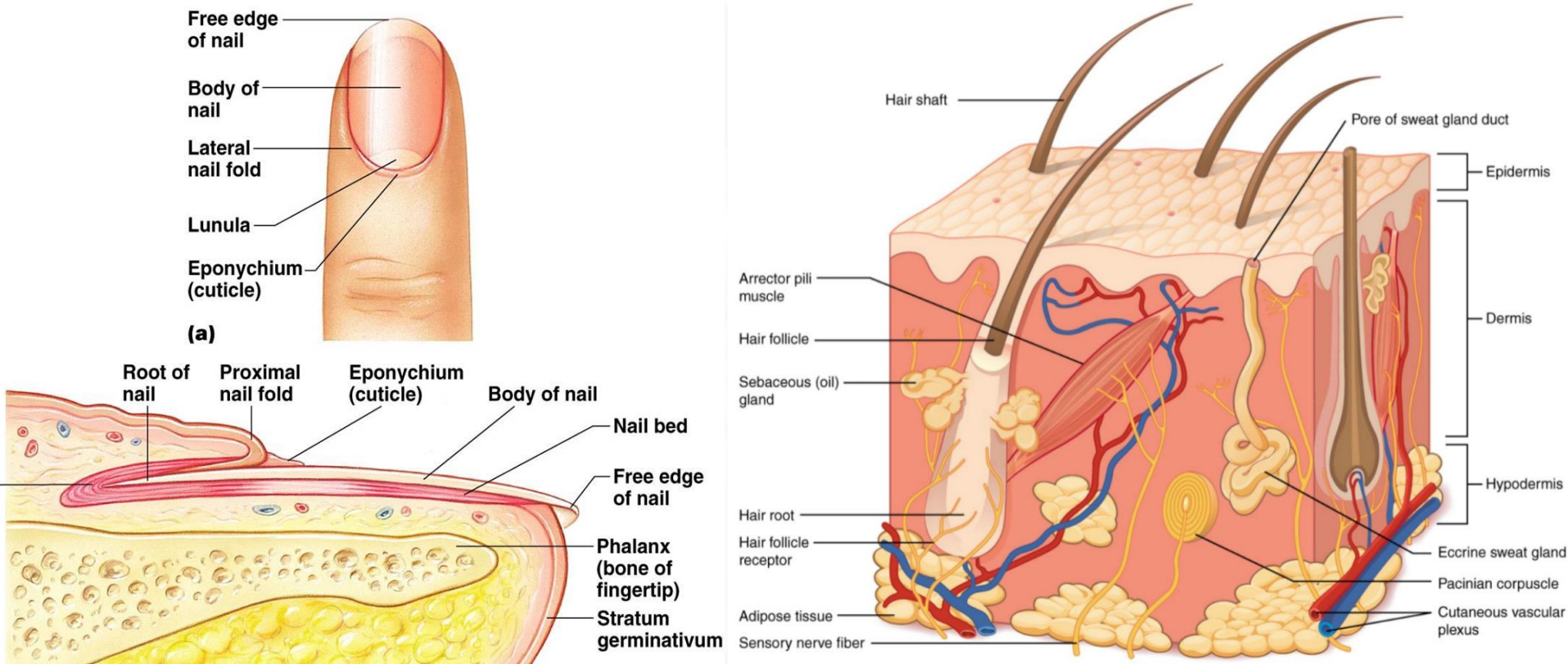


Female Reproductive System



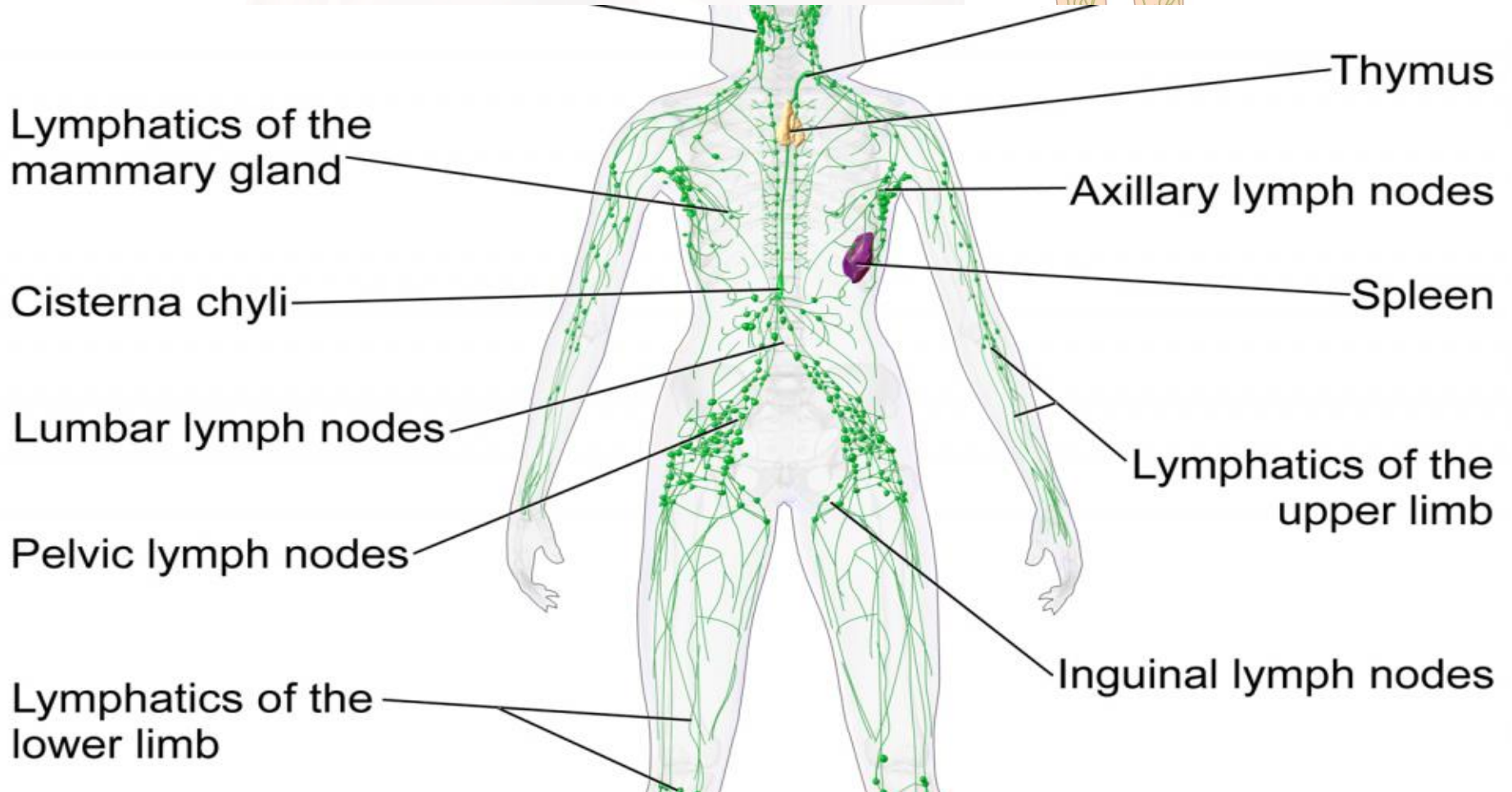
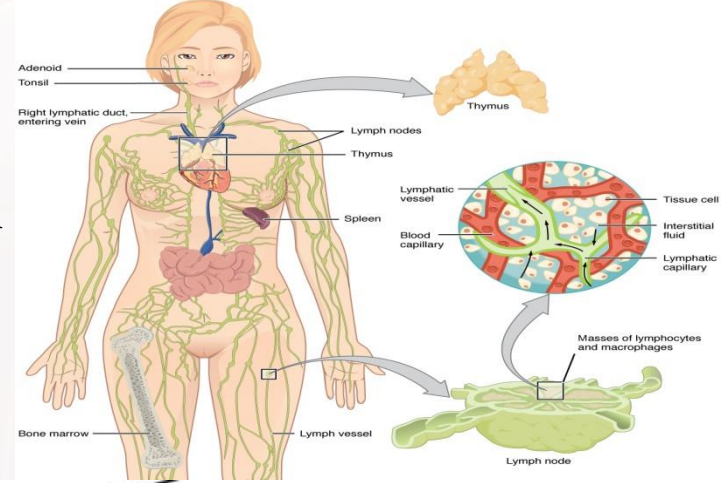
10. Integumentary System

Skin, hair, nails covers the body;
regulates body temp;
creates structures for sensation.



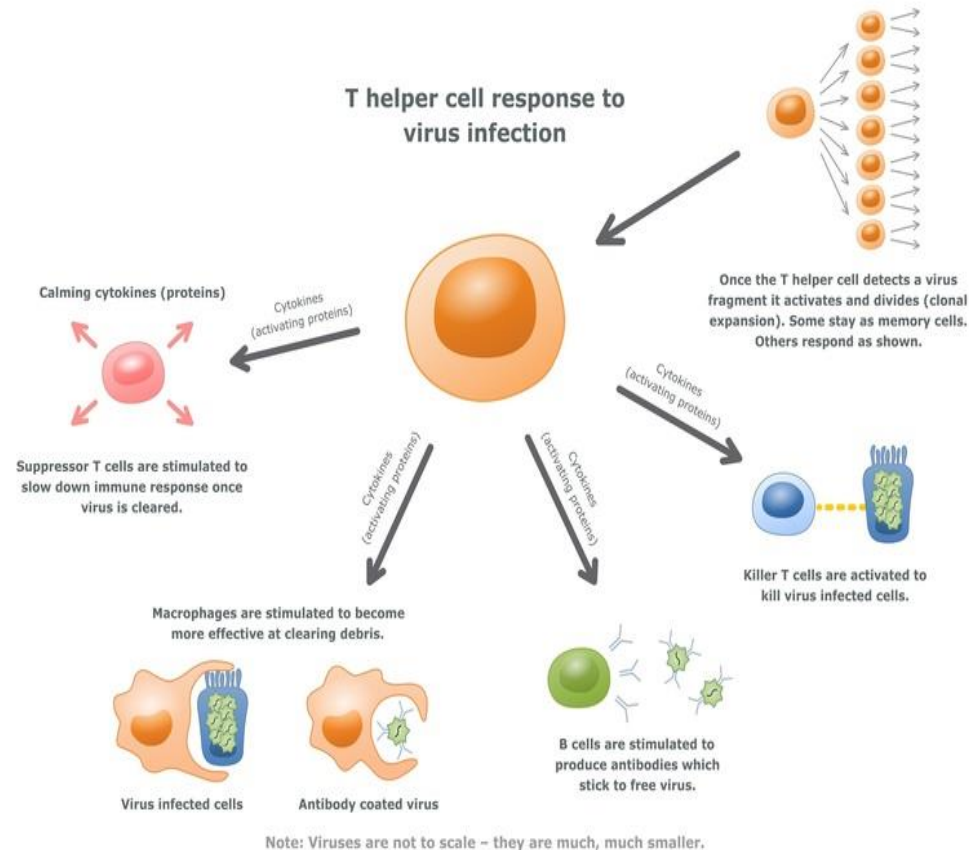
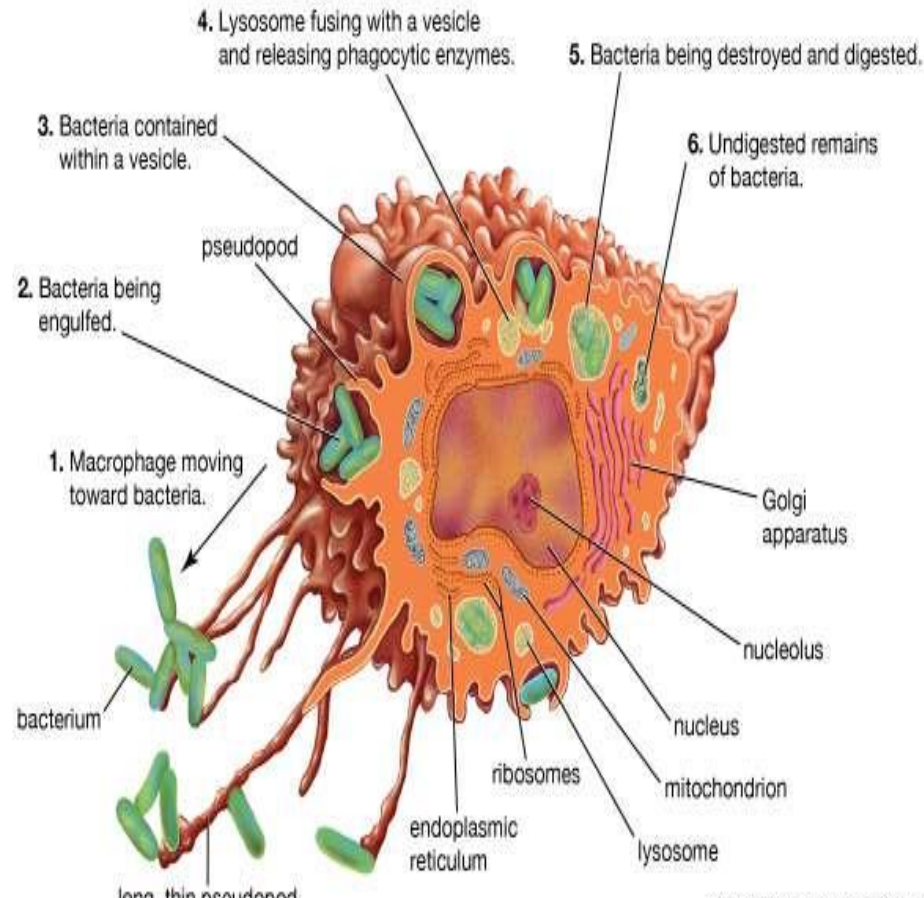
11. Lymphatic System

lymph nodes, lymphatic vessels, lymph & other lymphoid organs
fluid balance; defence against pathogens & other foreign material



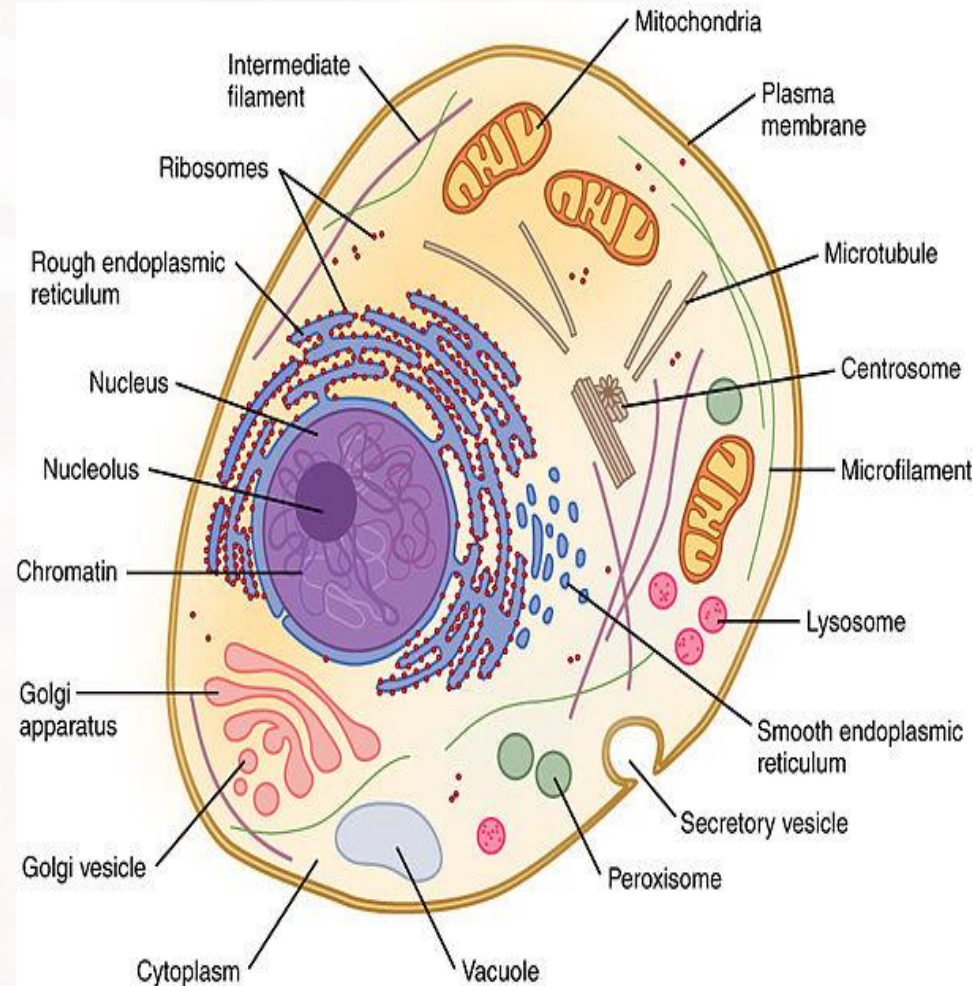
12. Immune System

an elaborate defense system; protects from pathogens, allergens & our own cells that have gone awry. (cancer cells)



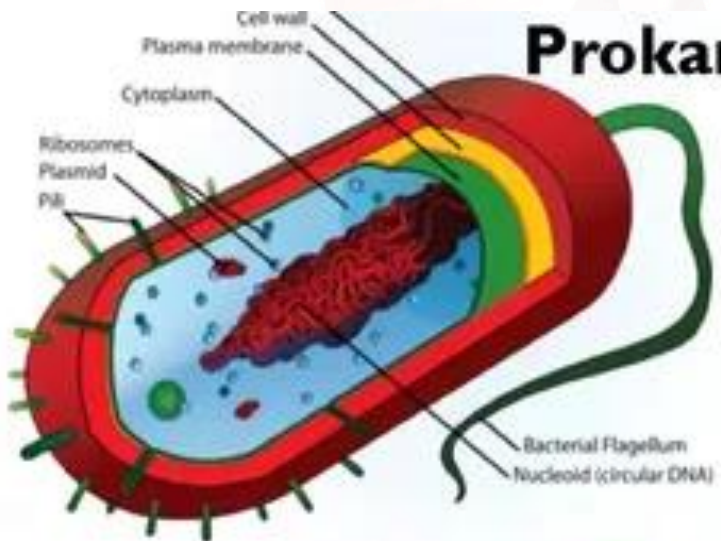
WHAT IS A CELL

Cells are the basic building blocks or structural and functional unit of all living beings. The human body is composed of trillions of cells. They provide structure for the body, take in nutrients from food, convert those nutrients into energy, and carry out specialized functions.

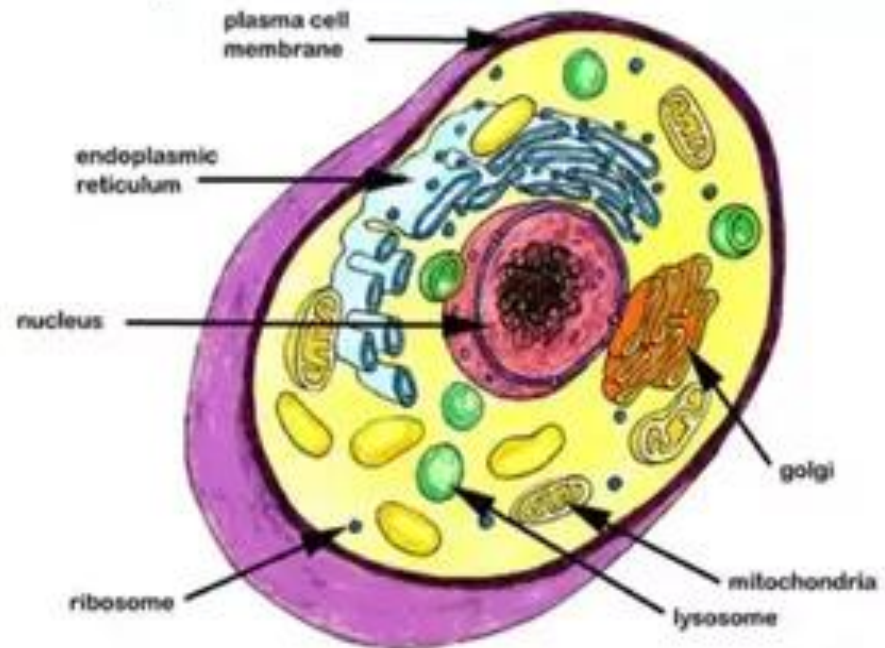


Types of cell

Prokaryotic Cell (Bacteria)



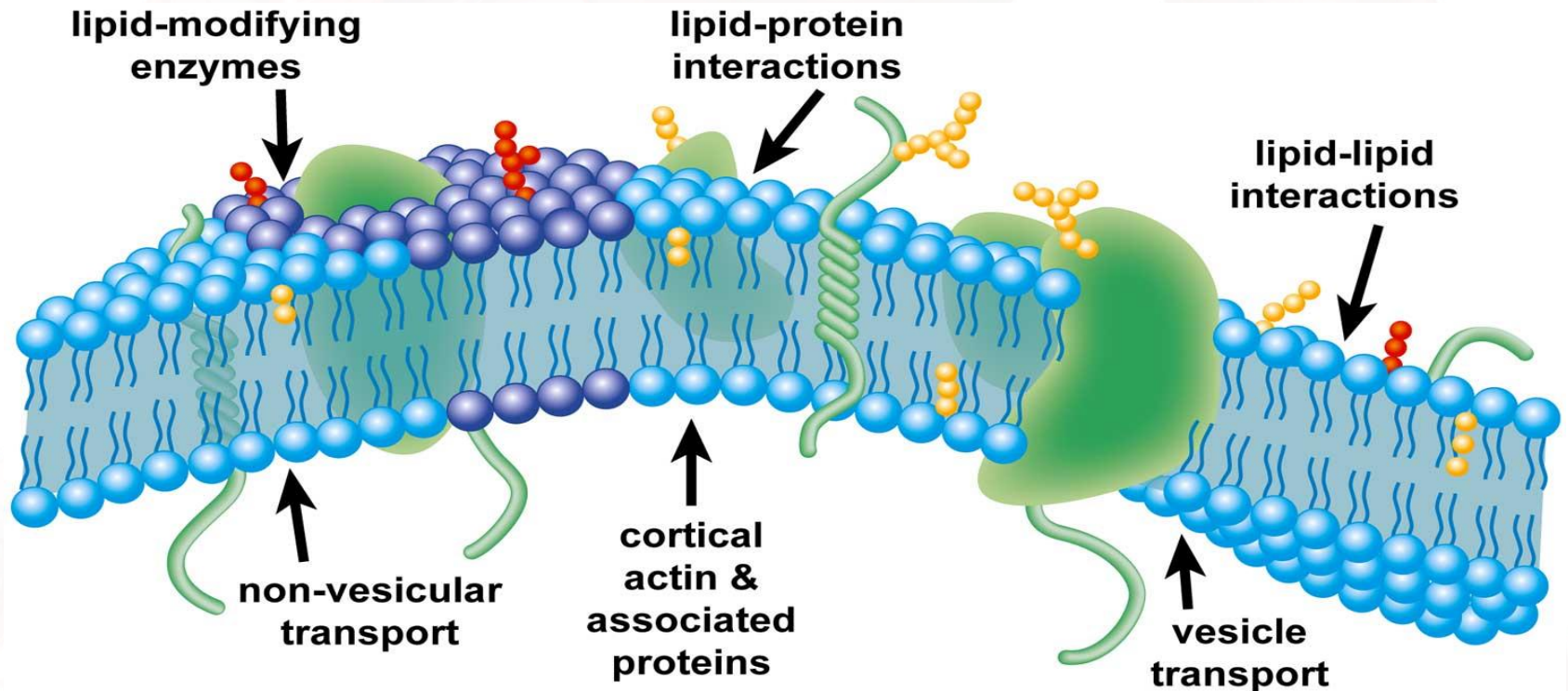
Eukaryotic Cell (Plant)



Eukaryotic Cell (Animal)

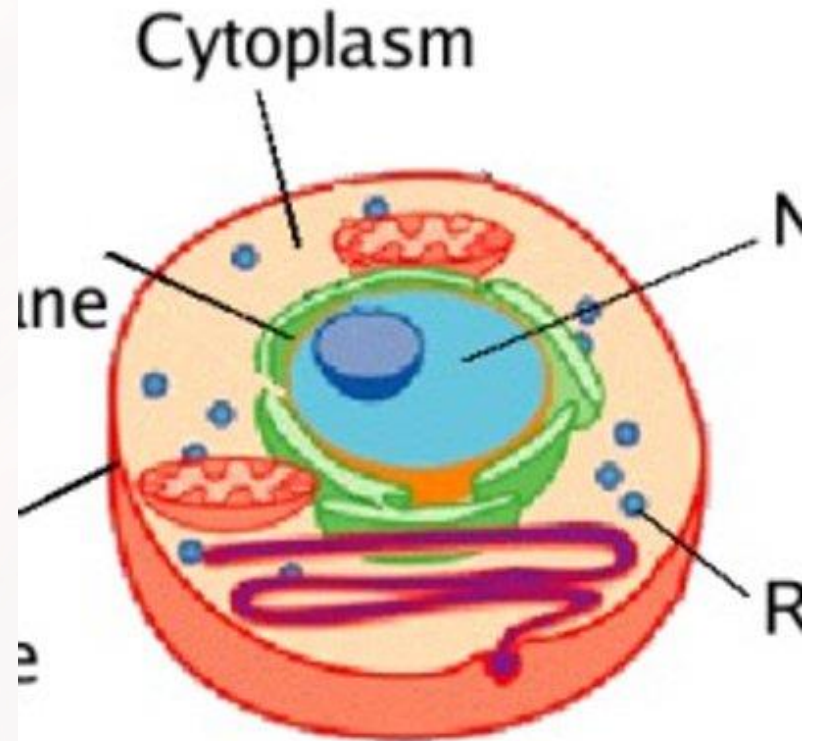
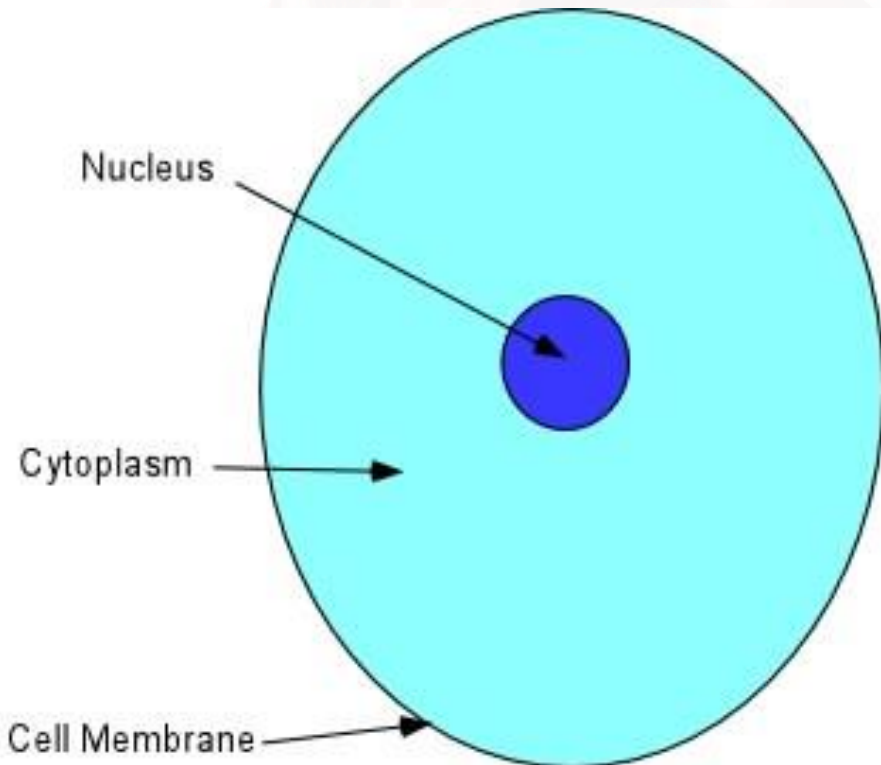
Cell Membrane

The cell membrane (also known as the plasma membrane or cytoplasmic membrane) is a biological membrane that separates the interior of all cells from the outside environment. The cell membrane is selectively permeable to ions and organic molecules and controls the movement of substances in and out of cells.



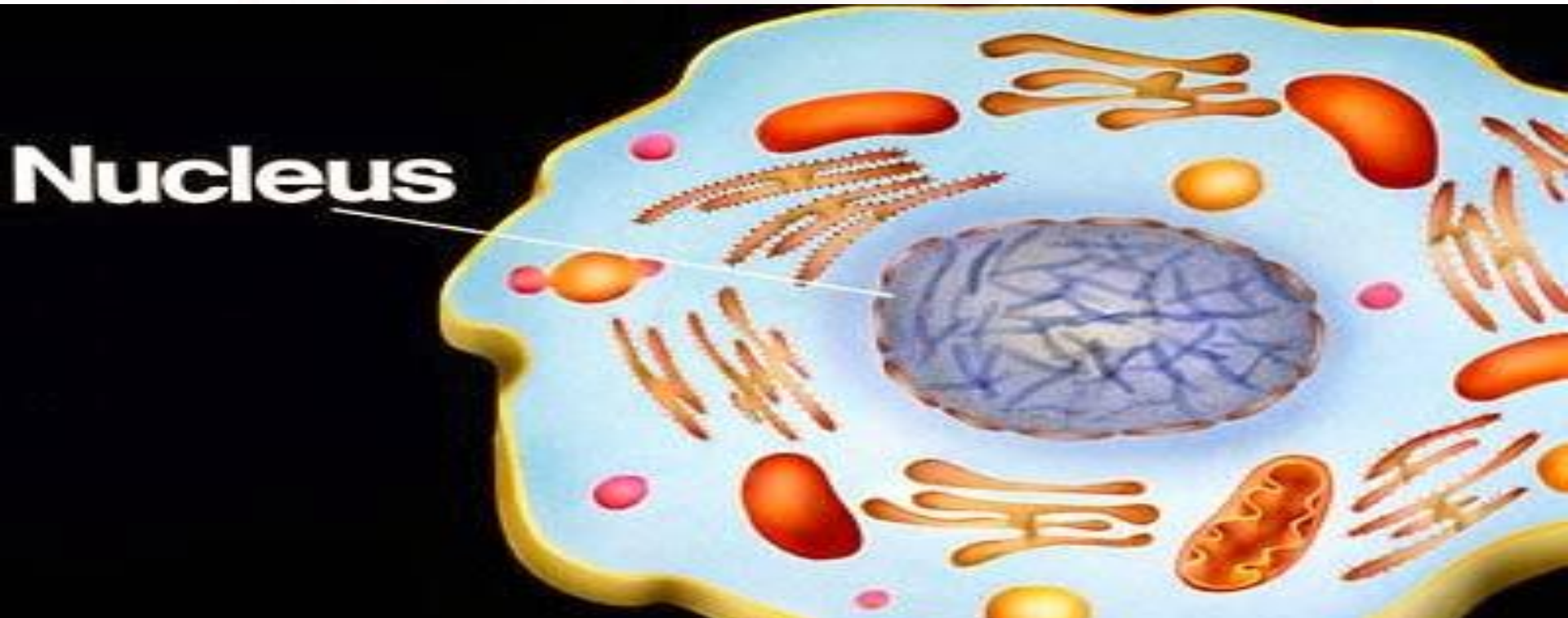
CYTOPLASM

Cytoplasm : Within cells, the cytoplasm is made up of a jelly-like fluid (called the cytosol) and other structures that surround the nucleus.



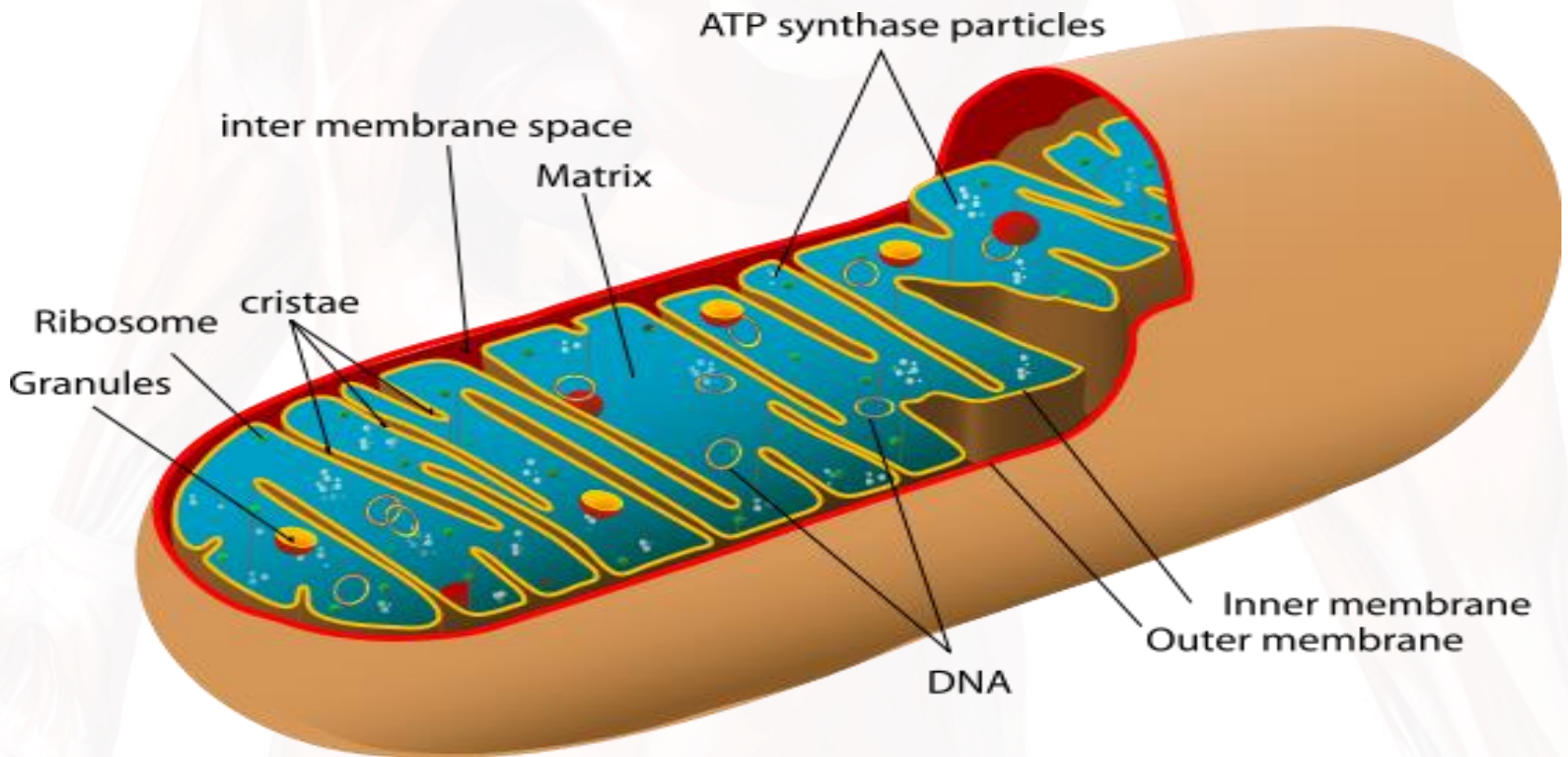
Nucleus

The nucleus serves as the cell's command center, sending directions to the cell to grow, mature, divide, or die. It also houses DNA (deoxyribonucleic acid), the cell's hereditary material.



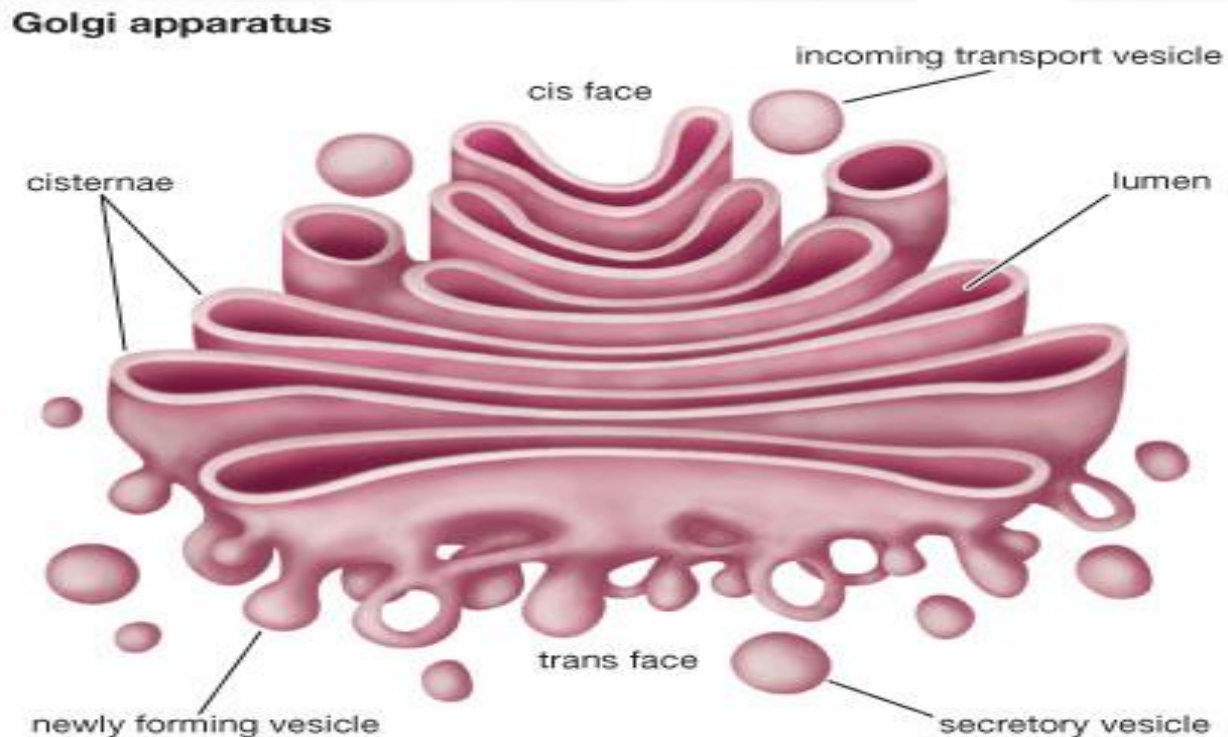
Mitochondria

Mitochondria are complex organelles that convert energy from food into a form that the cell can use.



Golgi apparatus

The Golgi apparatus packages molecules processed by the endoplasmic reticulum to be transported out of the cell.



Function of Cell

- **Plasma membrane:** Cell border; selective passage of molecules into and out of cell; location of cell markers, cell receptors.
- **Nucleus:** Storage of genetic information; control center of cell; cell replication, Ribosomal formation.
- **Mitochondrion:** Cellular respiration and convert energy.
- **Golgi apparatus:** Processing, packaging, and distribution of molecule.

THANK YOU

